



Albany Motorsport Park

**Application for Planning Approval for
'Motorsport based recreation and
incidental uses' at Lot 5780 (No. 54) Down
Road South, Drome**

City of Albany

24 August 2021

→ **The Power of Commitment**



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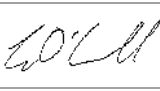
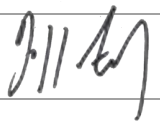
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Executive summary

The purpose of this Development Application Report is to provide both the City of Albany and the Joint Development Assessment Panel a comprehensive description of the proposed construction of the Albany Motorsport Park and its compliance with the applicable State and Local Planning framework. The proposed works are to be located at Lot 5780 Down Road South, Drome (Figure 3.2).

The preparation of the document follows a long process which has included the preparation of various feasibility studies and the undertaking of a scheme amendment to the City of Albany Local Planning Scheme No.1. These have all been undertaken as a result of increasing demand within the region to provide a facility that adequately caters for the motor sporting community, encompassing local, national and international enthusiasts.

This Report is a culmination of various technical studies, all of which have been prepared to effectively manage the construction and operation of Stages 1A and 1B of the park.

These various management plans address the following:

- Environmental impacts, inclusive of:
 - Noise
 - Water, both wastewater and stormwater
 - Hydrocarbons
 - Waste
 - Dust
 - Acid sulphate soils
 - Protected exclusion area
 - Decommissioning
 - Construction
- Visual impacts
- Bushfire
- Traffic and parking

This application is also supported by the preparation of a Landscaping Masterplan which forms part of the overall development plans. All of these documents have been appended to this application.

As outlined in the subsequent sections of this Report, the proposed development is considered to sufficiently address all applicable planning requirements, and as such, is considered to warrant approval.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.2 and the assumptions and qualifications contained throughout the Report.

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1. Introduction

1.1 Purpose of this report

The City of Albany (CoA) has engaged GHD to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure 3.2). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

At full development, the proposed AMP will consist of:

- A sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*^[1] (CAMS, 2012) and Motorcycling Australia (MA) *Track Guidelines*^[2] (MA, 2011).
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Stage 2 Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

A Master Plan, which illustrates the various aspects of the Site and staging areas, has been developed by the GSMG and CoA to support the Development Application for the AMP (Appendix B).

1.2 Scope and limitations

This report has been prepared by GHD for the CoA and may only be used and relied on by these bodies for the purpose agreed between GHD and the CoA as set out in this report.

GHD otherwise disclaims responsibility to any person other than the CoA arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

¹ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

² MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

GHD has prepared this report on the basis of information provided by the CoA and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Background

The AMP has been the subject of extensive investigations by the State and Local Government, consultation with stakeholders and a range of economic and technical feasibility studies to inform the merits of the proposal.

In 2016, the City of Albany undertook a demand study into the need for a multi-use motorsports facility that demonstrated a strong need and desire for such a facility in the region. The WA Motorsport Strategy (DLGSCI, 2018) identified the proposed site as a regional level facility also serving local need. The strategy further recommended detailed planning and feasibility of developing the motorsports facility be undertaken.

Recognising the interest in motorsports in the Great Southern, the Western Australian Government committed \$250,000 to undertake preliminary planning for a regional motorsports facility (Watson, 2018) and a further commitment of \$5.5 million in the 2020/21 forward estimates (GoWA, 2018) for its development.

A technical site feasibility study (2018) was then prepared by GHD for the City of Albany, in collaboration with the Department of Local Government, Sport and Cultural Industries (DLGSCI), to facilitate development of a multi-use regional motorsports facility which informed the preparation and submission of a scheme amendment for the subject site. The scheme amendment proposed to rezone the subject site and introduce a range of provisions to facilitate development of the AMP. The scheme amendment was approved by the Minister for Transport, Planning, Ports Hon. Rita Saffioti (Minister for Planning) on 27 July 2021, with the amendment gazetted on 3 August 2021.

The sections below provide a summary of the overall project timeline as well as a detailed summary of the key milestones that have occurred leading up to this application.

2.1 Project timeline

Table 2.1 below provides a summary of overall project timeline and the extensive process undertaken to reach this stage of preparing and submitting a development application. Also outlined are future milestones associated with the overall AMP project:

Table 2.1 Project timeline

	Project Milestone	Date	Status / Key Actions
Phase 1	Feasibility, planning, documentation	2018	Completed.
	Cost Benefit analysis and business case development to support future funding applications.	2019	Completed.
	Land purchase negotiations and commitments	Oct 2018 - Feb 2019	Completed - City of Albany Council decision to purchase land. Completed - State Government and City of Albany agreement on land purchase conditions.
	Land purchased by City of Albany	Apr 2019	Completed.
	Scheme amendment / site rezoning approved by Minister	28 July 2020 3 August 2021	Initiated. Approved.
	EPA referral under Part IV, Division 3 of the EP Act	8 October 2020	Completed. Outcome – Scheme not assessed.
	Funding approval received for planning and design, with funding commitment for implementation subject to an approved DA	Feb 2019 – May 2021	Completed - Finalisation and targeted development of funding application documentation. Completed - Leverage available and committed funds to attract federal funding.

	Project Milestone	Date	Status / Key Actions
Phase 2	Preparation of draft masterplan	Dec 2020 – August 2021	Completed.
	<i>EPBC Act</i> referral to DAWE and outcome	23 June 2021	Completed. Outcome – “not a controlled action”
	Funding applications and agreements in place – planning and design completed and implementation funding – subject to approved DA	Apr 2020 - Apr 2021	Completed.
	Undertake detailed design of project	June – Dec 2021 TBA	Stage 1A Stage 1B – Subject to securing implementation funding
	Planning approvals (inc. approvals from referral agencies – DWER and DFES)	August – December 2021	Subject application.
	Contractor tender – Engagement of construction company	Jan – Feb 2022	
	Stage 1 construction and commissioning	Jan 2022 – April 2023	Construction commencement. Operation. Stage 1A to be completed by May 2022. Stage 1B to be completed by April 2023.
Phase 3	Stage 2 construction and commissioning	2024 – 2027	Construction commencement. Operation. Subject to funding

2.2 Consultation

Throughout the abovementioned process, a significant amount of pre-lodgement consultation has also been undertaken as part of the AMP project. This consultation has been led by the City of Albany, with support from GSMG and associated consultants. In addition, several Ministerial briefing notes / letters regarding the project have been prepared by the City of Albany in the form of:

- Briefing note for the Hon. Dave Kelly – Minister for Water, 19 December 2017.
- Briefing note for the Hon. Mick Murray – Minister for Seniors and Ageing; Volunteering; Sport and Recreation, 27 February 2018.
- Letter to the Hon. Mick Murray – Minister for Seniors and Ageing; Volunteering; Sport and Recreation, 23 March 2018.

Responses were subsequently received from the following:

- Letter from the Hon. Peter Water MLA – Member for Albany, 17 January 2018.
- Letter from the Hon. Dave Kelly – Minister for Water; Fisheries; Innovation and ICT; Science, 9 February 2018.

The record of consultation since July 2018 is summarised below:

Table 2.2 Record of consultation (Source: GHD, 2020)

Date	Attendees	Summary of Discussion
20 July 2018	City of Albany Great Southern Motorplex Group (GSMG) Inc. Department of Local Government, Sport and Cultural Industries (DLGSCI)	Project initiation meeting for site feasibility study.
17 August 2018	City of Albany GSMG Inc. DLGSCI Department of Planning, Lands and Heritage (DPLH) Department of Water and Environmental Regulation (DWER) Great Southern Development Commission (GSDC) Office of Peter Watson, MLA	Progress update on site feasibility study.
20 September 2018	City of Albany Wagyl Kaip and Southern Noongar Working Party	Briefing and presentation of proposed regional motorsports facility.
27 September 2018	City of Albany Councillors	Briefing and presentation of draft Site Technical Feasibility Study.
19 October 2018	City of Albany GSMG Inc. DLGSCI DPLH DWER GSDC Office of Peter Watson, MLA Water Corporation	Presentation of final Site Technical Feasibility Study.
28 November 2018	City of Albany GSMG Inc. DPLH	Pre-lodgement consultation meeting for Scheme Amendment with DPLH (Great Southern).
7 January 2019	Environmental Protection Authority (EPA)	Pre-lodgement consultation for Scheme Amendment referral with EPA.
15 February 2019	City of Albany DWER	Feedback on preliminary site water management plan and noise modelling.
28 February 2019	City of Albany GSMG Inc. DLGSCI DPLH DWER GSDC Office of Peter Watson, MLA Main Roads WA Department of Biodiversity, Conservation and Attractions (DBCA) Department of Health (DoH)	Progress update on site technical studies (specifically, bushfire management, water quality monitoring, flora & fauna) and Scheme Amendment.
11 April 2019	City of Albany GSMG Inc. EPA DWER DPLH	Site visit specifically with EPA and DWER officers to discuss key environmental constraints and proposed management approaches.

Date	Attendees	Summary of Discussion
5 August 2021	DWER	Discussion surrounding the development application and how it addresses the environmental constraints present at the site.

2.3 Site feasibility study

As noted in Table 2.1 above, the City of Albany commissioned GHD to prepare a comprehensive Site Feasibility Study in 2018. The Site Feasibility Study comprised three main elements with the following scope of works:

1. Site concept development
 - The AMP concept design was developed by the GSMG (including Roberts Gardiner Architects) and City of Albany. GHD assisted with the concept design development.
 - GHD prepared a preliminary capital budget estimate, based on the GSMG concept design and the technical feasibility investigations conducted.
 - Development of a priorities and staging plan.

2. Site technical feasibility investigations
 - Collation of background information, existing and surrounding land uses, planning restrictions (including bushfire planning provisions), approvals and buffer requirements.
 - Traffic investigation for Down Road and the intersection with Albany Highway.
 - Desktop geotechnical investigation of anticipated ground and groundwater conditions.
 - Desktop investigation into anticipated power demands and servicing requirements.
 - Desktop hydrogeology investigation.
 - Preliminary Water Management Plan for the site, particularly addressing the requirements of Water Quality Protection Note (WQPN) 100: Motor sport facilities near sensitive waters.
 - Preliminary desktop Environmental Impact Assessment (EIA) and site walkover.
 - Preliminary desktop noise investigation and management plan.

3. Stakeholder consultation
 - Regular consultation with a small working group occurred throughout the study period.
 - A broader consultation workshop was also held on 17 August with representatives from City of Albany, DLGSCI, GSMG, Department of Planning, Lands and Heritage (DPLH), Department of Water and Environmental Regulation (DWER), Great Southern Development Commission (GSDC), and the office of Peter Watson MLA.

The above main elements ultimately informed the site feasibility assessment which was undertaken using the City of Albany's *Risk & Opportunity Management Framework (2018)* which captured 20 material risk issues. Each identified risk was addressed by recommended remedial actions, controls and responsibilities, with attention paid to the preferred hierarchy of controls. The residual risk level for each issue was targeted to be 'Low / acceptable' or 'Medium / monitor' with the latter being items which require on-going monitoring to ensure risk levels remained acceptable.

A summary of the risk issues and initial and residual risk ratings derived as part of the Site Feasibility Study is shown in Table 2.3 below.

Table 2.3 Risk issues and associated rating (Source: GHD, 2018)

Risk issue	Initial risk rating	Residual risk rating
Zoning of Project Site	High	Low
Bushfire Prone Area	High	Medium
Security of Project Site	High	Medium
Visual amenity impacts	High	Low
Loss of fauna habitat (Black Cockatoos)	High	Medium
Heritage impacts	Medium	Medium
Adverse geotechnical conditions	High	Medium
Waste materials dumped on site	Medium	Low
General construction phase impacts	Medium	Low
Erosion and sediment pollution to Wetland (construction and operation phases)	Extreme	Medium
Hydrocarbon / chemical pollution to Wetland	Extreme	Medium
Drinking water availability	High	Medium
On-site wastewater management	High	Low
Noise impacts	High	Medium
Traffic impacts from special events	High	Medium
Crash risk with heavy vehicles on Down Rd	High	Medium
Power availability	High	Low
Telecommunications availability	Medium	Low

The Site Feasibility Study ultimately concluded that the AMP proposal at the subject site does not have any technical obstructions to its feasibility, pending regulatory approvals and implementation of the recommended remedial and control actions. The remedial and control actions have been captured within the provisions which form part of Scheme Amendment No.35 to the City of Albany Local Planning Scheme No.1 (LPS No.1).

2.4 Scheme Amendment No.35

Following the findings of the abovementioned feasibility study, Scheme Amendment No.35 to LPS No.1 to rezone the subject site from 'Priority Agriculture' to 'Special Use – SU26' was initiated by the City on 28 July 2020. The Scheme Amendment was commenced in response to the recommended remedial and control actions of the aforementioned Site Feasibility Study, specifically relating to the need to rezone the land to 'Special Use'. Amendment No.35 has since been approved by the Minister for Planning and gazetted on 3 August 2021.

The conditions which formed part of Amendment No.35 and which have since been included into the City of Albany LPS No.1 have been derived from a number of the remedial and control actions identified in the aforementioned Site Feasibility Study, and associated investigations.

Table 2.4 below provides a complete extract of the new scheme provision. These provisions also form the key considerations of the planning assessment conducted under section 8 further below.

Table 2.4 Local Planning Scheme No.1 – Scheme Amendment No. 35 / Special Use Provisions

No.	Description of Land	Special Use	Conditions
SU26	Lot 5780 Down Road South, Drome	Recreation – Private Club Premises	<ol style="list-style-type: none"> 1. All development requires the development approval of the local government. 2. Recreation—Private and Club Premises uses shall be motorsport based only. Council may consider uses that are incidental to the Special Uses listed. 3. Applications for development approval shall be advertised in accordance with clause 64 of the deemed provisions. 4. All use and development is to be in accordance with the Regional Motorsports Park Precinct Plan and approved management plans 5. Any application for development approval for the site shall be accompanied by management plans to address environmental aspects, including—: <ol style="list-style-type: none"> a. A Noise Management Plan for construction and operation of the site, to the satisfaction of the local government and Department of Water and Environmental Regulation, and which includes but is not limited to— <ol style="list-style-type: none"> i. Limitations on hours of operation as follows— <ul style="list-style-type: none"> • Sundays: 9 am-6 pm; • Monday—Saturday: 8 am-6 pm ii. Events not occurring on both the multi-use track and the motocross track at the same time; iii. Timing of race events to manage impacts on agricultural operations (livestock handling) on adjacent rural properties; iv. Frequent/ongoing monitoring and reporting on noise emissions; and v. Provide notification of events to stakeholders / landholders. b. A Water Management Plan for construction and operation of the site, consistent with a Local Water Management Strategy and any associated management plans, to the satisfaction of the local government and Department of Water and Environmental Regulation. c. A Hydrocarbon Management Plan for operation of the site. d. A Waste Management Plan for construction and operation of the site. e. A Dust Management Plan for construction and operation of the site. f. An Acid Sulfate Soils (ASS) Management Plan to manage the risk from ASS during construction and operation of the site, to the satisfaction of the local government and Department of Water and Environmental Regulation.

No.	Description of Land	Special Use	Conditions
			<p>g. <i>A Protected Exclusion Area Management Plan for construction and operation of the site, to the satisfaction of the local government and Department of Water and Environmental Regulation, addressing management responsibilities, fencing of the Protected Exclusion Area, revegetation, and vegetation condition and wetland water quality monitoring.</i></p> <p>h. <i>A Decommissioning Plan for operation of the site, to the satisfaction of the local government and Department of Water and Environmental Regulation, that identifies actions for rehabilitation, if or when motorsports cease to operate at the site.</i></p> <p>i. <i>A Construction Management Plan.</i></p> <p>6. <i>Any application for development approval for the site shall be accompanied by a visual impact assessment to determine the appropriate physical treatments to mitigate visual impact to Lot 5781 Down Road South, Drome.</i></p> <p>7. <i>Development shall be in accordance with an approved Bushfire Management Plan that has been implemented to the satisfaction of the Local Government and the Department of Fire and Emergency Services.</i></p> <p>8. <i>Development shall be subject to prior securing of appropriate tenure and/or easements and prior or concurrent construction of a secondary vehicular access/egress route for emergency purposes, to the relevant standards</i></p> <p>9. <i>Any application for development approval for the site shall be accompanied by a Traffic and Parking Management Plan for construction and operation of the site, including consideration of peak parking and traffic management during larger and special events (i.e. events attracting greater than 500 attendees).</i></p>

3. Site details

3.1 Land description

The development is proposed at Lot 5780 (No. 54) Down Road South, Drome (subject site). The subject site is legally described as “Lot 5780 on Deposited Plan 206199”, on Volume 1352, Folio 224.

A copy of the Certificate of Title for Lot 5780 is provided at Appendix A of this report. Table 3.1 summarises the lot details.

Table 3.1 Lot details

Lot No	Street Address	Plan / Diagram	Area	Vol	Folio	Registered Proprietor
5780	54 Down Rd South, Drome	206199	192.34 ha	1352	224	City of Albany

3.2 Regional context and local context

The subject site is located within the Great Southern region of Western Australia within the local government area of the City of Albany. The Great Southern region is located on the south coast of WA, adjoining the Southern Ocean, where the coast extends for approximately 250 km. Bounded by the South West region on the west and Wheatbelt region to the north, the total land area of 39,007 square kilometres represents approximately 1.5 per cent of the state's total area. The region officially comprises the local government areas of Albany, Broomehill-Tambellup, Cranbrook, Denmark, Gnowangerup, Jerramungup, Katanning, Kent, Kojonup, Plantagenet and Woodanilling.

The Great Southern has a growing reputation for hosting significant festivals and exhibitions and is renowned for its natural and built tourist attractions. These include a rugged coastline, white sandy beaches, tall timber forests, wildflowers and wineries.

The City of Albany is located approximately 410 km south-south-east of Perth and encompasses an area of approximately 4,312.3 square kilometres which includes the Greater Albany metropolitan area and the Port of Albany, as well as the surrounding agricultural district and some national parks.

Lot 5780 Down Road South, Drome is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Two areas within Lot 5780 are excluded from the AMP development and include 49.47 ha at the western end of the Site which is covered with native vegetation and a dam area (1.37 ha) on the northern boundary which is subleased to Plantation Energy.

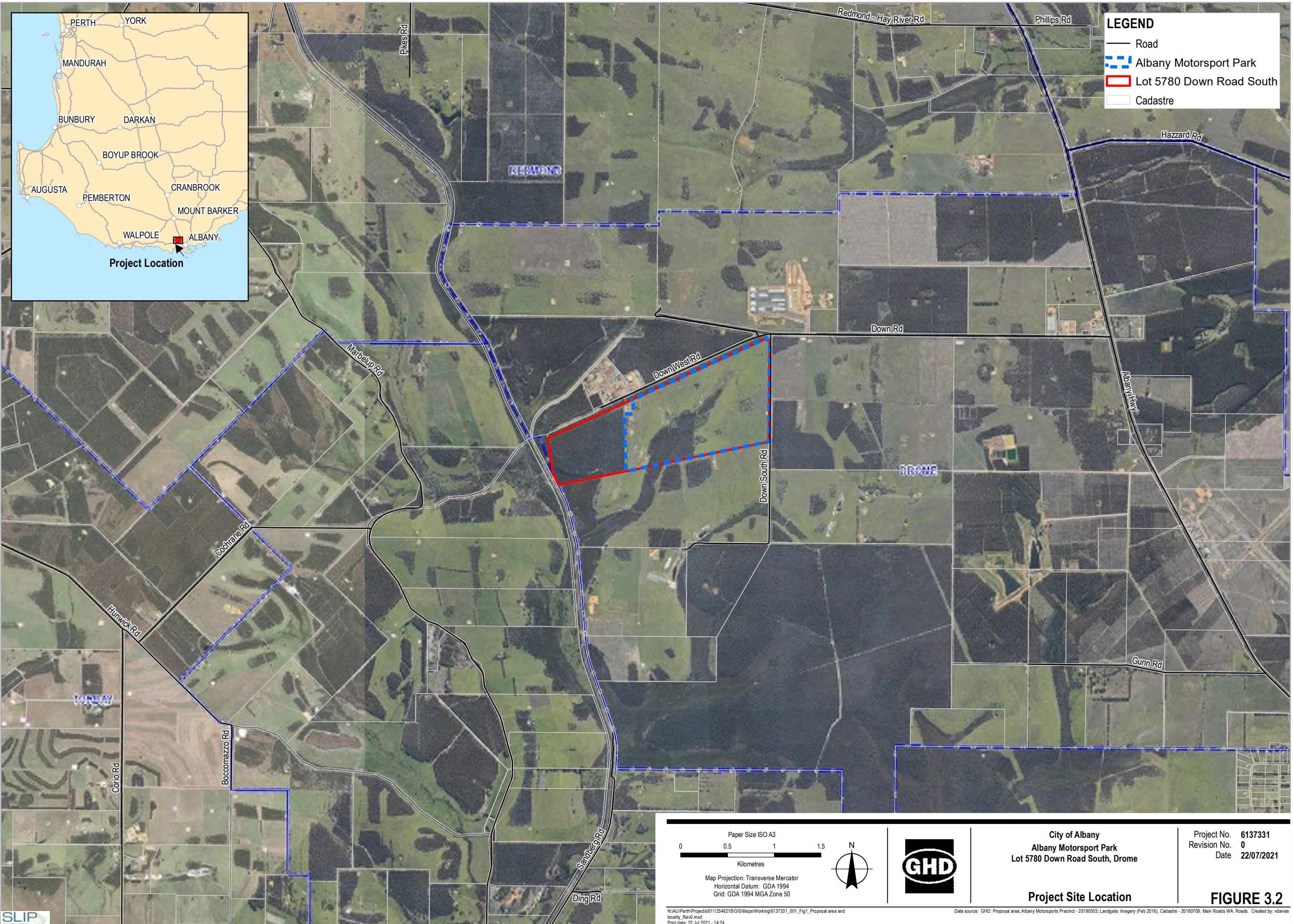
Figure 3.2 below illustrates the subject site in its regional and local context.





LEGEND

- Road
- ▬▬▬ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre



Paper Size ISO A3

0 0.5 1 1.5

Kilometres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park
 Lot 5780 Down Road South, Drome

Project No. 6137331
 Revision No. 0
 Date 22/07/2021

Project Site Location

FIGURE 3.2

4. Project description

4.1 Albany Motorsport Park

This proposal will see an under-utilised piece of agricultural land within the suburb of Drome transformed into a nationally-recognised motor racing venue. The long-term proposal for the AMP comprises:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia's *Track Operator's Safety Guide* (CAMS, 2012) and Motorcycling Australia (MA) *Track Guidelines* (MA, 2011).
 - To be licensed by Motorsports Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and structures.

Appendix B provides a copy of detailed development plans which form part of this subject application.

Further discussion on what each facility will comprise of are provided in the sections to follow.

4.1.1 Motocross Precinct

The Motocross Precinct will be located along the north-western end of the subject site. It will comprise of a 2.1 km long dirt track that is approximately 8.0 m wide and encompasses a total area of approximately 12.42 ha. Additionally, a junior motocross area will also be provided which is similarly 8.0 m wide and will comprise an area of approximately 1.73 ha. Various improvements to the subject site also form part of the motocross precinct, these including:

- 20.0 m x 20.0 m single storey club building consisting of:
 - 4.0 m x 20.0 m ambulance drive-through
 - 3.5 m x 2.5 m first aid room
 - 6.0 m x 4.0 m storeroom
 - 10.0 m x 8.0 m hall
 - 5.0 m x 20.0 m viewing area
 - 3.0 m x 6.0 m sign-in area
 - 2.5 m x 2.5 m accessible toilet
 - 6.0 m x 6.0 m service room
 - Two 2.25 m x 6.0 m restroom facilities
- 2.5 ha parking area with 250 parking bays.
- 7.0 m x 6.0 m maintenance shed.
- 6.0 m x 3.0 m transportable toilet block.
- 1.2 m high spectator fencing to separate spectators from the track.
- 1.8 m high boundary fence surrounding / delineating the motocross precinct.
- Lighting for the purposes of safety and for assisting with the pack down and set up of structures on site i.e. tents, food stands, spectator areas etc.

In accordance with the approved Local Water Management Strategy for the site, the motocross track area will be filled to achieve a minimum 2 m vertical separation to the groundwater. Further detail is provided in the Water Management Plan (Appendix D). Preliminary earthworks modelling indicates approx. 57,220 m³ of fill will be required. It is intended to source this fill on site, from the 4WD Driver Training and ATV Precinct.

4.1.2 4WD Driver Training and ATV Precinct

The 4WD Driver Training and ATV Precinct will be located along the western boundary of the subject site and will be approximately 12.39 ha in area. As indicated above, this Precinct will be partly excavated to provide fill for the motocross track area. These excavations works will allow for development of the 4WD and ATV training elements (e.g. ditches and mounds). Based on site soil characterisations, it is anticipated that an area of approx. 5 hectares could be excavated to an average depth of 1.14 m to win the required fill volume. This excavation activity is proposed in the southern and western extents of the Precinct, outside of the “moderate to low acid sulphate soil (ASS) risk” zone and > 2 m above groundwater.

No other structures or buildings are proposed to be located within this precinct with works generally being limited to a 1.8 m high boundary fence and a 4.0 m wide fire access gravel track that runs along the western, southern and eastern periphery of the precinct.

4.1.3 Racetrack Precinct

The Racetrack Precinct will be the largest component of the AMP on site. The racetrack will encompass a total area of approximately 79.2 ha and comprise the construction of a 3.5 km long by 12.0 m wide sealed, configurable multi-use track that can be used for motor car racing, motorcycle racing, drifting, driver training and cycling. The multi-use track will be designed to relevant international standards, namely:

- Designed to comply with Motorsports Australia’s Track Operator’s Safety Guide (CAMS 2012) and Motorcycling Australia (MA) Track Guidelines (MA 2011); and,
- To be licensed by Motorsports Australia for Fédération Internationalé de l’Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).

Supporting the multi-use track will also be the following ancillary elements:

- A 350 sqm transportable single storey clubroom and toilets.
- Twenty-one 18.0 m x 7.0 m pit lane garages.
- A 5.0 m x 3.5 m high ambulance drive-through.
- A 7.0 m x 18.0 m control tower.
- Earth-backed tire wall and tree shelter belt along the southern boundary of the track.
- Safety barriers along the eastern side of the track, where pedestrians would be expected to be located.
- 2.48 ha landscaped spectator viewing area.
- 1.02 ha emergency muster area.
- 2.8 ha spectator parking hardstand for 250 parking bays in addition to an overflow parking area.
- 1.8 m high boundary fence along the facility boundary surrounding / delineating the multi-use track precinct.
- Flag stations along the length of the track at designated line of site viewing points.
- Lighting for the purposes of safety and for assisting with the pack down and set up of structures on site i.e. tents, food stands, spectator areas etc.

4.2 Staging

Based on the scale of the project as well as priority assigned to certain elements of the AMP, development of the site will be broken down into two (2) key stages as illustrated in the proposed Staging Plan (refer Appendix B).

The 2 key stages of development are defined as follows:

- Stage 1:
 - 1A – Construction of Motocross Precinct and 4WD Driver Training and ATV Precinct.
 - 1B – Construction of Race Track Precinct (with temporary structures).
- Stage 2: Construction of remaining permanent structures to support the function of the motorsports park.

Construction of the AMP is expected to be undertaken over an extended period of time, which will fundamentally be guided by funding and/or revenue generated by activities associated with the earlier stages. However, it is also

anticipated that user demand and requirements will change over time. As such, a staged approach will allow the design and construction works to be undertaken in a manner that allows the AMP to adapt.

It is noted that this application is seeking development approval for **Stage 1A and 1B works** only. A subsequent application for **Stage 2** will be prepared and submitted at a later date.

4.3 Operation and maintenance

The facility will operate on a 7-day per week basis, with public events held typically on weekends whilst private, club and corporate venue / track hire typically occurring during the week. Due to anticipated noise restrictions, events will NOT be held simultaneously at the Motocross Precinct and Racetrack Precinct and no events will be held after 6:00 pm.

The land on which the AMP is located will be owned by the City of Albany; however the facilities will be leased to the Albany Motoring Venues Inc. (AMV) for the purposes of effective management. The AMV is a recently founded Board of Management established as a not-for-profit entity to make key decisions on, lease, manage and maintain the AMP. It includes 7 directors, comprising of:

- Two community representatives recommended by the City of Albany
- One representative from Motorsport Australia
- One representative from Motorcycling Western Australia (MWA)
- One representative from 4-wheel racing clubs
- One representative from 2-wheel racing clubs
- One representative from motocross clubs

For legal purposes the AMV will be considered the venue operator and it is their responsibility to ensure that the AMP is managed effectively. The responsibilities associated with this include:

- Marketing
- Hiring of staff
- Organising the events schedule
- Managing of insurances
- Purchasing of any necessary equipment
- Maintenance of infrastructure
- Generating revenue
- Maintaining a cost effective business model
- Adherence to all relevant management plans.

Further details on the operations and maintenance of the AMP can be found in Appendix H.

5. Planning framework analysis

There are a range of strategic and statutory documents that are considered relevant to the subject site. These are addressed in detail the following sections below.

5.1 Strategic planning framework

5.1.1 State Planning Strategy 2050

The State Planning Strategy provides the strategic context for planning and development decisions throughout the State. It is based on a framework of planning principles, strategic goals and State strategic directions that respond to the challenges and opportunities that drivers of change present for the future land-use planning and development of WA. The Strategy supports the Government's intention to undertake a collaborative approach to planning for the State's land availability, physical and social infrastructure, environment, economic development and security. The State Planning Strategy 2050 will guide and inform:

- *Local community plans, growth plans and local planning schemes and strategies with structure planning and development assessments*
- *Project approvals through the Government's Lead Agency Framework*
- *Planning for the coordination of physical and community infrastructure*
- *Region scheme amendments, regional planning and infrastructure frameworks, regional investments and service delivery programs*
- *Investment proposals into areas and sectors of the State most likely to generate a return in the public interest.*



The proposed AMP is consistent with the established planning framework that underpins the State Planning Strategy as will be made clear in the assessment of each relevant state and local planning document conducted below.

5.1.2 Lower Great Southern Strategy 2016

The purpose of this strategy is to guide land use planning and provide strategic direction for the Lower Great Southern over the next 20 years. The Lower Great Southern is situated within the Great Southern region, incorporating the City of Albany and the Shires of Denmark, Plantagenet and Cranbrook. Specifically, the strategy aims to:

- *Provide guidance at a sub-regional level in the use of land to balance economic, social and environmental considerations*
- *Assist local government in preparing, reviewing and implementing local planning strategies and schemes, and other local planning and development matters*
- *Identify additional land of regional significance that may be required for regional open space purposes*
- *Ensure land required for important regional infrastructure, priority agricultural land, economic growth opportunities, water sources and basic raw materials is identified and retained for those purposes.*

Outlined within the strategy are key planning issues for individual settlements located within the Lower Great Southern. Twenty-one key planning issues have been outlined for Albany, of which the following are of relevance to the subject proposal:

- *Fostering tourism development in key tourist areas*
- *Developing cultural and recreation facilities to cater for future growth*
- *Identifying sites for future regional private recreation facilities (e.g. motor sport)*
- *Retaining priority agricultural land within Albany's development front for primary production*
- *Achieving a balance between conservation and urban development and protecting Albany's natural assets.*

✓ The proposed AMP will deliver a significant tourism boost to Albany at an international level, specifically relating to motor sport. However, that development will not compromise any priority agricultural land nor natural assets as outlined in the sections the follow.

5.1.3 City of Albany Local Planning Strategy 2019

The Local Planning Strategy guides the City's progress towards its vision to be Western Australia's most sought after and unique regional city to work, live and visit. Prepared in accordance with the State Planning Strategy and the Lower Great Southern Strategy, the Local Planning Strategy guides settlement growth and land use planning over the next 10-15 years and provides a rationale for zoning, land use and development controls in the City's Local Planning Scheme.

The Local Planning Strategy contains 18 objectives, of which the following are of relevance to the subject proposal:

- *Conserve places and areas of Aboriginal and historic heritage significance*
- *Incorporate recognition of Native Title rights and interests in planning determinations*
- *Facilitate the diversification of the City's competitive advantages in agriculture and tourism*
- *Protect the City's pristine natural and coastal environments and other landscape qualities*
- *Protect agricultural land from inappropriate development.*

The Strategy identifies the subject site as designated for 'Industry' within a wider area that has been identified as 'Investigation area 4 – Mirambeena Strategic Industrial Area'.

Specific to this are the following actions:

- *Support the development of the Albany Motorsport Park through the provision of planning advice, land acquisition and fund sourcing.*
- *Identify land around Mirambeena Strategic Industrial Area as Industrial Expansion Area and facilitate the preparation of a structure plan to address the following matters:- proposed Albany Motorsport Park.*

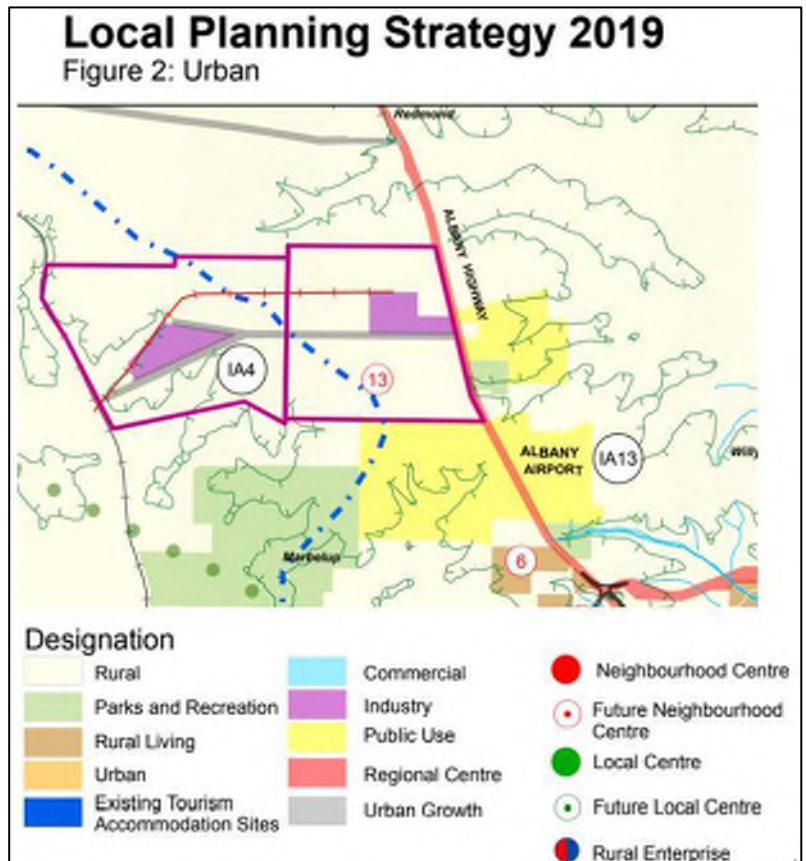


Figure 5.1 Local Planning Strategy map (Source: City of Albany 2019)

✓ The proposed AMP is consistent with the Local Planning Strategy which has clearly designated land for this purpose already.

5.1.4 Western Australian Motorsport Strategy

The Western Australian Motorsport Strategy was developed by the Department of Local Government, Sport and Cultural Industries with the intent of providing the State Government with the necessary strategic approach to the development of the motor sports industry within Western Australia. The objectives of this strategy are as follows:

- *Facilitate increased participation in all motorsport disciplines to give more people an opportunity to participate in, and experience, motorsport*
- *Develop the WA motorsport industry’s potential to host national and international motorsport events*
- *Develop the appropriate mix of complementary infrastructure and supporting facilities in Perth and regional WA, using evidence-based assessments of future requirements. This will provide for driver and rider experience and development; state, national and international competition; community development; and the delivery of a range of offerings across different motorsport disciplines*
- *Ensure motorsport’s continued contribution to WA’s economic diversity, helping to boost job creation and tourism through motorsport-based activities and events*
- *Provide for the industry’s continued self-regulation through the development and implementation of best practice guidelines*
- *Encourage and consolidate a culture of safety, quality and continuous improvement within the industry, track operators, event providers and other industry organisations.*

The strategy specifically mentions ‘Albany Motorplex’ and outlines the following key infrastructure considerations:

- *Finalise the current planning process*
- *Determine the cost of mitigation measures to address environmental issues associated with the Down Road site*
- *Develop a business case for a regional level bitumen race track facility and motocross complex*
- *Determine the scope of the infrastructure to be developed and the associated stages of implementation to reflect the main functions.*



The development that forms part of this application seeks to finalise the key considerations which form part of this strategy in order to bring the ‘Albany Motorplex’ to fruition.

5.2 Statutory planning framework

5.2.1 SPP 2.0 Environment and Natural Resources Policy

State Planning Policy (SPP) 2.0 defines the principles and considerations that represent good and responsible planning in terms of environment and natural resource issues within the framework of the State Planning Strategy. The objectives of the policy are to:

- *Integrate environment and natural resource management with broader land use planning and decision-making*
- *Protect, conserve and enhance the natural environment*
- *Promote and assist in the wise and sustainable use and management of natural resources (water resources, air quality, soil and land quality, biodiversity, agricultural land and rangelands, landscapes and greenhouse gas emissions and energy efficiency).*

Based on the above, although the proposed works are non-compliant, there is not expected to be any hinderance or undermining occurring to the objectives of SPP 2.0. This is on the basis that a significant number of supporting studies have been undertaken which have guided the development of appropriate management plans to mitigate any potential environmental impacts.



The AMP has been the subject of extensive investigations which support its development at the subject site. Included within this application are a range of specialist technical inputs, all of which align with the objectives and policy measures of this strategy.

5.2.2 SPP 2.7 Public Drinking Water Source Policy

The objective of this policy is to ensure that land use and development within Public Drinking Water Source Area (PDWSA) is compatible with the protection and long-term management of water resources for public water supply.

The subject site is located within an area identified as a PDWSA Priority 2 (P2).

P2 source protection areas are:

defined to ensure that there is no increased risk of pollution to the water source. P2 areas are declared over land where low-risk development already exists. Protection of public water supply sources is a high priority in these areas. P2 areas are managed in accordance with the principle of risk minimisation and so conditional development is allowed.

✓ The AMP has been the subject of extensive investigations which support its development at the subject site. Included within this application are a range of specialist technical inputs, which conclude that risks to the P2 PDWSA associated with the proposal can be appropriately managed and mitigated.

5.2.3 SPP 2.9 Water Resources

This policy is directly related to the overarching sector policy SPP 2.0 and provides clarification and additional guidance to planning decision-makers for consideration of water resources in land use planning strategy.

The objectives of this policy are to:

- *Protect, conserve and enhance water resources that are identified as having significant economic, social, cultural and/or environmental values*
- *Assist in ensuring the availability of suitable water resources to maintain essential requirements for human and all other biological life with attention to maintaining or improving the quality and quantity of water resources*
- *Promote and assist in the management and sustainable use of water resources.*

✓ The AMP has been the subject of extensive investigations which support its development at the subject site. Included within this application are a range of specialist technical inputs, all of which align with the objectives and policy measures of this strategy.

5.2.4 SPP 3.7 Planning in Bushfire Prone Areas

SPP 3.7 Planning in Bushfire Prone Areas directs how land use should address bushfire risk management in WA. It applies to all land which has been designated as bushfire prone by the Fire and Emergency Services (FES) Commissioner as highlighted on the Map of Bush Fire Prone Areas.

SPP 3.7 seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. It applies to all higher order strategic planning documents, strategic planning proposals, subdivision and development applications located in designated bushfire prone areas (unless exemptions apply). This policy also applies where an area is not yet designated as bushfire prone but the proposed development is planned in a way that introduces a bushfire hazard (e.g. revegetation).

SPP 3.7 recommends against approving vulnerable or high-risk land uses within areas of extreme bushfire hazard levels, or where bushfire attack levels (BAL) of BAL-40 or BAL-FZ (flame zone) apply.

The subject site is located within an area that is entirely designated as a 'bushfire prone area' and as such, a number of bushfire assessment have been undertaken, these being:

- The preparation of a BAL assessment and bushfire management plan (BMP) as part of Amendment No.35.
- The preparation of a BMP for both Stages 1A and 1B to address the proposed Motocross and 4WD Driver Training and ATV Precincts.



The specialist technical inputs (namely bushfire consultant) concludes that subject to implementing the mitigation measures identified, the AMP will operate at an acceptable level of risk.

5.2.5 Position Statement: Tourism Land Uses in Bushfire Prone Areas 2019

The intent of this position statement is to provide guidance for tourism land uses within bushfire prone areas. The position statement maintains primacy for the protection of life but also recognises that the protection of property or infrastructure may be secondary to the social and economic development of a region. The key objectives of this position statement are as follows:

- *Maintain primacy for the protection of life, but also recognise preservation of property or infrastructure may be secondary to the social and economic development of a region*
- *Provide bushfire protection relevant to the characteristics of the tourism land use*
- *Provide bushfire risk management measures that mitigate the identified risks*
- *Achieve a balance between bushfire risk management measures, environmental protection, biodiversity management and landscape amenity.*



As outlined above, the bushfire assessment undertaken concludes that subject to implementing the mitigation measures identified in the BMP, the AMP will operate at an acceptable level of risk.

5.2.6 SPP 4.1 State Industrial Interface (Draft)

The purpose of the policy is to provide a consistent statewide approach for the protection and long-term security of industrial zones, transport terminals (including ports) other utilities and special uses.

The policy applies to all industry infrastructure and special use categories where on-site and off-site buffer areas are required. Special uses which fall within the remit of SPP 4.1 include major sporting facilities like speedway racing, football and soccer stadium.

The objectives of this policy are to:

- *Provide a consistent state-wide approach for the definition and securing of buffer areas around industry, infrastructure and some special uses*
- *Protect industry, infrastructure and special uses from the encroachment of incompatible land uses*
- *Provide for the safety and amenity of land uses surrounding industry, infrastructure and special uses*
- *Recognise the interests of existing landowners within buffer areas who may be affected by residual emissions and risks, as well as the interests, needs and economic benefits of existing industry and infrastructure which may be affected by encroaching incompatible land uses.*

The AMP has the potential to result in visual, noise and dust impacts to surrounding properties.



The specialist technical inputs relating to visual, noise and dust conclude that subject to implementing the mitigation measures identified, the AMP will operate at an acceptable level relative to its impact on any surrounding sensitive land uses.

5.2.7 Government Sewerage Policy 2019

The Government Sewerage Policy (2019) sets the State Government's position on how sewerage services are to be provided in Western Australia through the planning and development of land.

The policy requires reticulated sewerage to be provided during the subdivision and development of land. In instances where reticulated sewerage cannot be provided, it adopts a best practice approach to the provision of on-site sewage treatment and disposal, in accordance with *Australian/New Zealand Standard 1547 On-site domestic wastewater management*.

✓ A Water Management Plan, prepared as part of this submission, identifies that domestic wastewater will be managed in accordance with AS1547 and the *Government Sewerage Policy*. Additionally, for special events transportable units will be operated by an external waste management contractor. With regard to other wastewater services including vehicle maintenance and refueling, this will be managed in accordance with *WQPN 28: Mechanical servicing and workshops*.

5.2.8 City of Albany Local Planning Scheme No. 1

5.2.8.1 Zoning

The subject site is zoned 'Special Use' (SU26) under the provisions of the City of Albany LPS No. 1 as illustrated in Figure 5.2 below.

It is noted that LPS No. 1 does not contain any objectives for this zone. Rather, it outlines specific 'special use' and 'conditions' applicable to land designated 'Special Use' under Schedule 4 of LPS No. 1.

5.2.8.2 Land use permissibility

The SU26 conditions specifically allow the subject site to be used for '*Recreation – Private and Club Premises*'. The AMP as described in the sections above is considered to best fall under this land use description.

5.2.8.3 Development provisions

Development provisions relevant to the subject application under LPS No.1 are detailed under Clause 4.8 – 'site and development requirements' and the 'conditions' section applicable to SU26 under Schedule 4 of LPS No.1.

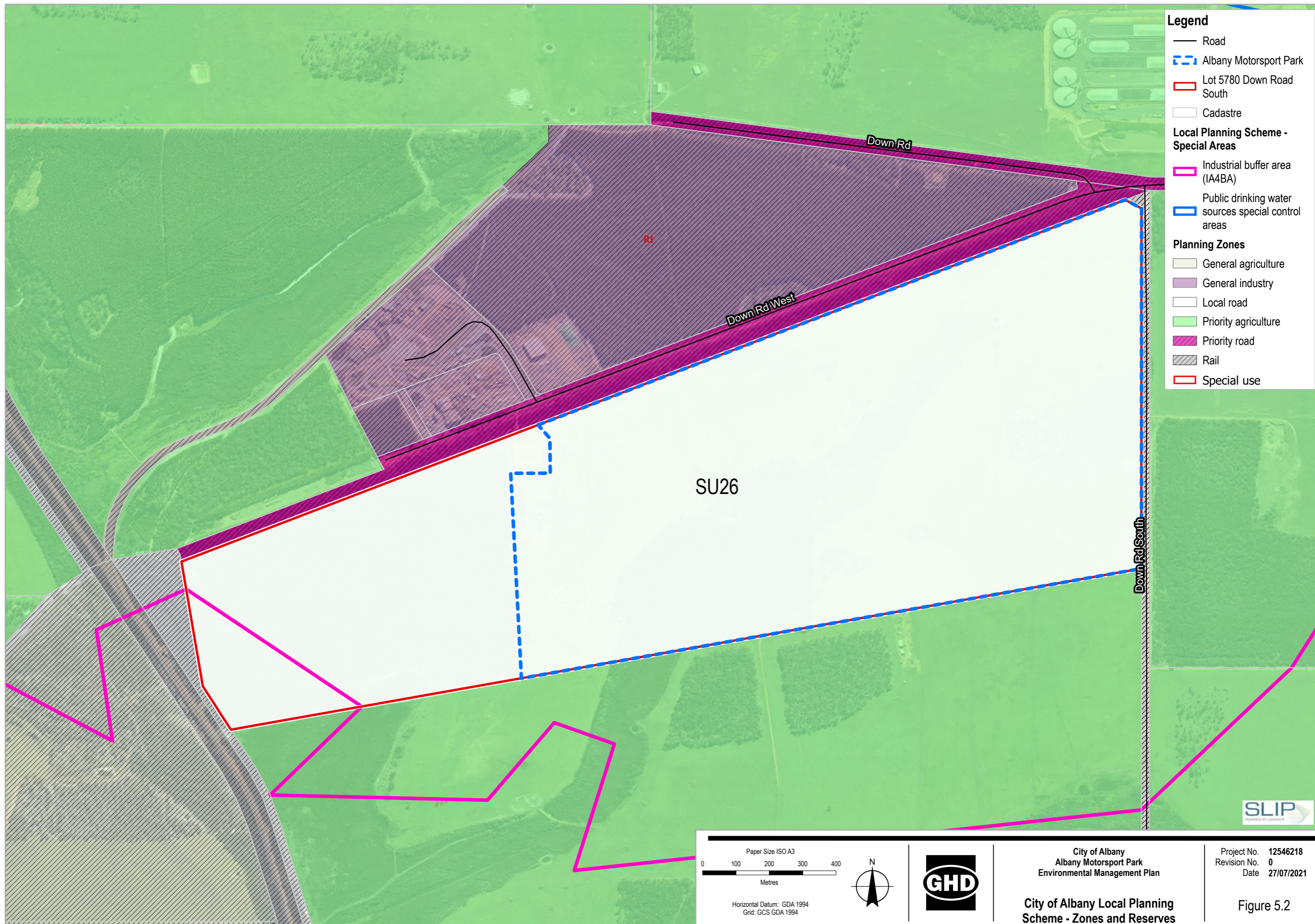
For clarity and brevity, an assessment against these provisions has not been repeated here but rather, outlined under Section 8 below.

5.2.9 Down Road Timber Processing Precinct Local Planning Policy

The purpose of this policy is to provide guidance on development in areas immediately surrounding the Down Road Timber Processing Precinct, which is located immediately to the north of the subject site. Due to how intrusive the processing plant is, the purpose of the policy is to apply appropriate separation distance buffers to ensure the plant does not have a detrimental impact on adjacent properties.

Development control under the policy is enforced through defined buffers, these being a hazard risk area, inner area and outer area. The subject site is affected by all three buffer areas which, if affected, preclude the land affected to be developed for the purposes of a dwelling house, permanent dwelling units or habitable structures.

✓ The proposed AMP is not considered to pose any adverse impacts to the current or future operations of the Down Road Timber Processing Plant given that it contains no habitable elements and/or elements which could be deemed to be a sensitive land use.



Legend

- Road
- Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre

Local Planning Scheme - Special Areas

- ▭ Industrial buffer area (IA4BA)
- ▭ Public drinking water sources special control areas

Planning Zones

- ▭ General agriculture
- ▭ General industry
- ▭ Local road
- ▭ Priority agriculture
- ▭ Priority road
- ▭ Rail
- ▭ Special use

SU26

Down Rd

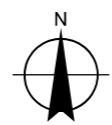
Down Rd West

Down Rd South

R1



Horizontal Datum: GDA 1994
Grid: GCS GDA 1994



City of Albany
Albany Motorsport Park
Environmental Management Plan

City of Albany Local Planning
Scheme - Zones and Reserves

Project No. 12546218
Revision No. 0
Date 27/07/2021

Figure 5.2



6. Other considerations

6.1 Cultural significance

6.1.1 Indigenous heritage

The South West Native Title Settlement represents an agreement reached between the Noongar People and Perpetual Trustee Company and, the Western Australian Government which was the subject of a signing ceremony in March 2021. A fundamental component of the Settlement is the recognition of the Noongar people as the Traditional Owners of the South-West region of WA, which includes the municipality of the City of Albany. The land to be allocated as part of this agreement relates to:

- Unallocated Crown land
- Unmanaged reserves
- Aboriginal Lands Trust (ALT) properties.

State Government agencies may also identify freehold land and reserves, for which they hold management orders but no longer require, for possible allocation to the Noongar Land Estate (NLE). The NLE does not include:

- Privately held or owned land
- Crown land that is currently leased.

To this end, given the subject site is under freehold ownership by the City of Albany, it is not affected by the recent South West Native Title Settlement.

A search of the subject site against the Aboriginal Heritage Inquiry System has identified the following, as summarised in Table 6.1 below:

- There are no registered Aboriginal Sites that have been identified on or in the immediate vicinity of the subject site.
- There are three Other Heritage Places that have been identified within the vicinity of the subject site.

Table 6.1 Summary of Aboriginal Heritage Inquiry System search

ID	Description	Name	Type	Status	Distance from Subject Site
29673	Other Heritage Place	Marbellup Brook	Mythological, Natural Feature	Stored Data / not a Site	Approx. 170 m to west
4632	Other Heritage Place	Down Road, Albany	Artefacts / Scatter	Stored Data/ not a Site	Approx. 1.7 km to north-east
4630	Other Heritage Place	King River	Camp	Lodged	Approx. 3.7 km to east

Aboriginal Site: The place has been assessed as meeting Section 5 of the Act.

Other Heritage Place which includes:

Lodged: Information has been received in relation to the place, but an assessment has not been completed to determine if it meets Section 5 of the Act.

Stored data/Not a Site: The place has been assessed as not meeting Section 5 of the Act.

✓	The presence of a number of Other Heritage Places is not considered to have any implications on the development proposal. It is also noted that during early consultation phases, a briefing and presentation has been undertaken with the Wagyl Kaip and Southern Noongar Working Party.
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6.1.2 European heritage

A desktop study has indicated that there are no areas of heritage significance present within the subject site and surrounding areas.

6.2 Acid sulphate soils

On-site testing conducted of the subject site reveals that the subject site has been identified as having a 'moderate to low risk of Acid Sulphate Soils (ASS) occurring within 3 m of the natural soil surface but high to moderate risk of ASS beyond 3 m of natural soil surface' – refer Appendix D. Specifically, findings from this sampling indicated that while no inorganic sulfidic acidity sources were identified on site, other forms of acidity were present. Given these findings the following recommendations were provided to manage these potential issues:

- Topsoil (0-300 mm) appears acceptable to be stripped and stockpiled for reuse without treatment (pH on average above 4 across the site).
- Neutralisation treatment and validation of soils will be required for silty sand soil units disturbed in the proximity of the watercourse area given that there are exceedances of the DWER action criteria (coarse textured soils) and if the proposed disturbance of greater than 100 m³ of soil. An ASS management plan is required (in accordance with DWER guidelines) to enable the effective excavation, treatment and disposal/reuse of the materials during construction works.
- Soil excavations should only occur during the periods of the year where groundwater is at its lowest point (i.e. outside of winter and post-winter periods) to eliminate the need for temporarily lowering the groundwater table (dewatering). If dewatering is determined to be required, then site specific dewatering risk assessment, management strategies and criteria are required to be developed, approved and implemented.

Further information on ASS is contained in the EMP – refer Appendix D.



The presence of Acid Sulphate Soils on the subject site is not considered to inhibit development of the AMP as detailed in the supporting Environmental Management Plan prepared as part of this application.

7. Specialist technical inputs

7.1 Environmental management plan

Prepared by: GHD

An overarching Environmental Management Plan (EMP) has been prepared for the operation and construction works associated with Stage 1A and 1B of the proposed AMP. Environmental management will be undertaken for the AMP as per strategies outlined in the following supplementary plans, which also form part of the EMP as detailed further below in this section:

- Noise management plan
- Water management plan
- Hydrocarbon management plan
- Waste management plan
- Dust management plan
- Acid sulphate soils (ASS) – refer section 7.1.6 below
- Protected Exclusion Area management plan
- Decommissioning plan
- Construction management plan

The overarching EMP was prepared for the AMP which assessed the impacts of the proposal relative to flora and fauna, water, air quality and social / heritage in addition to those items listed above which form supplementary plans. Overall, the following key findings form part of the EMP:

- The construction of the AMP is considered unlikely to impact on conservation significant flora species as it has been designed to lie predominantly within previously cleared agricultural land. Through designing around sensitive areas and implementing a development exclusion buffer and Protected Exclusion Area, the residual impact of the proposal is expected to only impact up to 0.928 ha of:
 - Vegetation Type 1 – Jarrah / Marri / Sheoak Laterite Forest (0.1 ha).
 - Vegetation Type 2 – Jarrah / Sheoak / *Eucalyptus staeri* Sandy Woodland (0.7 ha).
 - The clearing of 0.928 ha of native vegetation within the Site will not result in any of the mapped vegetation associations being reduced to less than 30 per cent (%) of their pre-European extents at various levels (State, IBRA Bioregion, IBRA Subregion and Local Government Area (LGA)).
 - The clearing of 0.928 ha of native vegetation within the Site is unlikely to result in significant cumulative impacts given that approximately 43 % of land within the local area (5 km buffer of the Site) is comprised of remnant vegetation (GoWA, 2021).
- Construction of the AMP may result in displacement, injury and death of native fauna species due to clearing of habitat (construction works and vehicle movements) however given the small amount and location of clearing this is unlikely to have a significant impact on fauna species. Impacts on fauna will be minimised through the following mitigation measures:
 - Avoidance through site selection and design within Lot 5780 which is largely situated in previously cleared paddocks and does not further fragment remnant vegetation patches.
 - Clearing of fauna habitat has also been minimised through site selection within Lot 5780 and includes only clearing of stands of paddock trees and vegetation on the edge of previously cleared paddocks.
 - Development of an EMP to define techniques to minimise risks to fauna and fauna habitat and provide monitoring during construction and operation of the AMP including:
 - Protected Exclusion Area Management Plan addressing management responsibilities, revegetation, vegetation condition and wetland water quality monitoring during construction and ongoing operation of the AMP.
 - A Development Exclusion Buffer will be established to provide a 50 m wide buffer between the AMP activities and the Protected Exclusion Area.

- Through the following mitigation measures outlined below, the proposed AMP will meet the EPA objective to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected. Mitigation measures include:
 - Protected Exclusion Area Management Plan addressing management responsibilities, revegetation, vegetation condition and wetland water quality monitoring.
 - A Development Exclusion Buffer will be established to provide a 50 m wide buffer between the AMP activities and the vegetation and Conservation Class wetland within the Protected Exclusion Area.
 - Implement a Water Management Plan during detail design and development approval for construction and operation of the site which outlines mitigation measures for protection of surface water and groundwater quality and maintenance of predevelopment stormwater quantities.
 - Hydrocarbon Management Plan.
 - Waste Management Plan.
- EPA objective to maintain air quality and minimise emissions so as to protect environmental values will be achieved through the implementation of a dust management plan, construction management plan, bushfire management plan and aforementioned Development Exclusion Buffer.
- The results of the noise assessment indicate that for some events, there will be occasions when the predicted noise levels from the subject site may exceed the assigned levels at existing residences. However, it is considered that, with the implementation of the Noise Management Plan and noise mitigation measures both onsite and at impacted residential properties (where required), noise impacts can be minimised.

A copy of the EMP, and associated sub-plans, is contained at Appendix D.

7.1.1 Noise management plan

Prepared by: GHD

A Noise Management Plan (NMP) has been prepared to provide guidance on the management of construction and operational noise from the proposed AMP. An operational NMP has been developed to allow the AMP to exceed the assigned noise levels in the *Environmental Protection (Noise) Regulations 1997*, provided motor racing activities are carried out in accordance with the operational NMP.

A copy of the NMP is contained within the EMP at Appendix D.

7.1.2 Water management plan

Prepared by: GHD

A Water Management Plan (WaMP) has been prepared to identify the principles, criteria and water management strategies to manage water across the Site during construction and operational phases.

The WaMP addresses this by summarising the key items that will impact upon the site water supply including acid sulfate soils, drainage, water quality etc. This is subsequently followed up with appropriate management measures to be put in place for both the construction and operation phase including, but not limited to:

- Soil erosion management
- Surface water quality management
- Establishment of designated wash-down area
- Sand and soil stockpiling to prevent materials from being washed down into roads

Incorporated within the WaMP, a Stormwater Management Plan (SWMP) has also been prepared. Noting that a portion of the water to be used on site will be sourced from rainfall and stormwater runoff. The SWMP provides guidance on how to effectively capture stormwater in a manner that minimises potential contamination.

A copy of the Water Management Plan is contained within the EMP at Appendix D.

7.1.3 Hydrocarbon management plan

Prepared by: GHD

A Hydrocarbon Management Plan (HMP) has been prepared to minimise environmental impact due to potential hydrocarbon spills or inappropriate disposal during the operation of the AMP to the environment and / or human health. Operation of the AMP is considered likely to generate hydrocarbons, via the following sources:

- Hydrocarbons (fuel, oil, grease, etc.) being brought to site by competitors
- There are to be no above or below ground bulk fuel storage tanks located onsite
- All competitors will bring their own fuel and remove all hydrocarbon waste offsite at the completion of each event
- Spills on the tracks
- Spills in the concrete bunded, covered, hardstand areas

Broad management strategies have been developed to minimise potential impacts associated with hydrocarbons. These management strategies and their actions, timeframes and responsibilities are detailed in under part 3 of the HMP. The HMP also contains a set of monitoring performance criteria and recommends an annual review.

A copy of the Hydrocarbon Management Plan is contained within the EMP at Appendix D.

7.1.4 Waste management plan

Prepared by: GHD

A Waste Management Plan (WMP) has been prepared to ensure that all waste generated on site is managed and disposed of appropriately. The WMP identified four (4) main waste categories which include:

- Non-hazardous waste
- Recyclables
- Hazardous waste
- Liquid waste.

Aside from hydrocarbons which are discussed in item 7.1.3 above, these are the most likely forms of waste. To manage this, the following strategies have been proposed:

- Site induction
- Offsite disposal
- Onsite reuse
- Promote a high standard of housekeeping thereby minimising litter and vermin attraction and infestation
- Inspection and monitoring.

To ensure that these strategies are being implemented, monitoring should also be undertaken. By undertaking these works in line with this management plan the proposed development is considered to be compliant with the City's provision.

A copy of the Waste Management Plan is contained within the EMP at Appendix D.

7.1.5 Dust management plan

Prepared by: GHD

A Dust Management Plan (DMP) has been prepared to ensure that human health and amenity is not unacceptably impacted by dust emissions during site development and operation, by providing a framework for the management of dust associated with the proposed AMP. Dust sources which have been identified can be broadly separated into construction and operational phases. During construction, there are two (2) key dust sources on site including:

- Mechanical dust – dust generated from clearing, transport, stockpiling and levelling activities
- Wind generated dust – dust generated from wind erosion of stockpiles or cleared areas.

Mechanical dust is a constant dust source during works at the site, whereas wind generated dust has the potential to range from negligible to high, depending upon weather conditions, the amount of the cleared area and management of the area.

During operation, dust sources are expected to be unsealed areas onsite (such as parking areas) and the motocross circuit.

A range of strategies and actions regarding the management of dust during construction and operation have been defined in order to reduce dust generation and avoiding potential impacts to nearby areas. The DMP also contains guidance relating to monitoring, reporting, signage, complaints register and stakeholder consultation.

A copy of the Dust Management Plan is contained within the EMP at Appendix D.

7.1.6 Acid sulphate soils

A review of the DWER Acid Sulfate Soil (ASS) risk mapping for Albany-Torbay indicates the Site is located outside of the boundary of this dataset. Tributaries of Marbelup Brook located approximately 750 m to the south of the Site are mapped within areas of “Moderate to Low risk” of ASS occurring within 3 m of the natural soil surface. No “High to moderate ASS risk” areas appear to be mapped within the broader site setting. However, given that the proximate tributaries of Marbelup Brook are mapped as “Moderate to Low risk” of ASS occurring, GHD has inferred that where these tributaries of Marbelup Brook extend into the site that they would also be considered to represent the same level of ASS risk.

To more accurately inform the ASS risk onsite, a preliminary ASS investigation was completed as part of the onsite geotechnical investigation undertaken by Great Southern Geotechnics in March 2021. In this investigation inorganic sulfidic acidity sources (capable of rapid acid release upon disturbance) were not observed, but other forms of acidity were present through actual (existing) acidity and potential acidity. The resultant ASS risk (moderate to low) mapping is captured in Figure 11 of the Environmental Management Plan (Appendix D).

Based on an overlay of this mapping with the proposed AMP development, it is evident that no excavation of soils (>100 m³) will occur in the zone of “moderate to low ASS risk”. Rather, this “moderate to low ASS risk” zone is largely coincident with the Protected Exclusion Area around the Conservation Class wetland. Outside of the Protected Exclusion Area, the motocross and race track areas will be filled to achieve the necessary vertical separation to groundwater, as required in the Water Management Plan. On this basis, an ASS management plan is not required as part of this application, but the following measures are recommended:

- Topsoil (0-300 mm) appears acceptable to be stripped and stockpiled for reuse without treatment (pH on average above 4 across the site).
- Neutralisation treatment and validation of soils will be required if silty sand soil units are disturbed in the proximity of the watercourse area, and if the proposed disturbance of greater than 100 m³ of soil.
- Soil excavations should only occur during the periods of the year where groundwater is at its lowest point (i.e. outside of winter and post-winter periods) to eliminate the need for temporarily lowering the groundwater table (dewatering).

These specific ASS management actions could be implemented as part of the Construction Environmental Management Plan (CEMP) by the appointed contractor. Refer also to Table 1 in the Construction Management Plan contained within the EMP at Appendix D.

Further information on ASS is contained in the EMP – refer Appendix D.

7.1.7 Protected Exclusion Area management plan

Prepared by: GHD

The purpose of the Protected Exclusion Area Management Plan (PEAMP) is to minimise environmental impact on ecological values within the Protected Exclusion Area during the operation of the AMP.

This fundamentally relates to managing any potentially polluting activities during operation of the AMP in order to mitigate the following potential impacts / risks within the Protected Exclusion Area:

- Contamination of surrounding soil, groundwater, and surface water
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value

- Bushfire
- Community and stakeholder dissatisfaction

Broad management strategies have been developed to minimise potential impacts associated with the Protected Exclusion Area. These management strategies and their actions, timeframes and responsibilities are detailed in under part 3 of the PEAMP. The PEAMP also contains a set of monitoring performance criteria and recommends an annual review.

A copy of the PEAMP is contained within the EMP at Appendix D.

7.1.8 Decommissioning plan

Prepared by: GHD

The purpose of the Decommissioning Plan (DP) is to describe the decommissioning and rehabilitation objectives, broad strategies and actions that would be required to ensure the subject site is left in a condition that is suitable and capable of accommodating agricultural land use, should the AMP cease operations.

A detailed DP will be developed at least two years prior to closure and detail how AMP's infrastructure will be decommissioned and, where applicable, outline where infrastructure will be subject to resale or repurposing relative to any infrastructure with value, disposal of hazardous waste and remediation of contaminated sites.

The DP outlines the following decommissioning process applying to the AMP:

1. Decommissioning:
 - a. Waste management, disposal and transport
 - b. Hazardous materials assessment
 - c. Contaminated areas assessment
 - d. Demolition – building removal and services disconnection
2. Rehabilitation:
 - a. Removal of non-native vegetation
 - b. Re-shaping of altered topography
 - c. Ripping to alleviate soil compaction and aerate soil
 - d. Topsoil, weed control and seeding
3. Monitoring and review.

A copy of the Decommissioning Plan is contained within the EMP at Appendix D.

7.1.9 Construction management plan

Prepared by: GHD

The purpose of the CMP is to ensure that all construction works are undertaken in accordance with environmental and statutory requirements and ensure that there are no on or offsite environmental or social impacts as a result of construction.

Broad management strategies have been developed to minimise potential impacts associated with construction of Stage 1A and 1B of the AMP. These management strategies and their actions, timeframes and responsibilities are detailed in under part 3 of the CMP. The CMP also contains a set of monitoring performance criteria and recommends an annual review.

A copy of the Construction Management Plan is contained within the EMP at Appendix D.

7.2 Visual impact assessment

Prepared by: GHD

The purpose of the Visual Impact Assessment (VIA) is to identify and address any potential amenity impacts generated by the development of the site. This was undertaken by determining how the construction of the AMP

would impact the surrounding amenity from seven viewpoints. The results of this assessment would then be reviewed and incorporated into the final Landscape Master Plan.

The results of this assessment indicated that the construction and operation of the proposed AMP has the potential to impact visual amenity of the local area. The residual visual amenity impacts are expected to be permanent, however the nearest residence is 1.4 km from the site. Furthermore, sensitive receptors of varying levels of significance were identified, including outdoor workers and road users along the southern boundary. Due to the sensitive receptors the highest impact rating has been determined as moderate which is based on there being outdoor workers located within the adjacent farmland to the east and west. The assessment also found that visual impacts ranged from high to moderate from the southern boundary of the site. This is due to how close the AMP will be located to the southern boundary, and the proposed magnitude of change within the AMP master plan.

Based on these findings, the VIA therefore recommends an integrated approach to landscape design and visual mitigation within the Landscape Plan. While this will not remove the issue, it will significantly mitigate some of the visual impacts as identified within the VIA.

A copy of the Visual Impact Assessment is contained at Appendix E.

7.2.1 Landscape master plan

Prepared by: GHD

A Landscape Master Plan (LMP) has been designed for the AMP; informed by the findings and recommendations identified through the specialist technical inputs outlined under Section 7 of this report.

A copy of the Landscape Master Plan is contained at Appendix C.

7.3 Bushfire management plan

Prepared by: Bio Diverse Solutions

A comprehensive Bushfire Management Plan (BMP) was prepared as part of the Scheme Amendment application, and was updated in June 2021. An addendum to the BMP has subsequently been prepared to accompany the subject application for the construction of Stages 1A and 1B of the proposed AMP. The BMP addendum has been developed to assess the proposal to ensure it is consistent with the current and endorsed 'Guidelines for Planning in Bushfire Prone Areas Version 1.3 (WAPC, 2017)' and 'State Planning Policy 3.7 (WAPC, 2015).

A copy of the BMP and addendum is contained as Appendix F of this report.

The findings and mitigations measures identified within this BMP and addendum have informed the proposed development plans as well as other specialist technical inputs which form part of this application. The key bushfire management findings are as follows:

- The identified bushfire risks associated with the subject site are the continuous vegetation to the north, northeast, east, south and west. This area presents as predominantly Forest Type A and Scrub Type D which are defined as Extreme Bushfire Hazard Level (BHL). Under hot, dry and unstable conditions (Severe to Catastrophic bushfire weather) the subject site is most at risk from bushfire from these directions.
- Against Element 1 – Location of the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017), the proposal meets the acceptable solution as all of the facilities are located within a BAL-29 area or less. All buildings proposed as part of the development are not required to be built to BAL under the *Building Act 2011*.
- Against Element 2 – Siting and Design of Development, the proposal meets the acceptable solution as a low fuel status will apply, subject to landscaping conforming to WAPC asset protection zone standards and a maintenance schedule being implemented.
- Against Element 3 – Vehicle Access, the proposal meets the acceptable solution criteria applicable on the basis that the access for the greater AMP site was assessed as a "Performance Based Solution". The proposed vehicle access took the overarching BMP report into consideration as well as the impacts of subsequent approvals. Furthermore, to assist in both providing additional access to the site and meet the requirements of Element 3, a secondary access road from Down Road South to Albany Highway is being provided by the City.

- Against Element 4 – Water, the application proposes to supply water through on-site resources via bore extraction to tank storage which is then pumped to facilities around the site. Storage of water dedicated for firefighting will be located in the north and the eastern precincts and tanks are to be a minimum of 110,000 L. 75 mm Camlock fittings and turnaround hardstand areas are to be installed at the tanks.
- The overarching BMP report for the AMP site contains a Bushfire Emergency Evacuation Plan (BEEP). This is recommended to be updated with wardens and responsible persons identified. This can be undertaken as a condition of the DA approval.

A copy of the BMP and addendum is contained at Appendix F.

7.4 Traffic impact assessment

7.4.1 Traffic and parking management plan

Prepared by: Shawmac Consulting Civil and Traffic Engineers

A Traffic and Parking Management Plan (TPMP) for the AMP was prepared based on recommendations from the earlier traffic impact assessment in the Site Feasibility Study and Scheme Amendment application. In its preparation, the TPMP had regard to the following:

- City of Albany Town Planning Scheme
- Master plan of the Albany Motorsport Park
- Site inspection and discussion with developer
- City of Albany event guideline.

The TPMP has recommended the following traffic and parking management measures:

- Implementation of temporary traffic management (i.e. signage, traffic wardens etc.) during construction of the AMP (Appendix A of the TPMP).
- Implementation of temporary traffic management (i.e. signage, traffic wardens etc.) during larger and special events (Appendix B of the TPMP).
- Temporary speed reduction to be imposed during the construction and events.
- Symbolic truck signs shall be installed for construction vehicles entering and exiting Down Road and Down Road South.
- Liaise with stakeholders (e.g. City of Albany) prior to the commencement of the construction or event.
- For events with more than 500 spectators, extra measures to be considered include:
 - Shuttle buses to a satellite parking area
 - Overspill parking area
 - Open parking bays from the Precinct, increase the parking capacity from 250 bays
 - Traffic management requirements at the intersection of Albany Highway and Down Road
 - Coordination with Main Road WA.

A copy of the TPMP is contained at Appendix G.

7.4.2 Transport impact assessment

Prepared by: GHD

A Transport Impact Assessment (TIA) was prepared for the AMP which reviewed the key traffic impact components of the proposal. This included liaison with the City of Albany and Main Roads WA, undertaking crash analysis, assessing peak operational traffic and assessing site access.

Overall, the following key traffic impact findings and recommendations have been identified within the TIA:

- The reported crash history does not indicate a safety issue on Down Road or its intersection with Albany Highway.
- Assuming competitor / spectator numbers of 500, the site is anticipated to generate 250 vehicles per hour (vph) in and 250 vph out at the start and finish of events. No adverse impacts are anticipated for Down Road or its intersection with Albany Highway.
- All parking should be contained on site and should be clearly signed for users.
- Consider reducing the speed limit in Down Road near the site (west of CBH entry) from 110 km/h to a maximum of 80 km/h. This should be followed up with Main Roads WA and the City of Albany.
- Complementary directional signage on Down Road should be installed for the AMP to assist in causing drivers to slow down.
- A left turn lane should be constructed at the access location in Down Road, commensurate with the posted speed limit (a 200 m length is recommended).
- Site accesses are located based on sight distance requirements for the adopted speed limit (either 80 km/h or 110 km/h).
- Traffic management planning for large events should be developed with the City of Albany and Main Roads WA.
- Regular consultation should be undertaken with the CBH grain storage facility, woodchip facility and other businesses in Down Road to advise when large events are planned.
- Emergency access to Albany Highway should be designed suitable for the design vehicle and maintained for use at all times.

A copy of the Transport Impact Assessment is contained at Appendix G.

8. Detailed planning assessment – Stages 1A and 1B

The preceding sections have demonstrated that the proposed AMP is broadly in-line with the overarching State and Local strategic planning framework which exists and applies to the subject site. This section now presents a detailed planning assessment of the proposal against the City of Albany LPS No.1 clause 4.8 'Site and Development Requirements' and Schedule 4 'SU26' provisions.

Table 8.1 Planning assessment

Provision / Condition	Assessment	Compliance	
		Stage 1A	Stage 1B
City of Albany LPS No.1 Clause 4.8 Site and Development Requirements			
<p>4.3.3 Vegetation Protection</p> <p>The Local Government may require the protection of existing vegetation on a site as a condition of development approval to:</p> <ul style="list-style-type: none"> • Protect a vegetation community • Prevent land degradation • Protect roadside vegetation • Maintain local visual amenity and the natural setting • Protect habitat, or a threatened species • Assist to provide vegetated corridors to maintain fauna and flora linkages, or • Assist in the maintenance of water quality. 	<p>A landscape master plan has been prepared for the subject site which proposes retention of existing vegetation within the Protected Exclusion Area, as well as a range of new landscape treatments across the subject site to improve the overall visual amenity of the locality.</p> <p>The landscape master plan has been informed by the recommendations contained within the following specialist technical inputs:</p> <ul style="list-style-type: none"> – Environmental Management Plan – Water Management Plan – Protected Exclusion Area Management Plan – Visual Impact Assessment – Bushfire Management Plan <p>A copy of the landscape master plan is contained in Appendix C.</p>	✓	✓
<p>4.3.4 Revegetation</p> <p>The Local Government may require revegetation on a site with local endemic species as a condition of development approval.</p>	<p>The Protected Exclusion Area Management Plan includes revegetation of the site's creekline and Conservation Class wetland.</p>	✓	✓
<p>4.3.5 Uses Adjacent to Conservation Areas</p> <p>In considering an application for development approval to develop premises adjoining a conservation area the Local Government shall consider the impacts of the proposal on the values of the conservation area and may require one or more of the following measures:</p> <ul style="list-style-type: none"> • Specific site management through the preparation and implementation of an environmental management plan to address those identified impacts on the conservation area and recommend strategies, processes and practices to minimise any impacts or conflicts • The establishment of an additional setback from the conservation area, or • The imposition of a buffer area between the uses to manage the impacts to the satisfaction of the Local Government in consultation with the Conservation Commission of WA and the relevant State Government authority. 	<p>The proposed AMP seeks to retain, preserve and revegetate the Protected Exclusion Area to ensure vegetation and the watercourse in this area is safeguarded.</p> <p>A development buffer of 50.0 m has also been established around the Protected Exclusion Area as outlined in the Water Management Plan – refer Appendix D.</p>	✓	✓
<p>4.3.6 Setbacks from Watercourses</p> <p>To protect development from inundation or flooding; to maintain the environment in its natural form; and to ensure the natural biophysical processes of the watercourse are accommodated, the construction or placement of any building or on-site effluent disposal systems shall be setback so as to achieve a minimum separation distance from the known high-water mark of a watercourse as follows:</p> <ul style="list-style-type: none"> • 30 metres from any seasonally flowing watercourse, or • 50 metres from any watercourse with permanent water, or • 100 metres from any river or estuary unless a lesser setback can be achieved under State Planning Policy 2.6. 	<p>A development buffer of 50.0 m has also been established around the Protected Exclusion Area as outlined in the Water Management Plan – refer Appendix D.</p>	✓	✓
<p>4.3.7 Land Subject to Flooding and/or Inundation</p>	<p>The development has been identified as having a low risk of flooding occurring on-site. In this regard the WaMP provided in Appendix D has addressed this by including appropriate stormwater management measures to mitigate the risk of damage to infrastructure.</p>	✓	✓
<p>4.3.8 Acid Sulfate Soils</p> <p>To ensure that any potential risk or hazard resulting from the disturbance of acid sulfate soils is controlled, the Local Government may require as a condition of approval, the adoption and implementation of an acid sulfate soil management plan, in consultation with the relevant State Government authority, for any development or land use.</p>	<p>A detailed assessment on acid sulphate soil on the entire subject site has been undertaken as part of the EMP. The report concludes that the proposed AMP will have negligible impact on ASS, due to no excavation within the zone of "moderate to low ASS risk".</p> <p>Further information on ASS is contained in the EMP – refer Appendix D.</p>	✓	✓
<p>4.3.9 Water Sensitive Urban Design Principles</p> <p>The Local Government shall require all development to incorporate water sensitive urban design principles and best management practices to:</p> <ul style="list-style-type: none"> • Reduce the rate of discharge and the quantity of stormwater that flows from the land so that post-development flows match pre-development flows • Avoid the export of waterborne pollutants, including nutrients • Recharge groundwater resources • Protect and enhance the ecological values of rivers, creeks and drains, and 	<p>As identified in Appendix D, Water Sensitive Urban Design Principles have been incorporated into the final design of the WaMP. Regarding items identified as not entirely addressing these principles, the WaMP then provides additional management measures to be put in place to mitigate these impacts</p>	✓	✓

Provision / Condition	Assessment	Compliance	
		Stage 1A	Stage 1B
<ul style="list-style-type: none"> Retain local water for non-potable use. 			
<p>4.8.1.1 Approval from the relevant road control authority is required for the construction of a vehicle access/egress point onto a Major Road or Priority Road shown on the Scheme Map.</p> <ul style="list-style-type: none"> All vehicle access points, other than in the Residential zone, shall be designed so that all vehicles can enter and leave the lot in a forward gear. No vehicle crossover shall be located within the corner truncation of any lot having two or more street frontages. 	<p>Down Road West is identified as a Priority Road under LPS No.1. Stage 1A seeks approval for a new access point on Down Road West.</p> <p>Down Road South is identified as a Local Road under LPS No.1. Stage 1B seeks approval for a total of two new (emergency) access points on Down Road South.</p> <p>All access points have been designed for two way movement.</p> <p>No access points have been designed within a corner truncation.</p> <p>A Traffic and Parking Management Plan has been prepared which has conducted detailed investigation of the proposed AMP from a traffic impact aspect. The report concludes that the proposal can operate satisfactorily subject to implementing management measures during events with more than 500 spectators as outlined in the Traffic and Parking Management Plan – refer Appendix G.</p>	✓	✓
<p>4.8.1.6 On Major Roads and Priority Roads shown on the Scheme Map, the Local Government may require additional land to be added to widen or extend the road in support of subdivisional approval or as a condition of granting development approval</p>	<p>The Traffic and Parking Management Plan has determined that Down Road West and Down Road South have capacity to manage future anticipated traffic generated by the AMP without any widening or improvements. During events of more than 500 spectators, a range of traffic management measures have been proposed.</p>	✓	✓
<p>4.8.1.11 The Local Government shall require an area to be provided on-site other than a car parking bay, for the loading and unloading and servicing or dispatch or receipt of goods and materials associated with any commercial or industrial use.</p>	<p>It is not anticipated that there will be regular loading and unloading of goods occurring from the subject site. It is also noted that competitors are also provided with pitlane sheds where loading and unloading can occur without any hinderance.</p>	✓	✓
<p>4.8.2.1 Any building or development that is required to dispose of liquid effluent shall:</p> <ul style="list-style-type: none"> Be connected to the Water Corporation reticulated sewerage system in the Water Corporation's Water Sewerage Operating License Areas unless advised by the Water Corporation that a connection cannot practically be provided, or Provide an on-site effluent disposal system designed and located to minimise nutrient export from the site and be approved by the Local Government and the relevant State Government authority for that purpose, and Implement a disposal process for chemical or oil substances in accordance with the Environmental Protection Authority guidelines. 	<p>As noted in the WaMP, all wastewater generated on site will be disposed of in accordance WQPN 28. Given that there is no reticulated sewerage in close proximity to the site, wastewater will need to be managed via an on-site effluent disposal system, and transportable toilets.</p> <p>Further details on the disposal system for each facility can be found in Appendix D – refer to the attached Site and Soil Evaluation Report.</p>	✓	✓
<p>4.8.3.2 The Local Government shall apply the following objectives in determining the location and size of the building envelope:</p> <ul style="list-style-type: none"> Protection of remnant vegetation Avoidance of areas of low land capability Maintaining any necessary buffers to other uses, and Enhancement of visual amenity. 	<p>The AMP Master Plan functions in the manner of a building envelope plan in this instance. Accordingly, implementing a building envelope for the subject site is not considered to be necessary in this instance.</p>	✓	✓
<p>4.8.5.3 Where a particular parking requirement for a use class is not specified in Table 5 or the Scheme provisions, the Local Government shall determine the number of car parking bays to be provided having regard to:</p> <ul style="list-style-type: none"> The nature of the proposed development The recommendations of the Building Code of Australia The number of employees and visitors/clients to be associated with the development, and The orderly and proper planning of the locality. 	<p>Table 5 of LPS No. 1 does not contain a parking requirement for a 'Motorsport based recreation and incidental uses'.</p> <p>The Traffic and Parking Management Plan has considered the need for parking based on spectator numbers and parking bays provided. It is understood that the AMP Master Plan proposes to create 250 bays in the Motocross Track and 4WD Driver Training and ATV Area Precinct and an additional 250 bays for the Racetrack Precinct. Where spectators or vehicles are expected to exceed 250 vehicles, management measures have been recommended which include:</p> <ul style="list-style-type: none"> Shuttle buses to a satellite parking area Overspill parking area Open parking bays from the Precinct, increase the parking capacity from 250 bays Traffic Management requirement at the intersection of Albany Highway and Down Road Coordination with City of Albany and Main Roads WA. 	✓	✓
<p>4.8.5.7 Vehicular parking, manoeuvring and circulation areas are to be constructed, drained and sealed to the satisfaction of the Local Government. All parking spaces are to be line marked, appropriately lit and maintained in good repair.</p>	<p>The AMP Master Plan and Landscape Plan outline the proposed parking areas, which have been configured to confirm with Australian Standards. Car parks are proposed to be compacted gravel, with WSUD drainage features. Refer to the Water Management Plan.</p>	✓	✓

Provision / Condition	Assessment	Compliance	
		Stage 1A	Stage 1B
	No events are planned for evening or night time, hence only low level outdoor lighting is proposed for the AMP.		
4.8.5.8 When considering an application for development of tourist, commercial and/or industrial uses, the Local Government may require car parking bays to be configured to provide for car/trailer parking, the amount of which is at the discretion of the Local Government. Car/trailer parking bays shall be: <ul style="list-style-type: none"> • Located so that the user can readily access the bays when entering the property • The bays are designed to accommodate entry and exit with the vehicle in a forward gear, and • The bays are in close proximity to material and product storage areas. 	Due to the nature of the use, parking areas (in particular pit lane spaces) can readily accommodate trailers. Additionally, the car parking areas have been configured to allow for large and long vehicles, including trailers. Competitors will also be able to congregate with their support vehicles and trailers in the dedicated marshalling areas.	✓	✓
4.8.5.18 All parking areas and associated vehicle crossings required to be provided shall comply with the following requirements to the satisfaction of the Local Government: <ul style="list-style-type: none"> • Parking for vehicles is to be designed in accordance with AS 2890.1- 1993 Parking Facilities Part 1: Off Street Parking and any subsequent amendments thereto. 	All parking areas have been designed in accordance AS 2890.1. Refer to the Landscape Plan in Appendix C.	✓	✓
4.8.8.1 The Local Government may require an area for bin and refuse storage associated with any group or multiple dwelling, tourist, commercial, or industrial use to be provided on-site. All bin and refuse storage areas shall comply with the following requirements: <ul style="list-style-type: none"> • Be located, constructed/drained, paved and screened from public view to the satisfaction of the Local Government, and • Be permanently retained for that exclusive use. 	Bin and refuse storage areas shall comply with the requirements. Refer to the Waste Management Plan in Appendix D.	✓	✓
4.8.9.2 Where no defined landscaping requirement is specified in Table 9, the Local Government shall determine the amount of landscaping to be provided having regard to the nature of the proposed development.	A Landscape Master Plan has been prepared for the proposal – refer Appendix C.	✓	✓
Schedule 4 SU26 Provision			
All development requires the development approval of the local government.	The subject application seeks development approval for the initial stages (1A and 1B). It is anticipated that subsequent stages of the AMP will also be the subject of a separate planning application.	✓	✓
Recreation—Private and Club Premises uses shall be motorsport based only. Council may consider uses that are incidental to the Special Uses listed.	The subject application is for the construction of a motorsports park with all proposed buildings being incidental to this use.	✓	✓
Applications for development approval shall be advertised in accordance with clause 64 of the deemed provisions.	This will be undertaken as part of the assessment of the proposal.	✓	✓
All use and development is to be in accordance with the Regional Motorsports Park Precinct Plan and approved management plans.	The subject application has been developed in accordance with the Regional Motorsports Park Precinct Plan and approved Bushfire Management Plan and Local Water Management Strategy.	✓	✓
Any application for development approval for the site shall be accompanied by management plans to address environmental aspects, including—:	A EMP forms part of this application for planning approval – refer Appendix D.	✓	✓
A Noise Management Plan for construction and operation of the site, to the satisfaction of the local government and Department of Water and Environmental Regulation, and which includes but is not limited to— <ol style="list-style-type: none"> Limitations on hours of operation as follows— <ul style="list-style-type: none"> • Sundays: 9 am-6 pm; • Monday—Saturday: 8 am-6 pm Events not occurring on both the multi-use track and the motocross track at the same time; Timing of race events to manage impacts on agricultural operations (livestock handling) on adjacent rural properties; Frequent/ongoing monitoring and reporting on noise emissions; and Provide notification of events to stakeholders / landholders. 	A Noise Management Plan which addresses these conditions forms part of the EMP which has been prepared as part of this application for planning approval – refer to Appendix D.	✓	✓
A Water Management Plan for construction and operation of the site, consistent with a Local Water Management Strategy and any associated management plans, to the satisfaction of the local government and Department of Water and Environmental Regulation.	A WaMP forms part of this application for planning approval – refer Appendix D.	✓	✓
A Hydrocarbon Management Plan for operation of the site.	A HMP forms part of this application for planning approval – refer Appendix D.	✓	✓
A Waste Management Plan for construction and operation of the site.	A WMP forms part of this application for planning approval – refer Appendix D.	✓	✓

Provision / Condition	Assessment	Compliance	
		Stage 1A	Stage 1B
A Dust Management Plan for construction and operation of the site.	A DMP forms part of this application for planning approval – refer Appendix D.	✓	✓
An Acid Sulfate Soils (ASS) Management Plan to manage the risk from ASS during construction and operation of the site, to the satisfaction of the local government and Department of Water and Environmental Regulation.	An acid sulfate soils risk assessment has been undertaken and forms part of the EMP that has been prepared as part of this application for planning approval – refer Appendix D.	✓	✓
A Protected Exclusion Area Management Plan for construction and operation of the site, to the satisfaction of the local government and Department of Water and Environmental Regulation, addressing management responsibilities, fencing of the Protected Exclusion Area, revegetation, and vegetation condition and wetland water quality monitoring.	A PEAMP forms part of this application for planning approval – refer Appendix D.	✓	✓
A Decommissioning Plan for operation of the site, to the satisfaction of the local government and Department of Water and Environmental Regulation, that identifies actions for rehabilitation, if or when motorsports cease to operate at the site.	A DP forms part of this application for planning approval – refer Appendix D.	✓	✓
A Construction Management Plan.	A CMP forms part of this application for planning approval – refer Appendix D.	✓	✓
Any application for development approval for the site shall be accompanied by a visual impact assessment to determine the appropriate physical treatments to mitigate visual impact to Lot 5781 Down Road South, Drome.	A Visual Impact Assessment forms part of this application for planning approval – refer Appendix E.	✓	✓
Development shall be in accordance with an approved Bushfire Management Plan that has been implemented to the satisfaction of the Local Government and the Department of Fire and Emergency Services.	An addendum to the approved BMP forms part of this application for planning approval – refer Appendix F.	✓	✓
Development shall be subject to prior securing of appropriate tenure and/or easements and prior or concurrent construction of a secondary vehicular access/egress route for emergency purposes, to the relevant standards	The City of Albany will be providing secondary emergency access to Albany Highway via construction of an Emergency Access Way (EAW). The EAW will be a 20 m wide road reserve excised from Lot 1 Down Road, and a 10 m wide easement in gross through Lot 10 Down Road and measures 4.38 km. Refer to the Bushfire Management Plan - Appendix F.	✓	✓
Any application for development approval for the site shall be accompanied by a Traffic and Parking Management Plan for construction and operation of the site, including consideration of peak parking and traffic management during larger and special events (i.e. events attracting greater than 500 attendees).	A TIA and TPMP forms part of this application for planning approval – refer Appendix G.	✓	✓

9. Approval timeframe

With regard to the approval timeframe, it is respectfully requested that a four-year (48 month) approval timeframe for substantial commencement is applied. This is in response to the funding, scale and staged nature of the proposal, the need for construction to be conducted in a number of stages under separate tenders and the need to undertake construction according to seasonal weather conditions i.e. October to April.

Whilst the Proponent will seek to achieve substantial commencement within 12 months, the additional timeframe will not only provide flexibility but avoid the need for subsequent applications for planning approval and/or extensions to the approval timeframe that may result in untimely delays to project delivery in the future.

Given the proposal has been the subject of a recent scheme amendment that has been guided by a fleet of higher-order strategic planning documents, the additional approval timeframe is not considered to compromise the overall planning framework for the next 5 to 10 years.

10. Conclusion

This application for planning approval for the proposed AMP development at the subject site has been the culmination of extensive investigation, stakeholder engagement and planning associated with setting in place the requisite planning framework to bring the proposal to fruition.

This application and accompanying specialist technical input reports strongly demonstrates:

- The proposed development will make a positive contribution to the community and will assist with strengthening the State and Local economy.
- The location of the proposal within the Great Southern region will deliver a range of economic benefits to surrounding local government areas of Broomehill-Tambellup, Cranbrook, Denmark, Gnowangerup, Jerramungup, Katanning, Kent, Kojonup, Plantagenet and Woodanilling through developing on the areas existing reputation for hosting significant festivals and exhibitions, as well as its range of natural and built tourist attractions.
- There is whole of government support towards the proposal given the Western Australian Government has committed \$250,000 to undertake preliminary planning for a regional motorsports facility (Watson, 2018) and a further commitment of \$5.5 million in the 2020/21 forward estimates (GoWA, 2018) for its development.
- The proposal has demonstrated that it aligns with the established State and Local Strategic planning framework which include most notably, Lower Great Southern Strategy, City of Albany Local Planning Strategy and, Western Australian Motorsport Strategy.
- The Minister for Planning has approved scheme amendment No.35 to the City of Albany LPS No.1 which has rezoned the site for its intended purposes being 'Motorsport based recreation and incidental uses'.
- The proposal is supported by a range of specialist technical inputs which, subject to adopting the various recommendations, measures and review processes, will support both the construction and operation of the AMP at the subject site.
- The proposal is entirely compliant with clause 4.8 and schedule 4 'SU26' provisions of the City of Albany LPS No.1, as well as associated local planning policies.

GHD and the entire project team are eager to work with the City of Albany, relevant State Government authorities, the GSMG and other stakeholders during the assessment process towards a favourable determination of this exciting and significant development.

Appendix A

Certificate of Title

WESTERN



AUSTRALIA

REGISTER NUMBER

5780/DP206199DUPLICATE
EDITION**5**

DATE DUPLICATE ISSUED

11/6/2019

DUPLICATE CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME
1352FOLIO
224

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.



REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 5780 ON DEPOSITED PLAN 206199

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

CITY OF ALBANY OF 102 NORTH ROAD ALBANY WA 6330

(T O164019) REGISTERED 31/5/2019

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. K809392 LEASE TO PLANTATION ENERGY AUSTRALIA PTY LTD OF LEVEL 2, 45 STIRLING HIGHWAY, NEDLANDS AS TO PORTION ONLY. EXPIRES: SEE LEASE. AS TO PORTION ONLY REGISTERED 22/12/2008.
- N538854 MORTGAGE OF LEASE K809392 TO GDF INTERNATIONAL SAS REGISTERED 24/1/2017.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
Lot as described in the land description may be a lot or location.

-----END OF DUPLICATE CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

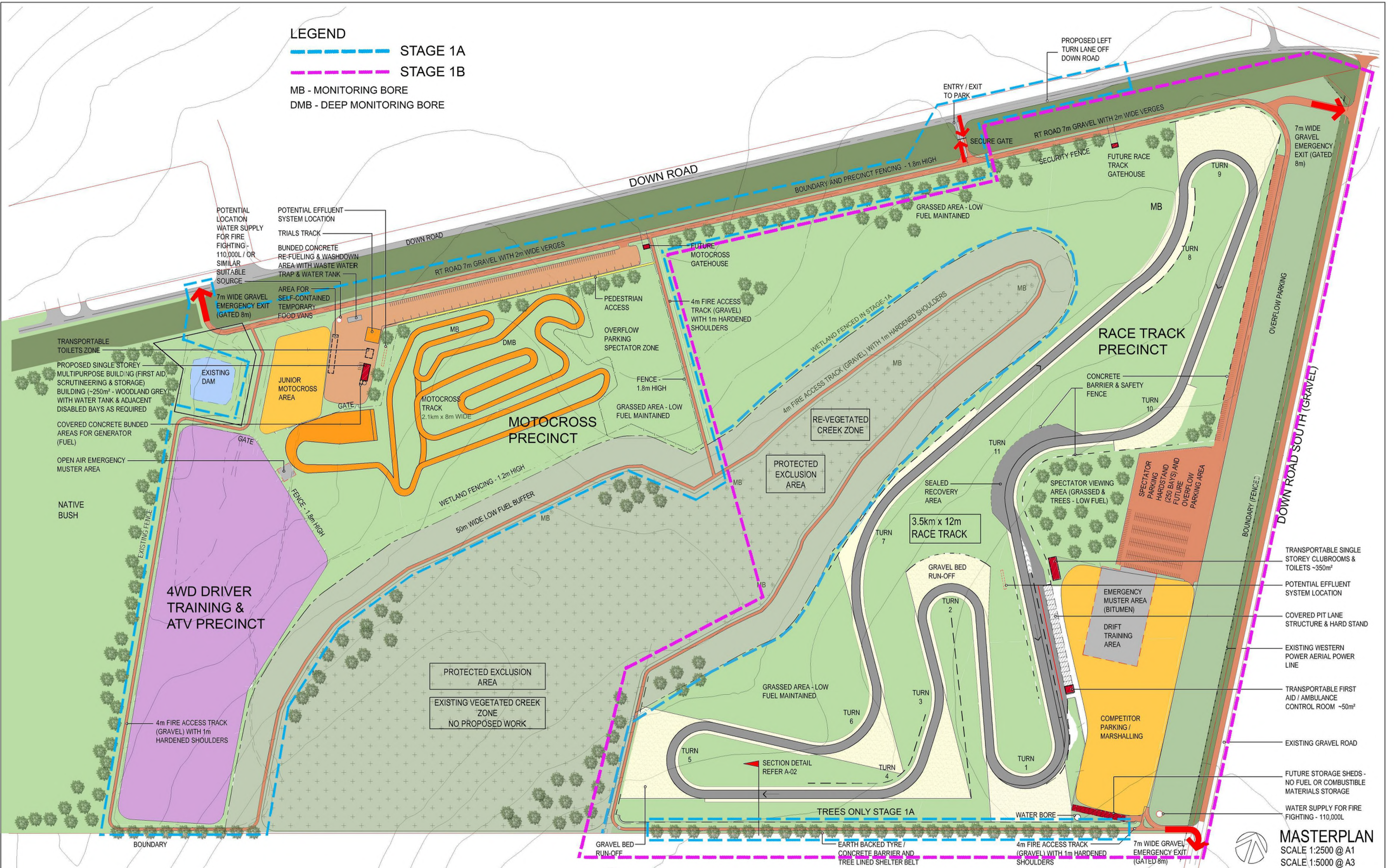
SKETCH OF LAND: 1352-224 (5780/DP206199)
PREVIOUS TITLE: 1352-224
PROPERTY STREET ADDRESS: 54 DOWN RD SOUTH, DROME.
LOCAL GOVERNMENT AUTHORITY: CITY OF ALBANY



Appendix B

Development plans

LEGEND
 - - - - - STAGE 1A
 - - - - - STAGE 1B
 MB - MONITORING BORE
 DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

p.o. box 1502, albany, western australia 6331
 telephone: (08) 9841 5455
 email: admin@rgarchitects.com.au

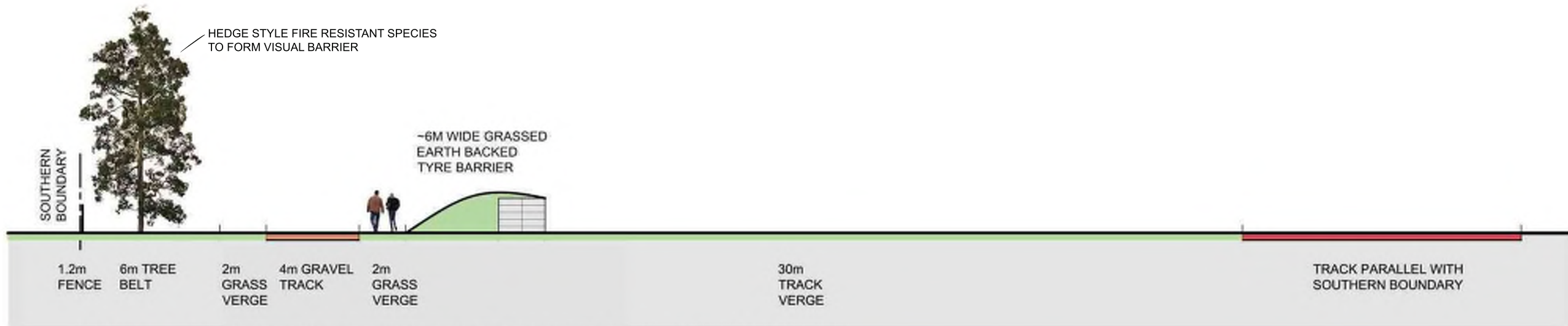
Roberts Gardiner
Architects

project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file
 drawn CB project number 21-002

scale 1:2500 @A1
 date JULY 2021
 dwg no. rev.
A-01 E



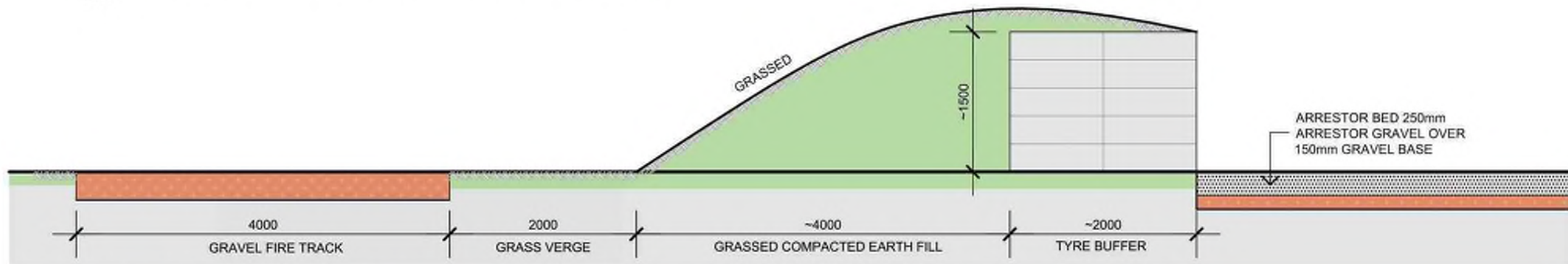
SECTION THRU SOUTHERN BOUNDARY (AT TRACK PARALLEL WITH BOUNDARY)
1:200



SECTION THRU SOUTHERN BOUNDARY (AT ARRESTOR BED)
1:200



VIEW ON SOUTHERN BOUNDARY LOOKING WEST



TYPICAL SECTION THROUGH TYRE BARRIER
1:50

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rev	date	description
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telephone: (08) 9841 5455
email: admin@rgarchitects.com.au

Roberts Gardiner
Architects

project
Albany Motorsport Park
Lot 5780 Down Rd, Drome, WA 6330
client
City of Albany

Section Through Southern Boundary

scale 1:200 @A3

date APRIL 2021

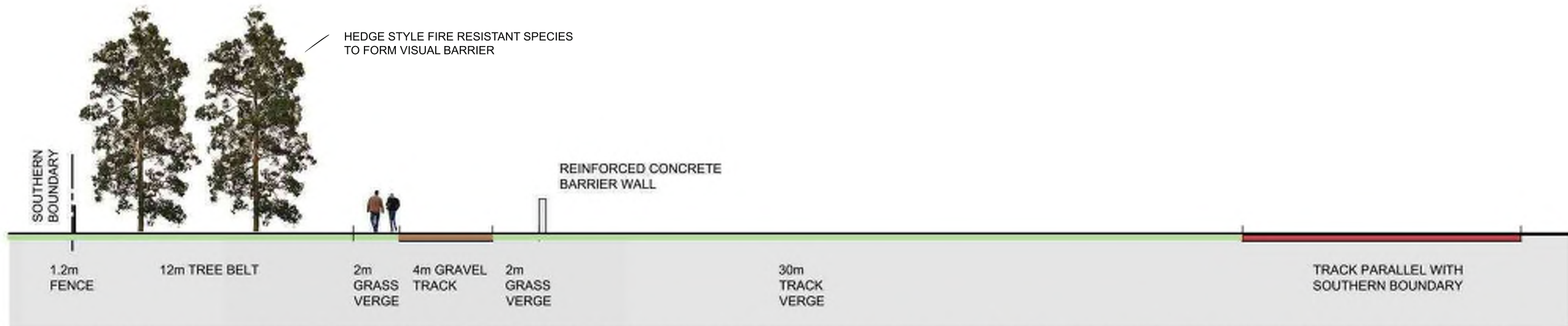
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dwg no. rev.

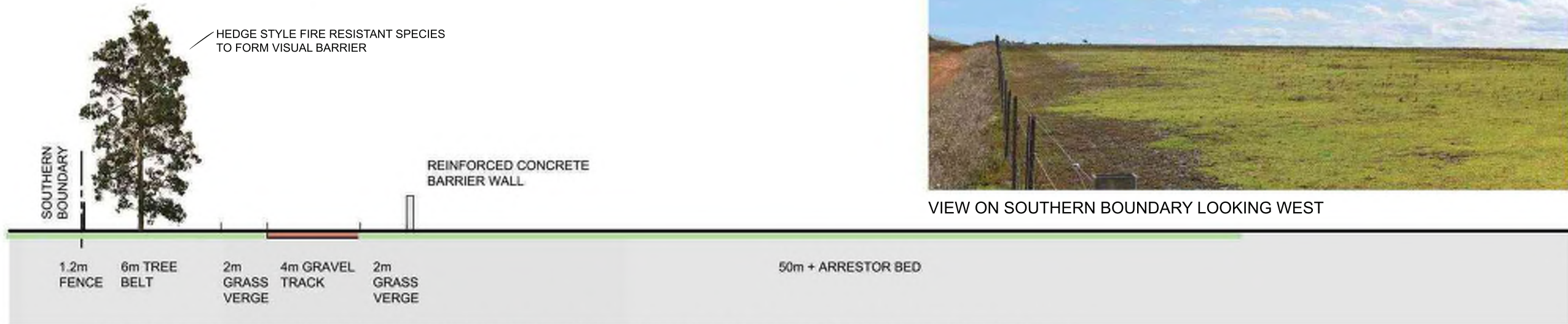
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project number 21-002

A-02 A

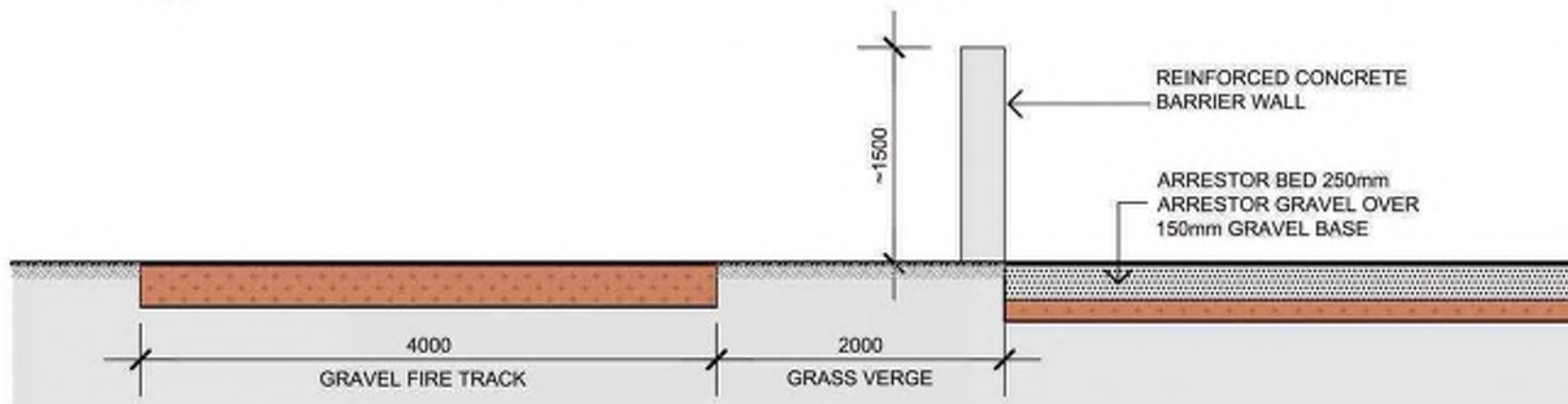


CONCRETE BARRIER SECTION THRU SOUTHERN BOUNDARY (12m TREE PLANTING AT TRACK PARALLEL WITH BOUNDARY & 4WD TRAINING PRECINCT)
1:200



VIEW ON SOUTHERN BOUNDARY LOOKING WEST

CONCRETE BARRIER SECTION THRU SOUTHERN BOUNDARY (6m TREE PLANTING AT ARRESTOR BED)
1:200



TYPICAL SECTION THROUGH REINFORCED CONCRETE BARRIER
1:50

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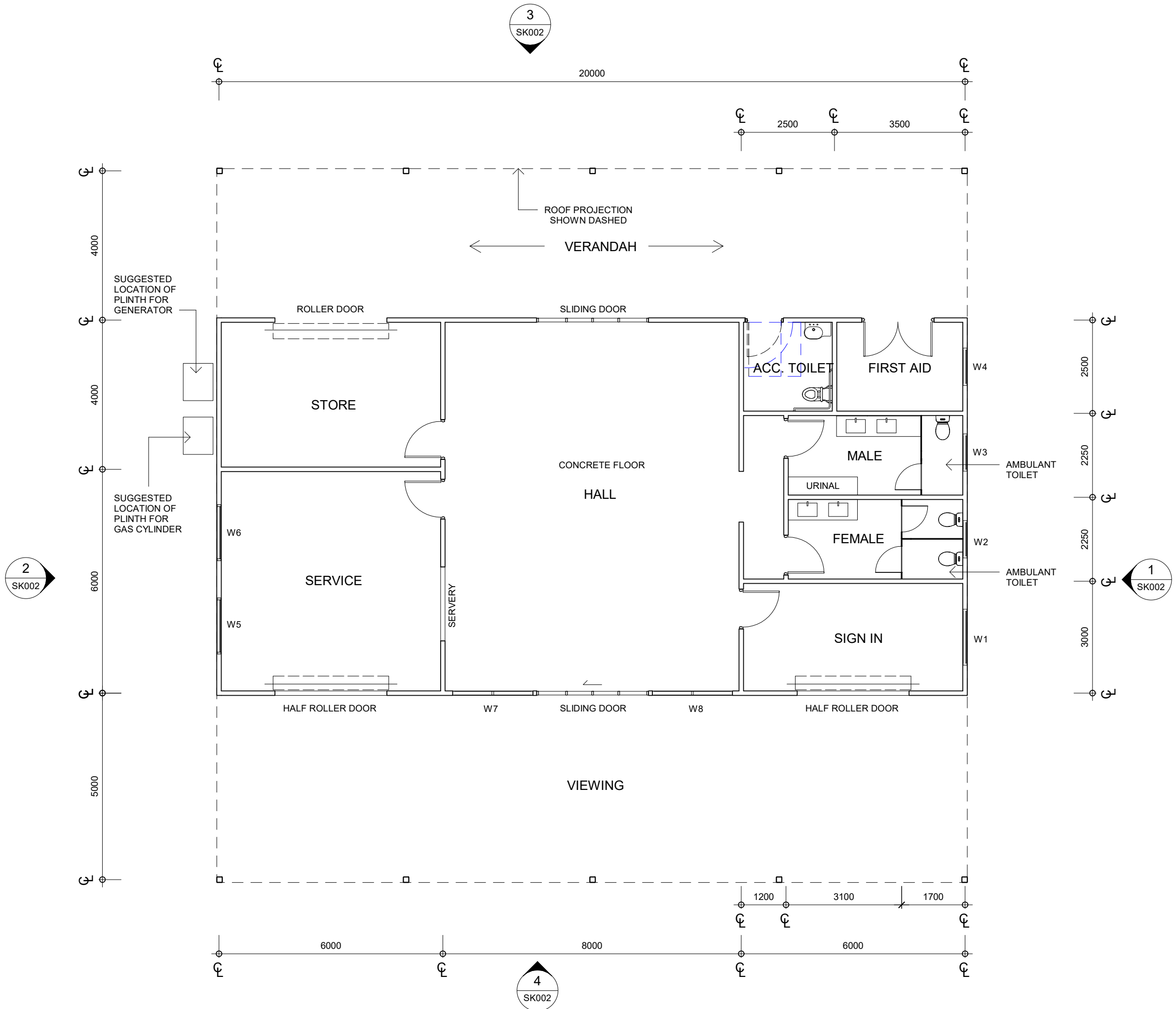
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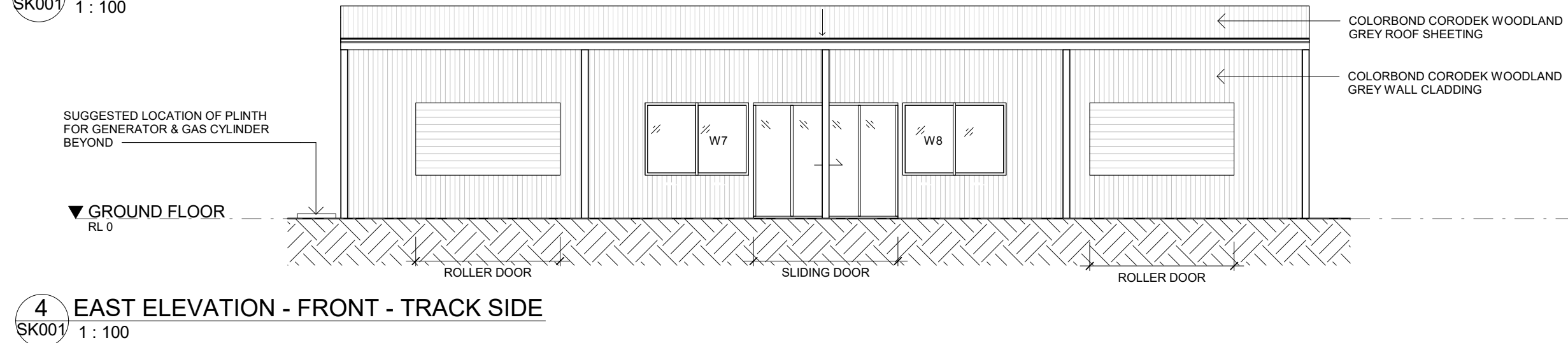
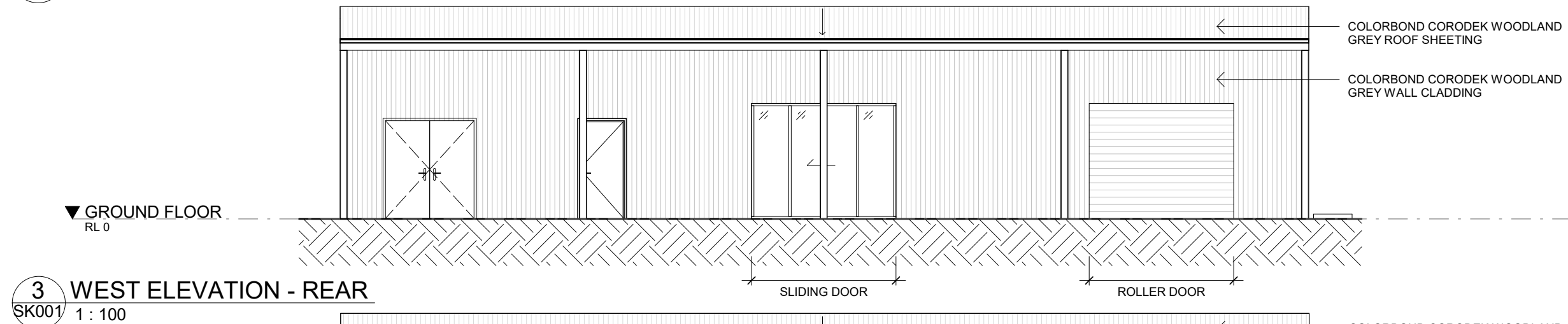
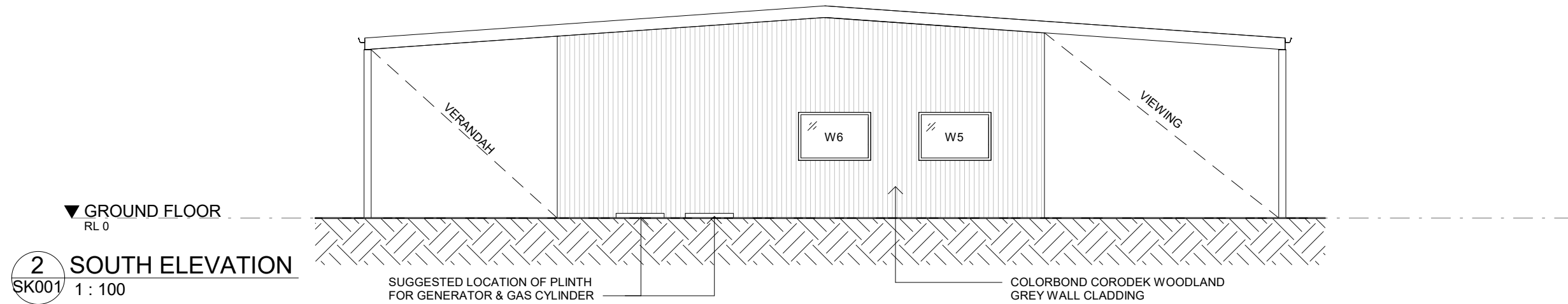
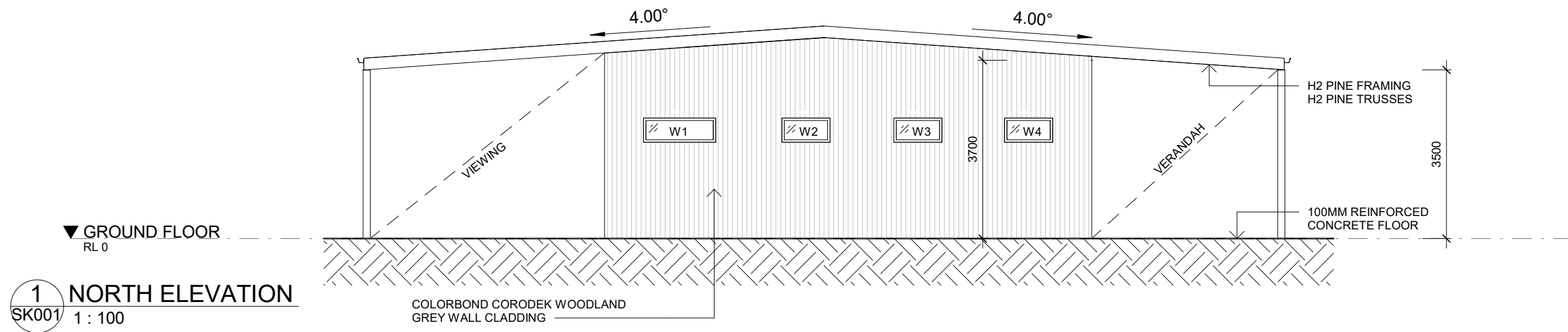
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email: admin@rgarchitects.com.au

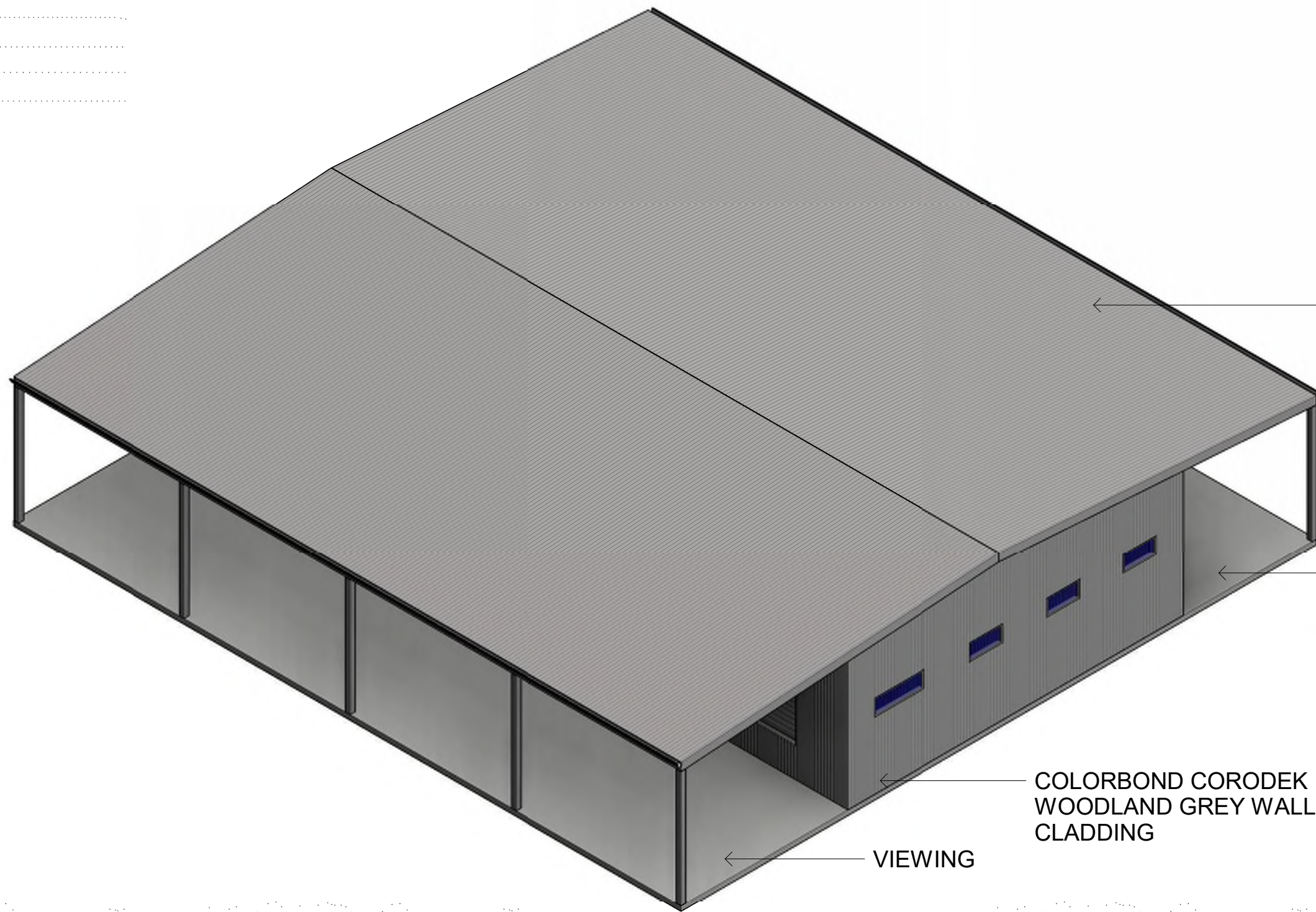
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Architects

project
Albany Motorsport Park
Lot 5780 Down Rd, Drome, WA 6330
client
City of Albany

Section Through Southern Boundary Concrete Barrier Option		scale 1:200 @A3
cad file		date MAY 2021
drawn CB	project number 21-002	dwg no. rev. A-03 A







COLORBOND CORODEK
WOODLAND GREY ROOF
SHEETING

VERANDAH

COLORBOND CORODEK
WOODLAND GREY WALL
CLADDING

VIEWING

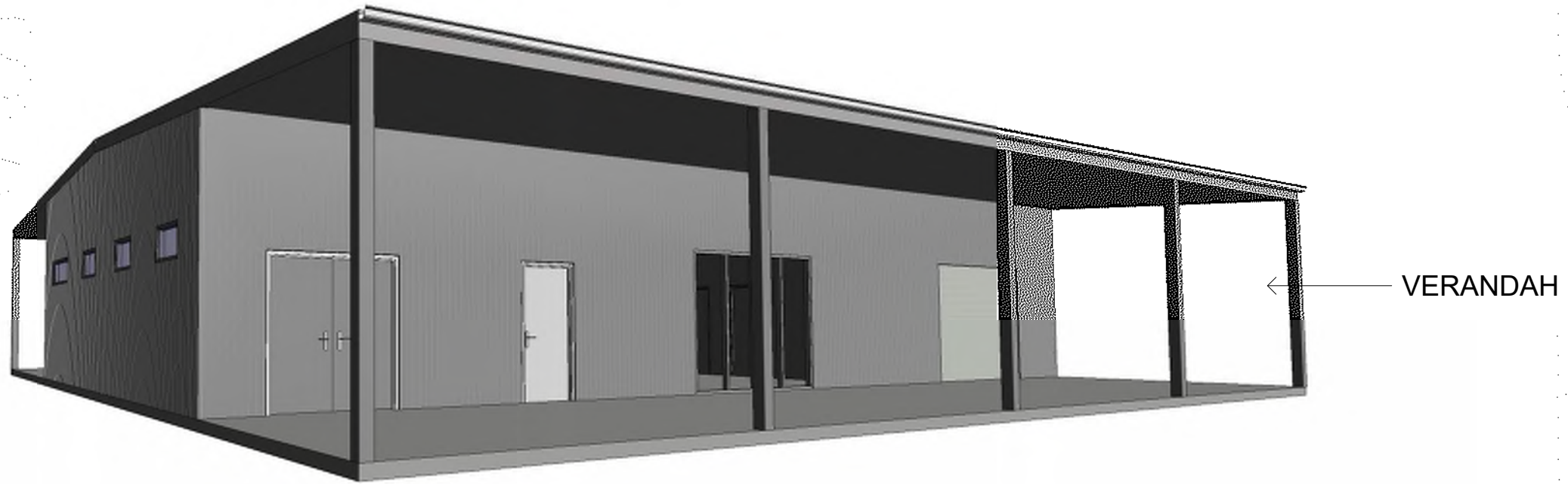
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MOTOCROSS ADMIN BUILDING

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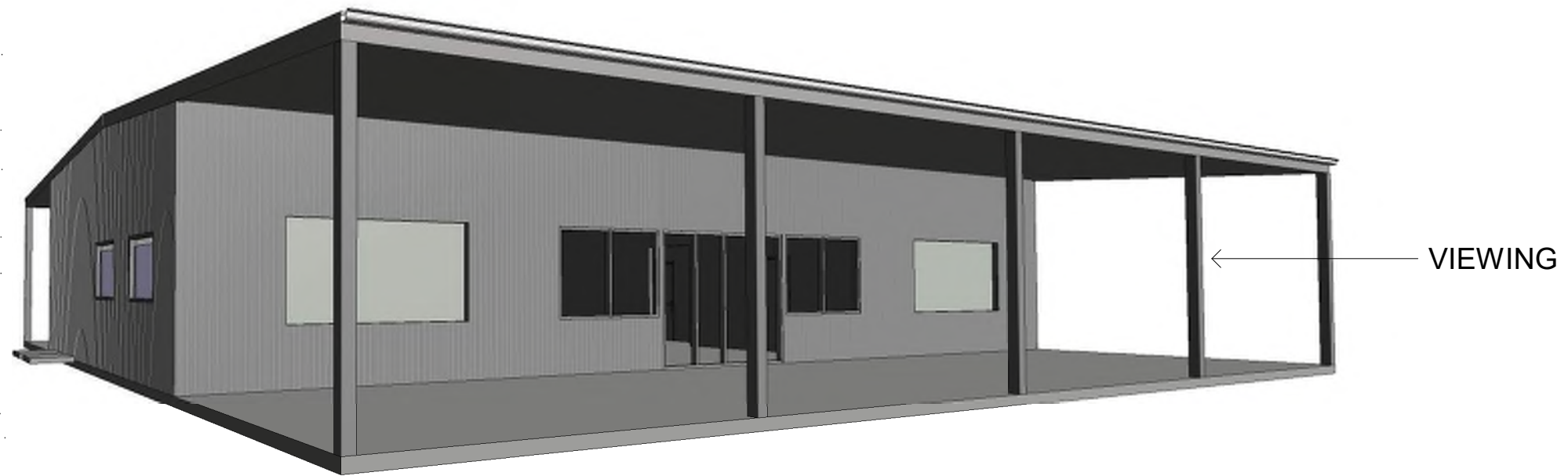
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North:
Project Number:
Drawing Number: SK003
Revision:
Date:



1 NORTHWEST PERSPECTIVE



2 SOUTHEAST PERSPECTIVE

Appendix C

Landscape Masterplan

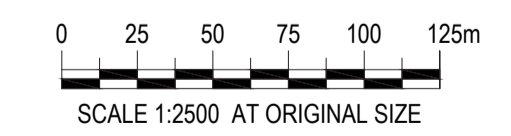


Note:

- Spectator parking bays (Race):
Standard - 270; Caravan/ RV/ truck - 13; DDA - 3; Motorcycle - 5;
- Spectator parking bays (Motocross):
Standard - 25; Caravan/ RV/ truck - 28

Legend of Proposed Works:

- STAGE 1A boundary
- STAGE 1B boundary
- Fence
- Concrete barrier
- ▲ Signage opportunity
- 1 Motocross track
- 2 Race track (3.5km x 12m)
- 3a Spectator parking (Race)
- 3b Spectator parking (Motocross)
- 3c Competitor pit bays (Motocross)
- 4 Junior motorcross area
- 5 4WD driver training & ATV area
- 6 Emergency muster & drift training area
- 7 Competitor parking / marshalling
- 8 Amenities/ facility precinct
- 9 Low fuel buffer (50m wide)
- 10 Re-vegetated creek zone
- 11 Gravel bed run-off
- 12 Pedestrian footpath
- 13 Earth backed tyre barrier & tree lined shelter belt
- 14 Swale / basin



Albany Motorsport Park

Proposed Master Plan Stage 1

Prepared for **City of Albany**
Western Australia

GHDWOODHEAD
999 Hay Street Perth WA 6000 / PO Box 3106 Perth WA 6832
T 61 8 6222 8222 E pemail@ghdwoodhead.com.au W www.ghdwoodhead.com

Job No: **12546218** / Date: **July 2021**
Approved: **I Pexton** / Scale: **1:2500 @ A1**
Sheet No: **SK-L001** / Rev No: **B**

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Appendix D

Environmental Management Plan



Albany Motorsport Park - Development Application

Environmental Management Plan

City of Albany

27 July 2021

→ The Power of Commitment

GHD Pty Ltd | ABN 39 008 488 373



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Printed date	27/07/2021 9:23:00 PM
Last saved date	27 July 2021
File name	https://projectsportal.ghd.com/sites/pp18_05/albanymotorsportpark/ProjectDocs/Environmental Management Plan/12564218-REP-0_Albany Motorsport Park Environmental Management Plan.docx
Author	Vicki Davies, James Forrest
Project manager	Vicki Davies
Client name	City of Albany
Project name	Albany Motorsport Park - Development Application
Document title	Albany Motorsport Park - Development Application Environmental Management Plan
Revision version	Rev 0
Project number	12546218

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	V. Davies/ J. Forrest	J. Cramer		J. Foley		17/05/21
S4	0	V. Davies/ J. Forrest	J. Cramer		J. Foley		Jeff Foley 2021.07.29 16:09:59 +08'00'

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Executive summary

The City of Albany (CoA) has engaged GHD to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure 1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*^[1] and Motorcycling Australia (MA) *Track Guidelines*^[2].
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

A Master Plan, which illustrates the various aspects of the Site and staging areas, has been developed by the GSMG and CoA to support the Development Application for the AMP (Figure 2, Appendix A).

This overarching Environmental Management Plan (EMP) has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development, as a condition under Local Planning Scheme No. 1, Scheme Amendment No. 35 for rezoning of Lot 5780 Down Road South, from 'Priority Agriculture' zone to 'Special Use – SU26' zone.

The objective of this EMP is to minimise environmental impacts during construction and operation of the AMP so that environmental values are protected.

This EMP has been developed with reference to the following themes, factors and objectives, as outlined in the Environmental Protection Authority (EPA) *Statement of Environmental Principles, Factors and Objectives* (EPA, 2020), which are considered applicable to the Site:

- *To protect flora and vegetation so that biological diversity and ecological integrity are maintained.*
- *To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*
- *To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.*
- *To maintain air quality and minimise emissions so that environmental values are protected.*
- *To protect social surroundings from significant harm.*

¹ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

² MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

Environmental management will be undertaken for the AMP as per strategies outlined in the following sub-plans which are appended to this EMP:

- Noise management plan
- Water management plan
- Hydrocarbon management plan
- Waste management plan
- Dust management plan
- Protected Exclusion Area management plan
- Decommissioning plan
- Construction management plan.

A Construction Management Plan has been included in this EMP however it is recommended that a site-specific Construction Environmental Management Plan (CEMP) is developed by the appointed contractor to prior to commencement of construction works.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.6 and the assumptions and qualifications contained throughout the Report.

Abbreviations

Term	Definition
AMP	Albany Motorsport Park
AMV Inc.	Albany Motorsport Venue Incorporated
ARVS	Albany Regional Vegetation Survey
ASS	Acid Sulfate Soil
ATV	All-terrain vehicle
BAM Act	<i>Biosecurity and Management Act 2007</i>
BGL	Below ground level
BC Act	<i>Biodiversity Conservation Act 2016</i>
CAMS	Confederation of Australian Motor Sport Limited
CEMP	Construction Environmental Management Plan
CEO	Chief Executive Officer
CoA	City of Albany
CoC	Chain of Custody
DBCA	Department of Biodiversity, Conservation and Attractions
DBH	Diameter at breast height
DFES	Department of Fire and Emergency Services
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FIA	Federation Internationale de l'Automobile
FIM	Federation Internationale Motocyclisme
GoWA	Government of Western Australia
GSMG	Great Southern Motorplex Group Inc.
IBRA	Interim Biogeographic Regionalisation for Australia
JDAP	Joint Development Assessment Panel
LGA	Local Government Area
MA	Motorcycling Australia
PDWSA	Public drinking water source area
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i>
TAA	Titrateable Actual Acid
TPA	Total Peroxide Acidity
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2007</i>
WSUD	Water sensitive urban design
WONS	Weeds of National Significance

Term	Definition
WQPN	Water quality protection note
WSUD	Water sensitive urban design
4WD	Four-wheel drive

Defined terms

Term	Definition
Albany Motorsport Park	At full development, the proposed AMP will consist of: <ul style="list-style-type: none"> – Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling: <ul style="list-style-type: none"> • Designed to comply with Motorsport Australia <i>Track Operator's Safety Guide</i>^[3] and Motorcycling Australia (MA) <i>Track Guidelines</i>^[4]. • To be licensed by Motorsport Australia for Fédération Internationale de l'Automobile (FIA) Grade 2 and Fédération Internationale Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing). – A motocross circuit designed and constructed in association with MA guidelines. – An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area. – Associated buildings and infrastructure.
Clearing impact area	The clearing impact area (native vegetation) is 0.928 ha in size.
Conservation Category Wetland	Wetlands which support a high level of attributes and functions.
Development Exclusion Buffer	The Development Exclusion Buffer is a 50 m, low fuel buffer between the Protected Exclusion Area and AMP activity areas.
Federation Internationale de l'Automobile	The world controlling body of four wheeled motor sport.
Federation Internationale Motocyclisme	The global governing/ sanctioning body of motorcycle racing.
Motorcycling Australia	Motorcycling Australia – The governing body of motorcycle sport in Australia
Motorsport Australia	The body appointed by the FIA to regulate motor sport in Australia.
Proponent/ Venue Manager	Great Southern Motorplex Group Inc. / Albany Motorsport Venue Incorporated (AMV Inc.)
Protected Exclusion Area	The Protected Exclusion Area comprises remnant native vegetation and the CCW Marbelup Flats within the AMP area.
Site	Lot 5780 Down Road South, Drome. <ul style="list-style-type: none"> – The Site is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. Lot 5780 includes the following areas: <ul style="list-style-type: none"> • 141.5 ha proposed AMP – Excluded from AMP: <ul style="list-style-type: none"> • 49.47 ha native vegetation at western end • 1.37 ha dam area sub-leased to Plantation Energy The AMP will also include 0.2 ha of crossovers onto Down Road South and is therefore 141.7 ha in size.
Staging	<ul style="list-style-type: none"> – Stage 1A: Construction of motocross track and 4WD driver training, ATV area and associated infrastructure. – Stage 1B: Construction of racetrack and associated infrastructure (subject to funding). – Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.
Venue Owner	Lot 5780 Down Road South, Drome and all permanent facilities and infrastructure will be owned by the City of Albany.
Venue Procedures Manual	Standard operating practices for operation of the AMP.

³ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

⁴ MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

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Appendix H	Dust Management Plan
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1. Introduction

1.1 Project description

The City of Albany (CoA) has engaged GHD to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure 1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

Lot 5780 Down Road South, Drome is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Two areas within Lot 5780 are excluded from the AMP development and include 49.47 ha at the western end of the Site which is covered with native vegetation and a dam area (1.37 ha) on the northern boundary which is subleased to Plantation Energy.

The Great Southern Motorplex Group Inc. (GSMG), the Proponent, in partnership with the City of Albany, intend to develop the site as a regional motorsport facility. In October 2018, the City of Albany Council resolved to purchase the site and settlement of the land purchase was concluded in 2019.

Once constructed, the AMP will be operated and managed by Albany Motorsport Venue Incorporated (AMV Inc.) as per the Governance model included in Appendix B.

The proposed AMP forms part of the CoA's strategy to expand upon its existing motorsports facilities within the greater Albany area. The AMP is to be the largest facility of its kind in Western Australia and will support the local economy.

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*⁵ and Motorcycling Australia (MA) *Track Guidelines*⁶.
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing)
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

A Master Plan, which illustrates the various aspects of the Site and staging areas, has been developed by the GSMG and CoA to support the Development Application for the AMP (Figure 2, Appendix A).

1.2 Staging and timeframes

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track and 4WD driver training, ATV area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

The areas for Stage 1A and Stage 1B have been shown on the Master Plan in Figure 2 (Appendix A).

⁵ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

⁶ MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

1.3 Purpose of this report

This overarching Environmental Management Plan (EMP) has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development, as a condition under Local Planning Scheme No. 1, Scheme Amendment No. 35 for rezoning of Lot 5780 Down Road South, from 'Priority Agriculture' zone to 'Special Use – SU26' zone.

The management strategies and procedures outlined within the EMP aim to achieve the AMP environmental objectives as defined in Section 1.4.

1.4 Objectives

The objective of the EMP is to minimise environmental impacts during construction and operation of the AMP so that environmental values are protected.

This EMP has been developed with reference to the following themes, factors and objectives, as outlined in the Environmental Protection Authority (EPA) *Statement of Environmental Principles, Factors and Objectives* (EPA, 2020), which are considered applicable to the Site (Table 1).

Table 1 EPA themes, factors and objectives (EPA, 2020)

Theme	Factor	Objectives
Land	Flora and Vegetation	<i>To protect flora and vegetation so that biological diversity and ecological integrity are maintained.</i>
	Terrestrial Fauna	<i>To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.</i>
Water	Inland Waters	<i>To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.</i>
Air	Air Quality	<i>To maintain air quality and minimise emissions so that environmental values are protected.</i>
People	Social Surroundings	<i>To protect social surroundings from significant harm.</i>

1.5 Scope of works

The scope of works for this EMP includes the overarching requirements and a number of subplans to address specific aspects of the AMP. The EMP includes the following:

- Overarching EMP requirements (Sections 1, 2, 4 to 10)
- Assessment of impacts (Section 3)
 - Flora and vegetation
 - Terrestrial fauna
 - Inland waters
 - Air quality
 - Social surroundings
- Protected Exclusion Area management plan (Appendix C)
- Water management plan (Appendix D)
- Hydrocarbon management plan (Appendix E)
- Waste management plan (Appendix F)
- Noise management plan (Appendix G)
- Dust management plan (Appendix H)
- Decommissioning plan (Appendix I)
- Construction management plan (Appendix J).

1.6 Limitations

This report: has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and City of Albany as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Compliance/ legal obligations register

A compliance/ legal obligations register will be developed for the AMP, and updated in this EMP in the next review, based on the outcomes of the Development Approval and conditions set for construction and operation of the Site. This will summarise the commitments to be undertaken to address each compliance or legal obligations to construct and operate the AMP including:

- Environmental aspects
- Legislation/ requirements
- Obligations
- Timing and period of obligations.

Compliance and other legal obligations will be reported on, to relevant approving authorities, as required.

3. Environmental impact assessment

3.1 Vegetation and flora

3.1.1 Receiving environment

3.1.1.1 Regional biography

The Site is located in the South West Botanical Province of Western Australia (Beard, 1990). The Southern Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) subregion is characterised by “Jarrah-Marri forest on laterite gravels and, in the eastern part, by Wandoo - Marri woodlands on clayey soils. Eluvial and alluvial deposits support *Agonis* shrublands. In areas of Mesozoic sediments, Jarrah forests occur in a mosaic with a variety of species-rich shrublands” (Hearn, Williams, Comer, & Beecham, 2002, p. 382).

Broad scale pre-European vegetation mapping of the Southern Jarrah Forest IBRA Region was completed by Beard (1979) at an association level. The mapping indicates that two vegetation associations are present within the Site and lie within the Albany System Association (Figure 3, Appendix A):

- Cyperaceae, Restionaceae, Juncaceae (mainly in the South-West) (association 51)
- Jarrah, Banksia or Casuarina *Eucalyptus marginata*, *Banksia* spp., *Allocasuarina* spp. (association 978)

The Albany Regional Vegetation Survey (ARVS) (Sandiford & Barrett, 2010) provides a local and regional overview of the native vegetation within a 124,415 ha area to the east, west and north of Albany. This survey described, mapped and assessed the conservation status of native vegetation within the ARVS area, which includes the Site.

The Sandiford and Barrett (2010) mapping indicates that three ARVS vegetation units mapped within the Site including vegetation unit 12, 13 and 47. The ARVS vegetation units mapped by Sandiford and Barrett (2010) for the Site and surrounds are presented in Figure 4, Appendix A.

3.1.1.2 Vegetation communities and condition

The majority of the Site has been previously cleared for agriculture with isolated stands of trees. Bio Diverse Solutions (2018) mapped six vegetation types within the Site. These vegetation types and their corresponding ARVS vegetation units are summarised in Table 2 and presented in Figure 5, Appendix A.

Table 2 Vegetation types mapped within the Site

Vegetation type	Corresponding ARVS Vegetation Unit name	Vegetation type summary	Corresponding ARVS vegetation unit	Extent (ha)
1	Jarrah/ Marri/ Sheoak Laterite Forest	Overstorey of <i>Eucalyptus marginata</i> and <i>Allocasuarina Fraseriana</i> with a relatively open and diverse shrub layer	ARVS 12	0.1
2	Jarrah/ Sheoak/ <i>Eucalyptus staeri</i> Sandy Woodland	Overstorey of <i>Eucalyptus marginata</i> , <i>Allocasuarina fraseriana</i> , <i>Eucalyptus staeri</i> and <i>Corymbia calophylla</i> with a relatively open and diverse shrub layer	ARVS 13	11.1
3	<i>Homalospermum firmum</i> / <i>Callistemon glaucus</i> Peat Thicket	<i>Melaleuca preissiana</i> , <i>Callistemon glaucus</i> , <i>Homalospermum firmum</i> and <i>Banksia littoralis</i> over <i>Taxandria parviceps</i> , <i>Taxandria linearis</i> and <i>Acacia hastulata</i>	ARVS 47	5.0
4	<i>Melaleuca preissiana</i> Low Woodland	<i>Melaleuca preissiana</i> and <i>Psoralea pinnata</i> * and occasional <i>Banksia littoralis</i> over <i>Taxandria linearis</i> , <i>Taxandria parviceps</i> , <i>Callistemon glaucus</i> , <i>Homalospermum firmum</i> , <i>Empodisma gracillimum</i> and <i>Holcus lanatus</i> *	ARVS 49	0.9

Vegetation type	Corresponding ARVS Vegetation Unit name	Vegetation type summary	Corresponding ARVS vegetation unit	Extent (ha)
5	Miscellaneous Drainage Woodland/Shrubland	<i>Taxandria linearis</i> and <i>Acacia hastulata</i> over <i>Homalospermum firmum</i> , <i>Callistemon glaucus</i> and <i>Boronia molloyae</i>	ARVS 50	11.7
6	Grazed paddock areas/ agricultural land.	Grazed paddock areas / agricultural land.	NA	112.9
Total				141.7

The condition of vegetation within Lot 5780 varies from Pristine to Completely Degraded in the paddocks (Figure 6, Appendix A). The vegetation within Lot 5780 and adjacent road reserves was found to be in Excellent to Very Good condition (Bio Diverse Solutions, 2019).

3.1.1.3 Threatened and Priority Ecological Communities

Desktop searches by Bio Diverse Solutions (2019) identified potential for two Threatened or Priority Ecological Communities within 15 km of the Site, including:

- Subtropical and Temperate Coastal Salt Marsh – Priority 3 (WA); Vulnerable (EPBC Act)
- Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia - Priority 3 (WA); Endangered (EPBC Act)

One DBCA-listed Priority Ecological Community (PEC), “*Banksia coccinea* Shrubland/ *Eucalyptus staeril* Sheoak Open Woodland (ARVS Community type 14a)”, was identified within a 5 km buffer of the Site in the ARVS mapping by Sandiford and Barrett (2010). This mapping identifies small populations to the south and west of the Site. The closest population is located approximately 800 m from the Site on the western side of the railway.

No Threatened or Priority Ecological Communities were identified within the Site during the field survey (Bio Diverse Solutions, 2019).

3.1.1.4 Flora diversity

Bio Diverse Solutions (2019) recorded 141 flora taxa (including subspecies and varieties), representing 41 families and 105 genera during the field survey of Lot 5780 and vegetation within adjacent road reserves on Down Road West and Down Road South. This total comprised 123 native taxa and 19 introduced taxa.

Dominant families recorded within the wider survey area included:

- Fabaceae (24 taxa including five introduced taxa)
- Proteaceae (15 taxa)
- Myrtaceae (13 taxa)
- Poaceae (nine taxa including eight introduced taxa)
- Cyperaceae (eight taxa).

3.1.1.5 Conservation significant flora

Desktop searches by Bio Diverse Solutions (2019) of the EPBC Act Protected Matters and DBCA NatureMap databases, identified potential presence of 58 conservation significant flora within the Site. The likelihood of occurrence for each species has been undertaken by Bio Diverse Solutions (2019) identified 36 species having potentially suitable habitat present within the survey area, including:

- 11 *Biodiversity Conservation Act 2016* (BC Act) priority listed species
- Two Priority 1 species
- Four Priority 2 species
- 10 Priority 3 species
- Nine Priority 4 species.

The spring survey did not identify any EPBC Act, BC Act or State Priority listed flora species within the survey area (Bio Diverse Solutions, 2019). The construction of the AMP is considered unlikely to impact on conservation significant flora species as it has been designed to lie predominantly within previously cleared agricultural land.

3.1.1.6 Introduced species

Nineteen introduced flora taxa were recorded during the field survey (Bio Diverse Solutions, 2019). None are listed as Declared Pests under the *Biosecurity and Management Act 2007* (BAM Act) and/ or as a Weeds of National Significance (WONS).

The introduced taxa are considered environmental weeds and all have been previously recorded in the local area.

3.1.1.7 Dieback

Phytophthora cinnamomi threatens over 2,300 different plant species in Western Australia. Once the pathogen infects the roots, the plant may begin to show symptoms of ‘dying back’, hence the common name used for the pathogen: Dieback. Dieback has a widespread but discontinuous range in areas with an annual rainfall above 400 mm (Dieback Working Group, 2016).

No site-specific dieback assessments or detailed mapping has been undertaken for the Site. However, the Site is considered to be a dieback susceptible area as it has water gaining areas and lies within the 600 – 800 mm rainfall zone (CALM, 2003), receiving a mean annual rainfall of 925.2 mm (BoM, 2021b). Given the level of previous disturbance it is expected that much of the Site would be dieback infested and/ or uninterpretable.

3.1.1.8 Regional significance – Vegetation association/ complexes

The pre-European vegetation mapping has been adapted and digitised (Shepherd, Beeston, & Hopkins, 2002). The extent of the vegetation associations (remaining uncleared) have been determined from the state-wide vegetation area calculations maintained by the DBCA (latest update March 2019) (GoWA, 2019).

As shown in Table 3, the current extents remaining of these vegetation associations are all greater than 30 per cent (%) of their pre-European extents at various levels (State, IBRA Bioregion, IBRA Subregion and Local Government Area (LGA)).

An assessment of the Department of Primary Industries and Regional Development (DPIRD) indicates that approximately 43 % of land within the local area (5 km buffer of the Site) is comprised of remnant vegetation (GoWA, 2021).

Table 3 Extent of pre-European vegetation associations within the Site

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	Current extent remaining in all DBCA managed lands (proportion of current extent %)
Jarrah Forest	IBRA Bioregion	4,506,660.26	2,399,838.15	53.25	69.74
51	State: Western Australia	59,085.59	33,057.98	55.95	68.81
	IBRA Bioregion: Jarrah Forest	19,962.06	7,187.97	36.01	32.26
	IBRA Subregion: Southern Jarrah Forest	19,899.01	7,124.92	35.81	31.66
	LGA: City of Albany	17,586.13	5,751.05	32.70	21.54
978	State: Western Australia	53,230.64	18,855.77	35.42	26.75
	IBRA Bioregion: Jarrah Forest	53,016.57	18,751.03	35.37	26.79

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	Current extent remaining in all DBCA managed lands (proportion of current extent %)
	IBRA Subregion: Southern Jarrah Forest	53,016.57	18,751.03	35.37	26.79
	LGA: City of Albany	52,154.39	18,719.90	35.89	26.94

3.1.1.9 Other significant vegetation

EPA guidance provides a definition of vegetation that may also be considered significant for reasons other than statutory listing. The vegetation within the Site meets the 'other significant vegetation' criteria for due to historical impact from threatening processes such as land clearing and grazing, Phytophthora dieback, weed invasion and fire (Sandiford & Barrett, 2010).

Bio Diverse Solutions (2019) found that the vegetation types identified within the Site were aligned with ARVS vegetation units 12, 13, 47, 49 and 50. The significance of these vegetation units was assessed by Sandiford and Barret (2010), at a local scale, and has been presented in Table 4. ARVS vegetation units 13, 47 and 49 appear to be restricted to the ARVS area and buffer. These vegetation units are considered likely to have less than 30% of pre-clearing extent remaining (Sandiford & Barrett, 2010).

Table 4 Local significance of ARVS vegetation units

ARVS Vegetation Unit name	ARVS Vegetation Unit Code	ARVS area				Riparian vegetation	Threats	
		Restricted ARVS	Range limit in ARVS	Rarity < 1500 ha	< 10% in IUCN Reserves		Phytophthora dieback	Fire sensitive
Jarrah/ Marri/ Sheoak Laterite Forest	12	✓	+/- E		✓		✓	✓
Jarrah/ Marri/ <i>Eucalyptus staeri</i> Sandy Woodland	13	✓	+/- E				✓	✓
<i>Homalospermum firmum</i> / <i>Callistemon glaucus</i> Peat Thicket	47					✓	✓	✓
<i>Melaleuca preissiana</i> Low Woodland	49	✓	+/- E	✓	✓	✓		✓
Miscellaneous Drainage Woodland/Shrubland	50	NA	NA	NA	NA	✓	NA	NA

Note: E – eastern extent; NA – not available

3.1.2 Potential impacts

The AMP has the potential to directly and indirectly impact on flora and vegetation during the construction and operational phases. The potential direct impacts include:

- Loss of to 0.928 ha of native vegetation
- The construction of the AMP is considered unlikely to impact on conservation significant flora species as it has been designed to be predominantly located within previously cleared agricultural land.

The construction of the AMP may also result in the following indirect impacts to native vegetation and flora:

- Increased edge-effect pressures and potentially a decline in condition of existing remnant vegetation
- Possible introduction and/ or spread of Dieback and weeds to adjacent vegetation

- Changes to vegetation structure and floristic composition in surrounding areas through altered surface water flows if not adequately managed
- Damage to surrounding vegetation through accidental generation of a bushfire.

The potential indirect impacts from surface water will be mitigated in accordance with procedures outlined in Section 3.3.4 and dust and bushfire mitigated in accordance with procedures outlined in Section 3.4.4.

3.1.3 Assessment of impacts

Construction of the AMP is expected to require the following:

- Clearing of 0.928 ha of Jarrah/ Sheoak/ *Eucalyptus staeri* Sandy Woodland
- Clearing of 0.928 ha of vegetation will not result in any of the mapped vegetation associations being reduced to less than 30 per cent (%) of their pre-European extents at various levels (State, IBRA Bioregion, IBRA Subregion and Local Government Area (LGA)).
- Clearing of 0.928 ha of native vegetation within the Site is unlikely to result in significant cumulative impacts given that approximately 43 % of land within the local area (5 km buffer of the Site) is comprised of remnant vegetation (GoWA, 2021).
- Construction of the AMP is considered unlikely to impact on conservation significant flora species as it has been designed to be predominantly located within previously cleared agricultural land.

3.1.4 Mitigation

Impacts to vegetation and flora will be minimised through the following measures:

- Avoidance through selection of the Site (i.e. clearing of native remnant vegetation was minimised through selection of the Site where the majority of land has been previously disturbed by agriculture).
- Development of an Environmental Management Plan (EMP) including Protected Exclusion Area Management Plan addressing management responsibilities, revegetation, vegetation condition and wetland water quality monitoring during construction and ongoing operation of the AMP.
- A Development Exclusion Buffer will be established to provide a 50 m wide buffer between the AMP activities and the Protected Exclusion Area (Figure 2, Appendix A).
- Revegetation, where required, of the Protected Exclusion Area with suitable native species, identified within the CCW including, ARVS Vegetation Units 13, 47 and 49.

3.1.5 Predicted outcomes

The residual impact of construction of the AMP is expected to be loss of up to 0.928 ha of:

- Jarrah/ Sheoak/ *Eucalyptus staeri* Sandy Woodland
- Clearing of 0.928 ha of native vegetation within the Site will not result in any of the mapped vegetation associations being reduced to less than 30 per cent (%) of their pre-European extents at various levels (State, IBRA Bioregion, IBRA Subregion and Local Government Area (LGA)).
- Clearing of 0.928 ha of native vegetation within the Site is unlikely to result in significant cumulative impacts given that approximately 43 % of land within the local area (5 km buffer of the Site) is comprised of remnant vegetation (GoWA, 2021).

3.2 Terrestrial fauna

3.2.1 Receiving environment

3.2.1.1 Fauna studies

A desktop assessment and initial site walkover was undertaken as a component of the initial AMP Site Feasibility Study (GHD, 2018).

A Level 1 Fauna Survey was completed for the Site in spring 2018 by Bio Diverse Solutions (2019). This survey included targeted assessment for fauna of conservation significance, listed under the BC Act and EPBC Act, outlined in Table 5.

Table 5 Targeted fauna species of conservation significance

Scientific name	Common name	BC Act status	EPBC Act status
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo	Vulnerable (VU)	VU
<i>Calyptorhynchus baudinii</i>	Baudin's Cockatoo	Endangered (EN)	EN
<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo	EN	EN
<i>Dasyurus geoffroii</i>	Chuditch	VU	VU
<i>Hydromys chrysogaster</i>	Water Rat	Priority 4 (P4)	-
<i>Falsistrellus mackenziei</i>	Western False Pipistrelle	P4	-
<i>Isoodon obesulus fusciventer</i>	Quenda	P4	-
<i>Notamacropus irma</i>	Western Brush Wallaby	P4	-
<i>Phascogale tapoatafa wambenger</i>	Brush-tailed Phascogale	Conservation Dependent (CD)	-
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum	Critically Endangered (CR)	CR
<i>Setonix brachyurus</i>	Quokka	VU	VU
<i>Zephyrarchaea mainae</i>	Western Arachnid Spider	VU	-

3.2.1.2 Fauna habitat and value

The Bio Diverse Solutions (2019) field survey identified the following key aspects with regard to fauna habitat value within the Site (Figure 8, Appendix A):

- 112.8 ha (80%) of the Site has been cleared for agricultural purposes (highly modified/ cleared)
- The forest (Vegetation Type 1) and woodland (Vegetation Type 2) habitat types identified suitable foraging and potential Black Cockatoo breeding trees with a DBH of > 500 mm (Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo)
- The vegetation within the creek system (Vegetation Types 3, 4 and 5) has high habitat value for Quenda and Western Brush Wallaby
- There is suitable habitat present within the creek system for *Galaxiella munda* (Western Mud Minnow), *Galaxiella nigrostriata* (Black-stripe Minnow) (Endangered) and *Lepidogalaxis salamandroides* (Salamanderfish).

3.2.1.3 Ecological linkages

The Site lies within the "Marbelup Link" potential vegetation corridor and forms an important link connecting remnant vegetation to the northwest to Mount Lindsay and also connecting to the "Coastal Corridor" (Bio Diverse Solutions, 2019).

3.2.1.4 Fauna diversity

Bio Diverse Solutions (2019) completed a desktop review of relevant databases within 15 km of the survey area identified an inventory of 578 fauna species.

Forty fauna species were identified during the field survey including eight mammals (five native and three non-native), 29 birds, one reptile and two amphibians (Bio Diverse Solutions, 2019).

3.2.1.5 Conservation significant fauna

Desktop searches, undertaken by Bio Diverse Solutions (2019), of the EPBC Act Protected Matters and DBCA NatureMap databases, identified potential presence of 70 conservation significant flora within the Site. The likelihood of occurrence for each species has been undertaken by Bio Diverse Solution (2019) identified 21 species having potentially suitable habitat present within the survey area, including:

- 13 species listed under the EPBC Act and/or the *Biodiversity Conservation Act 2016* (BC Act)
- Two migratory birds protected under international agreement (Schedule 5)
- Six DBCA Priority listed species.

Four conservation significant species were directly and indirectly observed within the broader survey area by Bio Diverse Solutions (2019), including:

- Baudin's Cockatoo (*Calyptohynchus baudinii*) (Endangered)
- Forest Red-tailed Black Cockatoo (*Calyptohynchus banksia naso*) (Vulnerable)
- Western Brush Wallaby (*Notamacropus irma*) (Priority 4)
- Southern Brown Bandicoot, Quenda (*Isodon fusciventer*) (Priority 4).

3.2.1.6 Black Cockatoo species

The Site provides areas of suitable foraging habitat with potential tree feed species for each of the three Black Cockatoo species (Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo) present (Bio Diverse Solutions, 2019).

Evidence of feeding signs by Baudin's Cockatoo and Forest Red-tailed Black Cockatoo was recorded within the survey area. However, as the number of Black Cockatoo feeding sites within the survey area was relatively low it was considered by Bio Diverse Solutions (2019) that whilst the survey area contained high value foraging habitat it is not currently a favoured feeding area.

The field survey identified 678 potential Black Cockatoo breeding trees within the survey area, of which 92 had hollows. Of the existing hollows, based on their dimensions, 11 are either already suitable or have potential to develop into Black Cockatoo hollows (Bio Diverse Solutions, 2019).

3.2.1.7 Western Brush Wallaby

Western Brush Wallaby individuals were not recorded within the Site during the field survey undertaken by Bio Diverse Solutions (2019). However, this species is considered 'Likely to Occur' within the survey area, as defined runnels were observed within the creek line vegetation and scats detected in the creek line vegetation and stand of paddock trees in the eastern portion of Lot 5780.

3.2.1.8 Southern Brown Bandicoot, Quenda

Southern Brown Bandicoot individuals were not recorded within the Site during the field survey undertaken by Bio Diverse Solutions (2019). However, this species is considered 'Likely to Occur' within the Site as well-established runnels and diggings were observed in the western remnant vegetation and the creek line.

3.2.2 Potential impacts

The construction of the AMP will result in the direct loss of fauna habitat through clearing including:

- 0.928 ha of suitable Black Cockatoo foraging habitat
- 55 potential Black Cockatoo breeding trees with a DBH of > 500 mm, of which seven have hollows. The trees with hollows are located within paddocks (scattered remnant trees) and there was no clear evidence of use by Black Cockatoos for breeding.
- 0.928 ha of suitable habitat for Western Brush Wallaby
- 0.928 ha of suitable habitat for Southern Brown Bandicoot.

Other potential direct impacts to fauna during construction and operations may include death or displacement of native fauna species from vehicle movements.

Construction of the AMP may also result in incremental loss of fauna habitat such as fragmentation, barrier effects and edge effects (indirect impacts).

3.2.3 Assessment of impacts

3.2.3.1 Clearing and loss of habitat

Construction of the AMP may result in displacement, injury and death of native fauna species due to clearing of habitat (construction works and vehicle movements) however given the small amount and location of clearing this is unlikely to have a significant impact on fauna species.

3.2.3.2 Displacement of conservation significant fauna

3.2.3.2.1 Black cockatoo species

Construction of the AMP is considered to have a low risk of significant impacts on Black Cockatoo species based on the “*EPBC Act referral guidelines for three threatened black cockatoo species*” (SEWPAC, 2012) and the findings of the field survey (Bio Diverse Solutions, 2019) including:

- No known nesting trees are present with the proposed clearing area
- Less than 1 ha of Black Cockatoo foraging habitat will be cleared
- Whilst the proposed clearing includes potential Black Cockatoo foraging habitat the number of feeding sites across the survey area was relatively low and is likely to indicate that the Site is not currently a favoured feeding area
- The proposed clearing will not create a gap of greater than 4 km between patches of black cockatoo habitat (breeding, foraging or roosting)
- The proposed clearing equates to approximately 8% of potential Black Cockatoo breeding trees recorded within the survey area.

3.2.3.2.2 Western Brush Wallaby

Native vegetation proposed to be cleared within the Site (0.928 ha) is considered to be potential habitat for Western Brush Wallaby. However, no clearing is proposed in the creekline and only partial clearing of stands of paddock trees in the eastern portion of Lot 5780 therefore it is considered unlikely that construction of the AMP will have a significant impact on this species.

3.2.3.2.3 Southern Brown Bandicoot, Quenda

Native vegetation proposed to be cleared within the Site (0.928 ha) is considered to be potential habitat for Southern Brown Bandicoot. However, no clearing is proposed in the remnant vegetation in the western portion of Lot 5780 or in the creekline therefore it is considered unlikely that construction of the AMP will have a significant impact on this species.

3.2.3.3 Noise, vibration and dust

There will be an increased in secondary impacts on fauna such as noise, vibration and dust during construction and operation of the AMP. Increased noise, vibration and dust may result in fauna avoiding the area, however, this is unlikely to have a permanent impact on fauna species in the area as the construction will be temporary and motor sports events will be periodic.

3.2.3.4 Vehicle strike

Construction and operation of the AMP will result in an increase in traffic/ vehicle movements and therefore may result in a greater risk of fauna strike from vehicle movements. However, this is considered unlikely to have a significant impact on fauna species in the area as the construction will be temporary and motor sports events will be periodic.

3.2.3.5 Habitat fragmentation

Incremental reduction in fauna habitat has restricted the distribution of a number of conservation significant species known to occur within the Site. As habitat is cleared, patch sizes decrease and the impact of 'edge effect' increases with likely introduction of weeds and dieback, ultimately changing the species composition of the vegetation community and reducing suitability of habitat for local fauna species.

The Site has been largely cleared in the past for agriculture and general industry. This has resulted in previous fragmentation of both terrestrial and riparian/ wetland vegetation and ecological linkages, thereby reducing connectivity of fauna habitat.

It is considered unlikely that construction of the AMP will exacerbate the impact of fragmentation in the local area as proposed clearing will be limited to partial clearing of stands of paddock trees and vegetation on the edge of previously cleared paddocks. Vegetation will be retained in the western portion of Lot 5780 and the creek line.

3.2.4 Mitigation

Impacts on fauna will be minimised through the following measures:

- Avoidance through site selection and design within Lot 5780 which is largely situated in previously cleared paddocks and does not further fragment remnant vegetation patches.
- Clearing of fauna habitat has also been minimised through site selection within Lot 5780 and includes only clearing of stands of paddock trees and vegetation on the edge of previously cleared paddocks.
- There will be no storage of materials or parking under trees to be retained.
- Development of an EMP to define techniques to minimise risks to fauna and fauna habitat and provide monitoring during construction and operation of the AMP including:
 - Protected Exclusion Area Management Plan addressing management responsibilities, revegetation, vegetation condition and wetland water quality monitoring during construction and ongoing operation of the AMP.
- A Development Exclusion Buffer will be established to provide a 50 m wide buffer between the AMP activities and the Protected Exclusion Area (Figure 2, Appendix A).

3.2.5 Predicted outcomes

The predicted outcomes for fauna impacted by construction of the AMP include:

- Direct loss of 0.928 ha of Black Cockatoo habitat
- 55 potential Black Cockatoo breeding trees with a DBH of > 500 mm, of which seven have hollows. The trees with hollows are located within paddocks (scattered remnant trees) and there was no clear evidence of use by Black Cockatoos for breeding.

Construction of the AMP is considered to have a low risk of significant impacts on Black Cockatoo species and based on the mitigation measures above is unlikely to have significant residual impact on other fauna species.

3.3 Inland waters

3.3.1 Receiving environment

3.3.1.1 Topography

The surface elevation of the Site ranges from approximately 41 m AHD to 70 m AHD (Figure 8, Appendix A). The lowest elevation is on the southern boundary and extends through the centre of the Site within a gully (a tributary to Marbelup Brook) that lies in a north-easterly direction. The highest elevation occurs on the eastern boundary of the Site (GoWA, 2021).

3.3.1.2 Regional geology

Reference to the 1:50,000 Environmental Geology series map (Albany sheet) and the 1:250,000 Geological Series map (Mt Barker – Albany sheet) indicates the Site is underlain by Cainozoic sand of colluvial origin – “Czs: Sand, - white, grey or brown, commonly contains iron pisoliths and overlies laterite” on the slopes and within the low lying areas of the Marbelup Brook “QA – Clay, silt, sand and gravel in watercourses” (Figure 9, Appendix A).

The sand is described as pale grey, fine to coarse, angular to sub-rounded quartz that is loose and moderately sorted and contains occasional pebbles of laterite. The thickness of the sand unit is not indicated on the maps, however the 1:250,000 map sheet indicates sand unit generally overlays laterite.

3.3.1.3 Local geology

The local geology is further delineated by DPIRD Soil Landscape Mapping identified in Table 6 and presented in Figure 10 (Appendix A).

Table 6 Soil map units within the Site (GoWA, 2021)

Map unit symbol	Name	Landform	Geology	Soil
242KgDMc	Dempster Crest phase	Broad convex crusts of sandy and lateritic spurs and ridges	Deeply weathered siltstone	Duplex sandy gravels; Grey deep sandy duplexes; Pale deep sand; Shallow gravels
242KgS7f	Minor Valleys S7 floor phase	Foot slopes and swampy valley floors of minor valleys	Colluvial and alluvial deposits over weathered sedimentary rocks	Wet and semi-wet soils; Pale deep sands; Grey deep sandy duplexes
242KgS7h	Minor Valleys S7 slope phase	Side slopes of minor valleys	Colluvium sedimentary rocks	Pale deep sands; Grey deep sandy duplexes
242ReDMc	Dempster Crest phase	Elongate crests	No information recorded	Sands and laterite

Site investigations were completed by Great Southern Geotechnics across the site in March 2021 to assess soil types and profiles (0 – 2.5 mBGL) and in-situ permeability (Appendix K). Eight test pits were completed, with soil types typically in agreement with DPIRD Soil Landscape Mapping. Gravels were identified on the western slope in the vicinity of the 4WD Driver Training and ATV Area, and deep sands present on the valley slopes and duplex soils in the valley floors.

In-situ soil permeability testing was completed for test pit locations TP4 to TP8, with saturated hydraulic conductivity ranging between 0.41 m/day (TP8) and 3.29 m/day (TP6 and TP7). Due to site conditions permeability testing was completed in the laboratory for TP3 for soil between 160 mm to 2100 mm BGL with a result of 2.7×10^{-11} (Appendix K).

The locations of the test pits are presented in Figure 11 (Appendix A), with a summary provided in Table 7 and soil logs and soil permeability provided in Appendix K.

Table 7 Summary of soil profiles

Test pit locations	Soil profile description	Water table intercepted Yes/No
TP1, TP2	Topsoil over SANDY gravel over sandy CLAY	No
TP3	Gravelly SAND with silt over FILL (sandy GRAVEL with clay) over SAND with silt	No
TP4, TP6	Topsoil over SAND with silt	No
TP7	Topsoil over SAND with silt over sandy GRAVEL over gravelly SAND with silt	No
TP5, TP8	Topsoil over SAND with silt over gravelly SAND with silt	No

3.3.1.4 Acid sulfate soil risk assessment

A review of the Department of Water and Environmental Regulation (DWER) Acid Sulfate Soil (ASS) risk mapping for Albany-Torbay indicates the Site is located outside of the boundary of this dataset. Tributaries of Marbelup Brook located approximately 750 m to the south of the Site are mapped within areas of “Moderate to Low risk” of ASS occurring within 3 m of the natural soil surface (GoWA, 2021). No “High to moderate ASS risk” areas appear to be mapped within the broader site setting further supporting the expected low risk of ASS onsite occurring (within 3 m of the natural soil surface).

However, given that tributaries of Marbelup Brook located approximately 750 m to the south of the site are mapped as “Moderate to Low risk” of ASS occurring (within 3 m of the natural soil surface), GHD has inferred that where these tributaries of Marbelup Brook extend into the site that they would also be considered to represent the same level of ASS risk (Figure 11, Appendix A). This is also consistent with the more broadly mapped risk areas where there are obvious low lying drainage lines, creeks and tributaries.

To more accurately inform the ASS risk onsite, a preliminary ASS investigation was completed as part of the onsite geotechnical investigation undertaken by Great Southern Geotechnics on the 25/03/2021. Samples were collected from eight test pits at every 500 mm depths from surface to end of hole (between 2 and 2.5 mBGL). The samples were frozen and then sent to NATA accredited laboratory Eurofins/MGT.

As per requirements of the DWER guidelines “Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes” (DER, 2015), all 48 samples were analysed for pH_F and pH_{FOX} . Of these, eight samples (approximately 20%) were selected for further laboratory analysis comprising Chromium Reducible Suite (S_{CR}) and Total Peroxide Acidity (TPA) analysis. Analysed samples were selected on the basis of the field test results, and to provide a good representation of the different geological units encountered and different depths.

A summary of pH screening results, laboratory Certificates of Analysis and chain of custody documentation are included in Appendix L.

Overall, the screening results indicated the following:

- pH_F values ranged between 5.5 and 8 (average of 6.3).
- pH_{FOX} values ranged between 3.4 and 6.4 (average of 5.0). Only one results out of the 48 samples was less than the ASS indicator criterion (pH 4) and this was recorded at TP02_0 m (surface)
- ΔpH , defined as pH_F minus pH_{FOX} , ranged between 0.5 and 2.4 (average of 1.2).
- The majority of the observed reaction rates were noted as ‘No reaction to slight’ (4) followed by ‘moderate’ (26) and ‘strong’ (18).

The field test results did not provide a clear indication of Actual ASS or Potential ASS to be present on site.

Results of the ASS confirmatory laboratory testing are summarised in Table 1, Appendix L and include the following:

- Out of the eight primary samples analysed for Titratable Actual Acid (TAA), three samples (TP02_0 m, TP06_2.0 m and TP08_2.5 m) recorded concentrations above the DWER ASS action criteria of 18 mol H⁺/tonne (equivalent 0.03 %S).
- There were no recorded concentrations of S_{CR}, above the laboratory limit of reporting (LOR) of <3 mol H⁺/tonne.
- Titratable Peroxide Acidity (TPA) results were noted to be >18 mol H⁺/tonne (equivalent 0.03 %S) for four of the eight samples analysed (TP02_0 m, TP04_0.5 m, TP06_2.0 m and TP08_2.5 m). The calculated Titratable Sulfidic Acidity (TSA) (i.e. TPA-TAA) was also >18 mol H⁺/tonne for these four samples.
- Acid Neutralising Capacity (ANC) is a measure of the soils natural ability to buffer acidity and resist the lowering of the soil pH. ANC analysis was not completed as part of the acid-based accounting given that samples recorded pH_{KCL} values less than 6.5.

Whilst inorganic sulfidic acidity sources were not observed during the investigation (i.e. no S_{CR} concentrations measured), other forms of acidity (not necessarily sulfidic based) were present through actual (existing) acidity (as represented by low pH_{KCL} and TAA concentrations) and potential acidity (as represented by the calculated TSA concentrations). The application of the TSA results within acid-based accounting is recommended in the DWER ASS guidelines (DER 2015a) for situations where TSA is significantly higher than S_{CR}. DER (2015a) recommends that the net acidity calculation should substitute the S_{CR} value for the TSA i.e. Net Acidity = TSA + TAA – ANC.

Through substituting the S_{CR} concentrations for TSA concentrations into the net acidity calculation (i.e. using the TPA results), four out of the eight samples analysed exceed the DWER action criteria (18 mol H⁺/tonne). Whilst the acidity measured within the TSA value is not considered to be rapidly released into the environment in the short term, the TSA values should not be disregarded from a long-term management perspective.

3.3.1.5 Groundwater and surface water

Desktop searches of the DWER hydrology layers (GoWA, 2021) were undertaken and are summarised in Table 8.

Table 8 DWER data queries within the Site

Aspect	Details	Result
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the <i>Metropolitan Water Supply, Sewage and Drainage Act 1909</i> or the <i>Country Area Water Supply Act 1947</i> .	Site lies within the Priority 2 Marbelup Brook Catchment Area (Figure 12, Appendix A).
Groundwater Areas	Groundwater areas proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI).	Site lies within Albany Groundwater Area (Figure 12, Appendix A).
Surface Water Areas	Surface water areas proclaimed under the RIWI Act 1914.	None present.
Irrigation District	Irrigation Districts proclaimed under the RIWI Act 1914.	None present.
Rivers	Rivers proclaimed under the RIWI Act 1914.	None present.
Waterways Management Areas	Areas proclaimed under the <i>Waterway Conservation Act 1976</i> .	None present within the Site, however the Albany Waterways Management Area is located approx. 800 m to the north.
Clearing Control Catchments	<i>Country Area Water Supply Act 1947</i> Part 2A.	None present.

3.3.1.5.1 Groundwater

On a regional scale, the 250K Map Series – Hydrogeology identifies a “*sedimentary aquifer within intergranular porosity – extensive aquifers, major groundwater resources*” underlying the Site (DoW, 2002). Groundwater salinity in the local area is in the range of 500 – 1000 mg/L, which is considered to be marginal for productive uses (GoWA, 2021).

Bio Diverse Solutions (2018) installed 12 shallow monitoring bores within the Site. Groundwater was identified in boreholes drilled in lower lying areas, close to the watercourse which bisects the Site. When intersected the groundwater was generally observed to be between 0.0 m and 1.0 m below the existing surface. The information at this stage is limited by the shallow nature of the investigation (approx. 2 m depth), as summarised in Table 9.

Table 9 Site bores and groundwater levels

Bore ID	Easting (m)	Northing (m)	Ground level – est. RL (mAHD)	Depth to Groundwater (m BGL) Feb 2018	Depth to Groundwater (m BGL) May 2018	Depth to Groundwater (m BGL) Sep 2018
SB01	567179.967	6133615.868	58.4	> 2.0	> 2.0	> 2.0
SB02	567404.995	6133889.541	49.6	> 2.0	> 2.0	> 2.0
SB03	567519.139	6134401.422	56.8	> 2.0	> 2.0	1.21
SB04	567700.649	6134179.907	48.2	> 2.0	0.91	0.30
SB05 (not surveyed)	568056.306	6134636.37	60.0	> 2.0	> 2.0	> 2.0
SB06	568131.287	6134478.244	53.6	0.87	0.70	0.00
SB07	567939.672	6134264.362	51.6	0.64	0.54	0.44
SB08	568308.576	6134637.482	56.5	> 2.0	1.55	0.18
SB09	568032.238	6134141.798	50.3	0.66	0.57	0.44
SB10	567886.921	6133756.724	62.7	> 2.0	> 2.0	> 2.0
SB11 (not surveyed)	568314.202	6134267.661	68.6	> 2.0	> 2.0	> 2.0
SB12	568474.386	6134781.396	60.2	> 2.0	> 2.0	1.04

Notes: BGL – below ground level - Where results shown as “> 2.0”, this means the groundwater table was not intersected by the shallow groundwater monitoring bore (being only 2 m deep)

A search of DWER’s Water Information Reporting online system for available bore data (within a 3 km radius) revealed no other relevant time series data.

A conceptual model was developed for the site to gain an initial understanding of surface and groundwater water flows and potential linkages. The development of this model was limited to the first round of shallow bore data that was made available. Soil landscape mapping and regional geology mapping were used to infer geological units and soil types in the absence of deeper borehole data. Cross sections showing the conceptual site geology and flow directions are shown below in Plate 1 (across the valley) and Plate 2 (down the central waterway).

The following key hydrogeological features are noted in the conceptual model:

- The groundwater levels observed in the shallow bores indicate that groundwater is present in the lower lying areas nearer the creek and will be most likely be supplying the creek with groundwater inflow.
- The groundwater levels and gradient, inferred from topography, supports that groundwater discharges into the creek.
- Shallow/perched groundwater may discharge and resurface via sandier layers that sit on top of more impermeable lateritic, coffee rock or clay layers; especially when there is significant slope.

The discharging groundwater is either expressed as surface water or migrates within the deeper more permeable deposits.

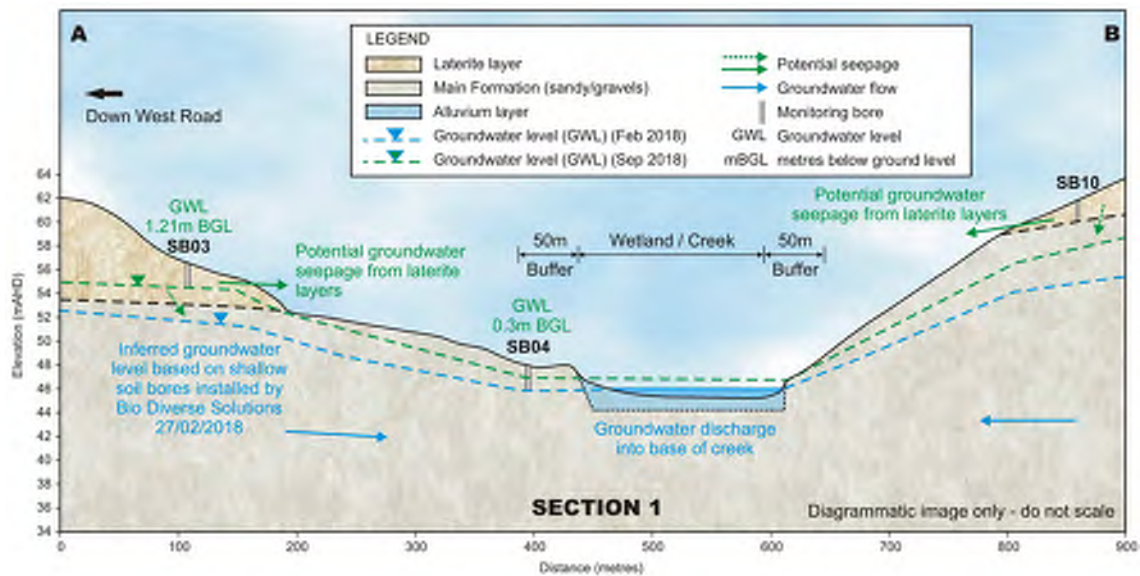


Plate 1 Preliminary hydrogeological section 1 (A-B)

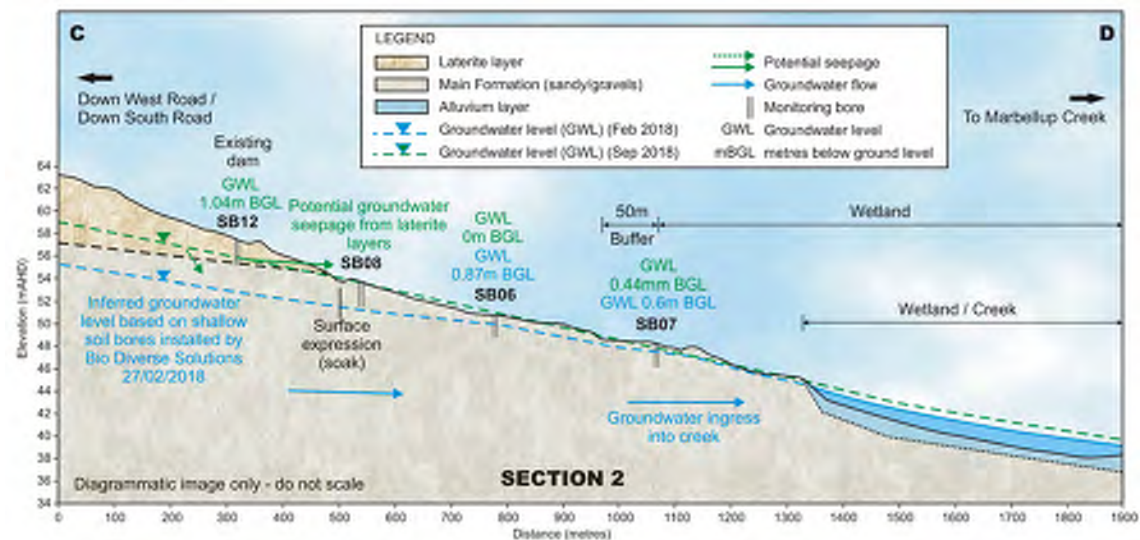


Plate 2 Preliminary hydrogeological section 2 (C-D)

3.3.1.5.2 Surface water and drainage

The Site lies in the Marbelup Brook sub-catchment which forms part of the wider Torbay Inlet Catchment in the Denmark Coast Basin within the South West Division (GoWA, 2021).

The entire Site and surrounds are located within the Marbelup Brook Surface Water Allocation Sub Area (SWASA), which is a sub area of the Albany Coast Surface Water Allocation Area (SWAA) (GoWA, 2021).

An unnamed water course is present within the Site, draining from the north-east and centre of the Site to the south across the southern boundary to the Marbelup Brook, which ultimately drains to Lake Powell. However, the natural drainage of the lower part of Marbelup Brook catchment has been modified which diverts the lower part of Marbelup Brook away from Lake Powell to the Torbay Inlet (DoW, 2007).

During the site visit the watercourse was observed to be in a modified state, with cattle currently having access to the watercourse. Erosion was evident, particularly in the eastern extent of the watercourse. This area was also mostly devoid of native vegetation, with the exception of some sedges (*Juncus* spp). The western section of the watercourse contains native shrubs/ sedges and had a defined bed/ banks.

3.3.1.6 Wetlands

3.3.1.6.1 International and nationally important wetlands

Desktop searches did not identify any internationally important (Ramsar) or Nationally Important listed wetlands within 5 km of the Site (GoWA, 2021).

3.3.1.6.2 South Coast Significant Wetlands

The unnamed water course located within the Site is a tributary of Marbelup Brook and is a Conservation Class wetland (Figure 11, Appendix A) (GoWA, 2021).

3.3.1.7 Public Drinking Water Source Area (PDWSA)

The Site is within a Priority 2 area of the Marbelup Brook PDWSA (Figure 12, Appendix A).

3.3.1.8 Contamination

A review of the DWER Contaminated Sites Database undertaken in August 2018 indicates there are no sites currently classified under the *Contaminated Sites Act 2003*, within 5 km of the Site (including the Site itself) (DWER, 2018).

It is understood that the Site has been used for agricultural/ grazing purposes since clearing of native vegetation, therefore the potential contaminating activities that have been observed from various site visits is in relation to the storage of farm/ plantation related waste materials and stockpiles of construction and demolition wastes.

All waste and stockpiled material will be removed during the construction phase and these materials will be validated and removed offsite to an appropriately licenced facility prior to the commencement of the development.

An unexpected finds protocol is included in the CMP to mitigate the risk associated with any unexpected finds with regards to contamination during construction.

3.3.2 Potential impacts

The potential direct impacts on inland waters during construction and operation of the AMP may include contamination of surface water (Marbelup Flats CCW) and/or groundwater (P2 Marbelup Brook PDWSA) as a result of the following potential impacts as outlined in DWER guidelines for “*Motor Sport Facilities Near Sensitive Waters*” (DoW, 2007):

- *Clearing of native vegetation*
- *Leaks or spills of chemicals or petroleum hydrocarbons from storage areas, mechanical servicing areas and on the racetracks*
- *Turbid or contaminated stormwater runoff*
- *Inappropriate containment or disposal of solid waste and wastewater from mechanical servicing and washdown areas*
- *Amenities for the congregation of large numbers of people.*

Construction activities may also impact on ASS present on site resulting in potential detrimental impact on soil, surface water and groundwater quality.

The potential indirect impacts on inland waters during construction and operation of the AMP include changes to vegetation structure and fauna habitat within the CCW as a result of changes to hydrological regimes.

3.3.3 Assessment of impacts

3.3.3.1 Erosion and sedimentation

Clearing of vegetation, construction earthworks and altered surface water regimes have the potential to destabilise soils and, if unmanaged, result in erosion of the Site and sedimentation of surrounding vegetation, wetlands and ultimately Marbelup Brook.

3.3.3.2 Contamination of surface water and groundwater

Contamination of surface water and groundwater may result during the construction phase as a result of the unintended release of environmentally hazardous materials during onsite works (construction materials and hazardous materials stored onsite), runoff during stormwater events and contaminated sediment or settled dust.

Contaminated surface water and groundwater has the potential to impact sensitive receptors including neighbouring properties, vegetation, fauna, wetlands and waterways. Impacts can also manifest downstream as loss of benthic habitat, fish deaths and damage to vegetation health. Downstream sensitive receptors include the CCW – Marbelup Flats and Marbelup Brook.

Surface and/ or groundwater may also become contaminated through the exposure of ASS during construction (excavation). ASS disturbance may have a range of impacts including enhanced phosphorus leaching, death of vegetation irrigated with affected water, the smothering of benthic aquatic animals by the precipitation of iron, and metal bioaccumulation in aquatic plants and animals. However, based on the ASS assessments to date (refer to Section 0), inorganic sulfidic sources capable of rapid acid release upon disturbance were not observed. Other, more slow releasing acidity sources were observed in the ASS assessment and will require management if disturbed in volumes greater than 100 m³.

Motor sports facilities also have the potential to contaminate surface water and groundwater during operational activities including hydrocarbons leaking from storage areas, race tracks and servicing areas, if not appropriately managed (DoW, 2007).

3.3.3.3 Risk assessment of PDWSA

A risk assessment for the proposed development was undertaken in accordance with the *Australian Drinking Water Guidelines* (ADWG) (NHMRC, NRMCC, 2011) and *Water Quality Protection Note 77: Risk Assessment of Public Drinking Water Source Areas* (DoE, 2005). The purpose of the risk assessment is to understand the hazards and events that could compromise drinking water quality and identify preventative measures to safeguard the future drinking water source.

The risk assessment identified that there is a Low to Medium risk of impact by construction and operation of the AMP on the P2 Marbelup Brook PDWSA (GHD, 2019).

3.3.4 Mitigation

Impacts of construction of the AMP on the Marbelup Flats CCW and P2 Marbelup Brook PDWSA will be minimised through implementation of a Construction Management Plan (Appendix J). A site-specific Construction Environmental Management Plan (CEMP) will also be developed and implemented by the appointed contractor.

Mitigation measures have been undertaken during the design phase of the AMP, as per the requirements of the DWER guideline (DoW, 2007) for “*Motor Sport Facilities Near Sensitive Waters*”, so as to achieve a 50 m buffer around the Protected Exclusion Zone, refuelling and servicing areas will be 200 m from the wetland area and a minimum vertical separation distance of two m to the maximum groundwater table.

Neutralisation treatment and validation of soils will be required for silty sand soil units disturbed in the proximity of the watercourse area given that there are exceedances of the DWER action criteria (coarse textured soils) and if the proposed disturbance of greater than 100 m³ of soil. An ASS management plan is required (in accordance with DWER guidelines) to enable the effective excavation, treatment and disposal/reuse of the materials during construction works.

Soil excavations should only occur during the periods of the year where groundwater is at its lowest point (i.e. outside of winter and post-winter periods) to eliminate the need for temporarily lowering the groundwater table (dewatering). If dewatering is determined to be required, then site specific dewatering risk assessment, management strategies and criteria are required to be developed, approved and implemented.

Impacts from operation of the Site will be mitigated through implementation of this EMP including the following:

- Protected Exclusion Area Management Plan addressing management responsibilities, revegetation, vegetation condition and wetland water quality monitoring (Appendix C)
- A Development Exclusion Buffer will be established to provide a 50 m wide buffer between the AMP activities and the vegetation and CCW within the Protected Exclusion Area (Figure 2, Appendix A)
- Implement a Water Management Plan during detail design and development approval for construction and operation of the site which outlines mitigation measures for protection of surface water and groundwater quality and maintenance of predevelopment stormwater quantities (Appendix D)
- Maintain a minimum vertical separation distance of two metres to the maximum (wet season) groundwater table as per DWER guidelines (DoW, 2007)
- Hydrocarbon Management Plan (Appendix E)
- Waste Management Plan (Appendix F).

3.3.5 Predicted outcomes

Given the mitigation measures outlined above no significant residual impacts are expected for this aspect and the proposed AMP meets the EPA objective to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.

3.4 Air quality

3.4.1 Receiving environment

3.4.1.1 Climate

Albany is located on the south coast of Western Australia and the climate is broadly described as Mediterranean, with warm dry summers and mild wet winters. The nearest Bureau of Meteorology (BoM) official recording station is Albany weather station (Site number 9500). This station records temperature, rainfall, relative humidity, wind speed and direction and has data available dating back to 1877. (BoM, 2021b).

Plate 3 illustrates recorded average monthly meteorological data for the Albany (Site number 9500) weather station for years 1877 to 2020. Temperatures range from a mean maximum of 22.9 °C in summer and drop to a mean maximum of 15.8 °C in winter. Mean minimum temperatures follow a similar trend, reaching 15.6 °C in summer and 8.2 °C in winter. Rainfall is low throughout the summer months and peaks in July, with a monthly average of 142.6 mm. The mean annual rainfall is 925.2 mm, with approximately 103.1 rain days a year. Relative humidity at Albany reflects the Mediterranean climate, demonstrating drier summers and a comparatively high relative humidity of 82 percent in the morning in winter (BoM, 2021b).

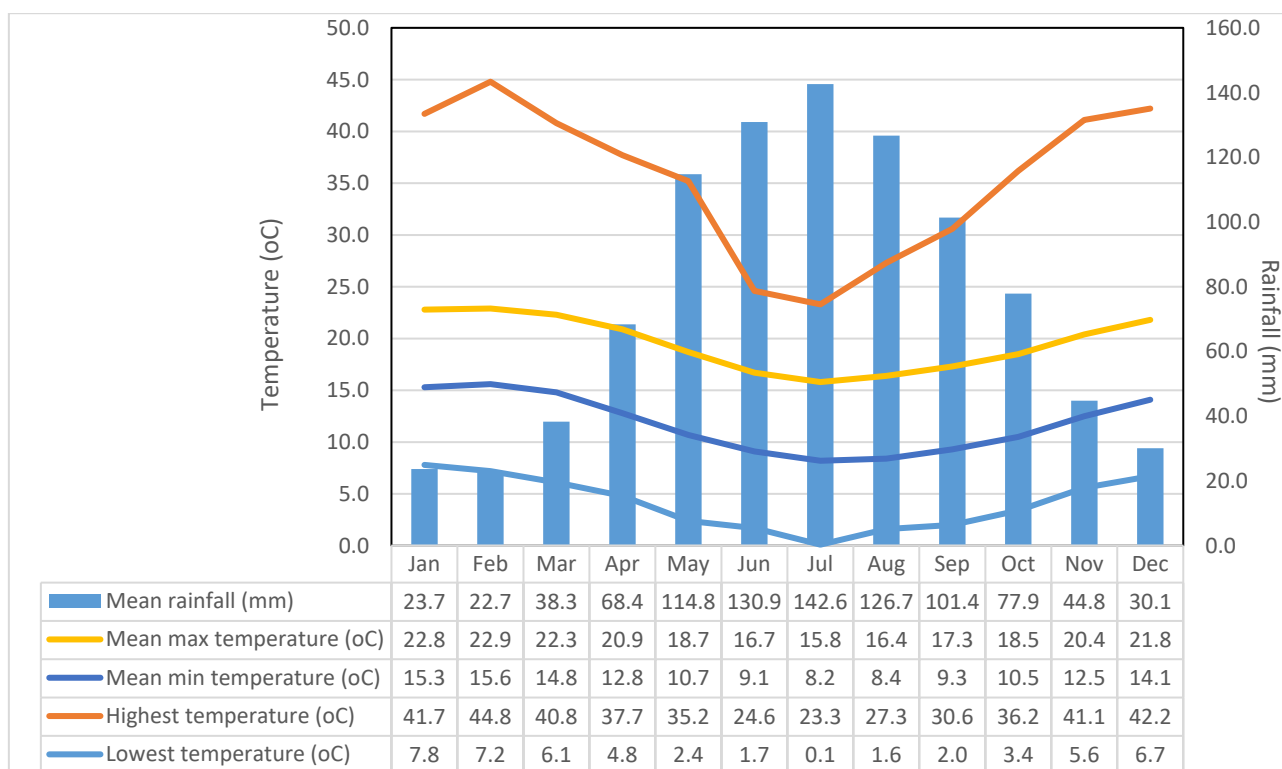


Plate 3 Mean rainfall and temperatures at the Albany weather station (Site No. 9500) (BoM, 2021b)

3.4.1.2 Sensitive receptors

The AMP is located in a rural area and no sensitive air quality receptors are expected. The impacts resulting to air quality are expected to be minor and typically of short duration (i.e. dust from construction and events once constructed).

The AMP is also located within the General Industry buffer area surrounding the Mirambeena Timber Processing Precinct which lies to the north of the Site.

3.4.2 Potential impacts

Potential direct construction and operational impacts that may occur to air quality as a consequence of developing the AMP are:

- Dust generated from construction activities (vegetation clearing, earthworks, road construction, events on unsealed tracks and areas) and operation of the AMP (gravel roads and tracks)
- Accidental bushfire generated from construction activities and operation of the AMP.

Emissions from vehicles during the operational phase of the AMP are expected to be periodic and are considered unlikely to be significant given that the Site is located in a rural area.

Dust emissions, during construction and operation of the AMP, may indirectly impact on vegetation condition as result of smothering in areas adjacent to the AMP activities.

3.4.3 Assessment of impacts

3.4.3.1 Reduced air quality, and health and aesthetic impacts due to dust emissions

Construction works for the AMP will involve the operation of heavy machinery to undertake vegetation clearing, earthworks, construction of tracks (sealed and unsealed) and other associated infrastructure within the Site. There will also be miscellaneous vehicle movements around the Site as part of the construction works.

These activities can result in dust emissions due to:

- Movement of vehicles and heavy equipment on unsealed surfaces
- Excavating, spreading and compacting soils
- Wind erosion from exposed and disturbed soil surfaces

Dust emissions are not considered to represent a significant or long-lasting impact to air quality, health or aesthetics during the construction phase. Dust impacts will be managed as part of the EMP.

3.4.3.2 Reduced air quality due to bushfire

Construction and operational activities have the potential to ignite bushfires through hot work and vehicle movements, which could cause a temporary reduction in local air quality.

3.4.3.3 Reduced vegetation condition due to dust emissions

Dust emissions, generated during construction and operation activities within the Site, have the potential to reduce the quality of vegetation adjacent to these activities.

3.4.4 Mitigation

Impacts on air quality will be minimised through implementation of the following:

- Implementation of a Dust Management Plan (Appendix H) during construction and operational phases as per “*A Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites, Remediation and Other Related Activities*” (DEC, 2011).
- Implementation of a Construction Management Plan (Appendix J) and site-specific Construction Environmental Management Plan (CEMP) (to be developed by the appointed Construction Contractor).
- Implementation of a Bushfire Management Plan for Stage 1A and Stage 1B (Bio Diverse Solutions, 2021) to the satisfaction of the City of Albany, DPLH and the DFES.
- A Development Exclusion Buffer will be established to provide a 50 m wide low fuel buffer between the AMP activities and the vegetation and CCW within the Protected Exclusion Area (Figure 2, Appendix A).

3.4.5 Predicted outcomes

Given the proposed mitigation measures outlined above, no residual impacts are expected for this aspect and the AMP meets the EPA objective to maintain air quality and minimise emissions so that environmental values are protected.

3.5 Social surroundings

3.5.1 Receiving environment

3.5.1.1 Heritage

3.5.1.1.1 Aboriginal heritage

A search of the Aboriginal Heritage Inquiry System found that there are no Registered Sites of Aboriginal heritage significance within the Site or within a 5 km buffer of the Site. There are also no sites lodged as 'Other Heritage Places' which intersect the Site, however three 'Other Heritage Places' are located within 5 km of the Site.

The search of the Aboriginal Heritage Inquiry System provided the following information regarding Indigenous Land Use Agreements in the South West:

"On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site" (DPLH, 2018).

The AMP project does not impact upon any Registered sites of Aboriginal heritage significance. As part of the previous Feasibility Study investigations, the City of Albany liaised with the Department of Aboriginal Affairs and advised Wagyl Kaip and Southern Noongar Group regarding the AMP project.

At this stage, no further Aboriginal heritage investigations are seen to be necessary, however the Wagyl Kaip and Southern Noongar Working Party has reserved the right to request Aboriginal heritage survey if required (letter from South West Aboriginal Land and Sea Council dated 25 October 2018).

3.5.1.1.2 Heritage (non-indigenous)

A search of the EPBC Protected Matters Search Tool did not identify any Commonwealth listed heritage sites within, or within a 5 km buffer of the Site.

A search of the Western Australian State Heritage Office Inherit database did not identify any State Registered Places within the Site (DPLH, 2018). The closest known site of heritage significance (Albany Airfield and 'Sigint' Radar System Place No 15574) was identified approximately 4.5 km from the Site.

It is considered that there are not any non-Indigenous heritage sites likely to be impacted by construction of the AMP. As a result, no impacts were identified or recommendations warranted for this project factor.

3.5.1.2 Land use

3.5.1.2.1 Zoning and existing buffers

Under the City of Albany Local Planning Scheme No. 1 the Site has been rezoned from 'Priority Agriculture' to 'Special Use'. It is largely located within the existing Industrial Buffer Area (IA4BA) surrounding the Mirambeena Timber Processing Precinct (TPP – i.e. Albany Plantation Export Company (APEC) and Plantation Energy) to the north of Down Road West (DoP, 2014).

The land immediately adjacent to the Site is also predominantly zoned 'Priority Agriculture' with the exception of the Albany Plantation Export Company (APEC) wood chip mill and Plantation Energy wood pellet production

facility, which are zoned 'General Industry'. The western boundary of the Site lies adjacent to a local road reserve and railway line which is zoned 'Major road, Rail'. Land to the south-west of the railway is zoned 'General Agriculture' (DPLH, 2018).

Approximately 900 m to the south of the Site, the Down Road Nature Reserve (Lot 7388 on P091191 and Lot 7676 on P217695) is zoned 'Parks and Recreation' (DPLH, 2018).

3.5.1.2.2 Surrounding land uses

The immediately surrounding land uses include a railway to the west of the Site, APEC and Plantation Energy to the north of Down Road West and 'Priority Agriculture' to the south and east. The CBH Mirambeena grain storage facility is also north of the site, on Down Road.

Further afield land uses are also largely 'Priority Agriculture', or 'General Agriculture'. The Down Road Nature Reserve is located approximately 900 m to the south; and the Water Corporation's Gunn Road tree plantation is located approximately 2,500 m to the east. The Mirambeena Strategic Industrial Area (SIA) is located approximately 2,000 m to the east on Albany Highway.

There are no DBCA Legislated Lands and Waters intercepted by the Site. However, there are two nature reserves within 5 km of the Site including the following (GoWA, 2021):

- Down Road Nature Reserve located approximately 900 m to the south, and
- Phillips Brook Nature Reserve located approximately 4.4 km to the north east.

The unnamed water course located within the Site is a tributary of Marbelup Brook and is a Conservation Category Wetland (CCW) (Figure 11, Appendix A) (GoWA, 2021). As per DWER guidance (DER, 2014), a conservation category wetland is "a defined wetland and the area within 50 m of the wetland" and is declared to be an Environmentally Sensitive Area (ESA) under the *Environmental Protection Act 1986*.

There is one mapped ESA located within 5 km: approximately 4.7 km to the north-east of the Site (**Error! Reference source not found.**, Appendix A) (GoWA, 2021).

3.5.1.2.3 Existing and historical uses

The perimeter of the Site is entirely fenced and is currently used for the primary purpose of cattle grazing. Historically the Site is likely to also have been used mainly for the purpose of agriculture, as well some sand / gravel extraction. The western end of the property consists of 52 ha of native vegetation that will be retained. An unnamed creek line runs from the north-east corner of the property through to the south-west corner, from where it joins into Marbelup Brook. A number of small dams are located across the property for stock watering.

The Plantation Energy sub-leased area consists of a small retention basin, connected to their site drainage system on the other side of Down Road West. The sub-lease area is powered, and Plantation Energy operates a pump from the retention basin. This area is presently unfenced, although there is a locked access gate on the site perimeter fence, off Down Road West.

3.5.1.3 Dust

Refer to Section 3.4 for information regarding dust emissions during construction and operation of the AMP.

3.5.1.4 Noise

The Site is currently used predominantly for agricultural purposes with the main sources of noise being occasional vehicle traffic on farm roads, livestock (in the distance) and sounds of nature (birds, insects and wind in trees) (GHD, 2020).

The Mirambeena Timber Processing Precinct to the north is a 24 hour/ 7 day per week operation and therefore is considered likely to have levels of noise consistent with its zoning of "General Industry".

3.5.1.5 Visual amenity

The existing amenity of the Site includes remnant vegetation, agricultural areas, existing roads and railways and previously cleared areas.

3.5.1.6 Lighting

No lighting is currently located within the Site however the Mirambeena Timber Processing Precinct to the north is a 24 hour/ 7 day per week operation and therefore is lit at night-time.

3.5.2 Potential impacts

3.5.2.1 Aboriginal heritage

The location of the AMP does not directly impact upon any Registered Sites of Aboriginal heritage significance. However, as part of the consultation process, the City of Albany has liaised with the DPLH and advised Wagyl Kaip and Southern Noongar Group of the AMP project. Comments on the proposal have been invited.

At this stage, no further Aboriginal heritage investigations are seen to be necessary, however the Wagyl Kaip and Southern Noongar Working Party has reserved the right to request Aboriginal heritage survey if required (letter from South West Aboriginal Land and Sea Council dated 25 October 2018).

Due to the existing land use and the extent of earthworks required to complete the AMP, it is considered that there is low potential for sub-surface materials to be uncovered.

3.5.2.2 Heritage (non-indigenous)

No non-Indigenous heritage sites are considered likely to be directly impacted by the AMP. As a result, no impacts and mitigation measures are considered necessary for this factor.

3.5.2.3 Noise and vibration

Construction noise and vibration and operational noise impacts have been assessed in the Noise Assessment undertaken by GHD (2020) for the Site.

There are four sensitive receptor locations (residential dwellings) ranging from 1.12 km to 1.93 km from the Site.

3.5.2.4 Dust

Refer to Section 3.4 for information regarding dust emissions during construction and operation of the AMP.

3.5.2.5 Visual amenity

Construction and operation of the AMP has the potential to impact on the amenity of the local area as a consequence of vegetation clearing and visibility of the Site to residential dwellings, workers and livestock.

3.5.2.6 Lighting

Internal lighting will be used for AMP buildings and low-level outdoor lighting for user safety/ pedestrian access powered by generators and/ or solar panels and battery storage.

There is no flood lighting proposed for motocross, racetracks and surrounding areas in Stage 1 of the AMP development, therefore it is expected that mitigation measures will not be required to manage light spill.

However, if in the future activities/ events require lighting at night-time these would be on an intermittent basis and would require further assessment and approval.

No sensitive receptors are considered likely to be impacted by light spill from the AMP. As a result, no impacts and mitigation measures are considered necessary for this factor.

3.5.3 Assessment of impacts

3.5.3.1 Noise impacts

There are four residences in close proximity to the Site. The results of the Noise Assessment for operation of the AMP indicate that for some event combinations, there will be occasions when the predicted noise levels from the

Site exceed the assigned noise levels at existing residences or new residential areas within the surrounding area (GHD, 2020).

A construction noise assessment was also completed in September 2020 (GHD, 2020), which concluded:

The closest noise sensitive receptor to any potential noise source during construction is located approximately 1120 m from the AMP. Noise levels exceeding the day assigned level of 45 dBA are not expected to impact on the closest noise sensitive receptors, with the exception of noisy equipment with a sound power level (SWL) higher than 115 dBA.

Accordingly, the construction noise impacts are considered negligible and able to be managed by adopting standard noise mitigation and management practices, as required.

3.5.3.2 Dust impacts

Refer to Section 3.4 for assessment of impacts regarding dust emissions during construction and operation of the AMP.

3.5.3.3 Visual amenity

Residual amenity impacts are expected to be permanent, however the nearest residence is 1.4 km from the Site. Native vegetation present on the east, west and north of the Site also provides an existing visual barrier on these sides. To the south lies agricultural land, with potential impacts to livestock and agricultural workers.

3.5.4 Mitigation

3.5.4.1 Noise impacts

It is expected that construction noise and vibration impacts will be managed through the implementation of the Noise Management Plan (Appendix G), Construction Management Plan (Appendix J) and site-specific CEMP developed by the appointed Construction Contractor. Construction noise and vibration impacts are expected to be limited to the construction phase of the AMP.

A Noise Management Plan (GHD, 2021) has been developed for operation of the Site (Appendix G). This plan includes:

- Types of racing activities and classes of vehicles
- Limitations on racing activities
- Measures to control noise emissions
- Notice of racing activities
- Complaint procedure
- Records
- Responsibilities.

3.5.4.2 Dust impacts

Refer to Section 3.4 for mitigation measures for dust emissions during construction and operation of the AMP.

3.5.4.3 Visual amenity

Management of visual amenity issues have been clearly defined through development of a Visual Impact Assessment to determine the appropriate physical treatments on the southern boundary to mitigate visual impact to Lot 5781 Down Road South, Drome (GHD, 2021).

A visual treatment (earthen bund, tree-lined shelter belt and 2 m high fence) will be established along the AMP southern boundary to mitigate visual impacts on workers and livestock in the adjacent property.

Additionally, tree plantings and water sensitive urban design (WSUD) measures (e.g. grassed swales) will be employed in the AMP car park areas to mitigate visual impacts.

3.5.5 Predicted outcomes

The results of the Noise Assessment (GHD, 2020) indicate that for some event combinations, there will be occasions when the predicted noise levels from the Site may exceed the assigned levels at existing residences. However, it is considered that, with the implementation of the Noise Management Plan (GHD, 2021) and noise mitigation measures both onsite and at impacted residential properties (where required), noise impacts can be minimised for the small number of sensitive receptors (Appendix G).

Refer to Section 3.4 for predicted outcomes regarding dust emissions during construction and operation of the AMP.

Residual amenity impacts are expected to be permanent, however it is considered that visual amenity impacts will be addressed by establishment of physical treatments on the southern boundary of the Site.

4. Environmental management subplans

Environmental management will be undertaken for the AMP as per strategies outlined in the following subplans:

- Protected Exclusion Area management plan (Appendix C)
- Water management plan (Appendix D)
- Hydrocarbon management plan (Appendix E)
- Waste management plan (Appendix F)
- Noise management plan (Appendix G)
- Dust management plan (Appendix H)
- Decommissioning plan (Appendix I)
- Construction management plan (Appendix J).

5. Roles and responsibilities

It is the responsibility of the AMV Inc. to implement this EMP for development approval of the AMP. The roles and responsibilities of the AMV Inc. and CoA are outlined in Table 10.

Table 10 Roles and responsibilities

Role	Actions	Key commitments
City of Albany (CoA)	Approving LGA	Review annual EMP report
Albany Motorsport Venue Incorporated (AMV Inc.) – Board of Directors and Chair of the Board	Responsible for marketing, management, programming and safe use of the AMP.	Endorsement of annual report
Operations Manager	Operation and maintenance of the AMP	Annual report Operation and maintenance of the AMP as per legal obligations and EMP requirements
Other staff (TBC)	Operation and maintenance of the AMP	Operation and maintenance of the AMP as per legal obligations and EMP requirements

The key emergency contacts responsible for managing environmental emergencies associated with the AMP are included in Table 11.

All spill/ pollution or incidents that are serious or have lasting environmental impacts shall be reported to DWER under the requirements of the *Environmental Protection Act 1986* and *Contaminated Sites Act 2003* as soon as practicable. Minor spills/ pollution and incidents shall be recorded, via the AMP Incident Register held by AMV Inc., in annual reporting to the CoA.

Table 11 Key emergency contacts

Key personnel	Role	Contact details
AMV Inv.	Board of Directors	To be confirmed
CoA	General enquiries	(08) 6820 3000 PO Box 484, ALBANY, WA 6331 102 North Road, Yakamia, WA 6330
	For dog attacks, straying livestock or Ranger services affecting public safety	(08) 6820 3999 (Ranger)
	For flooded or blocked roads, or urgent safety concerns regarding Council buildings or properties	1800 633 000 (emergency line)
DWER	Life-threatening incident or pollution emergency	000 and ask for Fire Department of Fire and Emergency Services (DFES) will call out DWER for major pollution/ hazardous materials incidents.
	Pollution emergency that is not life-threatening	1300 784 782 DWER 24-hour Pollution Watch hotline
	Pollution incident (not life-threatening or an emergency)	1300 784 782 DWER 24-hour Pollution Watch hotline (08) 6364 7000 Monday to Friday 8:30 am – 5:00 pm

6. Environmental incidents, non-conformance and complaints

6.1 Environmental incidence and non-conformance

All environmental incidents will be recorded in the AMP Incidents Register, held by AMV Inc., and in the event of a serious incident the AMV Inc. Operations Manager shall notify DWER and CoA as per Section 5.

Any non-conformance with development approval conditions, regulatory or other compliance obligation will be recorded in the AMP Incidents Register and investigated by the AMV Inc. Operations Manager to determine if corrective actions are required to mitigate any impact to environmental and/ or human health.

Where corrective actions are required to be implemented these shall be recorded in the AMP Corrective Action Register. Corrective actions may also be required to be updated in the relevant sub management plan and overarching EMP.

6.2 Complaint procedure

A sign shall be displayed at the entrance of the AMP with Site contact details. In the event of an environmental complaint, the AMV Inc. Operations Manager shall record it in the AMP Complaints Register. The AMV Inc. Operations Manager will investigate internally or liaise with CoA, where required, to determine what adjustments to Site operations will be required. As part of the AMP Complaints Register a Complaint and Corrective Action Form, held by AMV Inc., will be completed to record all reasonable and practicable measures undertaken to mitigate the issue. The AMV Inc. Operations Manager will follow up with the complainant to provide information regarding the measures taken and outcome of their complaint.

6.2.1 Normal working hours

In the event that environmental-related complaints are received, prompt follow-up will be required as follows:

- Immediate attention to urgent/critical issues: Complaints will be reported to the Approving Authority (and other relevant stakeholders) as soon as possible during normal working hours. Multiple complaints regarding the same issue will also be reported to the Approving Authority (and other relevant stakeholders) as soon as possible during normal working hours.
- Acknowledgment of contact: Each complaint received will be acknowledged within 24 hours of the initial contact and logged into the management system.
- Offered additional information: Each caller will be given the opportunity to be added to the project database, which is used to distribute project information and updates.
- Registration of noise complaint: Completed complaint form to be retained and made available to Approving Authority or an authorised DWER officer on request.
- Determine whether any unusual activities were taking place at the time of the complaint.
- Assessment of situation – complaint to be forwarded to Approving Authority. Conduct monitoring (e.g. noise, air quality etc.) at the location of the complainant (if required).
- Corrective action to mitigate the situation if found to be unreasonable using pre-determined mitigation measures.
- Reassessment at conclusion of works to ensure the implemented control procedure was successful.

Complaints received will be reported to the Approving Authority on a monthly basis. The complaint report will include: the location, date, time, issue summary, response from the contractor and action taken and resolution status.

6.2.2 Out of hours

In addition to the above, out of hours contacts and complaints will be made to the AMV Inc. Operations Manager. To assist in resolving complaints made directly to the Approving Authority outside of normal working hours, the mobile contact number for the AMV Inc. Operations Manager will be provided.

If work must continue outside of the approval conditions at short notice i.e. during the shift for safety reasons, the AMV Inc. will contact the Approving Authority as soon as possible the following morning.

Emergency issues outside normal working hours will be raised with the Approving Authority as soon as possible during the next business day.

7. Monitoring

Ongoing monitoring of environmental aspects within the AMP will be undertaken to ensure the continued success of any actions implemented in this EMP.

Monitoring against key outcome criteria and specific monitoring activities are outlined in each sub management plan in this overarching EMP.

Monitoring activities will be recorded as per Section 9.

8. Environmental training

All AMV Inc. members, volunteers and competitors shall undertake Site induction regarding general aspects of the AMP and specific environmental training as per the relevant sub-plans in this EMP.

All training activities shall be recorded in the AMP Training register, held by AMV Inc., for inclusion in annual reporting.

9. Reporting and control of environmental records

The AMV Inc. Operations Manager shall keep records of the following aspects relevant to the AMP Site:

- Standard operating procedures
- Material Safety Data Sheets (MSDS) for all chemicals kept on site
- Hazchem emergency information and spill clean-up procedures
- Training register
- Complaints register
- Incidents register
- Corrective actions register
- Waste volumes generated on site and removed off site.

The AMV Inc. Operations Manager shall, on an annual basis, report to the CoA CEO on activities undertaken during ongoing operation of the AMP.

Reporting shall include but may not be limited to:

- Review of environmental incidents
- Meeting environmental objectives and key performance criteria
- Compliance with this EMP and any other legal obligations.

10. EMP Review

The EMP and sub-management plans, will be reviewed and updated no later than annually and/ or in the case of significant changes within the Site. The review will include an assessment of the effectiveness of environmental strategies and performance against the plan's objectives.

A review may occur sooner if there is a material change in risk, legal requirements or an incident relevant to environmental management. Mitigation strategies will be reviewed for effectiveness and any corrective actions will be implemented.

11. References

- Allen, A., & Sofoulis, J. (1984). *1:250,000 Geological Series Map, Mount Barker – Albany, WA Sheet SI 50-11 and part of Sheet SI 50-15*. Perth: Government of Western Australia.
- Beard, J. S. (1979). *Vegetation Survey of Western Australia: the Vegetation of the Perth Area Western Australia, map and explanatory memoir 1:250,000 series*. Applecross: Vegmap Publications.
- Beard, J. S. (1990). *Plant Life of Western Australia*. Perth: Kangaroo Press.
- Bio Diverse Solutions. (2018). *Surface water and Groundwater Monitoring*. Unpublished report for City of Albany.
- Bio Diverse Solutions. (2019). *Proposal Motorsport Park, Lot 5780 Down Road, Drome WA 6330, Reconnaissance Flora and Level 1 Fauna Survey Report*. Unpublished report for City of Albany.
- Bio Diverse Solutions. (2019). *Reconnaissance Flora and Level 1 Fauna Survey Report*. Unpublished report for the City of Albany.
- Bio Diverse Solutions. (2021). *Albany Motorsport Park, Lot 5780 Down Road, Drome, Bushfire Management Plan, Addendum Report*. Unpublished report prepared for GHD.
- Bio Diverse Solutions. (2021). *EPBC Act referral Albany Motorsport Park, Significant Trees*. Unpublished report prepared for City of Albany.
- BoM. (2021a). *Albany Airport Site Number 9999 Monthly Rainfall*. Retrieved from Bureau of Meteorology: http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_s_tn_num=9999
- BoM. (2021b). *Climate statistics for Australian locations*. Retrieved from Bureau of Meteorology: http://www.bom.gov.au/climate/averages/tables/cw_009500.shtml
- CALM. (2003). *Phytophthora cinnamomi and disease caused by it, Volume I – Management Guidelines*. Perth: Department of Conservation and Land Management.
- CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.
- DEC. (2011). *A Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites, Remediation and Other Related Activities*. Perth: Department of Environment and Conservation.
- DER. (2014). *Environmentally Sensitive Areas, Clearing Regulation Fact Sheet 24*. Perth: Department of Environment Regulation.
- DER. (2015). *Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes*. Perth: Department of Environment Regulation.
- Dieback Working Group. (2016, February 1). *Dieback*. Retrieved from <http://www.dwg.org.au>
- DoE. (2005). *Water quality protection note 77: Risk Assessment of Public Drinking Water Sources Areas*. Perth: Department of Environment.
- DoP. (2014). *City of Albany Local Planning Scheme No. 1, Updated to include AMD 4 GG 01/06/18*. Perth: Department of Planning.
- DoW. (2002). *250K Map Series – Hydrogeology dataset*. Perth: Department of Water.
- DoW. (2007). *Marbelup Brook Catchment Area Drinking Water Source Protection Plan, Water Resource Protection Series Report No. 67*. Perth: Department of Water.
- DoW. (2007). *Water Quality Protection Note 100: Motor sport facilities near sensitive water*. Perth: Department of Water.
- DPLH. (2018, August 20). *Aboriginal Heritage Inquiry System*. Retrieved from <https://maps.daa.wa.gov.au/ahis/>
- DPLH. (2018). *City of Albany Local Planning Scheme datasets - Zones and Reserves, Special Areas*. Perth: Department of Planning, Lands and Heritage.
- DPLH. (2018, August 20). *State Register of Heritage Places*. Retrieved from <http://www.stateheritage.wa.gov.au/>
- DWER. (2018, July 30). *Contaminated Sites Database*. Retrieved from <https://dow.maps.arcgis.com/apps/webappviewer/index.html?id=c2ecb74291ae4da2ac32c441819c6d47>
- DWER. (2019). *Landfill Waste Classifications and Waste Definitions 1996 (As amended 2019)*. Perth: Department of Water and Environmental Regulation.
- EPA. (2020). *Statement of Environmental Principles, Factors and Objectives*. Prepared for the Government of Western Australia. Retrieved from https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Statement%20of%20Environmental%20Principles%20-%2003.04.2020_0.pdf
- GHD. (2018). *Albany Motorsport Park Site Feasibility Study Lot 5780 Down Road South, Drome*. Unpublished report for the City of Albany.
- GHD. (2019). *Albany Motorsport Park EPA Referral Supporting Document*. Unpublished report prepared for City of Albany.
- GHD. (2020). *Albany Motorsport Park Noise Assessment*. Unpublished report for the City of Albany.
- GHD. (2021). *Albany Motorsport Park Noise Management Plan*. Unpublished report prepared for City of Albany.

- GHD. (2021). *Albany Motorsport Park Visual Impact Assessment*. Unpublished report prepared for the City of Albany.
- GoWA. (2019). *2018 Statewide Vegetation Statistics incorporating the CAR (Full Report). Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions. Retrieved from <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- GoWA. (2021). *www.data.gov.wa.au*. Retrieved from <http://www.data.wa.gov.au/>
- Great Southern Geotechnics . (2021). *Albany Motorsport Park Development, Pavement Investigation*. Unpublished report prepared for GHD.
- Hearn, S., Williams, K., Comer, S., & Beecham, B. (2002). *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions*. Perth: Department of Conservation and Land Management.
- MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.
- NHMRC, NRMCC. (2011). *Australian Drinking Water Guidelines: Paper 6 - National Water Quality Management Strategy*. Canberra: National Health and Medical Research Council, National Resource Management Ministerial Council.
- Roberts Gardiner Architects . (2021). *Albany Motorsport Park Masterplan - Stage 1*. Unpublished masterplan for City of Albany.
- Sandiford, E., & Barrett, S. (2010). *Albany Regional Vegetation Survey Extent, Type and Status: A project funded by the Western Australian Planning Commission (EnviroPlanning "Integrating NRM into Land Use Planning" and State NRM Program)*. Western Australia: South Coast Natural Resource Management Inc. and City of Albany for the Department of Environment and Conservation.
- SEWPAC. (2012). *EPBC Act referral guidelines for three threatened black cockatoo species*. Perth: Department of Sustainability, Environment, Water, Population and Communities.
- Shawmac. (2021). *Albany Motorsport Park Development Works on Roads Traffic Management Plan*. Unpublished report prepared for GHD.
- Shepherd, D. P., Beeston, G. R., & Hopkins, A. J. (2002). *Native Vegetation in Western Australia – Extent, Type and Status, Resource Management Technical Report 249*. Perth: Department of Agriculture WA.
- WAPC. (2009). *State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning*. Perth: Western Australian Planning Commission.
- Waste Authority. (2013). *Waste Authority Communication on the Waste Hierarchy*. Government of Western Australia.

Appendix A

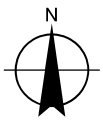
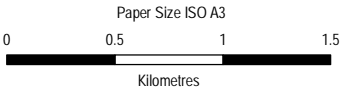
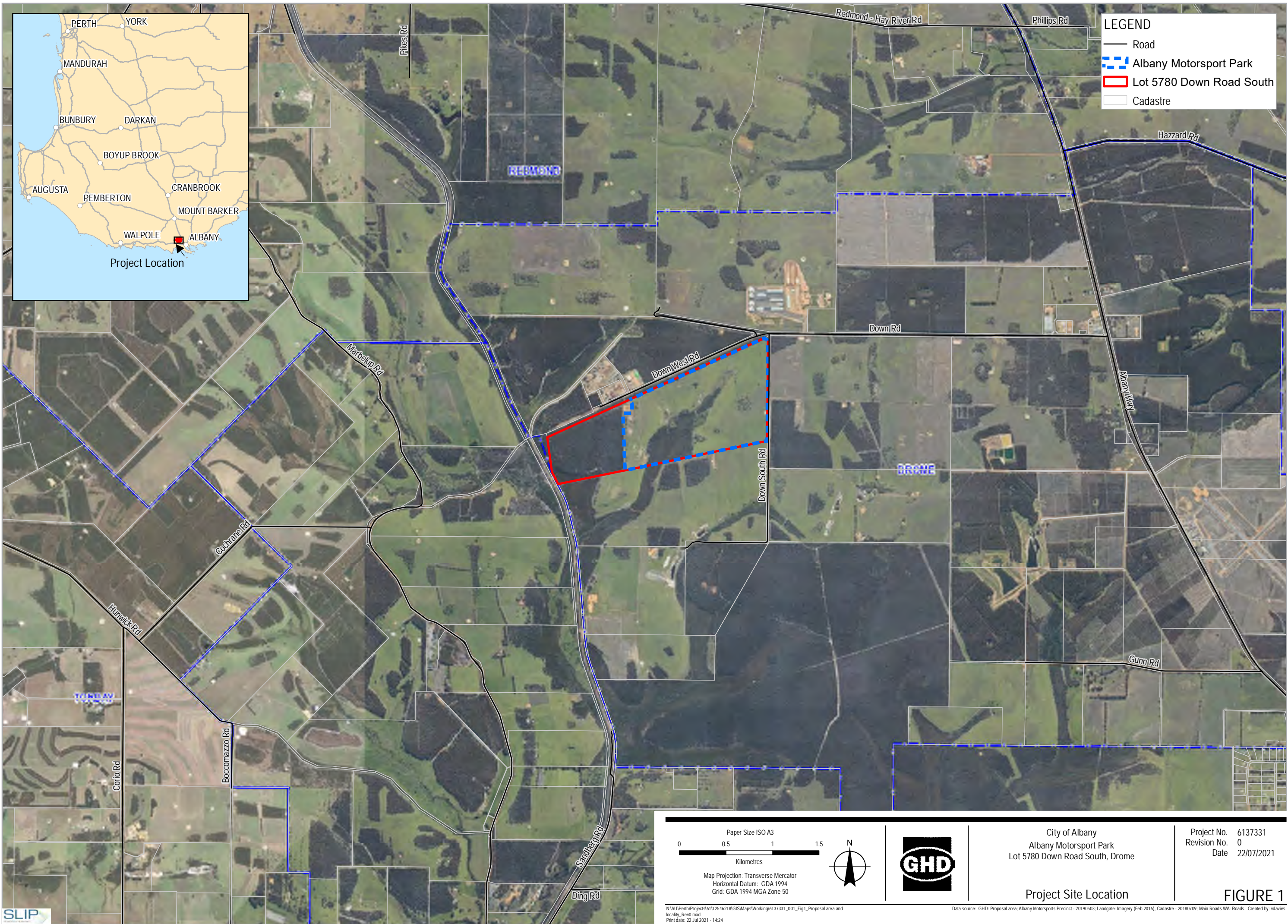
Figures

- Figure 1* *Project site location*
- Figure 2* *Master plan*
- Figure 3* *Pre-European vegetation, ESAs, TEC and Reserves*
- Figure 4* *ARVS – Vegetation units*
- Figure 5* *Vegetation types*
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- Figure 8* *Site topography*
- Figure 9* *Geology (250K)*
- Figure 10* *DPIRD soil landscape mapping*
- Figure 11* *South Coast Significant Wetlands and extrapolated ASS risk mapping*
- Figure 12* *PDWSA and Water Management Areas*



LEGEND

- Road
- ▬▬▬ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park
 Lot 5780 Down Road South, Drome

Project No. 6137331
 Revision No. 0
 Date 22/07/2021

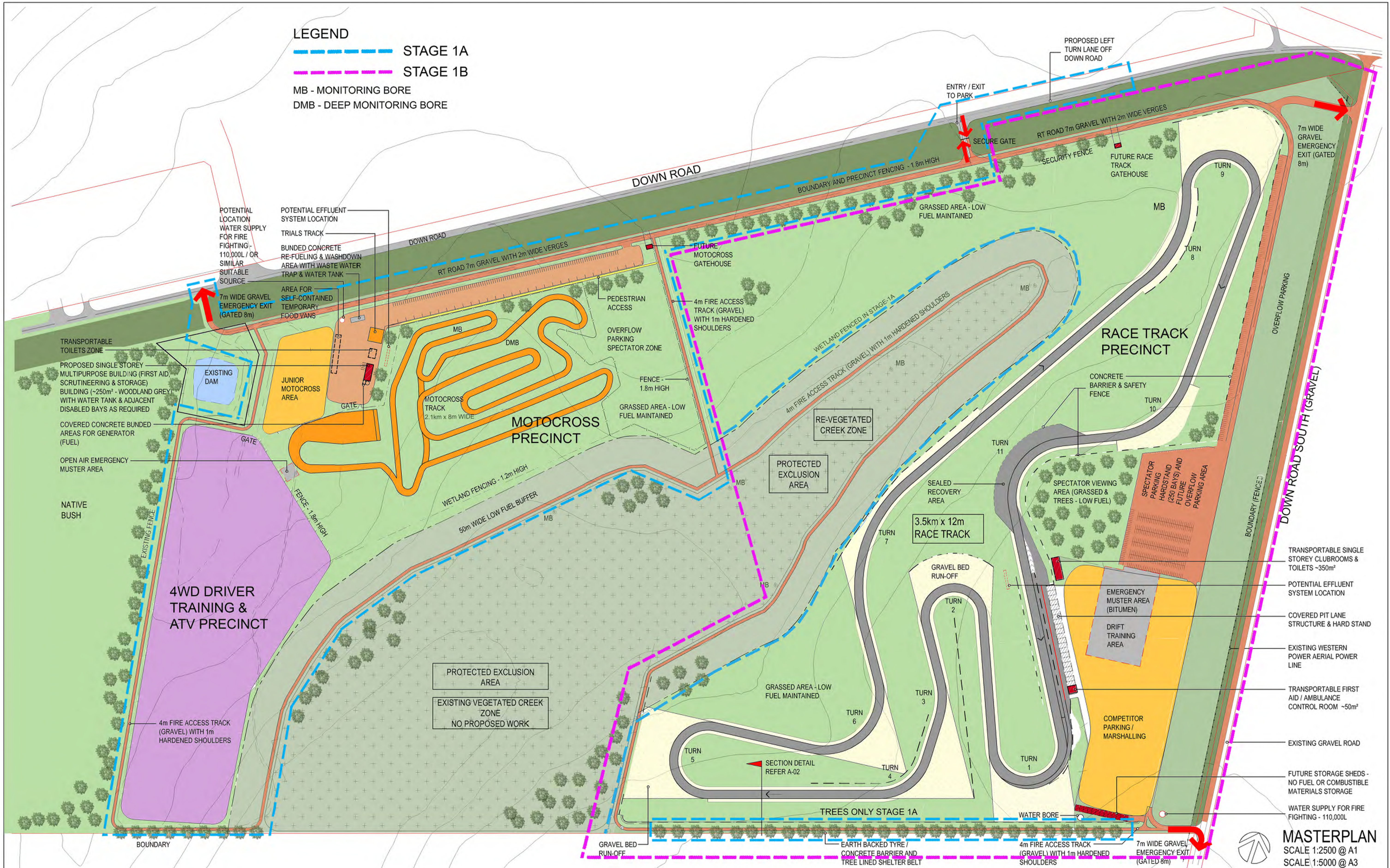
Project Site Location

FIGURE 1



LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

p.o. box 1502, albany, western australia 6331
 telephone: (08) 9841 5455
 email: admin@rgarchitects.com.au

Roberts Gardiner
Architects

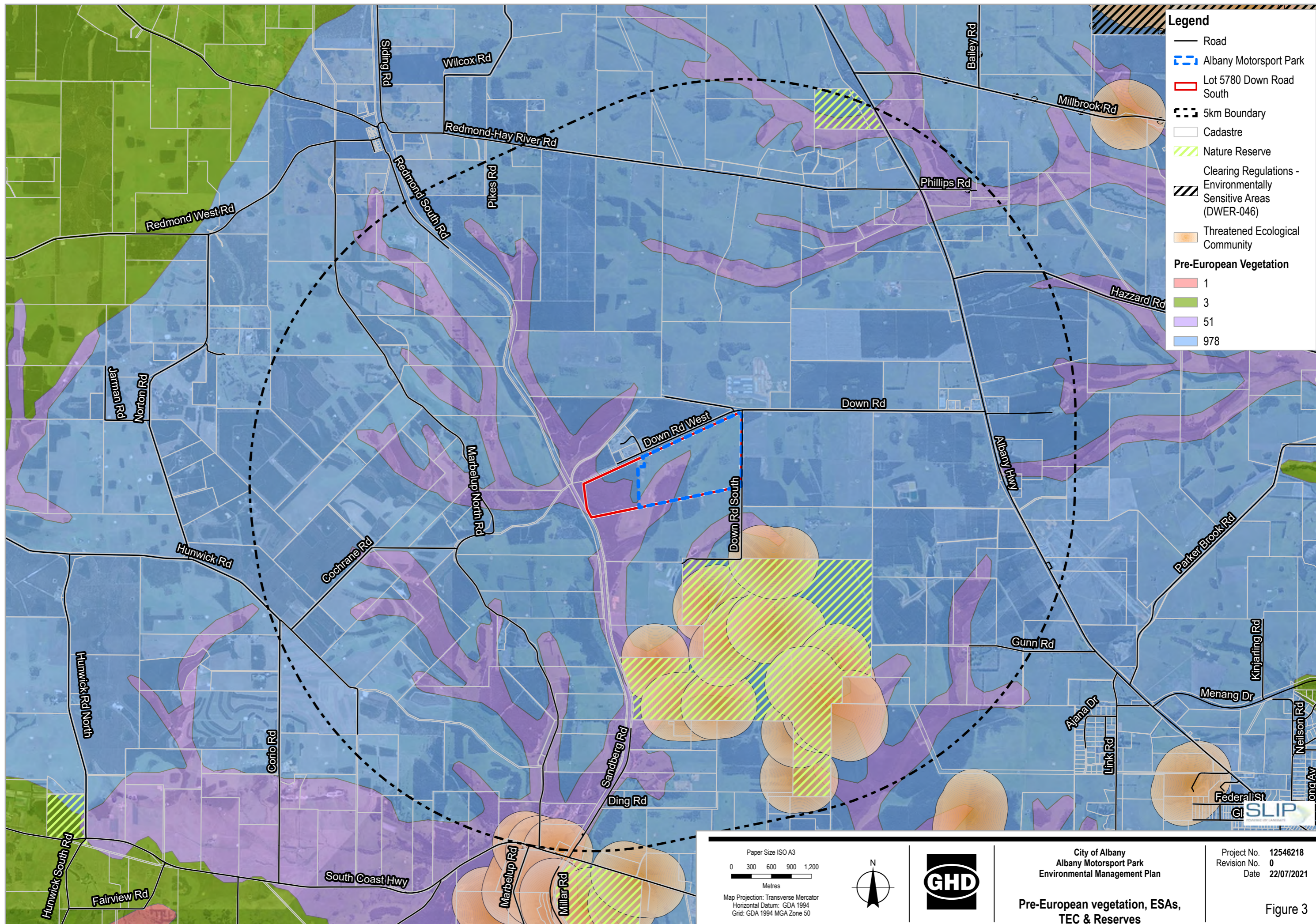
project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file

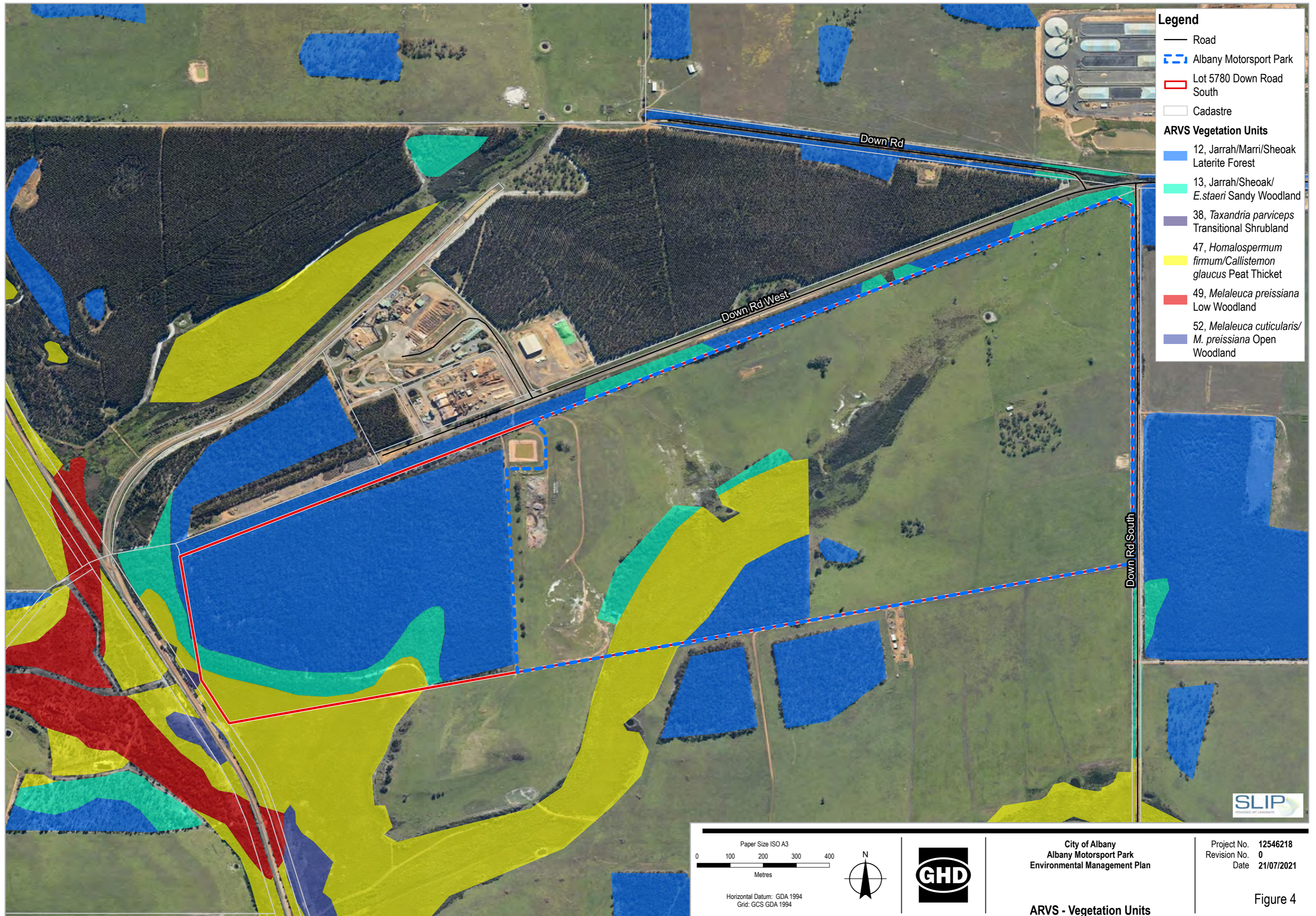
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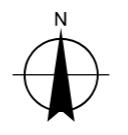
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- Road
 - ▭ Albany Motorsport Park
 - ▭ Lot 5780 Down Road South
 - ▭ Cadastre
- ARVS Vegetation Units**
- 12, Jarrah/Marri/Sheoak Laterite Forest
 - 13, Jarrah/Sheoak/*E.staeri* Sandy Woodland
 - 38, *Taxandria parviceps* Transitional Shrubland
 - 47, *Homalospermum firmum*/*Callistemon glaucus* Peat Thicket
 - 49, *Melaleuca preissiana* Low Woodland
 - 52, *Melaleuca cuticularis*/*M. preissiana* Open Woodland

Paper Size ISO A3

0 100 200 300 400

Metres

Horizontal Datum: GDA 1994
Grid: GCS GDA 1994



City of Albany
Albany Motorsport Park
Environmental Management Plan

Project No. 12546218
Revision No. 0
Date 21/07/2021

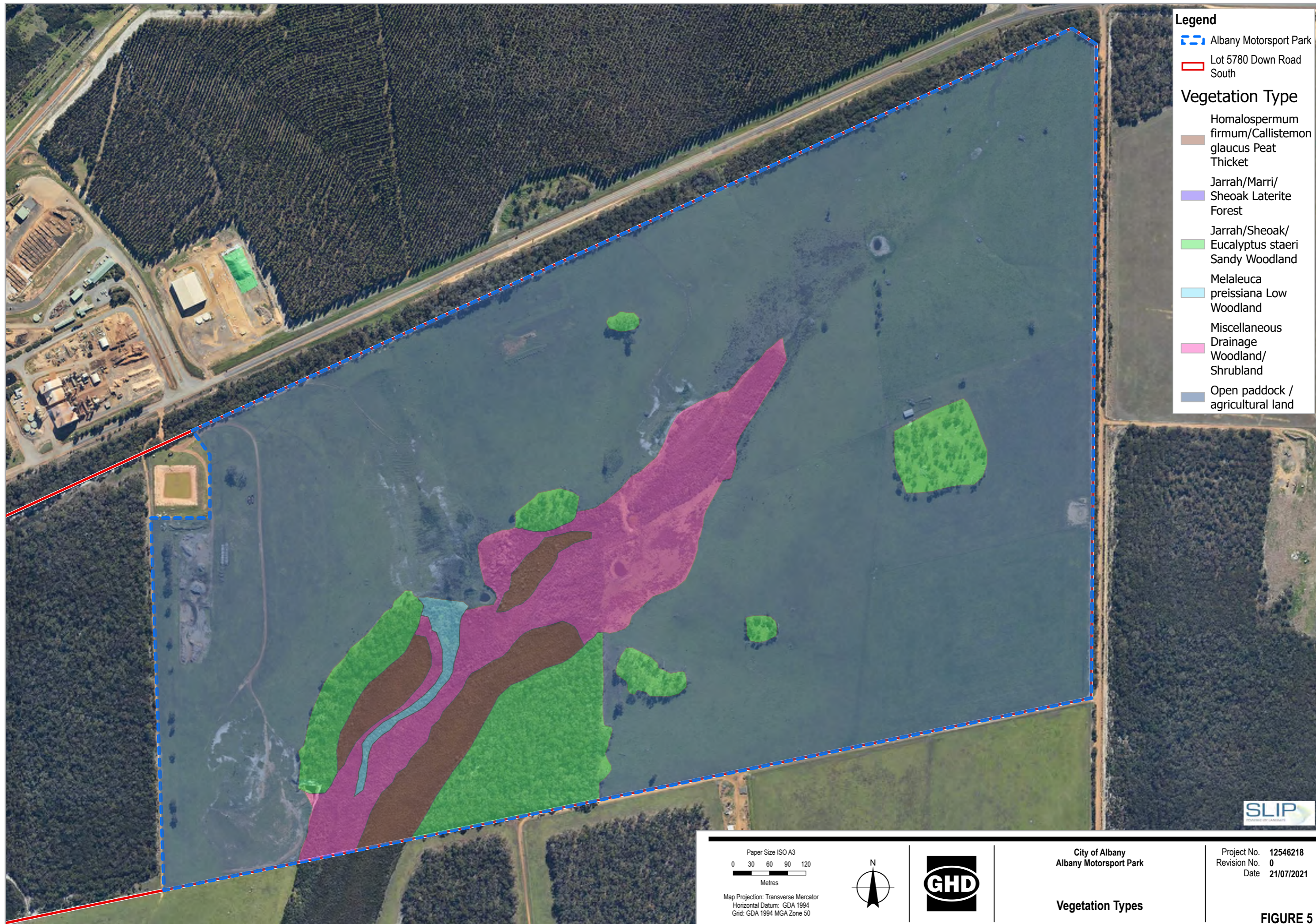
ARVS - Vegetation Units

Figure 4



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Legend

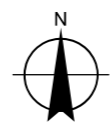
-  Albany Motorsport Park
-  Lot 5780 Down Road South

Vegetation Type

-  Homalospermum firmum/Callistemon glaucus Peat Thicket
-  Jarrah/Marri/Sheoak Laterite Forest
-  Jarrah/Sheoak/Eucalyptus staeri Sandy Woodland
-  Melaleuca preissiana Low Woodland
-  Miscellaneous Drainage Woodland/Shrubland
-  Open paddock / agricultural land



Paper Size ISO A3
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 Metres



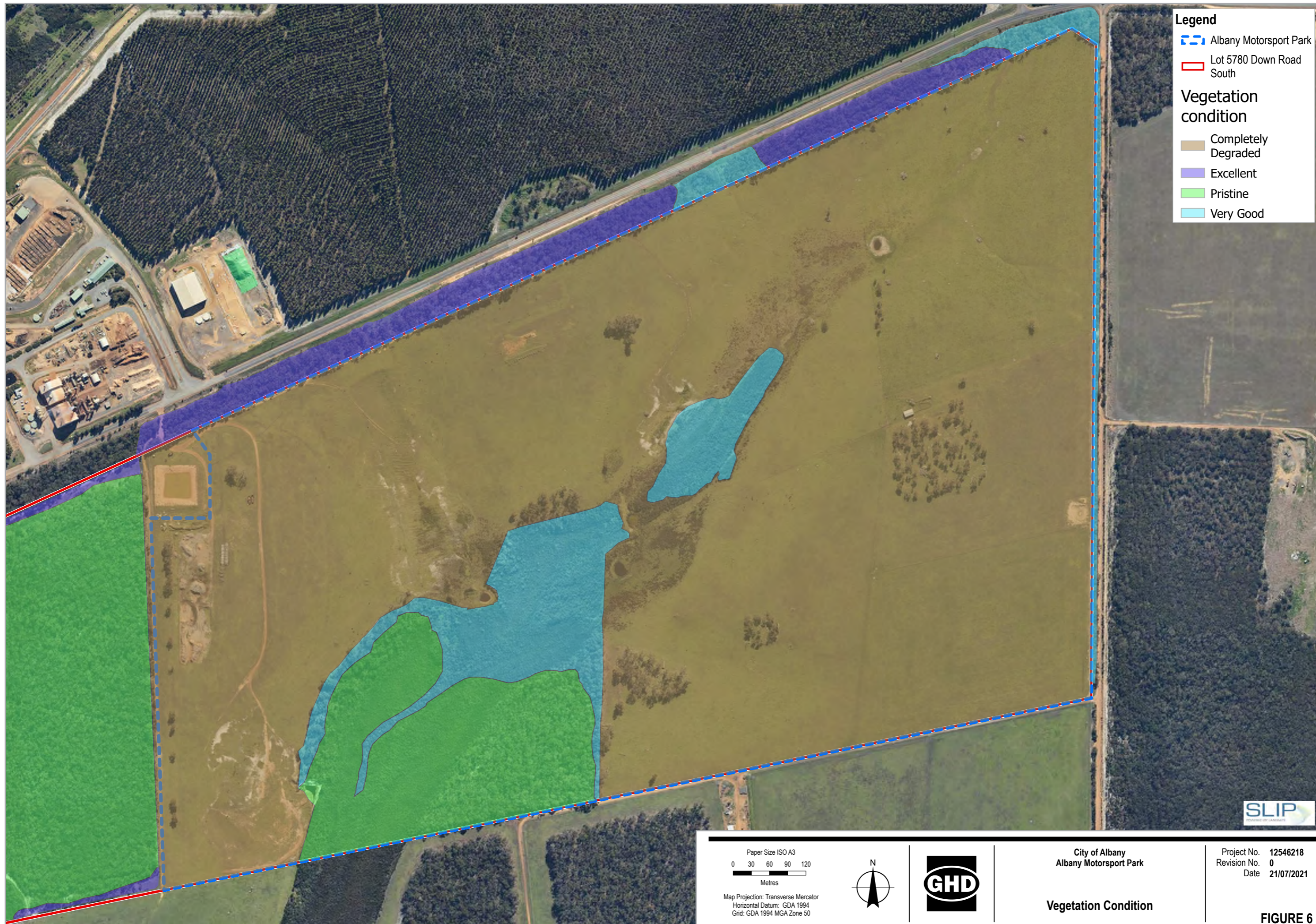
Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50

City of Albany
 Albany Motorsport Park

Vegetation Types

Project No. 12546218
 Revision No. 0
 Date 21/07/2021

FIGURE 5

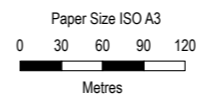


Legend

- Albany Motorsport Park
- Lot 5780 Down Road South

Vegetation condition

- Completely Degraded
- Excellent
- Pristine
- Very Good



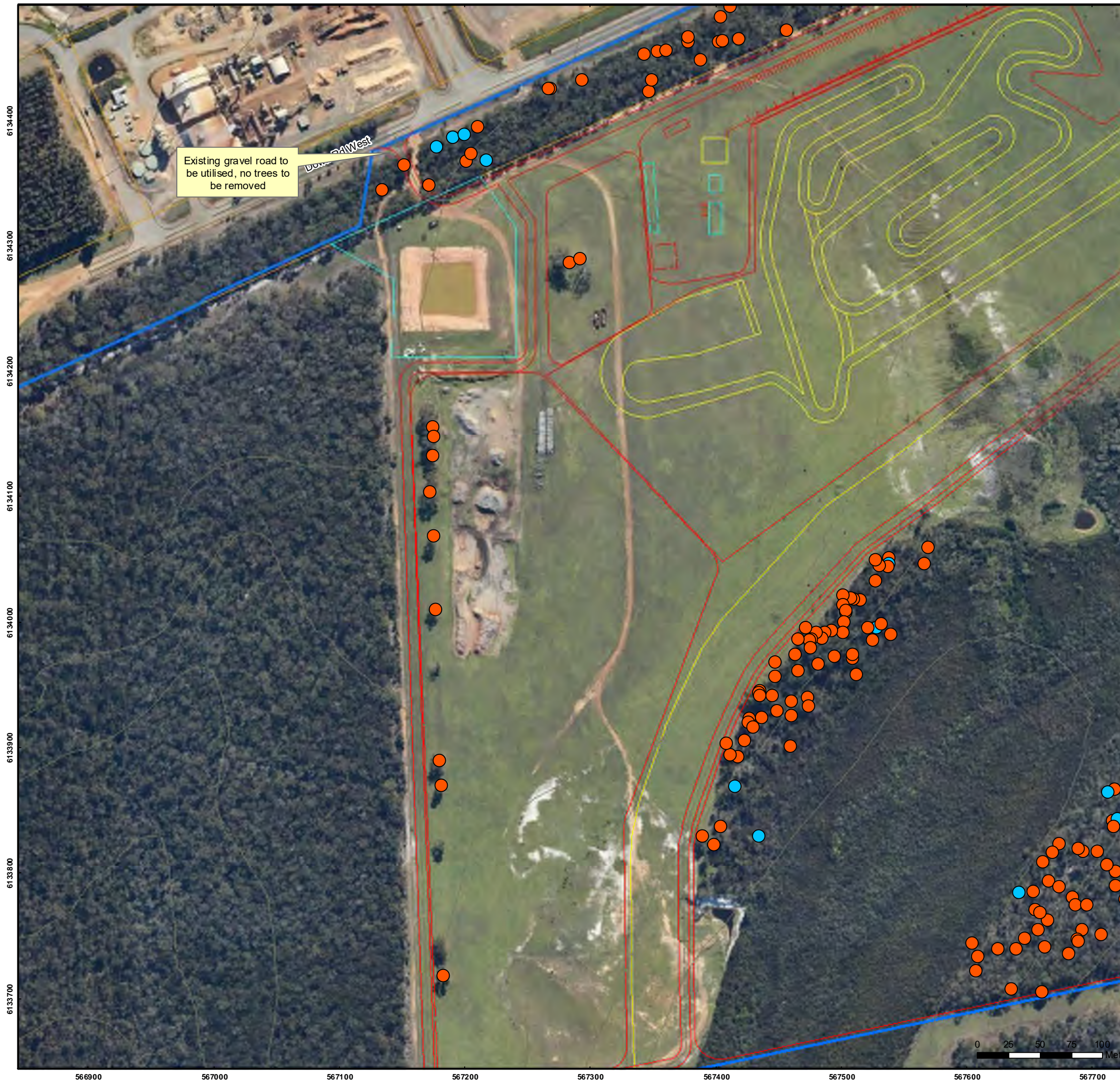
Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50

City of Albany
 Albany Motorsport Park

Vegetation Condition

Project No. 12546218
 Revision No. 0
 Date 21/07/2021

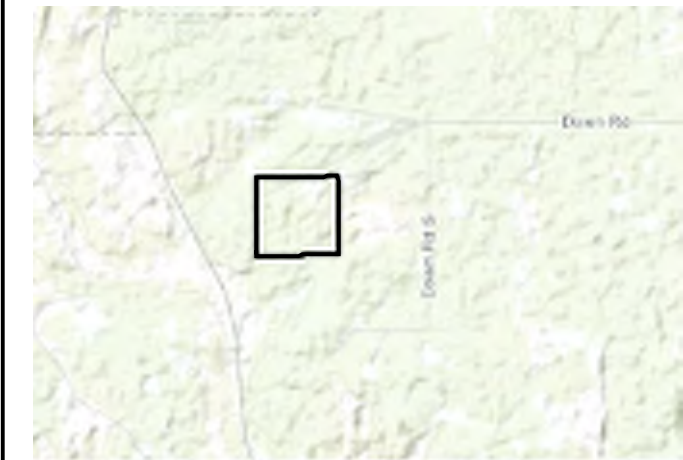
FIGURE 6



Albany Office:
29 Hercules Crescent
Albany, WA 6330
(08) 9842 1575

Denmark Office:
740 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450



Overview Map Scale 1:100,000

- Legend**
- Subject Site - Fauna and Flora Survey
 - Cadastre
 - Vegetation to be Cleared (0.928ha)
- Significant Trees to be Removed**
- Hollow, Occupant, Remove (No.)**
- ▲ Y, Bird (Non Threatened), Remove (1)
 - ▲ Y, Possum (Non-threatened), Remove (1)
 - ▲ Y, Unclear Evidence of Occupancy, Remove (5)
 - ▲ N, Bird (Non Threatened), Remove (1)
 - ▲ N, Not Occupied, Remove (47)
- Significant Trees to Remain**
- Hollow, Occupant, Remain (No.)**
- Y, Bird (Non Threatened), Remain (11)
 - Y, Feral Bees, Remain (4)
 - Y, Welcome swallows, Remain (1)
 - Y, Possum (Non Threatened), Remain (9)
 - Y, Red-capped parrot, Remain (1)
 - Y, Unclear Evidence of Occupancy, Remain (59)
 - N, Termites, Remain (1)
 - N, Not Occupied, Remain (535)
 - N, Hollow forming, Remain (2)



Scale
1:3,000 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Map 1 Significant Trees - West

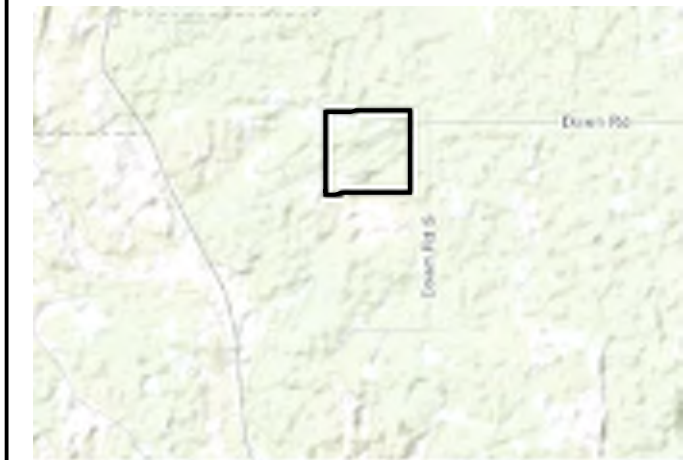
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STATUS FINAL	FILE MSC0137-003	DATE 30/04/2021



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Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450



Legend Overview Map Scale 1:100,000

- Subject Site - Fauna and Flora Survey
- Cadastre
- Vegetation to be Cleared

Significant Trees to be Removed

- Hollow, Occupant, Remove (No.)**
- ▲ Y, Bird (Non Threatened), Remove (1)
 - ▲ Y, Possum (Non-threatened), Remove (1)
 - ▲ Y, Unclear Evidence of Occupancy, Remove (5)
 - ▲ N, Bird (Non Threatened), Remove (1)
 - ▲ N, Not Occupied, Remove (47)

Significant Trees to Remain

- Hollow, Occupant, Remain (No.)**
- Y, Bird (Non Threatened), Remain (11)
 - Y, Feral Bees, Remain (4)
 - Y, Welcome swallows, Remain (1)
 - Y, Possum (Non Threatened), Remain (9)
 - Y, Red-capped parrot, Remain (1)
 - Y, Unclear Evidence of Occupancy, Remain (59)
 - N, Termites, Remain (1)
 - N, Not Occupied, Remain (535)
 - N, Hollow forming, Remain (2)



Scale
1:3,150 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Map 2 Significant Trees - North Central

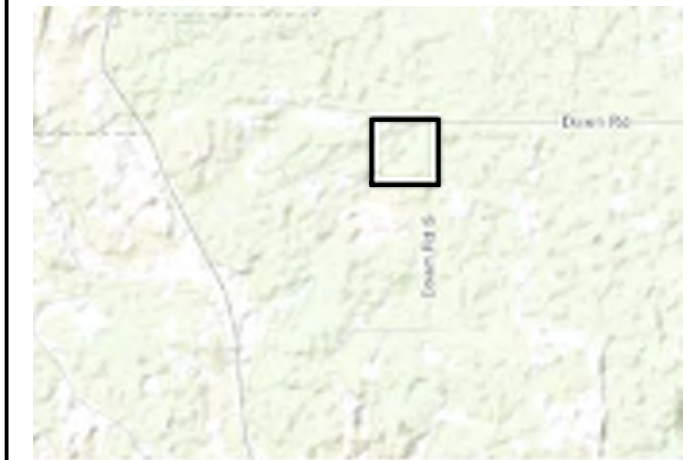
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STATUS FINAL	FILE MSC0137-003	DATE 30/04/2021



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Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450



Legend Overview Map Scale 1:100,000

- Subject Site - Fauna and Flora Survey
- Cadastre
- Vegetation to be Cleared
- Significant Trees to be Removed**
- Hollow, Occupant, Remove (No.)**
- ▲ Y, Bird (Non Threatened), Remove (1)
- ▲ Y, Possum (Non-threatened), Remove (1)
- ▲ Y, Unclear Evidence of Occupancy, Remove (5)
- ▲ N, Bird (Non Threatened), Remove (1)
- ▲ N, Not Occupied, Remove (47)
- Significant Trees to Remain**
- Hollow, Occupant, Remain (No.)**
- Y, Bird (Non Threatened), Remain (11)
- Y, Feral Bees, Remain (4)
- Y, Welcome swallows, Remain (1)
- Y, Possum (Non Threatened), Remain (9)
- Y, Red-capped parrot, Remain (1)
- Y, Unclear Evidence of Occupancy, Remain (59)
- N, Termites, Remain (1)
- N, Not Occupied, Remain (535)
- N, Hollow forming, Remain (2)



Scale
1:2,500 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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City of Albany
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Albany, WA 6331

Map 3 Significant Trees - North East

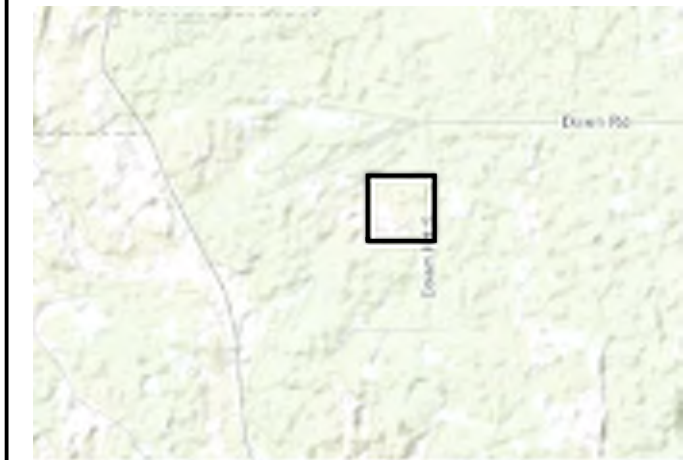
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STATUS FINAL	FILE MSC0137-003	DATE 30/04/2021



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Albany, WA 6330
(08) 9842 1575

Denmark Office:
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Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450



Overview Map Scale 1:100,000

- Legend**
- Subject Site - Fauna and Flora Survey
 - Cadastre
 - Vegetation to be Cleared
- Significant Trees to be Removed**
- Hollow, Occupant, Remove (No.)**
- ▲ Y, Bird (Non Threatened), Remove (1)
 - ▲ Y, Possum (Non-threatened), Remove (1)
 - ▲ Y, Unclear Evidence of Occupancy, Remove (5)
 - ▲ N, Bird (Non Threatened), Remove (1)
 - ▲ N, Not Occupied, Remove (47)
- Significant Trees to Remain**
- Hollow, Occupant, Remain (No.)**
- Y, Bird (Non Threatened), Remain (11)
 - Y, Feral Bees, Remain (4)
 - Y, Welcome swallows, Remain (1)
 - Y, Possum (Non Threatened), Remain (9)
 - Y, Red-capped parrot, Remain (1)
 - Y, Unclear Evidence of Occupancy, Remain (59)
 - N, Termites, Remain (1)
 - N, Not Occupied, Remain (535)
 - N, Hollow forming, Remain (2)



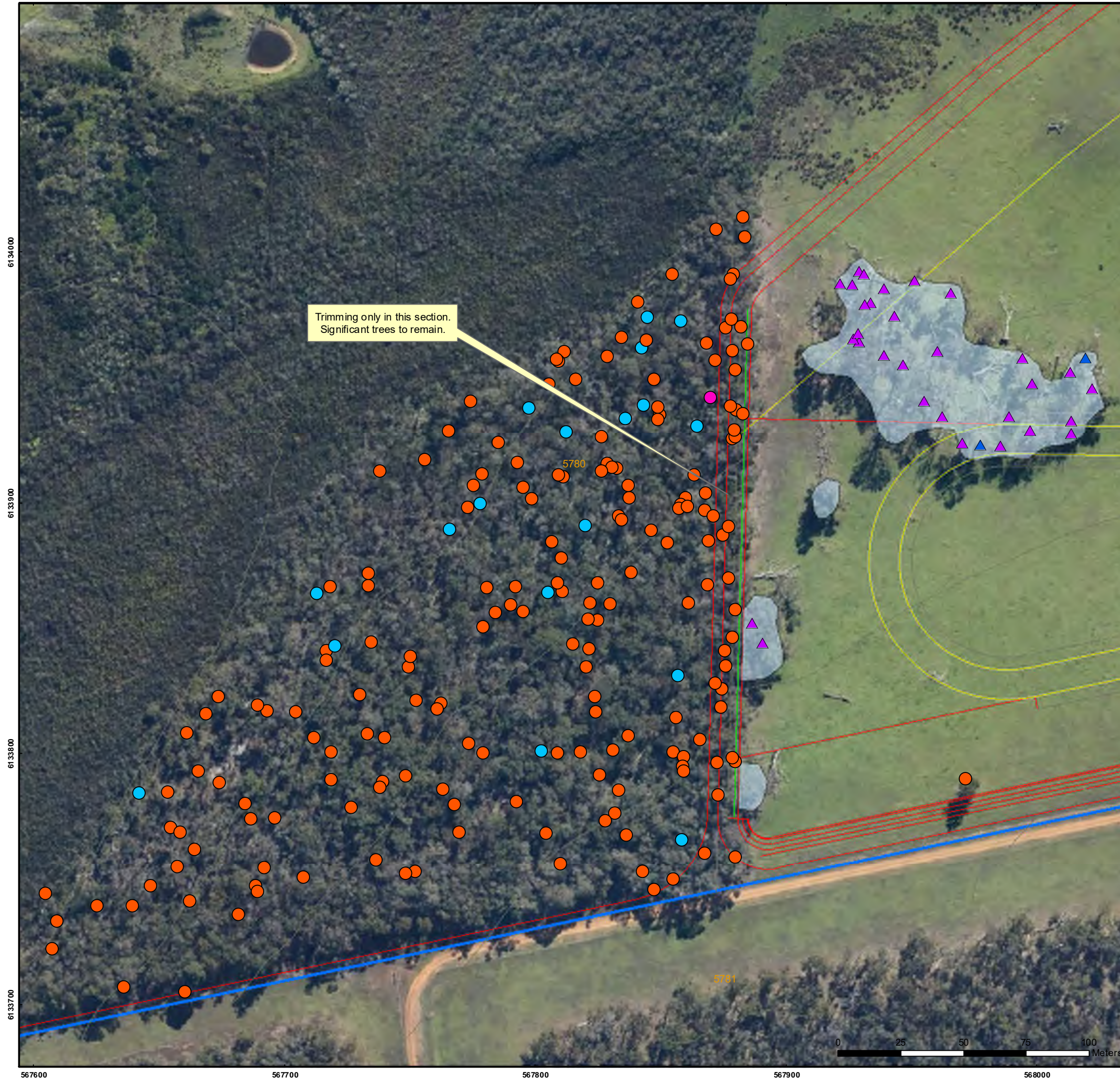
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Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Albany, WA 6331

Map 4 Significant Trees - South East

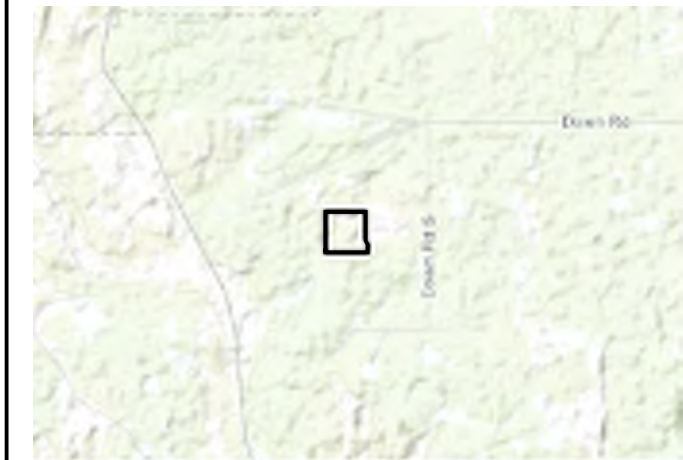
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STATUS FINAL	FILE MSC0137-003	DATE 30/04/2021



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Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450



Legend Overview Map Scale 1:100,000

- Subject Site - Fauna and Flora Survey
- Cadastre
- Vegetation to be Cleared
- Significant Trees to be Removed**
- Hollow, Occupant, Remove (No.)**
- ▲ Y, Bird (Non Threatened), Remove (1)
- ▲ Y, Possum (Non-threatened), Remove (1)
- ▲ Y, Unclear Evidence of Occupancy, Remove (5)
- ▲ N, Bird (Non Threatened), Remove (1)
- ▲ N, Not Occupied, Remove (47)
- Significant Trees to Remain**
- Hollow, Occupant, Remain (No.)**
- Y, Bird (Non Threatened), Remain (11)
- Y, Feral Bees, Remain (4)
- Y, Welcome swallows, Remain (1)
- Y, Possum (Non Threatened), Remain (9)
- Y, Red-capped parrot, Remain (1)
- Y, Unclear Evidence of Occupancy, Remain (59)
- N, Termites, Remain (1)
- N, Not Occupied, Remain (535)
- N, Hollow forming, Remain (2)



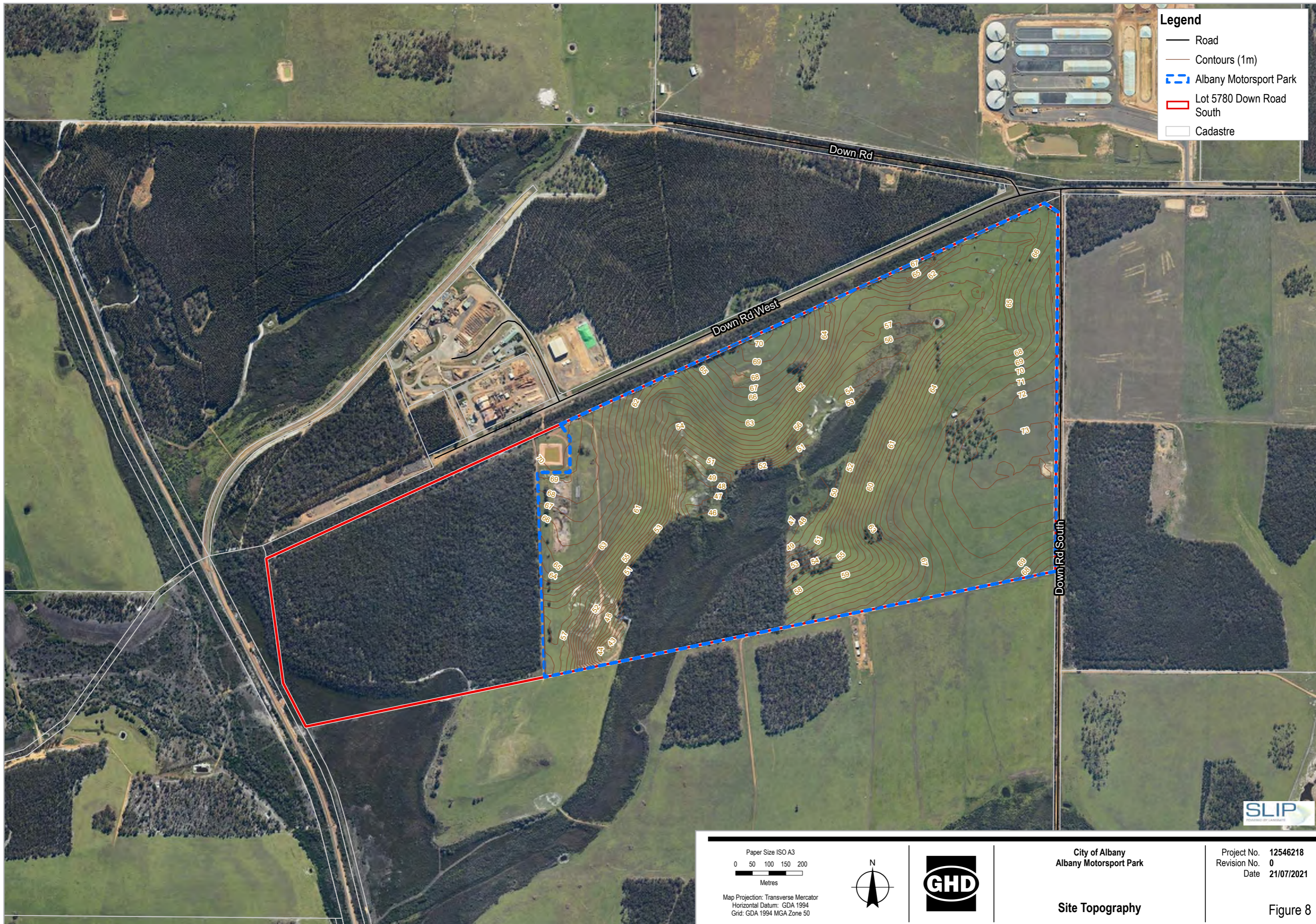
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GDA MGA 94 Zone 50

Data Sources
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Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Albany, WA 6331

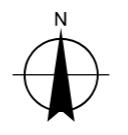
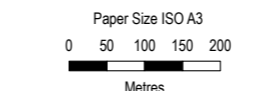
Map 5 Significant Trees - South Central

	QA Check KK	Drawn by BT
STATUS FINAL	FILE MSC0137-003	DATE 30/04/2021



Legend

- Road
- Contours (1m)
- ▭ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre



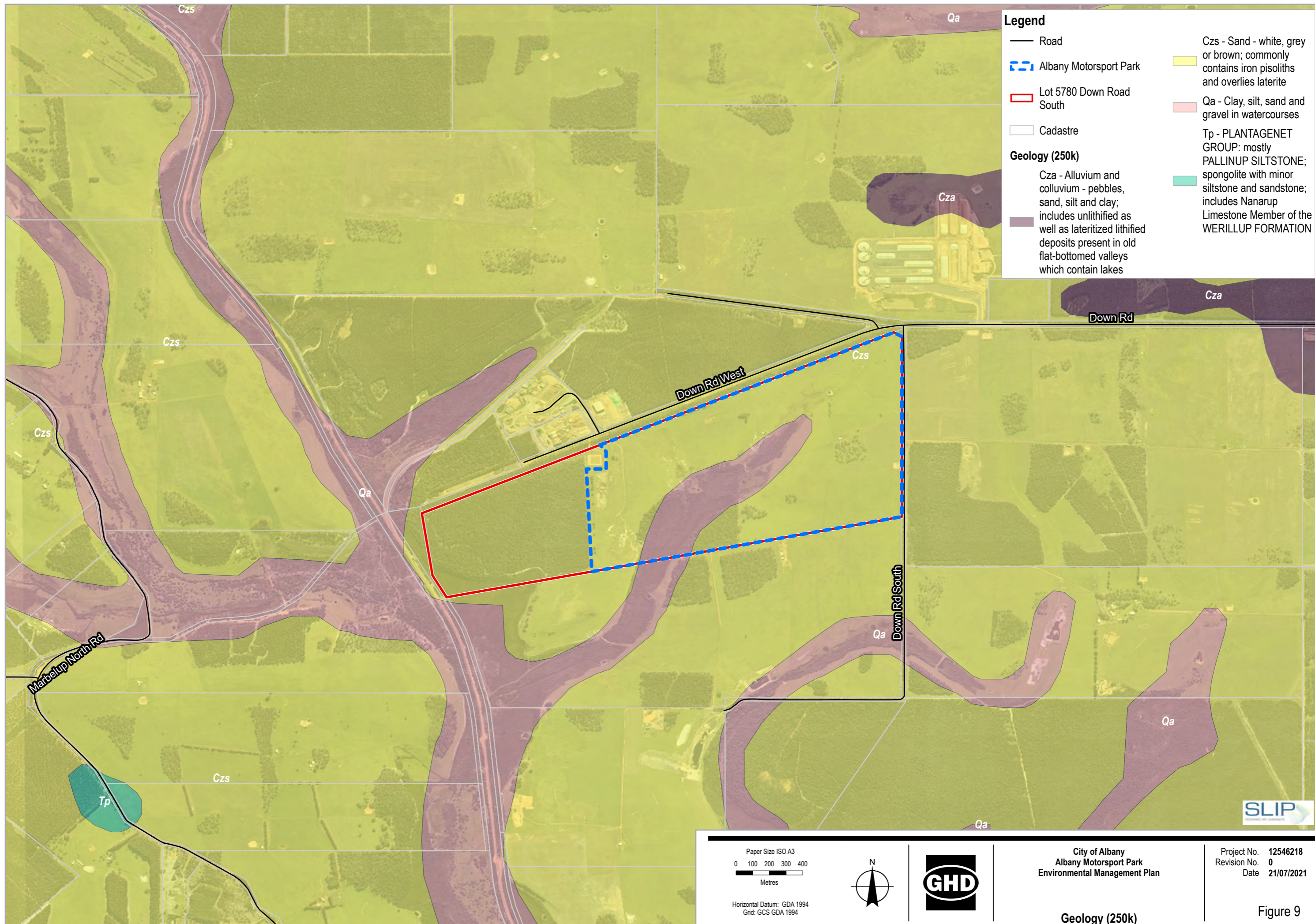
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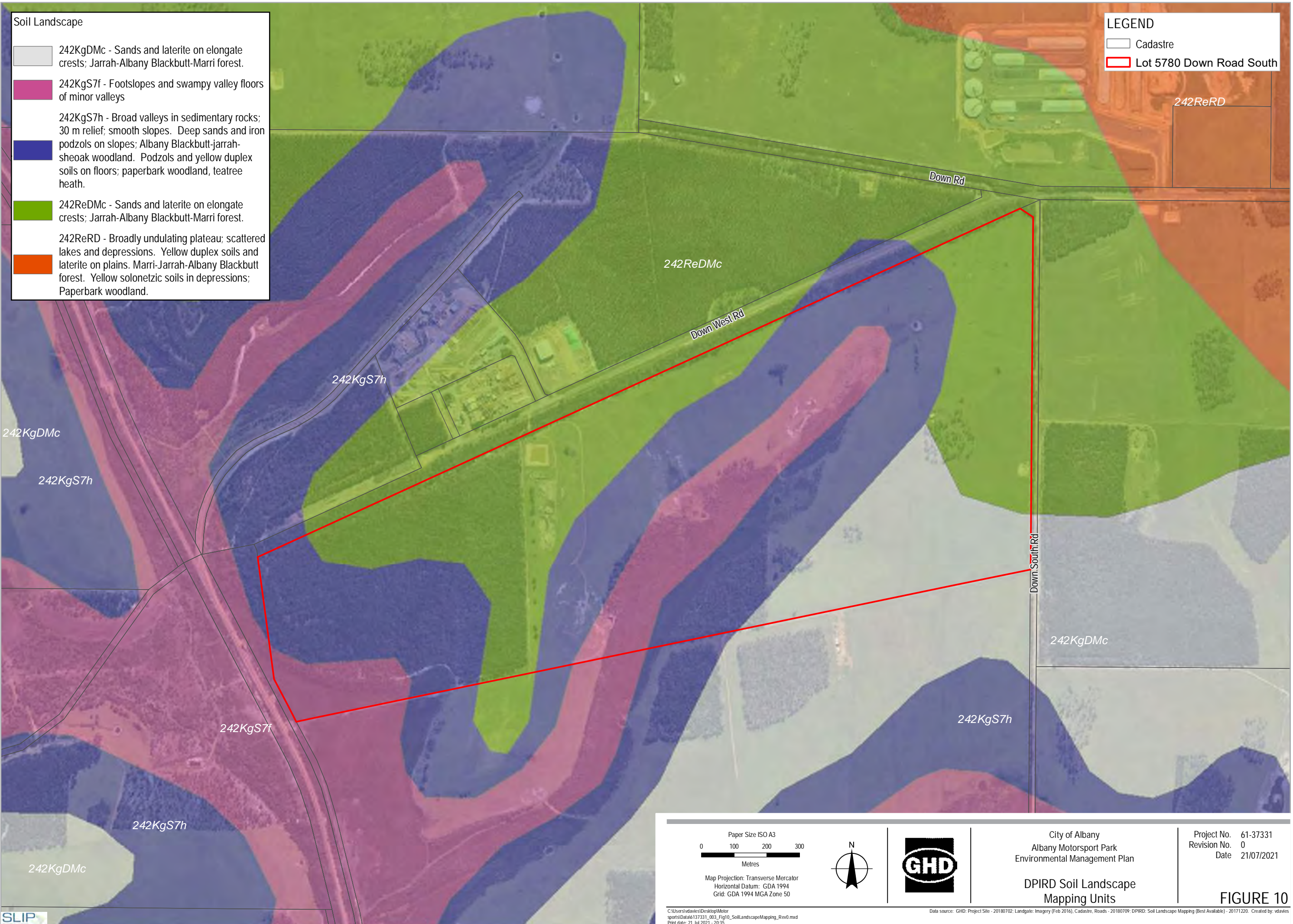
City of Albany
 Albany Motorsport Park

Site Topography

Project No. 12546218
 Revision No. 0
 Date 21/07/2021

Figure 8





Soil Landscape

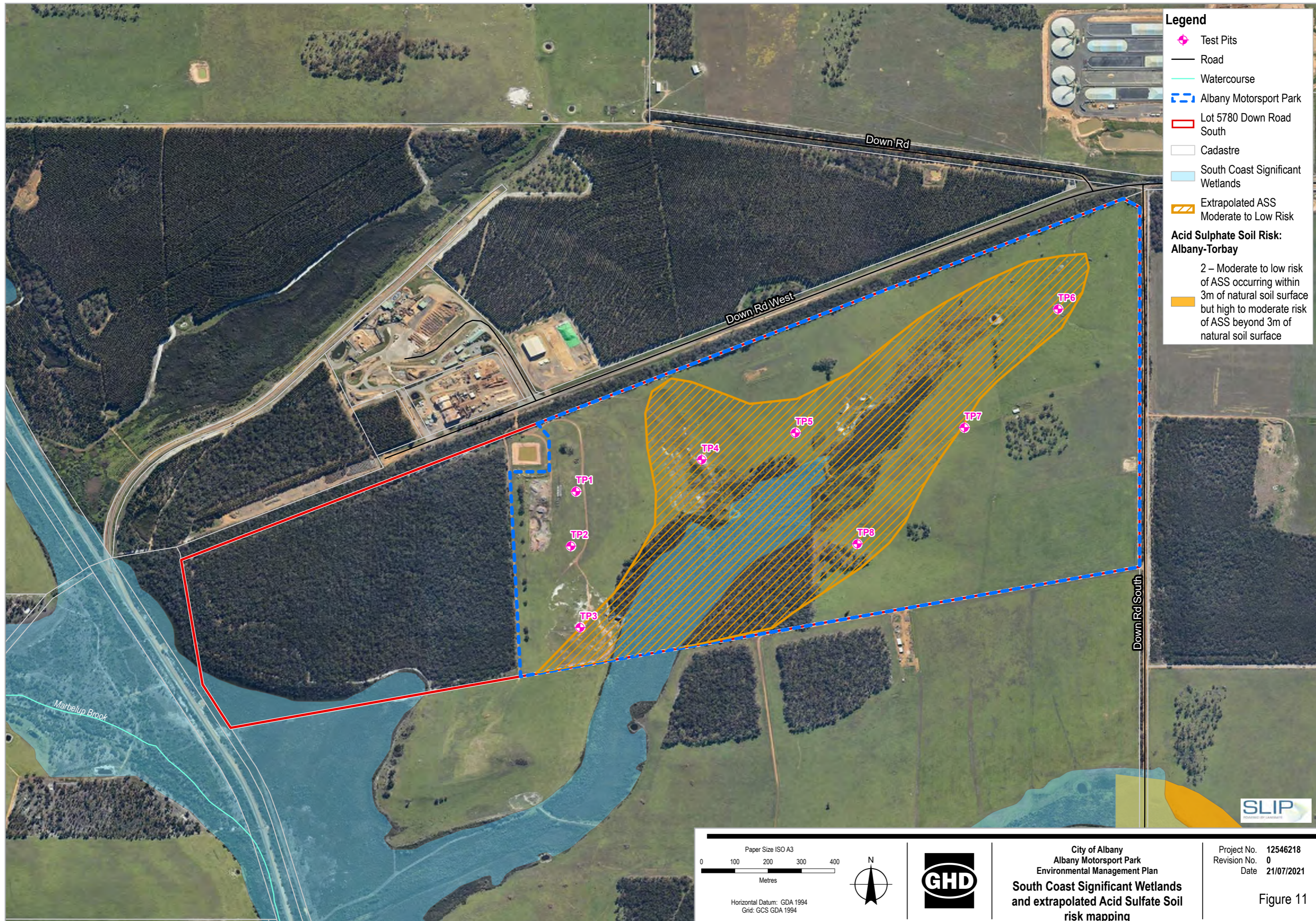
- 242KgDMc - Sands and laterite on elongate crests; Jarrah-Albany Blackbutt-Marri forest.
- 242KgS7f - Footslopes and swampy valley floors of minor valleys
- 242KgS7h - Broad valleys in sedimentary rocks; 30 m relief; smooth slopes. Deep sands and iron podzols on slopes; Albany Blackbutt-jarrah-sheoak woodland. Podzols and yellow duplex soils on floors; paperbark woodland, teatree heath.
- 242ReDMc - Sands and laterite on elongate crests; Jarrah-Albany Blackbutt-Marri forest.
- 242ReRD - Broadly undulating plateau; scattered lakes and depressions. Yellow duplex soils and laterite on plains. Marri-Jarrah-Albany Blackbutt forest. Yellow solonetzic soils in depressions; Paperbark woodland.

LEGEND

- Cadastre
- Lot 5780 Down Road South

<p>Paper Size ISO A3</p>  <p>Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 50</p>			<p>City of Albany Albany Motorsport Park Environmental Management Plan</p> <p>DPIRD Soil Landscape Mapping Units</p>	<p>Project No. 61-37331 Revision No. 0 Date 21/07/2021</p>
---	---	---	---	--

FIGURE 10



Legend

- Test Pits
- Road
- Watercourse
- Albany Motorsport Park
- Lot 5780 Down Road South
- Cadastre
- South Coast Significant Wetlands
- Extrapolated ASS Moderate to Low Risk

Acid Sulphate Soil Risk: Albany-Torbay

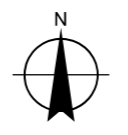
2 – Moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface

Paper Size ISO A3

0 100 200 300 400

Metres

Horizontal Datum: GDA 1994
Grid: GCS GDA 1994

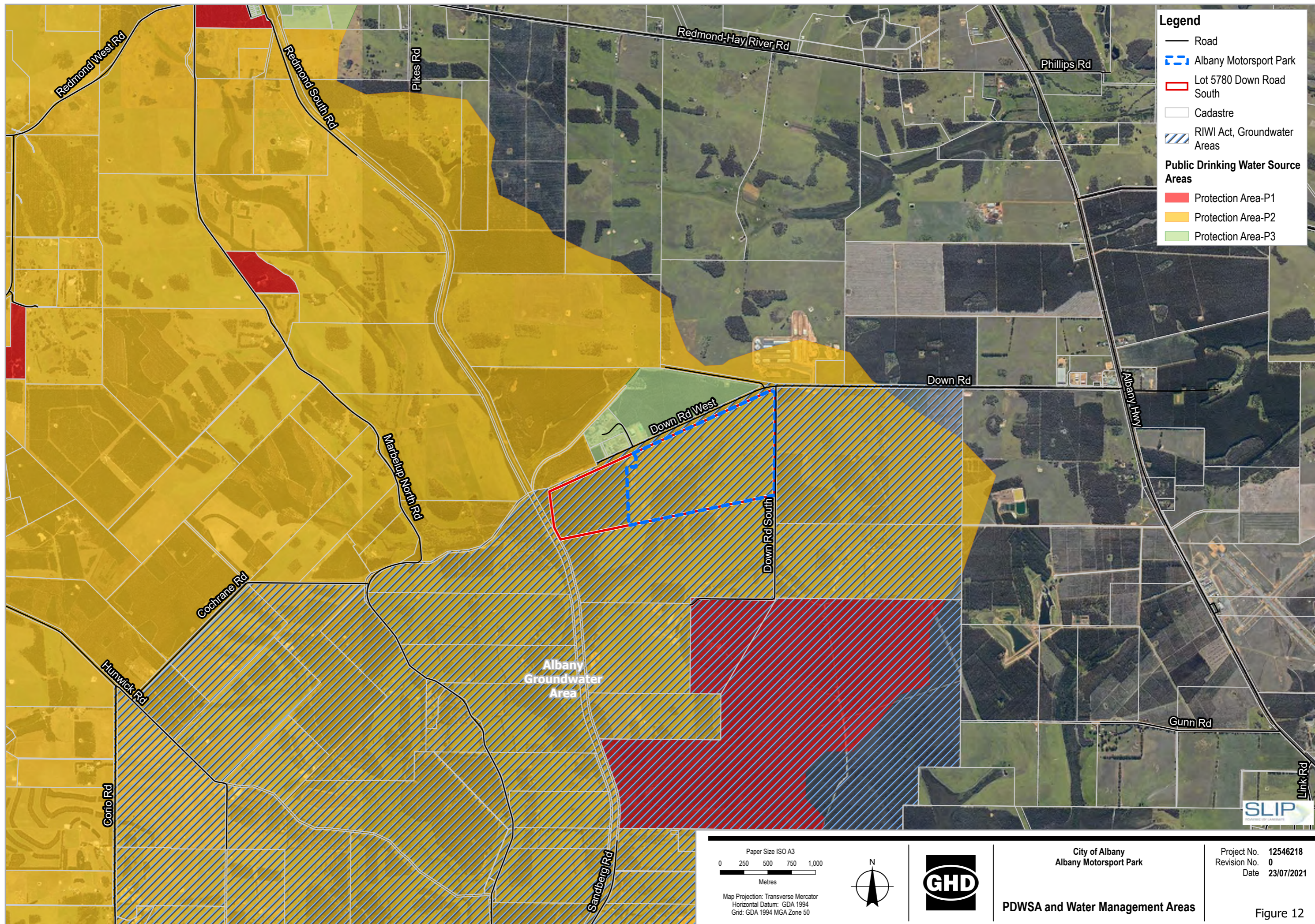


City of Albany
Albany Motorsport Park
Environmental Management Plan

South Coast Significant Wetlands and extrapolated Acid Sulfate Soil risk mapping

Project No. 12546218
Revision No. 0
Date 21/07/2021

Figure 11



Legend

- Road
- ▭ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre
- ▨ RIWI Act, Groundwater Areas

Public Drinking Water Source Areas

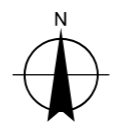
- ▭ Protection Area-P1
- ▭ Protection Area-P2
- ▭ Protection Area-P3

Paper Size ISO A3

0 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park

PDWSA and Water Management Areas

Project No. 12546218
 Revision No. 0
 Date 23/07/2021

Figure 12

Appendix B

Albany Motorsport Venue Inc. – Governance model

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

1. **VENUE**
Albany Motorsport Park
2. **LOCATION**
Lot 5780 Down Road, DROME, Western Australia
3. **LAND OWNER**
City of Albany
owns the land (LOCATION)
approving Authority for any modifications
4. **VENUE OWNER**
Albany Motorsport Venue Incorporated (AMV Inc.)
leases land from the LAND OWNER
owns and maintains the facilities and infrastructure
5. **THE BOARD**
VENUE OWNER's board of 7 Directors
responsible for management and operation of the VENUE
6. **OCCUPIER**
The VENUE OWNER
7. **AFFILIATIONS**
Confederation of Australian Motor Sport Limited, trading as Motorsport Australia
Motorcycling Australia Ltd
8. **VENUE MAP**
Albany Motorsport Park Masterplan
9. **OWNERSHIP & OPERATION**
 - Ownership of the land (The Land) is and will remain owned by the City of Albany.
 - Post construction by the City of Albany, ownership of all facilities and infrastructure (will be transferred to the Albany Motorsport Venue Incorporated (AMV Inc.) by written agreement.
 - The Land (not the Venue) will be leased by the City of Albany to the AMV Inc.
 - The AMV Inc. will be responsible for the operation, maintenance and repair of the Venue.
10. **AMV INC. BOARD GOVERNANCE**
 - AMV Inc. is to be established as a not for profit association incorporated in accordance with the Associations Incorporation Act 2015.
 - Noting it is acceptable for an association to trade with the public so long as the profits from those transactions are used to promote the objects and purposes of the association and members do not profit from the activities.
 - AMV Inc. will consist of a Board of Directors (the **Board**).
 - The Directors will be paid a remuneration agreed annually.
11. **THE BOARD**
 - 11.1 The Board may have up to seven (7) Directors, who shall comprise:
 - Two (2) community representatives recommended by the City of Albany for the Board's consideration.

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

- One (1) representing Motorsport Australia;
- One (1) representing Motorcycling Western Australia (MWA);
- One (1) representing 4-wheel racing clubs;
- One (1) representing 2-wheel racing (motorcycle road racing) clubs;
- One (1) representing motocross clubs;

11.2 The Chairman of the Board will be elected by the Directors.

11.3 Appointments are to be up to a two-year term, with skills determined by the Board.

11.4 The Directors shall meet monthly or on more occasions if the need dictates.

11.5 The Board to employ an Operations Manager and any other staff deemed necessary to ensure the safe and compliant Venue.

11.6 The Board shall lease the Land from the City of Albany.

11.7 A Lease Agreement shall be prepared by the City of Albany and approved by the City of Albany Council.

11.8 The Board shall be responsible for the insurance of the tracks, roads and any other permanent buildings and fixtures on the Venue.

11.9 The Board is responsible for the development of an Albany Motorsport Park Strategic Development Plan and overseeing the implementation of the strategies and supporting policies.

11.10 The Board is responsible for the development and implementation of systems to enable it to comply with its legal and policy obligations, adhering to accounting standards and ensuring the Venue assets are protected through appropriate risk management.

11.11 The Board is responsible for the marketing, management, programming and the safe use of the Venue.

12. VENUE OWNER

12.1 The Venue Owner shall carry out:

- marketing the Venue;
- hiring of facilities to various users and user groups;
- programme the hiring and events held at the Venue;
- ensure the hirer has the appropriate permit for the event being conducted;
- ensure the hirer has the appropriate event insurance in place;
- adherence to the Motorsport Australia “Track Operations Safety Guide”;
- adherence to the Motorcycling Australia “Track Standards” and current “Manual of Motorcycle Sport”;
- management and maintenance of the infrastructure;
- establish and maintain an ongoing maintenance (sinking) fund;
- ensure the Venue is cost-effective, that is, income is equal to or greater than expenses;
- adherence to the Bushfire Management Plan;

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

- adherence to the Noise Management Plan;
 - adherence to the Water Management Plan;
 - adherence to the Hydrocarbon Management Plan;
 - adherence to the Dust Management Plan; and
 - present an annual report to the City of Albany.
- 12.2 Produce and administer a “Venue Procedures Manual”.
- 12.3 Produce and administer a “Code of Conduct Manual”.
- 12.4 Ensure the tracks are certified and sanctioned by Motorsport Australia and Motorcycling Australia on an annual basis.
- 12.5 Ensure users of the Venue have the appropriate training and qualifications and operate in accordance with the relevant governing motorsport organisation.
- 12.6 Purchase and have available the required safety equipment.
- 12.7 Purchase and have available the required maintenance equipment.
- 12.8 Ensure grounds maintenance is carried out by trained employees and/or trained volunteers.

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

Revision History

Author	Version Description	Date Completed
Great Southern Motorplex Group Inc.	Draft prepared for review by City of Albany	26/04/2021
City of Albany	Reviewed and marked up by City of Albany. Changes review to compared document.	27/04/2021
City of Albany / Great Southern Motorplex Group Inc.	Amended post meeting held on 4 May 2021. Agreed amended marked up in RED.	04/05/2021
City of Albany	Changes accepted	06/05/2021
City of Albany	Amendment to Item 11	13/05/2021

Appendix C

Protected Exclusion Area Management Plan



Albany Motorsport Park – Development Application

Protected Exclusion Area Management Plan

City of Albany

27 July 2021

→ The Power of Commitment

GHD Pty Ltd | ABN 39 008 488 373



166 Stirling Terrace,

Albany, Western Australia 6330, Australia

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Printed date	27/07/2021 2:35:00 PM
Last saved date	27 July 2021
File name	https://projectsportal.ghd.com/sites/pp18_05/albanymotorsportpark/ProjectDocs/Environmental Management Plan/12546218-REP-0_Albany Motorsport Park_Protected Exclusion Area Management Plan.docx
Author	Vicki Davies
Project manager	Vicki Davies
Client name	City of Albany
Project name	Albany Motorsport Park - Development Application
Document title	Albany Motorsport Park – Development Application Protected Exclusion Area Management Plan
Revision version	Rev 0
Project number	12546218

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	V. Davies	J. Cramer		J. Foley		18/05/21
S3	B	V. Davies					22/06/21
S4	0	V. Davies	J. Cramer		J. Foley		Jeff Foley 2021.07.30 11:13:16 +08'00'

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Executive summary

The purpose of this Protected Exclusion Area Management Plan is to minimise environmental impact on ecological values within the Protected Exclusion Area during the operation of the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (the Site) (Figure 1, Appendix A).

The Protected Exclusion Area comprises remnant native vegetation and the Conservation Category Wetland (CCW) Marbelup Flats within the AMP area. The Protected Exclusion Area is also surrounded by a 50 m wide, low fuel Development Exclusion Buffer. The location of the Protected Exclusion Area is presented in Figure 2 (Appendix A).

This Protected Exclusion Area Management Plan is appended to the overarching Environmental Management Plan (EMP) which has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development.

The objective of this management plan is to protect and maintain biological diversity and ecological integrity within the Protected Exclusion Area.

If potentially polluting activities are not appropriately managed, during operation of the AMP, the following impacts/risks may occur in the Protected Exclusion Area:

- Contamination of surrounding soil, groundwater, and surface water
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value
- Bushfire
- Community and stakeholder dissatisfaction.

Measures to mitigate environmental impacts on the Protected Exclusion Area, during the construction of the AMP, have been included in the Construction Management Plan, which is also appended to the overarching EMP.

It is the responsibility of Albany Motorsport Venue Incorporated (AMV Inc.) to implement this Protected Exclusion Area Management Plan during operation of the AMP.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

Contents

1. Introduction	1
1.1 Purpose of this report	1
1.2 Objectives	1
1.3 Legislation and guidelines	1
1.4 Limitations	1
2. Potential environmental impacts	2
3. Management strategies, actions, timeframes and responsibilities	3
4. Monitoring	5
5. Review	6
6. References	7

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Table 1	Protected Exclusion Area management strategies, actions, timeframes and responsibilities	3
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Appendices

Appendix A	Figures
Appendix B	Revegetation species list

1. Introduction

1.1 Purpose of this report

The purpose of this Protected Exclusion Area Management Plan is to minimise environmental impact on ecological values within the Protected Exclusion Area during the operation of the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (the Site) (Figure 1, Appendix A).

The Protected Exclusion Area comprises remnant native vegetation and the Conservation Category Wetland (CCW) Marbellup Flats within the AMP area. This area is also surrounded by a 50 m wide, low fuel Development Exclusion Buffer as per the requirements of WQPN 100 Motor sport facilities near sensitive waters (DoW, 2007). The location of the Protected Exclusion Area is presented in Figure 2 (Appendix A).

This Protected Exclusion Area Management Plan is appended to the overarching EMP which has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development.

Measures to mitigate environmental impacts on the Protected Exclusion Area, during the construction of the AMP, have also been included in the Construction Management Plan (Appendix J of the EMP).

1.2 Objectives

The objective of this management plan is to protect and maintain biological diversity and ecological integrity within the Protected Exclusion Area.

1.3 Legislation and guidelines

Legislation and guidelines applicable to the Protected Exclusion Area include the following, but may not be limited to:

- *Biosecurity and Agriculture Management Act 2007*
- *Biodiversity Conservation Act 2016*
- *Environmental Protection Act 1986*
- *Environmental Protection and Biodiversity Conservation Act 1999* (Commonwealth)
- *Environmental Protection Regulations 1987*
- *Rights in Water and Irrigation Act 1914.*

1.4 Limitations

This report: has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and City of Albany as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

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2. Potential environmental impacts

If potentially polluting activities are not appropriately managed, during operation of the AMP, the following impacts/risks may occur in the Protected Exclusion Area:

- Contamination of surrounding soil, groundwater, and surface water
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value
- Bushfire
- Community and stakeholder dissatisfaction.

3. Management strategies, actions, timeframes and responsibilities

Broad management strategies have been developed to minimise potential impacts associated with the Protected Exclusion Area. The management strategies, timing and responsibilities to minimise environmental impacts on the Protected Exclusion Area within the AMP are outlined in Table 1.

It is the responsibility of the Operations Manager of the AMV Inc. to implement this Protected Exclusion Area Management Plan during operation of the AMP.

Table 1 Protected Exclusion Area management strategies, actions, timeframes and responsibilities

Management Strategies	Actions	Timeframes	Responsibility
Site induction	<p>Site induction includes the following specific management components:</p> <ul style="list-style-type: none"> – Location of the Protected Exclusion Area – What can and can't be done within the Protected Exclusion Area. – What to do with injured fauna, if any. 	On entry to site	All personnel (AMV Inc. Operations Manager, volunteers and competitors)
	All responsible persons to undertake the necessary training on the requirements of the Protected Exclusion Area within the AMP.	Site induction	AMV Inc. Operations Manager
Minimise impact on native vegetation	<p>Demarcate approved clearing area to restrict clearing of native vegetation to the approved clearing area only. Any clearing outside the approved area to be recorded in the AMP Incident Register and reported to DWER as required.</p>	At all times	AMV Inc. Operations Manager
	<p>All plant and vehicle movement and access areas will be limited to the Stage 1A and Stage 1B areas only. No vehicle movement within the Protected Exclusion Area.</p>		
	<p>Maintain fencing around Development Exclusion Buffer (Figure 2, Appendix A).</p>		
	<p>Revegetation and weed control, where required, of the Protected Exclusion Area with suitable native species, identified within the CCW including, ARVS Vegetation Units 13, 47 and 49 (Appendix B).</p> <p>A revegetation plan shall be developed to identify sources of commercially available tubestock/ seed, areas of wetland and upland vegetation type planting, weed control, completion criteria and monitoring timeframes.</p> <p>Revegetation and weed cover will be monitored against adopted completion criteria to determine success of revegetation works. Monitoring will be undertaken until adopted completion criteria are met. If revegetation does not meet completion criteria further remedial works will be undertaken to ensure success of revegetation works.</p>	As required	AMV Inc. operating manager

Management Strategies	Actions	Timeframes	Responsibility
Minimise impact on native fauna	<p>Check tracks for presence of native fauna prior to commencement of AMP activity.</p> <p>If native fauna is disturbed during clearing it should be allowed to make its own way to adjacent vegetation.</p> <p>Any native fauna injured as a result of the AMP operation will be taken to a designated veterinary clinic or a DBCA nominated wildlife carer.</p> <p>All native fauna injuries and deaths to be recorded in the AMP Incident Register and reported as required.</p> <p>Maintain fencing around Development Exclusion Buffer.</p>	At all times	AMV Inc. Operations Manager
Minimise impact to groundwater and surface water quality and quantity	<p>No dewatering or disposal of dewatering effluent onsite due to drawn down of groundwater and ASS “moderate to low” risk area in the Protected Exclusion Area.</p> <p>Undertake waste management as per the Waste Management Plan.</p> <p>Undertake hydrocarbon management as per the Hydrocarbon Management Plan.</p> <p>Implement Water Management Plan.</p>	At all times	AMV Inc. Operations Manager
Minimise erosion and sedimentation	Surface water drains and discharge locations to be positioned so that they have minimal impact on native vegetation.	Detailed design phase	AMV Inc. Operations Manager /contractors
	Install erosion and sediment control structures downstream of AMP activity areas and construct final landforms to be stable. Maintain erosion control structures and clean out on a regular basis to prevent erosion and sedimentation in the Protected Exclusion Area.	As required	AMV Inc. Operations Manager /contractors
Minimise disturbance of ASS	<p>No soil disturbance within the Protected Exclusion Area.</p> <p>No dewatering or disposal of dewatering effluent onsite due to drawn down of groundwater and ASS “moderate to low” risk area in the Protected Exclusion Area.</p> <p>Any bore water drawdown onsite for water use should not encroach on the ASS risk area identified onsite.</p>	At all times	AMV Inc. Operations Manager
Minimise risk of bushfire	<p>Maintain 50 m wide, low fuel Development Exclusion Buffer around the Protected Exclusion Area (Figure 2, Appendix A).</p> <p>Undertake maintenance activities within the AMP as per the Addendum to the Bushfire Management Plan for Stage 1A and 1B (Bio Diverse Solutions, 2021).</p>	As required	AMV Inc. Operations Manager
Onsite green waste reuse	Vegetation waste shall not be reused within the Protected Exclusion Area or Development Exclusion Buffer.	As required	AMV Inc. Operations Manager
Promote a high standard of housekeeping, thereby minimising litter and vermin attraction and infestation	Ensure domestic waste bins are lidded to minimise litter and vermin attraction and infestation.	At all times	AMV Inc. Operations Manager
	Manual litter sweep/ pick-up of the site to collect any windblown waste.	Weekly	AMV Inc. Operations Manager

4. Monitoring

Monitoring of the Site will be undertaken, by the AMV Inc. Operations Manager, so as to meet the following performance criteria:

- No impact on ecological values within the Protected Exclusion Area i.e. no clearing of native vegetation, increase in weed cover (density/ species composition), spread of Dieback or fauna deaths etc.
- No impact on surface water and groundwater quantity and quality compared to baseline monitoring levels.
- No erosion and sediment run-off to the Protected Exclusion Area.
- No soil disturbance within the Protected Exclusion Area.
- No dewatering or disposal of dewatering effluent onsite due to drawn down of groundwater and ASS “moderate to low” risk area in the Protected Exclusion Area. Any bore water drawdown onsite for water use should not encroach on the ASS risk area identified onsite.
- Successful revegetation results within the Protected Exclusion Area when measured against adopted performance criteria.
- No complaints received regarding operational activities and their impact on the Protected Exclusion Area.

5. Review

The Protected Exclusion Area Management Plan will be reviewed and updated no later than annually. A review may occur sooner if there is a material change in risk, legal requirements or an incident relevant to management of the Protected Exclusion Area. Mitigation strategies will be reviewed for effectiveness and any corrective actions will be implemented.

6. References

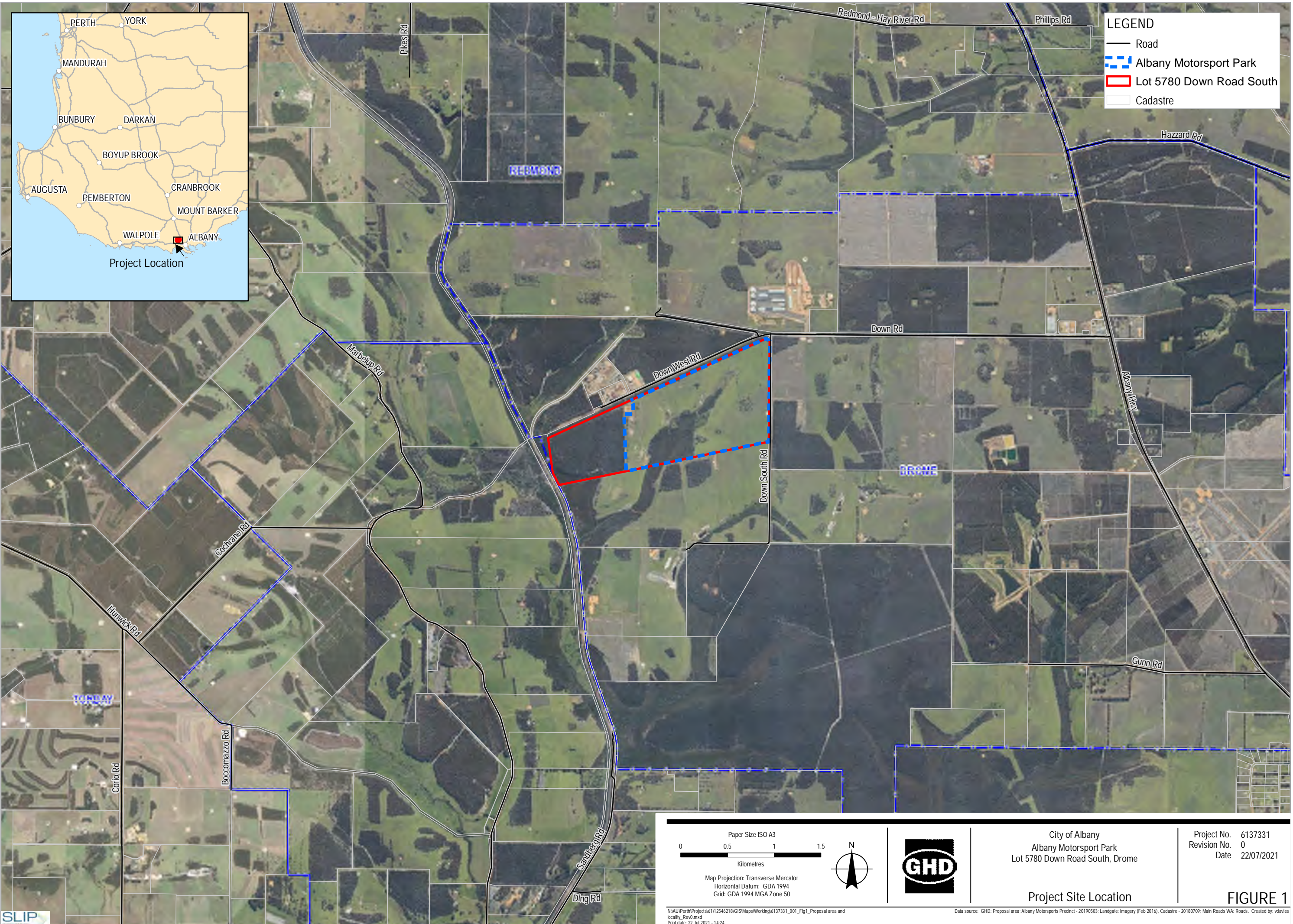
- Bio Diverse Solutions. (2021). *Albany Motorsport Park, Lot 5780 Down Road, Drome, Bushfire Management Plan, Addendum Report*. Unpublished report prepared for GHD.
- DoW. (2007). *Water Quality Protection Note 100: Motor sport facilities near sensitive water*. Perth: Department of Water.
- Roberts Gardiner Architects . (2021). *Albany Motorsport Park Masterplan - Stage 1*. Unpublished masterplan for City of Albany.

Appendix A

Figures

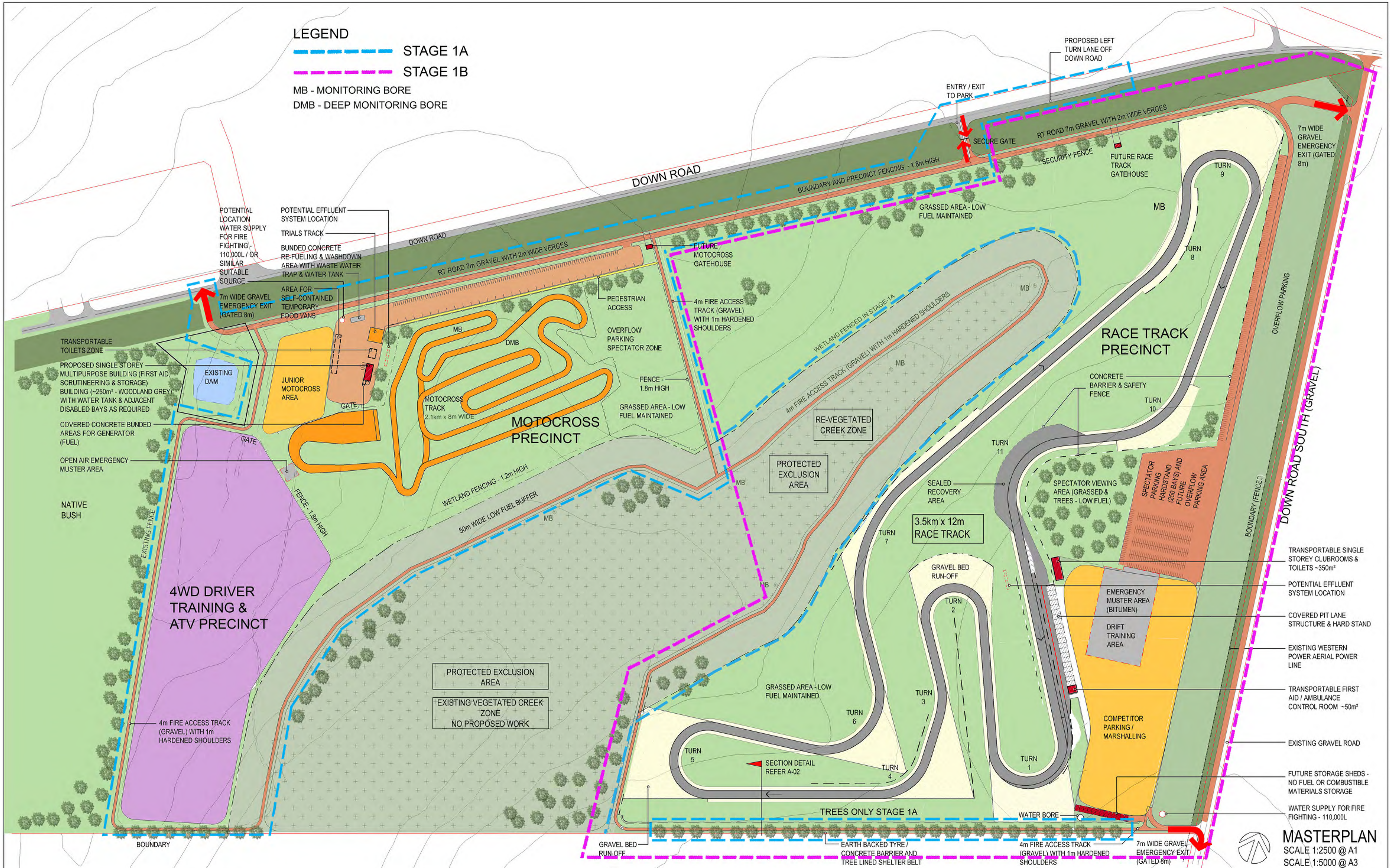
Figure 1 *Project site location*

Figure 2 *Master plan*



LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

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Roberts Gardiner
Architects

project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file

drawn CB project number 21-002

scale 1:2500 @A1
 date JULY 2021
 dwg no. **A-01** rev. **E**

Appendix B

Revegetation species list

Upland vegetation type	Common Name	Commercial availability
ARVS 13/ Vegetation Type 2 (Bio Diverse Solutions 2019) -		
Jarrah/Sheoak/Eucalyptus staeri Sandy Woodland		
Overstorey		
<i>Eucalyptus marginata</i>	Jarrah	Yes
<i>Allocasuarina fraseriana</i>	Sheoak	Yes
<i>Eucalyptus staeri</i>		Yes
<i>Corymbia calophylla</i>	Marri	Yes
Shrub layer		
<i>Banksia grandis</i>	Bull Banksia	Yes
<i>Pimelea imbricata</i>		Seed
<i>Hakea amplexicaulis</i>	Prickly Hakea	Seed
<i>Leucopogon verticillatus</i>	Tassel Flower	Unlikely
<i>Dasypogon bromeliifolius</i>	Pineapple Bush	Seed
<i>Leucopogon distans</i>		Unlikely
<i>Boronia crenulata</i>	Aniseed Boronia	Unlikely
<i>Xanthosia rotundifolia</i>	Southern Cross	Yes
<i>Gompholobium ovatum</i>	Bold Beauty	Seed
Sedges and herb layer		
<i>Anarthria prolifera</i>		Unlikely
<i>Cyathochaeta equitans</i>		Seed
<i>Desmocladius fasciculatus</i>		Unlikely
<i>Patersonia occidentalis</i>	Purple Flag	Yes
<i>Lindsaea linearis</i>	Screw Fern	Unlikely
<i>Dampiera pedunculata</i>		Unlikely
<i>Lepidosperma squamatum</i>		Possible
Wetland vegetation types		
ARVS 47/ Vegetation Type 3 (Bio Diverse Solutions 2019) -		
Homalospermum firmum/Callistemon glaucus Peat Thicket		
Shrub layer		
<i>Melaleuca preissiana</i>	Moonah	Yes
<i>Callistemon glaucus</i>		Yes
<i>Homalospermum firmum</i>		Seed
<i>Banksia littoralis</i>	Swamp Banksia	Yes
Over		
<i>Taxandria parviceps</i>		Yes
<i>Taxandria linearifolia</i>		Yes
<i>Acacia hastulata</i>		Seed
Sedges and herb layer		
<i>Empodisma gracillimum</i>		Unlikely
<i>Gymnoschoenus anceps</i>		Unlikely
<i>Dampiera leptoclada</i>	Slender-shooted Dampiera	Unlikely

Upland vegetation type	Common Name	Commercial availability
ARVS 49/ Vegetation Type 4 (Bio Diverse Solutions 2019)		
Melaleuca preissiana Low Woodland		
Shrub layer		
<i>Melaleuca preissiana</i>	Moonah	Yes
<i>Banksia littoralis</i>	Swamp Banksia	Yes
Over		
<i>Callistemon glaucus</i>		Yes
<i>Empodisma gracillimum</i>		Unlikely
<i>Homalospermum firmum</i>		Seed
<i>Taxandria parviceps</i>		Yes
<i>Taxandria linearifolia</i>		Yes



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→ **The Power of Commitment**

Appendix D

Water Management Plan



Albany Motorsport Park – Development Application

Water Management Plan

City of Albany

16 August 2021

→ **The Power of Commitment**



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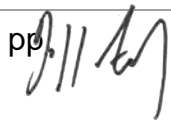
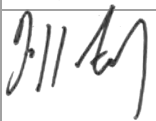
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Document title	Albany Motorsport Park – Development Application Water Management Plan
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Abbreviations

Term	Definition
AHD	Australian Height Datum
AMP	Albany Motorsport Park
AMV Inc.	Albany Motorsport Venue Incorporated
ASS	Acid Sulfate Soil
ATV	All-terrain vehicle
BGL	Below ground level
BMP	Best management practices
BoM	Bureau of Meteorology
CAMS	Confederation of Australian Motor Sport Limited
CEMP	Construction Environmental Management Plan
CEO	Chief Executive Officer
CoA	City of Albany
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
ESA	Environmentally Sensitive Areas
FIA	Federation Internationale de l'Automobile
FIM	Federation Internationale Motocyclisme
GIS	Geographic information system
GoWA	Government of Western Australia
GSMG	Great Southern Motorplex Group Inc.
JDAP	Joint Development Assessment Panel
LGA	Local Government Area
LWMS	Local Water Management Strategy
LGSTWSS	Lower Great Southern Towns Water Supply Scheme
MA	Motorcycling Australia
PDWSA	Public drinking water source area
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i>
SMP	Stormwater Management Plan
TN	Total Nitrogen
TP	Total Phosphorus
WQPN	Water quality protection note
WSUD	Water sensitive urban design
4WD	Four-wheel drive

1. Introduction

1.1 Project description

The City of Albany (CoA) has engaged GHD Pty Ltd (GHD) to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure 1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*¹ and Motorcycling Australia (MA) *Track Guidelines*².
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the complex, the works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

A Master Plan, which illustrates the various aspects of the Site and staging areas, has been developed by the GSMG and CoA to support the Development Application for the AMP (Figure 2, Appendix A).

Once operational the AMP will be operated by Albany Motorsport Venue Incorporated (AMV Inc.).

1.2 Site location

Lot 5780 Down Road South, Drome is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Two areas within Lot 5780 are excluded from the AMP development and include 49.47 ha at the western end of the Site which is covered with native vegetation and a dam area (1.37 ha) on the northern boundary which is subleased to Plantation Energy.

The site is zoned 'Special Use – SU26' under City of Albany Local Planning Scheme No. 1.

The Site is bounded by Down Road West to the north, Down Road South to the east, Lot 5781 Down Road South to the south (privately owned) and a local road reserve and the Avon-Albany rail reserve to the west. The Site is located adjacent to the Mirambeena Timber Processing Precinct and sits within the industrial buffer area.

¹ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

² MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

1.3 Purpose of this report

This Water Management Plan (WMP) has been prepared to support the Application for Planning Approval. The WMP identifies the principles, criteria and water management strategies to manage water across the Site during construction and operational phases.

1.4 Albany Motorsport Park design

1.4.1 Events and usage

For the purposes of sizing facilities and infrastructure GSMG have provided conceptual usage of the AMP, with an assumed typical /frequent site attendance of 300 persons for the Motocross Precinct and 500 persons for the Race Track Precinct (i.e. competitors + officials + spectators). This was determined through discussion with the GSMG on the nature and size of expected typical events. For special events that anticipate a greater number of site attendees, additional water servicing management measures will need to be implemented (e.g. drinking water carts, port-a-loos).

1.4.2 Elements of AMP design

Key elements of the track design and consideration for Water Sensitive Urban Design (WSUD) are summarised in Table 1.

Table 1 Key AMP design elements and WSUD considerations

Track element	Description	WSUD considerations
AMP facilities	Includes the following: <ul style="list-style-type: none"> – Facility buildings (clubrooms, first aid, toilets, storage sheds) – Carpark (competitor and spectator) – Pit and garage areas – Refueling area 	Considered impervious areas contributing surface runoff. To be protected from flood events. Pit and garage areas and refueling areas are key water quality treatment areas.
Access roads	Entry and exit roads consisting of 7 m wide gravel road, with 2 m wide grassed verges either side.	Road and verge have limited permeability.
Overflow parking	Grassed overflow parking	Considered pervious.
Race Track pavement	The Race Track pavement consists of 12 m wide track.	Considered impervious areas contributing surface runoff.
Race Track verge	The Race Track verge is predominantly grass and gravel with limited asphalt on T11.(recovery area)	Gravel verge is considered permeable.
Run-off areas	Run-off areas occur around the Race Track to enable drivers to dissipate speed during a race. Run-off areas are composed of loose gravel underlain by compacted pavement material.	Pavement layer underneath is considered impervious.
Motocross Track	Compacted clay and sand Motocross track.	Limited permeability.
4WD Driver Training and ATV Precinct	4WD and ATV area comprises finished natural surface after removal of some gravel, sand and clay to build the Motocross track.	Limited permeability.

1.5 Previous studies

Numerous studies and investigations have been undertaken to support development planning for the Albany Motorsports Complex. A summary of key documents of relevance to integrated water management of the Site is provided below:

- **Pavement Investigation Report 4212/1 Albany Motorsport Park Development** (Great Southern Geotechnics , 2021)
 - A geotechnical investigation was completed for the proposed Albany Motorsport Park Development including assessment of soil types and profiles, characteristics of selected soil samples and completion of in-situ permeability testing at selected locations.
- **Albany Motorsport Park Local Water Management Strategy** (GHD, 2021)
 - A Local Water Management Strategy (LWMS) was prepared (as part of the Scheme Amendment) that identified the key water management principles, design criteria, and strategies for the proposed development of the Albany Motorsport Park. The water management strategies in the LWMS were developed with reference to the concept track design and with regard to the site characteristics.
- **Albany Motorsport Park Site Feasibility Study – Lot 5780 Down Road South, Drome** (GHD, 2018)
 - A site feasibility assessment was completed as part of preliminary planning investigations for the proposed Albany Motorsport Park. The feasibility assessment included a range of desktop technical investigations including review of servicing requirements and traffic impact assessment, and desktop geotechnical, hydrogeological, noise and water management planning. The feasibility assessment further included a preliminary risk assessment of the key issues identified and identified a suite of recommended remedial actions based on a hierarchy of controls. A number of recommended remedial and control actions were outlined to provide guidance for the various stages of the development.
- **Albany hinterland prospective groundwater resources map; Explanatory notes** (DWER, 2017)
 - Hydrogeological report and map for the Albany hinterland developed by the Department of Water and Environmental Regulation (DWER) as part of the Royalties for Regions South Coast Groundwater Investigation project. The Albany hinterland area in the South Coast is known as an important resource for water supply in the Great Southern region. In 2013, DWER undertook some hydrogeological (surface water and groundwater) investigations (as part of South Coast groundwater investigation by Western Australian Government on groundwater availability) and mapped prospective groundwater resources in the Albany hinterland region in order to support regional developments.
 - The report and map were used to develop a conceptual hydrogeological model for the Site as part of the LWMS, in order to understand the groundwater and surface water sources and pathways.
- **Motorplex Development, Down Road Surface and Groundwater Monitoring 2018 Summary Report** (Bio Diverse Solutions, 2018)
 - Summary reporting of shallow groundwater monitoring bore monitoring program. Monitoring of shallow groundwater bores installed across the Site commenced in February 2018. The 2018 report summarises preliminary results for the 2018 monitoring period, with additional monitoring completed up to November 2019 which were included in the LWMS.
- **Proposed Motorsport Park, Lot 5780 Down Road, Drome Reconnaissance Flora and Level 1 Fauna Survey Report** (Bio Diverse Solutions, 2019)
 - Bio Diverse Solutions completed a desktop assessment and reconnaissance flora survey and Level 1 Fauna survey of the Project Site in Spring 2018. The survey included identification of habitat trees and threatened fauna dependent hollows, and mapping of vegetation communities (GIS mapping, vegetation condition mapping, fauna habitat types and condition).

1.6 Scope and limitations

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2. Existing environment

This section summarises key information relating to catchment characteristics for the Site. The LWMS (GHD, 2021) provides a comprehensive overview of environmental characteristics.

2.1 Existing activities

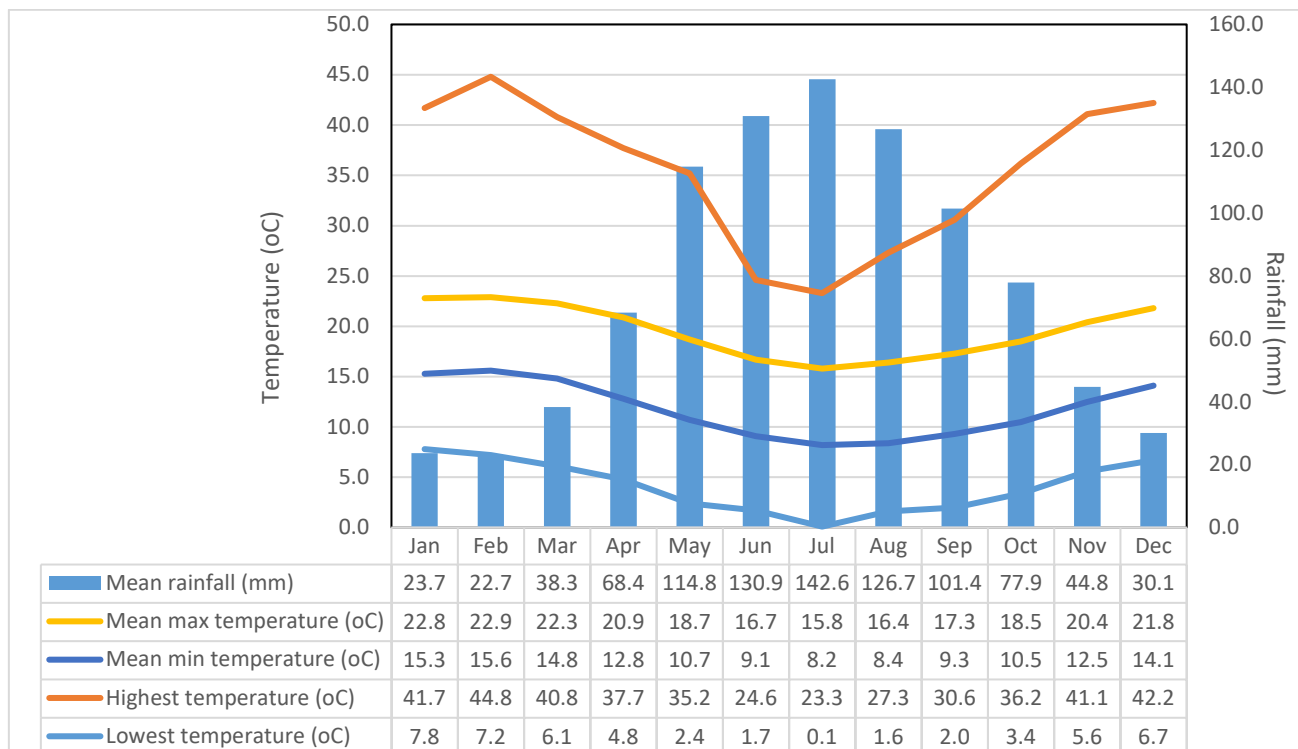
The perimeter of the site is entirely fenced and is currently used for the primary purpose of cattle grazing. Historically the site is likely to also have been used mainly for the purpose of agriculture, as well as some limited resource extraction (sand and gravel). The western end of the site consists of 52 ha of native vegetation that will be retained. A number of small dams are located across the site for stock watering. These will be retained and maintained for the AMP.

2.2 Climate

Albany is located on the south coast of Western Australia and the climate is broadly described as Mediterranean, with warm dry summers and mild wet winters. The nearest Bureau of Meteorology (BoM) official recording station is Albany Airport (Station No. 9500). This station records temperature, rainfall, relative humidity, wind speed and direction and has data available dating back to 1877. Table 2 illustrates recorded average monthly meteorological data for the Bunbury AWS BoM station for years 1877 to 2020 (BoM, 2020).

Temperatures range from a mean maximum of 22.9 °C in summer and drop to a mean maximum of 15.8 °C in winter. Mean minimum temperatures follow a similar trend, reaching 15.6 °C in summer and 8.2 °C in winter. Rainfall is low throughout the summer months and peaks in July, with a monthly average of 142.6 mm. The mean annual rainfall is 925.2 mm, with approximately 103.1 rain days a year. Relative humidity at Albany reflects the Mediterranean climate, demonstrating drier summers and a comparatively high relative humidity of 82 % in the morning in winter (BoM, 2020).

Table 2 Mean rainfall and temperatures in the Albany region (Site No. 9500) (BoM, 2020)



2.3 Topography, landform and soils

2.3.1 Topography

The surface elevation of the site ranges from approximately 41 m AHD to 73 m AHD (GoWA, 2021). The lowest elevation is on the southern boundary and extends through the center of the site within a gully (a tributary to Marbelup Brook) that lies in a north-easterly direction. The highest elevation occurs on the eastern boundary of the site.

2.3.2 Surface soils and geology

Regional geology is described with reference to the 1:50,000 Environmental Geology series map (Albany sheet) and the 1:250,000 Geological Series map (Mt Barker – Albany sheet). These indicate the site is underlain by Cainozoic sand of colluvial origin – “Qc: *Colluvium – Sand, silt and clay*” on the slopes and within the low-lying areas of the Marbelup Brook “QA – *Clay, silt, sand and gravel in watercourses*” (Allen & Sofoulis, 1984). The sand is described as pale grey, fine to coarse, angular to sub-rounded quartz that is loose and moderately sorted and contains occasional pebbles of laterite. The thickness of the sand unit is not indicated on the maps, however the 1:250,000 map sheet indicates sand unit generally overlays laterite.

Local soils and geology are further delineated by Department of Primary Industries and Regional Development (DPIRD) Soil Landscape Mapping as summarized in Table 3 and presented in Figure 3 (Appendix A).

Site investigations were completed by Great Southern Geotechnics across the site in March 2021 to assess soil types and profiles and in-situ permeability. Eight test pits were completed, with soil types typically in agreement with DPIRD Soil Landscape Mapping. Gravels were identified on the western slope in the vicinity of the 4WD Driver Training and ATV Area, and deep sands present on the valley slopes and duplex soils in the valley floors.

In-situ soil permeability testing was completed for test pit locations TP4 to TP8, with saturated hydraulic conductivity ranging between 0.41 m/day (TP8) and 3.29 m/day (TP6 and TP7).

The locations of the test pits, soil logs and soil permeability results provided in Appendix B.

Table 3 Soil map units within the Project Site (GoWA, 2021)

Map unit symbol	Name	Landform	Geology	Soil
242KgDMc	Dempster Crest phase	Broad convex crests of sandy and lateritic spurs and ridges	Deeply weathered siltstone	Duplex sandy gravels; Grey deep sandy duplexes; Pale deep sand; Shallow gravels
242KgS7f	Minor Valleys S7 floor phase	Foot slopes and swampy valley floors of minor valleys	Colluvial and alluvial deposits over weathered sedimentary rocks	Wet and semi-wet soils; Pale deep sands; Grey deep sandy duplexes
242KgS7h	Minor Valleys S7 slope phase	Side slopes of minor valleys	Colluvium sedimentary rocks	Pale deep sands; Grey deep sandy duplexes
242ReDMc	Dempster Crest phase	Elongate crests	No information recorded	Sands and laterite

2.3.3 Acid sulfate soils risk mapping

An overlay of the site onto the DWER ASS risk mapping for the Albany-Torbay region (GoWA, 2021) is presented as Figure 4 (Appendix A), which identifies that the site is located outside of the boundary extent of the mapped areas.

Given that tributaries of Marbelup Brook located approximately 750 m to the south of the site are mapped as “Moderate to Low Risk” of ASS occurring, GHD has inferred that where these tributaries of Marbelup Brook extend into the site that they would also be considered to represent the same level of ASS risk. This is also consistent with the more broadly mapped risk areas where there are obvious low lying drainage lines, creeks and tributaries.

To more accurately inform the ASS risk onsite, a preliminary ASS investigation was completed as part of the onsite geotechnical investigation undertaken by Great Southern Geotechnics on 25 March 2021. Based on the ASS assessments to date, inorganic sulfidic sources capable of rapid acid release upon disturbance were not observed. Other, more slow releasing acidity sources were observed in the ASS assessment and will require management if disturbed in volumes greater than 100 m³.

Any impacts associated with dewatering (if required) during construction will need to be considered in the ASS management plan. Further detail is captured in the associated AMP Environmental Management Plan.

2.4 Hydrology

A summary of desktop searches related to hydrology datasets is provided in Table 4. Further detail is provided in the following sections where relevant.

Table 4 Summary of hydrology dataset queries within the Project Site

Dataset	Details	Result
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the <i>Metropolitan Water Supply, Sewage and Drainage Act 1909</i> or the <i>Country Area Water Supply Act 1947</i> .	Site lies within the Priority 2 Marbelup Brook Catchment Area (Section 2.4.1).
Groundwater Areas	Groundwater areas proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI).	Site lies within Albany Groundwater Area (Section 2.4.2, Figure 5).
Surface Water Areas	Surface water areas proclaimed under the RIWI Act 1914.	None present.
Irrigation District	Irrigation Districts proclaimed under the RIWI Act 1914.	None present.
Rivers	Rivers proclaimed under the RIWI Act 1914.	None present.
Waterways Management Areas	Areas proclaimed under the <i>Waterway Conservation Act 1976</i> .	None present within the Site; however, the Albany Waterways Management Area is located approx. 800 m to the north.
Clearing Control Catchments	Country Area Water Supply Act 1947 Part 2A.	None present.
South Coast Significant Wetlands	Represents the regionally significant wetlands of the South Coast.	Site contains the Marbelup Flats, a conservation class wetland (Section 2.4.3).

2.4.1 Public drinking water source area

The site is located within a Priority 2 (P2) area of the Marbelup Brook public drinking water source area (PDWSA) (GoWA, 2021). This PDWSA is gazetted under the *Country Areas Water Supply Act 1947*, however is currently not used. It has been identified as a potential future water source option in the *Great Southern Regional Water Supply Strategy 2014* (DoW, 2014).

The Minister for Water has formally provided advice to the City of Albany (Kelly, 2018) that while a motorsport facility is incompatible with a P2 PDWSA (DoW, 2016), “*there are measures that can be put in place to protect water quality should the City proceed to approve the development*”. These measures are further discussed in Section 4.2 (Wastewater servicing), Section 5.2 (Stormwater quantity management), Section 5.3 (Stormwater quality management) and Section 6 (Construction management) and Section 7 (Monitoring).

2.4.2 Groundwater conditions

On a regional scale, the 250K Map Series – Hydrogeology identifies a “*sedimentary aquifer within intergranular porosity – extensive aquifers, major groundwater resources*” underlying the Site (DoW, 2002). Groundwater salinity in the local area is in the range of 500 – 1000 mg/L, which is considered to be marginal for productive uses (GoWA, 2021).

A review of the DWER Water Information Reporting database identified no publicly available groundwater level or groundwater quality data within 2 km from the Site.

2.4.3 Wetlands and groundwater dependent ecosystems

Desktop searches identified no internationally important (Ramsar) or Nationally Important listed wetlands within 5 km of the Site (GoWA, 2021).

The South Coast Significant Wetlands dataset (DBCA-018) identifies the unnamed water course located within the Site as the Marbelup Flats, part of the King River Suite, and a Conservation Class wetland (Figure 4, Appendix A) (GoWA, 2021).

2.4.4 Surface water features

An unnamed creek line runs from the north-east corner of the site through to the south-west corner, from where it joins into Marbelup Brook located approximately 800 m west of the site boundary.

During a site visit (June 2018) the watercourse was observed to be in a modified state, with cattle currently having access to the watercourse. Erosion was evident, particularly in the eastern extent of the watercourse. This area was also mostly devoid of native vegetation, with the exception of some sedges (*Juncus* spp) (GHD, 2018). The western section of the watercourse contains native shrubs / sedges and had a defined bed / banks.



Plate 1 Eastern extent of the watercourse showing evidence of erosion and cattle access

2.4.5 Summary of pre-development monitoring (Bio Diverse Solutions)

Bio Diverse Solutions completed quarterly monitoring of surface water and groundwater at the Project Site for the period February 2018 to November 2019. An overview of the key results is provided in the following sections with sampling locations, the 2018 summary report and baseline water quality results for surface water and groundwater provided in Appendix C.

2.4.5.1 Surface water

Field records indicate two surface water sample locations within the unnamed watercourse were flowing for all monitoring dates in 2018 (Feb, May, Sep, Nov 2018), with flow at the downstream site (CS01) on all dates in 2019 (Feb, May, Aug, Nov).

An overview of key surface water quality data include:

- Surface water pH is moderately acidic, ranging from 4.46 to 6.85.
- Total nitrogen (TN) concentrations were typically higher at the upstream surface water location CS02 (TN range of 2 mg/L to 6.5 mg/L) compared to the downstream location CS01 (TN range from 0.5 mg/L to 2 mg/L)
- Total phosphorus (TP) concentrations were higher at the upstream surface water location CS02 (TP range from 0.22 mg/L to 0.55 mg/L) reflecting the TP concentration of bores in proximity to CS02. TP concentrations were typically below detection levels at the downstream surface water location CS01.
- Dissolved metals parameters including aluminium, iron and zinc were elevated in several samples at downstream surface water location CS01. Site CS02 reported isolated elevated aluminium, iron and zinc.
- MBTEXN parameters reported below detection in all surface water samples.
- TRH fractions were detected in some surface water samples.
- PAH parameters reported below detection in all surface water samples.
- Microbial testing detected microbial parameters in the majority of surface water samples.

2.4.5.2 Ground water

A summary of groundwater level records is provided in Table 5.

Table 5 Groundwater levels

Bore ID	Easting (m)	Northing (m)	Ground level – est. RL (mAHD)	Depth to Groundwater (mBGL)							
				Feb 2018	May 2018	Sep 2018	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019
SB01	567179	6133615	58.4	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0
SB02	567404	6133889	49.6	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0
SB03	567519	6134401	56.8	> 2.0	> 2.0	1.21	1.93	> 2.0	> 2.0	1.45	> 2.0
SB04	567700	6134179	48.2	> 2.0	0.91	0.30	1.07	1.66	1.11	0.37	1.48
SB05	568056	6134636	60.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0
SB06	568131	6134478	53.6	0.87	0.70	0.00	0.59	1.03	0.73	0.06	0.73
SB07	567939	6134264	51.6	0.64	0.54	0.44	0.64	0.95	0.58	0.52	0.64
SB08	568308	6134637	56.5	> 2.0	1.55	0.18	1.27	1.58	1.42	0.38	1.29
SB09	568032	6134141	50.3	0.66	0.57	0.44	0.78	0.98	0.87	0.61	0.99
SB10	567886	6133756	62.7	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0
SB11	568314	6134267	68.6	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0	> 2.0
SB12	568474	6134781	60.2	> 2.0	> 2.0	1.04	> 2.0	> 2.0	> 2.0	1.1	> 2.0
DB01	-	-	-	-	-	-	-	-	7.10	6.95	6.97
Notes	BGL – below ground level - Where results shown as “> 2.0”, this means the groundwater table was not intersected by the shallow groundwater monitoring bore (being only 2 m deep)										
	Results shown in red font - groundwater table was intersected by the groundwater monitoring bore.										
	Deep bore (DB01) monitoring only commenced from May 2019.										

An overview of key groundwater quality data include:

- Groundwater pH is moderately acidic, typically ranging from 3.82 to 7.52. pH at SB06 and SB07 (2.5 and 2.8) were significantly lower in February 2018 sampling event.
- Total nitrogen (TN) concentrations were typically elevated across the Site (range from 2 mg/L to 28 mg/L), which may be attributed to the historic and current farming practices. Significantly elevated TN at some bores (SB06, SB07 and SB08) coincided with sampling following peak groundwater levels. Exceptionally elevated TN concentrations reported in bore SB08 in February and May 2019 (110 and 79 mg/L), and additional sampling is recommended to confirm concentrations.
- Total phosphorus (TP) concentrations were typically elevated in some bores (SB06, SB07 and SB08).
- Dissolved metals parameters including aluminium, iron and zinc were elevated in the majority of samples in all bores, suggesting background concentrations of these metals are elevated due to the local soil and geological profile. Dissolved chromium was also elevated above the default trigger value in some bores.
- With the exception of toluene MBTEXN parameters reported below detection in the majority of groundwater samples. Toluene was detected in bore SB04 on all sampling occasions, and in bores SB06, SB07, SB08, SB09 in some sampling occasions. Toluene was elevated above the ANZG (2018) default toxicant guideline value in samples from SB07 (770 ug/L) and SB08 (210 ug/L, 310 ug/L, 980 ug/L).
- TRH fractions were detected in some groundwater samples. Particularly elevated TRH fractions were reported for bore SB07 and SB08 in February 2019. It is recommended that additional TRH samples are collected, with silica gel cleanup requested from the laboratory where elevated samples are identified.
- With the exception of a single detection for Naphthalene (SB06, Sept 2019) PAH parameters reported below detection in all groundwater samples.
- Microbial testing detected microbial parameters in some groundwater samples at all bores

2.4.6 Conceptual hydrogeological model

A conceptual hydrogeological model was developed for the site to gain an initial understanding of surface and groundwater water flows and potential linkages. Soil landscape mapping and regional geology mapping were used to infer geological units and soil types in the absence of deeper borehole data. The outcomes of the model (see Appendix D) noted:

- The groundwater levels observed in the shallow bores indicate that groundwater is present in the lower lying areas nearer the creek and will be most likely be supplying the creek with groundwater inflow.
- The groundwater levels and gradient, inferred from topography, supports that groundwater discharges into the creek.
- Shallow/perched groundwater may discharge and resurface via sandier layers that sit on top of more impermeable lateritic, coffee rock or clay layers; especially when there is significant slope.
- The discharging groundwater either expresses as surface water, or migrates within the deeper more permeable deposits.

2.4.7 Existing hydrological regime

2.4.7.1 Pre-development hydrology

A catchment analysis was completed using CatchmentSIM to delineate pre-development catchments for the entire site, including upstream areas. Refer to Figure 6 in Appendix A.

A one-dimensional DRAINS model with ILSAX hydrology was used for calculation of runoff. Model parameters included:

- Paved (impervious) area depression storage = 1 mm
- Supplementary area depression storage = 1 mm
- Grassed (pervious) area depression storage = 5 mm
- Soil Type 3 (slow infiltration rates).

The assessment was determined in accordance with Australian Rainfall and Runoff (ARR) 2016 (Geoscience Australia, 2016), with design rainfall data from the ARR 2016 data hub and the Bureau of Meteorology (BoM, 2018). The estimated peak flows for pre-development from various catchments are shown below in Table 6. Further assessment of specific areas impacted by the project works are further detailed in section 5.2.5. These focus on predevelopment areas surrounding the western motocross development and the eastern race track development, where the majority of the changes to the site occur.

Table 6 Estimates of peak flows pre-development

Catchment	Area (ha)	Impervious fraction (%)	Peak flows (m ³ /s)			
			1EY (1 yr ARI)	0.5 EY (2 yr ARI)	10% AEP (10 yr ARI)	1% AEP (100 yr ARI)
E1	19.8	3	0.06	0.08	0.43	2.44
E2	17.4	3	0.08	0.10	0.39	2.24
E3	15.3	3	0.01	0.02	0.36	1.97
E4	13.9	0	0.00	0.00	0.45	2.27
E5	36.4	60	0.00	0.00	0.00	0.67
E6	17.4	0	0.00	0.00	0.33	1.81
S1	14.1	0	0.00	0.00	0.31	1.64
S2	23.4	0	0.00	0.00	0.57	3.30
S3	41.6	0	0.00	0.00	1.02	6.07
S4	33.6	0	0.00	0.00	0.65	3.64

Catchment	Area (ha)	Impervious fraction (%)	Peak flows (m ³ /s)			
			1EY (1 yr ARI)	0.5 EY (2 yr ARI)	10% AEP (10 yr ARI)	1% AEP (100 yr ARI)
S5	25.1	0	0.00	0.00	0.90	4.18
TOTAL	262.7	-	0.03	0.03	1.82	17.0
<i>Note:</i>	<i>E denotes an external catchment, S denotes a catchment within the site or with a significant portion of the catchment within the site.</i>					
	<i>TOTAL denotes the flows leaving the site via the creek/wetland which may be different to the individual catchments due to routing and storage within the site/model.</i>					

2.4.7.2 Flood modelling

To inform the design of site infrastructure, a site-wide modelling of the existing (or pre-development) flood conditions was undertaken. This entailed simulating the 1% AEP storm event over the site using TUFLOW (Build 2020-10-AA), which is a program for simulating depth-averaged, one and two-dimensional free surface flows (such as occurs from floods and tides). Calibration of the model was not performed, as there are no operational streamflow gauges in vicinity and/or relevant to the site.

2.4.7.2.1 Model setup and assumptions

Modelling was done using a ‘rainfall-on-grid’ approach, in which the design rainfall hyetograph is applied directly to a Digital Elevation Model (DEM) that describes the site topography. The DEM was generated with a 5 m cell resolution using 1 m surface contours from Landgate, which is the finest available topography data that is publicly available for the site.

Routing of surface runoff over the DEM is influenced by the surface roughness, which is characterised by assigning Manning’s roughness values to each DEM cell. Characterisation of the surface roughness was done through manual interpretation of the latest aerial imagery, with each identified surface type assuming the roughness values listed in Table 7.

Table 7 Adopted surface roughness values in flood modelling

Surface type	Manning’s roughness n*
Cleared and grassed	0.050
Forested	0.070
Bare earth	0.040
Paved/roof areas	0.020

* Note: Values determined based on Table 6.2.2 in Book 6 of ARR 2019.

Catchment hydrological losses were simulated using an initial and continuing loss approach. With the exception of existing impervious areas, an initial and continuing loss values of 27 mm and 3.4 mm/hour were globally applied to the model domain. For paved and roofed areas, the initial loss was set to 1 mm and no continuing loss was applied. The effects of rainfall pre-burst are also accounted for in modelling by subtracting the median pre-burst depths (extracted from the ARR Data Hub) from the initial loss value.

Culverts across Down Road West were simulated as one-dimensional elements within the greater two-dimensional model. In the absence of detailed survey information, the culvert sizes were determined based on manual measurements taken by the Great Southern Motorplex Group on 17 June 2021; whilst culvert levels were set the same as the topographical low spots. Only two of the three culverts identified along the road were modelled. The culvert near the northeast corner of the site (i.e., Culvert E on Figure 7) could not be modelled due to the coarse resolution of the topography dataset, which did not accurately reflect the road geometry and adjacent table drains.

An open flow boundary is assumed along the perimeter of the model domain. This effectively simulates free discharge of flood waters out of the model and towards low lying areas external to the domain.

2.4.7.2.2 Modelling outcomes

The simulated maximum flood depths and flow velocities for the 1% AEP storm event are provided in Figure 7 and Figure 8 in Appendix A. The results demonstrate that majority of the site drains to the central creek line via overland sheet flow and has very shallow or negligible flood depths; other than in obvious gullies or valleys.

Elevated floodwaters are simulated along the main creek that traverses the site, with localised spots where the flood depth and flow velocities exceed 1 m or 1 m/s in the 1% AEP storm event. Nevertheless, the simulated creek flood extents are largely contained within the proposed Protected Exclusion Area (which will be fenced off) and not expected to interfere with future site operations.

Concentrated flows are expected to occur across the centre of the motocross track, as well as the northern and southern portions of the multi-use racetrack. The simulated flood depths at these areas are generally less than 200 mm but will require provisioning of culverts and/or floodways to mitigate standing water on tracks.

Some flooding is simulated at two low spots north of Down Road West, with flood depths of up to 0.6 m at the western low spot and as high as 0.9 m at the eastern one in the 1% AEP storm event. Both low spots are drained via cross-carriageway culverts that discharge directly to the northern boundary of the site. In particular, the western culvert (i.e., Culvert W) discharges directly towards the proposed motocross track and diversion of these flows will need to be considered as part of this site’s stormwater management. This is further discussed in Section 5.

Table 8 summarises the simulated flows and velocities through each culvert.

Table 8 Simulated 1% AEP culvert flows and velocities

Culvert details	Culvert W	Culvert C	Culvert E
Diameter (mm)	750	900	1050
Flow (m ³ /s)	0.48	1.07	3.54*
Velocity (m/s)	2.04	2.61	NA

* Note: Culvert not modelled. Overland surface flow used as proxy for culvert flow.

Some external catchment runoff from the CBH Mirambeena grain receival site is also expected to flow across Down Road and into the site from the north-east corner, partially through Culvert E. The natural flow path of this external flow cuts across the northern tip of the multi-use track and will need to be diverted accordingly.

2.5 Water users

2.5.1 Surface water

Review of aerial photography identifies numerous small dams located within Marbelup Brook and riparian zone (as demarcated by the DWER South Coast Significant Wetlands coverage), and one potential surface water abstraction (pumping) site downstream of the Site. These locations are summarised in Appendix E.

2.5.2 Groundwater

Groundwater allocation in Western Australia is regulated by DWER. The DWER Water Register notes one groundwater license for the Site and five groundwater licenses downgradient / downstream of the Site along the Marbelup Brook. The groundwater licences are summarised in Appendix E.

2.6 Environmentally sensitive areas

2.6.1 DWER Environmentally sensitive areas

The DWER maintains a dataset of Environmentally Sensitive Areas (ESA). ESAs are areas of land deemed to support conservation, heritage or ecological value, or an area protected through existing State Policy. There are no mapped Environmentally Sensitive Areas (ESA) within 5 km of the Project Site (DWER-046).

As per DWER guidance (DER 2014) a conservation category wetland is “a defined wetland and the area within 50 m of the wetland” and is declared to be an ESA under the *Environmental Protection Act 1986*. The Conservation Class wetland within the Project Site (Section 2.4.3, Figure 4) is identified as an ESA.

2.6.2 Groundwater dependent ecosystems

A search of the online *Groundwater Dependent Ecosystems (GDE) Atlas* (BoM 2020) does not identify any terrestrial or aquatic groundwater dependent ecosystems within the Project Site boundary.

2.6.3 Flora and fauna

Bio Diverse Solutions (2019) completed a Level 1 Fauna Survey and a reconnaissance level flora survey in spring 2018. The reconnaissance level flora survey did not identify any EPBC Act, BC Act or State Priority listed flora species within the Project Site.

The Level 1 fauna survey observed four conservation significant fauna species directly and indirectly within the broader survey area including:

- Baudin’s Cockatoo (*Calyptohynchus baudinii*) (Vulnerable, Schedule 2)
- Forest Red-tailed Black Cockatoo (*Calyptohynchus banksia naso*) (Vulnerable, Schedule 3)
- Western Brush Wallaby (*Notamacropus irma*) (Priority 4)
- Southern Brown Bandicoot, Quenda (*Isodon fusciventer*) (Priority 4).

Marbelup Brook was identified to have high aquatic fauna species richness from monitoring for the study *Ecological values of waterways in the south coast region, Western Australia* (Cook, Janicke, & Maughan, 2008). The high aquatic fauna species richness was partly attributed to the high number of samples collected, comprising 28 sites including three sites (MAR07, MAR08 and MAR09) located within and immediately downstream of the Site.

2.7 Sewage sensitive areas

The Department of Planning Lands and Heritage Map of Sewage Sensitive Areas identifies that the majority of the site is located within a sewage sensitive area (within 1 km of significant wetlands).

3. Design criteria and objectives

This section outlines the design criteria and objectives that the Water Management Plan (WMP) for the site must achieve. The design criteria have been developed with reference to the principles and objectives and guidance in the following:

- AMP Feasibility Study (GHD, 2018)
- *Stormwater Management Manual for Western Australia* (DoW, 2007)
- *Decision process for stormwater management in Western Australia* (DWER 2017)
- *Subdivision and Development Guidelines 2018* (CoA, 2018)
- *WQPN 100: Motor sport facilities near sensitive waters* (DoW, 2007)
- *WQPN 28: Mechanical servicing and workshops* (DoW, 2013)
- *WQPN 52: Stormwater management at industrial sites* (DoW, 2006).

Water and wastewater supply and servicing

This WMP proposes the following water supply design criteria for the site:

- Criteria WS1: Potable water will be supplied through collection and treatment of rainwater to potable standard. Non-potable water will be supplied via bore, site dam and rainwater tanks.
- Criteria WS2: Shortfalls in potable water supply will be imported to the site.

Further detail is provided in Section 4.1.

The wastewater management strategy proposes the following design criteria for the site:

- Criteria WW1 (Stage 1A): Domestic wastewater will be serviced using a combination of transportable toilets (with waste disposal managed by a waste management contractor) and a permanent on-site treatment and disposal system, in accordance with the *Government Sewerage Policy* (DoH, DPLH, DWER, 2019) for a PDWSA and Sewage Sensitive Area.
- Criteria WW1 (Stage 1B): Domestic wastewater will be serviced using transportable toilets (with waste disposal managed by a waste management contractor)
- Criteria WW2: Wastewater from vehicle maintenance, refuelling and washdown areas will be managed in accordance with WQPN 28.

Further detail of domestic wastewater servicing is provided in Section 4.2.1, with detail of vehicular maintenance servicing areas provided in Section 4.2.2.

Stormwater management

This WMP proposes the following stormwater design criteria for the site:

- Criteria SW1: Maintain the hydrological regime of the site and surrounds.
- Criteria SW2: Maintain serviceability of motorsport tracks for the 10% AEP event.
- Criteria SW3: Provide adequate drainage to achieve 300 mm separation from the 1% AEP event for key infrastructure (e.g. vehicle maintenance areas, buildings, wastewater facilities).

Water quality management

This WMP proposes the following water quality design criteria for the site:

- Criteria WQ1: Manage stormwater from the Site to ensure no deterioration in surface and groundwater quality.
- Criteria WQ2: Retain and treat stormwater runoff from constructed impervious surfaces generated by the first 15 mm of rainfall at source, prior to discharge or disposal to groundwater.
- Criteria WQ3: Manage stormwater quality from the Site in accordance with WQPN 100, WQPN 28 and WQPN 52.

4. Water supply and servicing

4.1 Water supply

4.1.1 Potable water

The Water Corporation's Lower Great Southern Towns Water Supply Scheme (LGSTWSS) runs along Albany Highway, with the nearest connection point approximately 4 km to the east at 66 Down Road (fertiliser distribution warehouse) (Water Corporation, 2018). Hence, it is proposed to service Site drinking water needs through a combination of collected rainwater and water carts.

Uncontaminated rainwater from the Site roof runoff (AMP buildings) will be collected in standard 110,000 litre rainwater tanks. At source treatment by household-scale filtration and ultraviolet disinfection will be undertaken. This will allow a safe drinking water supply to the AMP facilities (i.e. clubrooms, canteen, etc.) and ablutions.

A preliminary water balance for the site suggests that rainfall alone will be insufficient to meet expected demand for regular attendance of 500 people. Where there is a shortfall, the venue operator will purchase and cart water to the Site. Similarly for large-scale events, additional potable water will need to be carted to site.

4.1.2 Non-potable

Water demands for other external, non-potable uses (i.e. garden irrigation, toilet flushing, vehicle washdown, dust suppression, etc.) will be met from Site bore, dams and rainwater tanks (where possible). The GSMG is negotiating with Plantation Energy for access to their 4,000 kL Bremer West superficial groundwater allocation (licence number 168308).

4.1.3 Fire water

Fire water supply will be through on-site resources via bore extraction to tank storage and pumped to facilities around the site. Storage of water dedicated for firefighting will be located in the north and the eastern precincts and tanks are to be a minimum of 110,000 L (as shown on Masterplan).

4.2 Wastewater servicing

4.2.1 Domestic wastewater

The Water Corporation's Albany sewerage scheme is not in close proximity to the Site, with the nearest connection point being at Lancaster Road, McKail (being some 10 km distant).

Stage 1A of the development will be serviced by a combination of transportable toilet units (Plate 2) and permanent toilets in the multi-purpose building (sized for 300 patrons). The permanent toilets are connected to an on-site treatment and disposal system, designed in accordance with the *Government Sewerage Policy* (DoH, DPLH, DWER, 2019) for a PDWSA and Sewage Sensitive Area. A full site and soil evaluation report is attached in Appendix H. The transportable toilet units will be maintained and regularly serviced by a local waste disposal contractor. For large-scale events additional portable hire toilet units will be used to accommodate peaks in wastewater production.

Stage 1B of the development will be serviced by transportable toilet units only (Plate 2). The transportable toilet units will be maintained and regularly serviced by a local waste disposal contractor. For large-scale events additional portable hire toilet units will be used to accommodate peaks in wastewater production.



Plate 2 Example portable toilet unit

4.2.2 Vehicular maintenance wastewater

The Site is proposed to be used for motor sport activities. All vehicle maintenance and servicing including vehicle washdown and refueling, will be undertaken in dedicated refueling and pit areas.

To minimise the risk of contamination to sensitive receptors the refueling and pit areas will be designed and constructed in accordance with WQPN 100 and WQPN 28, including the following attributes:

- Have a low permeability sealed concrete pad to minimise seepage and assist cleanup of spills.
- Will be covered and weatherproofed to prevent stormwater intrusion.
- Designed with floors graded to a pit and pipe network that will be serviced by a sediment trap and oil water separator, to ensure stormwater and wastewater are managed separately from other parts of the Site.
- Be double bunded to contain water and spills within the internal drainage network.
- No fuel or combustible chemicals will be stored on-site.

On-site personnel will complete regular inspection and maintenance of the vehicle maintenance areas wastewater infrastructure to ensure they are operating as required.

Sediment from the sediment trap will be removed as required and disposed of at a registered waste facility. Any hydrocarbons removed from the oil water separator will be collected and stored within appropriate sealed containers for disposal at a registered waste facility.

Spill kits will be held at the vehicle maintenance areas in the event of any hydrocarbon spill. When spill kits are used the material will be disposed of at a registered waste facility.

On-site personnel will be trained in the use and disposal of spill kits.

A separate Hydrocarbon Management Plan is included as part of the Environmental Management Plan.

5. Stormwater management plan

5.1 Overview

Stormwater management across the Site has been developed based on an understanding of the key site risks. The design of the Site and stormwater management elements has been iterative and developed with regard to key site characteristics including nature of the proposed activities, external catchment flows, steep terrain over parts of the Site, shallow groundwater conditions over parts of the Site, high surface/groundwater connectivity and downstream receptors and water users.

The key components of the Stormwater Management Plan for the site include:

- Flows that originate upstream of the site will be diverted around motorsport park infrastructure to maintain pre-development hydrology, and to keep externally generated flows separated from stormwater runoff from the motorsport park infrastructure.
- The Site has been designed to ensure key infrastructure (vehicle maintenance areas, buildings, bioretention basins) are sited outside of the modelled 1% AEP flood area (Section 2.4.7.2).
- Key stormwater management controls and best management practices have been considered for various parts of the Site infrastructure to reduce or minimise risk to surface and groundwater quality.
- Stormwater generated from areas considered to have a higher risk of discharging potential contaminants of concern (vehicle maintenance areas) will be managed separate to stormwater runoff from the remainder of the site.
- The first 15 mm of runoff generated from car parking, hardstand areas, motocross track and race track will be treated in bioretention areas.
- Runoff generated from Site buildings will be directed to rainwater tanks, with overflow infiltrated close to source or diverted to swales.

The following sections provide a further detail of the design of the stormwater management system for Stage 1A and 1B of the proposal, with Section 5.2 detailing the management of stormwater quantity and Section 5.3 detailing the management of stormwater quality.

5.2 Stormwater quantity

5.2.1 Principles and objectives

The management of stormwater quantity is proposed in accordance with the principles and objectives of the technical feasibility study (GHD, 2018), the *Stormwater Management Manual for Western Australia* (DoW, 2007); the *Decision Process for Stormwater Management in Western Australia* (DoW 2017), WQPN and the *Subdivision and Development Guidelines 2018* (CoA, 2018).

For vehicle maintenance areas (refueling, washdown and pit areas) stormwater and wastewater generated in these areas for all events up to the 1% AEP will be managed internally as detailed in Section 4.2.2. The stormwater system within this area is further described in Section 5.2.3.2. Vehicle maintenance areas will not be used during events exceeding the 10 year ARI event (10% AEP).

For all other parts of the Site the following principles apply with detail provided for Stage 1A in Section 5.2.2 and Stage 1B in 5.2.3.

1-year ARI event and smaller (1EY)

To retain and treat the 1-year ARI (1EY) event:

- Runoff from impervious areas will be managed via a range of measures including:
 - Small event runoff from impervious areas will be directed to bioretention basins for treatment, prior to infiltration where there is sufficient separation to groundwater.

- Targeted rainwater (roof water only) capture for potable (i.e. drinking) and non-potable water supply (refer Section 4.1). Overflow from rainwater tanks will be infiltrated close to source using soakage pits or infiltration galleries, or directed to swales.
- Drainage swales will be sited downstream of the tracks, conveying stormwater to bioretention basins and allowing stormwater infiltration as close to source as practical, in accordance with WSUD principles. Vegetation, rock weirs and/or check dams (in steep sloped areas) will slow flows and contribute to achieving WSUD objectives. Culverts will be installed to allow crossings of access tracks, carparking (where required) and racetrack pavement, with some piped sections where site topography doesn't allow overland flow.
- Direction of runoff to bioretention basins targeting peak flow management to pre-development levels, where possible.
- Where possible, bioretention basins are positioned to ensure 2 m vertical clearance from the maximum groundwater level. Where bioretention basins are located within 2 m vertical clearance from maximum groundwater level the base of the basin will be lined with local clay to reduce permeability, with subsoil drains installed to provide drainage function.

10-year ARI event (10% AEP)

To maintain site serviceability in the 10-year ARI (10% AEP) event:

- Drainage swales will convey stormwater to bioretention basins and will allow stormwater to be infiltrated as close to source as practical in accordance with WSUD principles. Vegetation and check dams (in steep sloped areas) will slow flows and contribute to achieving WSUD objectives. Culverts will be installed to allow crossings of access tracks and raceway pavements.
- The bioretention basins are designed to compensate peak flows to pre-development levels, and maximise opportunities for infiltration prior to discharge from the site.
- Appropriate erosion control and energy dissipation will be implemented at the outlet of piped drainage structures.

100-year ARI event (1% AEP)

To protect from flooding in the 100-year ARI (1% AEP) event:

- Key site infrastructure (vehicle maintenance areas, habitable buildings) are sited outside the 1% AEP flood area (Section 2.4.7.2). A minimum freeboard of 300 mm is provided to prevent ingress of water.
- Stormwater flows will exceed the capacity of the internal drainage swales, but will be contained within the swale freeboard, or via overload flow along roadways or grassed flow paths.
- The bioretention basins will compensate peak flows to levels that will not adversely impact the downstream receiving areas, and maximise opportunities for infiltration prior to discharge from the site.
- Overland flow paths are provided to minimise the potential for exposure of publicly accessible areas to flood waters.
- Basins will be designed with appropriate emergency overflow weirs and structures to ensure controlled discharge wherever possible.

5.2.2 Stage 1A

Stage 1A of the Albany Motorsport Park comprises the motocross track and 4WD driver training, ATV area and associated infrastructure. Figure 9 in Appendix A presents the proposed stormwater management plan for Stage 1A. An overview of key stormwater management infrastructure is described in the following sections. Details of the hydraulic and hydrologic modelling, including sizing of key stormwater infrastructure are provided in Section 5.2.4.

5.2.2.1 Diversion of external flows

Flood modelling of the site (Section 2.4.7.2) has identified external flows generated from the catchment of the Albany Plantation Export Company (APEC) site to the north of the Stage 1A area. Under current conditions it is assumed that stormwater runoff passes through existing culverts along Down Road West (refer Table 8), with occasional overtopping of the road in larger events and sheeting across the road verge and down into the existing valley.

It is proposed to divert flow from this external catchment via a vegetated diversion drain that traverses around the western edge of the motocross track. Culverts will be located to convey flows under the carpark area and under the motocross track where required.

A second diversion drain is sited along the central hillslope, on the eastern side of the motocross track, as a cut off drain to divert any flows from the hillslope area away from the track.

It is proposed to direct flows from the diversion drains to the central creekline along gently sloping areas. A level spreader weir is proposed to dissipate flows as sheetflow over a vegetated overland pathway. Where slopes are steep or level spreader weirs are not used, the base of swales will be rock protected and feature regular rock weirs and/or check dams to reduce velocity.

Diversion drains have been sized to manage all runoff from the external catchments in accordance with pre-development discharge.

5.2.2.2 Refuelling and washdown area

All servicing, washdown and refuelling associated with the motocross track will be completed within the designated refuelling and washdown area. This area will be a covered concrete area with double perimeter bund and internally draining pit and pipe network. The pit and pipes will direct all water to a sediment trap and an oil water separator, as described in Section 4.2.2.

Treated water from the oil water separator will be directed into the stormwater drainage system.

5.2.2.3 Access road and carpark

In small runoff events stormwater runoff generated from the access roads and carparks will be directed towards distributed bioretention basins to treat stormwater, and infiltrate where possible. Flow in excess of the capacity of the bioretention basins will connect to surface drainage (e.g. diversion drain, swale drainage).

5.2.2.4 Motocross track

The motocross track is sited across the northern valley of the Site. Fill sourced from the Site is used to provide adequate separation (≥ 2.0 m) of the track from the maximum groundwater level. The track is constructed using locally sourced sandy/clay. Refer to the motocross track drawings (plan and longitudinal sections in Appendix F).

Stormwater runoff from the motocross track is directed to a series of vegetated drainage swales that capture and convey stormwater flows to distributed bioretention basins.

Swale dimensions are summarised in Section 5.2.4.

5.2.2.5 4WD driver training and ATV area

The location of the 4WD driver training and ATV area has been identified as a local source of sand/clay and gravel, which will be used for the construction of the motocross track, access road, carparking areas and race track at the Site.

Following removal of sand/clay and gravel the 4WD driver training and ATV area will comprise the natural surface. No formal stormwater management is proposed in this area. Stormwater runoff from this area will be directed to a bioretention basin at the natural low point to aid settling of sediment, with flow in excess of the bioretention basin volume directed via a vegetated overland flowpath towards the central creekline.

5.2.3 Stage 1B

Stage 1B of the Albany Motorsport Park comprises the race track and associated infrastructure. Figure 10 in Appendix A presents the proposed stormwater management plan for Stage 1B. An overview of key stormwater management infrastructure is described in the following sections. Details of the hydraulic and hydrologic modelling, including sizing of key stormwater infrastructure are provided in Section 5.2.4.

5.2.3.1 Diversion of external flows

Flood modelling of the site (Section 2.4.7.2) has identified external flows generated from the north-east catchment, with flows crossing Down Road West from the APEC site to the north, the CBH Mirambeena site to the north-east, and agricultural land to the east of the Stage 1B area.

Flows from part of the northern part of this external catchment accumulate in a roadside drain on the north side of Down Road West, and flow via a culvert (1050 mm dia.) under Down Road West to the Site. External flows originating along the northern boundary of Stage 1B will follow their natural flowpaths with minor culvert crossings (300 mm culvert) provided under access roads where required. A culvert crossing of the Down Road West roadside drain will be provided at the entry to the Site.

External flow originating from the eastern agricultural land will follow its natural flowpath, with minor culvert crossings provided under the access road and race track where required. This diversion drain will also receive some race track stormwater runoff, and flows will be directed to a bioretention basin prior to discharge from the Site.

The flows originating from the north-east (CBH site) will be diverted around the race track using a cut off drain, with minor culvert crossings provided under the access road and race track where required.

Where slopes are steep or level spreader weirs are not used, the base of swales shall be rock protected and feature regular rock weirs and/or check dams to reduce velocity and provide water treatment.

Diversion drains are sized to manage all runoff from the external catchments in accordance with pre-development discharge.

5.2.3.2 Pit area

All servicing, washdown and refuelling associated with the race track will be completed within the designated pit area. The pit area will be covered and weatherproofed to prevent stormwater intrusion, with an impervious perimeter bund and floors graded to an internally draining pit and pipe network. The pit and pipe drainage network in this area may comprise perimeter trench drains with trafficable covers located within the perimeter bund to prevent egress of any surface water drainage or spills generated within this area.

The pit and pipe drainage network will direct all water to a sediment trap and an oil water separator, as described in Section 4.2.2. Treated water from the oil water separator will be directed into the stormwater drainage system.

5.2.3.3 Access road, spectator carpark, competitor carpark and emergency muster area

Runoff from these areas will be managed as follows:

- Access roads and tracks – stormwater runoff generated from the access roads will drain to vegetated areas alongside the roads. Where this cannot occur, roadside drains will be implemented which will feature regularly spaced rock weirs/check dams to slow flows and promote sedimentation. Where required, suitable culvert pipes or overflow points either under the roadway or over the roadway will be provided to target controlled discharge to the surrounding environment.
- Spectator carpark – small event stormwater runoff generated from carpark area will be directed towards the bioretention swales distributed throughout the carpark. These will be connected via minor culverts under the carpark to the adjacent drainage swales.
- Competitor parking and marshalling area – it is proposed that the emergency muster area will feature a crest to direct stormwater runoff to vegetated swale drains located around the perimeter of the competitor carpark and marshalling area. The southern and eastern portions of the carpark and emergency muster area will be

designed to direct flows to a bioretention basin in the south-east corner of the Site. The north-western portion of the carpark and emergency muster area will divert flows to drainage swales and bioretention basins located to the north and south of the Pit area.

5.2.3.4 Race track

Runoff from the race track is designed to capture and convey stormwater flows in a series of shallow vegetated swales (1V:6H) sited downstream of race track cross-fall (assumed on inside of corners). The shallow vegetated swales will feature regularly spaced interceptor traps, and will convey flows to bioretention basins.

5.2.4 Hydrologic and hydraulic assessment

Sizing of key stormwater infrastructure for Stage 1A and Stage 1B including diversion drains, swales and bioretention basins was completed through development of a post-development hydrologic and hydraulic model, using inputs from the existing site hydrology (Section 2.4.7) and the Site infrastructure plans (Figure 2 in Appendix A).

5.2.4.1 Diversion drains

Design of the diversion drains is based on the following:

- Where space and topography permit the drainage swales will be broad and shallow. Side slopes of 1V:6H are proposed to ensure safe vehicle run-off in proximity to the motocross track and race track, as well as ease of maintenance.
- Maximum side slopes of 1V:3H may be required in areas restricted by space or topography.
- Diversion drains will have a freeboard of 0.3 m (over the 10% AEP design event level) to allow additional storage and conveyance to distributed bioretention basins.
- Drains with typical slopes that are greater than 3% longitudinal grade will require erosion protection surfacing either in the form of rock lining or other similar measures.

Typical diversion drain dimensions are summarised in Table 9. Further information on drains with similar requirements are detailed on Figure 9 and Figure 10.

Table 9 Diversion drain dimensions

Swale example	Shape and side slope (V/H)	Average slope (%)	Max depth* (m)	Length (m)	10% AEP flow (m ³ /s)
Stage 1A					
W-EXT02	1:6 swale	0.38	0.542	140	0.172
W-EXT04	1:6 swale	1.56	1.423	100	0.186
Stage 1B					
E-B9-07	1:4 swale	1.64	0.781	350	0.072
E-B9-08	1:4 swale	0.94	0.781	120	0.024

* The max. depth is driven by providing adequate freeboard for the 10% AEP event while also considering the depths in the 1% AEP event. The depth varies along the drain and would generally increase from a minimum depth of 300 mm at the upstream end, unless receiving water from upstream drains or culverts.

5.2.4.2 Drainage swales

Design of the drainage swales is based on the following:

- Where space and topography permit the drainage swales will be broad and shallow. Side slopes of 1V:6H are proposed to ensure safe vehicle run-off in proximity to the motocross track and race track, as well as ease of maintenance.

- Maximum side slopes of 1V:3H may be required in areas restricted by space or topography.
- Drainage swales will have a freeboard of 0.3 m (over the 10% AEP design event level) to allow additional storage and conveyance to distributed bioretention basins.
- Drains with typical slopes that are greater than 3% longitudinal grade will require erosion protection surfacing either in the form of rock lining or other similar measures.

Key swale dimensions are summarised in Table 10, while the modelling results for each swale drain are contained in Appendix G.

Table 10 Swale dimensions

Swale example	Shape and side slope (V/H)	Average slope (%)	Max depth*** (m)	Length (m)	10% AEP flow (m ³ /s)
Stage 1A					
W-B4-01	1:6 swale	1.80	0.909	170	0.088
W-B4-02	1:6 swale	4.81	0.909	200	0.110
W-B5-04	1:6 swale	3.00	0.811	40	0.188
W-B5-05	1:6 swale	4.89	0.798	45	0.018
W-S1	1:6 swale	5.07	0.478	300	0.265
Stage 1B					
E-B4-01*	K300**, 0.4 m deep	0.50	0.57	150	0.090
E-B4-02	1:4 swale	0.90	0.586	220	0.248
E-B6-01	1:6 swale	3.87	0.699	150	0.094
E-B9-01	1:6 swale	3.60	0.447	160	0.129

* Further development in detail design will likely require a pit and pipe system to be installed in combination with this trench drain.

** K300 is an assumed 300 mm wide with varying depth Class D Covered Trench Drain

*** The max. depth is driven by providing adequate freeboard for the 10% AEP event while also considering the depths in the 1% AEP event. The depth varies along the drain and would generally increase from a minimum depth of 300 mm at the upstream end, unless receiving water from upstream drains or culverts.

5.2.4.3 Culverts

Different crossing locations were determined to manage discharge to the surrounding environment. Preliminary sizing of proposed culverts was done using DRAINS software and results are shown in Table 11. Further assessment of these culverts are suggested in future design stages to determine structural suitability, should there be reduced cover as limited by resulting earthworks.

Table 11 Culvert dimensions

Culverts	Length (m)	Slope (%)	No. of barrels	Diam (mm)
Stage 1A				
W-B1-CULV1	30	1.17	1	450
W-B5-CULV1	13	2.00	1	450
W-B5-CULV2	12.5	3.00	1	450
W-B5-CULV3	19.2	1.56	2	450
W-B5-CULV4	14.5	2.76	1	450

Culverts	Length (m)	Slope (%)	No. of barrels	Diam (mm)
W-B5-CULV5	12.6	7.06	1	450
W-B5-CULV6	20	1.00	1	450
W-EXT-CULV	150	2.13	1	450
W-EXT-CULV1	20	0.50	1	450
Stage 1B				
E-B5-CULV1	15	6.07	1	450
E-B7-CULV1	55.2	2.55	1	450
E-B7-CULV2	13.4	3.06	1	450
E-B7-CULV3	97.1	0.50	1	450
E-B9-CULV1	13.7	7.30	1	450
E-B9-CULV2	28.3	3.22	1	450
E-B9-CULV3	49	1.86	1	450

5.2.4.4 Bioretention basins

A series of shallow distributed bioretention basins are sited to provide both water quality treatment as well as stormwater compensation/detention/infiltration throughout the Site.

The bioretention basins are sized such that the total post-development flow off the site was equal to or less than the pre-development flow for the minor (10% AEP) design event and targeted appropriate compensation and management of major storms (i.e. the 1% AEP or 100 year ARI). Bioretention basin parameters included:

- Sited outside the 1% AEP event from the major creek through the site.
- Construction should use the natural topography of the Site where possible.
- Basin base levels set to be 2 m above the assumed groundwater level when used for infiltration. If within 2 m of the groundwater the base of the basin is to be lined to prevent infiltration; these basins will require the implementation of a subsoil drainage system.
- Basins equipped with low flow outlet/s (pipe/orifice), high flow bypass pit and a mortared/rock protected overflow spillway that has sufficient capacity to handle 1% AEP flow, where possible.
- Nominal depths ranging from 0.35 m to 1.2 m to spillway levels; and 0.5 m to 1.5 m to top of wall.
- 1V:6H side slopes where space permits to allow for vegetation to stabilise side slopes and reduce erosion risk. Where geotechnical conditions permit, basin side slopes may be increased a max. of 1V:3H to facilitate increased base infiltration surface (may require fencing and/or signage for safety where fencing is not appropriate).
- An average 2 m/day infiltration rate has assumed, noting that testing has found varying rates of between 0.41 and 3.29 m/day across the site. Detailed design of each basin should be informed by the site-specific permeability test results in Appendix B.
- Bioretention basins feature a low flow piped discharge, designed to be:
 - Set above the peak 1EY basin water level, such that no discharge occurs for water quality management, where possible (basins requiring lining will need to discharge the 1EY event).
 - Set and sized so as to ensure that the basin overflow spillway does not activate in events up to and including the 10% AEP.
 - Contributing catchments would be directed into each of the basins as detailed in Section 5.2.2 and Section 5.2.3.
- Post development flows are those of the combined catchment areas that contribute to the basin location and are shown in Appendix G.
- The results of the bioretention basin sizing for Stage 1A and Stage 1B are summarised in Table 12.

Table 12 Bioretention basin sizing *

Basin	Slope (1V:_H)	Base Elevation (m)	Base Area (m ²)	Top Elevation (m)	Top Surface Area (m ²)	Depth (m)	Max Volume (m ³)	By-pass level (m)	Low Flow Outlet	Overflow weir level (m)
Stage 1A										
West-B1	3	66.0	90	67.0	265	1.0	170	66.60	N/A	66.75
West-B2	6	62.0	150	62.5	640	0.5	180	62.35	3 x 70	62.35
West-B3	3	62.5	160	64.0	475	1.5	450	63.20	N/A	63.70
West-B4	6	59.0	100	60.5	450	1.5	400	59.50	2 x 70, 1 x 100	59.60
West-B5	3	53.5	105	54.5	260	1.0	175	54.00	3 x 90	54.25
West-B6	6	58.0	100	59.0	500	1.0	275	58.50	N/A	58.75
West-B7	3	51.5	430	52.5	980	1.0	700	52.20	3 x 70	52.50
Stage 1B										
East-B1	6	58.0	145	59.5	950	1.5	750	58.75	1 x 90	59.50
East-B2	6	57.0	500	58.0	1150	1.0	800	57.50	1 x 90	57.75
East-B3	6	70.0	350	71	950	1.0	625	70.60	3 x 100	71.00
East-B4	6	71.0	250	71.5	550	0.5	200	71.25	N/A	71.38
East-B5	6	66.0	300	67.5	1300	1.5	1100	67.00	2 x 80, 1 x 100	67.20
East-B6	6	61.0	600	61.5	1000	0.5	400	61.20	3 x 90	61.50
East-B7	6	65.0	300	66.0	850	1.0	550	65.50	180, 1 x 90, 1 x 90	65.75
East-B8	6	70.5	250	71.5	750	1.0	475	71.00	N/A	71.25
East-B9	6	63.0	950	64.0	1800	1.0	1350	63.50	N/A	64.00
East-B10	6	62.0	430	62.5	800	0.5	300	62.25	3 x 110	62.50

* The levels detailed in the above table are subject to change during detailed design however base areas and volumes will need to be generally achieved.

5.2.5 Pre- and post-development discharge

The outlet locations to the downstream watercourse were determined, and the contributing catchments from Stage 1 works assessed for the treatment and management of stormwater runoff within the site. Due to the proposed layout of the tracks, minor changes in catchment areas were present when comparing both pre-development and post-development scenarios. A summary of this comparison is shown in Table 13.

All outlet locations on Stage 1B are shown discharging on a 1EY event and must be treated within the basin prior to discharge, to mitigate any adverse water quality outcomes. The modelling determined it is impractical to manage some flows to below pre-development discharge (i.e. East-3 and East 4) for the 10% AEP. However overall the post-development discharge from all eastern catchments is below pre-development discharge. For the western catchments, the total post-development discharge is only 0.007 m³/s above pre-development, which is only 1.5% and considered insignificant.

Table 13 Combined site discharge

Discharge location	Pre-development flows (m3/s)				Post Development flows (m3/s)			
	Area (ha)	1EY	10% AEP	1% AEP	Area (ha)	1EY	10% AEP	1% AEP
Stage 1A								
West-1	14.10	0	0.270	1.64	14.10	0	0.263	1.600
West-2	11.17	0	0.214	1.36	6.86	0	0.132	0.286
*West-3	*	*	*	*	4.31	0.013	0.096	0.498
TOTAL	25.27	0	0.484	3.00	25.27	0.013	0.491	2.384
Stage 1B								
East-1	12.13	0	0.244	1.58	11.04	0.020	0.158	0.450
East-2	13.30	0	0.296	1.83	15.53	0.016	0.290	1.080
East-3	9.76	0	0.177	1.06	10.28	0.031	0.193	0.919
East-4	7.35	0	0.118	0.65	5.72	0.021	0.174	0.494
TOTAL	42.54	0	0.835	5.12	42.57	0.088	0.815	2.943

*additional outlet location taken from West-2

5.3 Stormwater quality

5.3.1 Overview

The hydrogeological conceptual model (Appendix D) indicates high surface/ groundwater connectivity within the Site, with potential for impacted groundwater to migrate towards the creekline and off-site towards the major drainage in the area, the Marbelup Brook. If not responsibly managed, the development has the potential to negatively affect stormwater quality discharging from the catchment and impact on the potential receptors and water users.

Based on the proposed site activities the key stormwater quality issues requiring management include:

- **Sediment load:** Erosion caused by high flow velocity can result in a loss of soil, damage to drainage swales, and increased sediment load to the receiving water body.
- **Nutrient load:** Increased nutrient loading to the receiving water body may result from over- application of fertilisers to landscaped areas.
- **Gross pollutants:** Suspended and dissolved pollutants, and rubbish.
- **Toxicants:** Key pollutants associated with motor sport facilities include leaks and spills of chemical or petroleum hydrocarbons from vehicle maintenance areas, hydrocarbon storage areas and racetracks. Other potential toxicants of concern include dissolved metals and pesticides.

5.3.2 Best management practices

Management of stormwater quality is focused on providing appropriate treatment of stormwater runoff generated by the various parts of the Site based on an understanding of the key site risks. A range of key controls and best management practice WSUD elements will be utilised to manage stormwater quality across the site.

Best management practices (BMPs) are design strategies targeted to manage total suspended solids, gross pollutants, nutrients (TP and TN) within stormwater discharged from urban catchments (DoW, 2007). Frequently occurring rainfall events are targeted, using source, in-transit and end-of-pipe controls to improve water quality. BMPs considered appropriate for the Site include:

- The Site stormwater drainage system has been designed to separate good quality stormwater from potentially contaminated stormwater.
- Flows generated from external catchments will be diverted around the Site infrastructure, with external drainage separated from Site drainage where possible.
- Stormwater runoff from hydrocarbon-impacted areas including the refuelling and washdown area (Stage 1A) and pit (Stage 1B) will be isolated from stormwater generated for other parts of the Site. These areas are covered, double bunded, with internal stormwater pit and pipe network connected to sediment trap and oil water separator.
- Maximising infiltration by adopting a stormwater retention system to contain, and as a minimum, treat the first 15 mm of rainfall on site.
- Flows generated from Site buildings are considered to be uncontaminated and will be diverted to rainwater tanks for reuse as discussed in Section 4.1.1, or infiltrated at source.
- Use of suitable soils within swales and compensation basins that target the uptake of nutrients.
- Construction of combined bioretention and compensation basins to allow water quality treatment of small events (including metals and hydrocarbons), encourage infiltration and reduce peak flow rates.
- Swale drains shall be planted with grass for filtering of particulates and uptake of dissolved nutrients. Grass will be mowed with clippings removed from site.
- Additional sediment management measures include regularly spaced interceptor traps on swale drains, with check dams and rock protection used on steeper slopes where required.
- First-flush diversion will be installed for the pit area as well as the adjacent extensive hardstand area of the competitor parking and marshalling area, to capture initial stormwater run-off after an extended dry period.

5.3.3 Spill control and pollution management

To achieve spill control and pollution management in the high risk areas of the AMP, the following practices from *WQPN 28: Mechanical workshops and servicing* (DoW, 2013), *WQPN 52: Stormwater management at industrial sites* (DoW, 2006) and *WQPN 100: Motor sport facilities near sensitive waters* (DoW, 2007) will be implemented:

- Separation of uncontaminated stormwater from potentially contaminated stormwater (particularly roof water from other trafficked hardstands).
- Fuel / chemical handling areas (i.e. pits and maintenance areas) shall be located within secondary containment areas that allow maximum recovery of any spilt materials.
- Paved areas exposed to rainfall where dust, litter or spilt substances accumulate will be regularly cleaned by AMV Inc. personnel with methods that prevent fluid drainage or leaching into the surrounding environment.
- Oil and sediment traps (as appropriate to the site) will be installed at vehicle maintenance areas, and managed by AMV Inc. personnel (Section 4.2.2). First-flush water diversion to be installed for the pit area as well as the adjacent extensive hardstand area of the competitor parking and marshalling area to capture initial stormwater run-off after any extended dry period.
- Wash down of vehicles to occur in vehicle maintenance areas only. These areas feature a bunded impervious pad that is weatherproof to minimise stormwater access. Chemical solvents and non-degradable detergents used to clean equipment or pavements should not be released into stormwater systems. High pressure, steam cleaning, scrubbing or quick break detergents are the preferred methods of cleaning vehicles.

- Spill kits (permanent and mobile) will be located throughout the Site, comprising absorbent materials. AMV Inc. personnel will have necessary training on the handling of, and disposal of, hydrocarbons and spill kits. Any fuel/ chemical spills will be contained and remediated in accordance with the management strategies and actions outlined in the Hydrocarbon Management Plan prepared for the Site (GHD, 2021).

Water contamination barriers

The following water contamination barriers are proposed, to prevent any loss of hydrocarbons and chemicals from the site:

- A 50 m grassed buffer (Development Exclusion Buffer) from the unnamed watercourse and Conservation Class wetland.
- A 200 m buffer from the unnamed water course and Conservation Class wetland to vehicle maintenance areas (as per DoW *WQPN 100*).

No permanent fuel, oil or chemical storage will occur on the Site. Temporary storage of fuel, oil and chemical solvents within the Site will occur within the bunded vehicle maintenance areas / pits.

- Covered, double bunded impervious vehicle maintenance areas with spill controls in place for hydrocarbon management. Runoff from these areas will be internally draining to a pit and pipe network connected to treatment devices including a sediment trap and pol water separator. Treated water shall outlet to the Site drainage network of swales and bioretention basins. Wastes and oily residue will be disposed to an approved off-site location (Section 4.2.2).
- Interceptor traps shall be installed and maintained throughout the swale network for treatment of track stormwater runoff.

It is noted that a swale exists within 200 m of the vehicle pits in the south-east of the site. Whilst water conveyance through the swale will improve water quality when compared to piped conveyance, it can also be considered a direct connection to the watercourse. It is proposed that all runoff from the pits and maintenance areas in this location should pass through an oil/water separator to remove contaminants before they enter the watercourse. Furthermore, the runoff from this area will pass through a compensating basin before entering the watercourse. This retarding effect on the runoff will allow a chance for the contaminants to settle and/or break down.

5.3.4 Emergency response plan

In the event of a vehicle crash and/or fire, first response extinguishment will be via standard, portable dry chemical fire extinguishers (ABE type). The multipurpose ABE powder is a versatile extinguishant, which is used to extinguish Class A (carbonaceous), Class B (flammable liquid) and Class E (electrical) fires. When dry, the powder may be cleaned up with a vacuum cleaner, or similar. No larger firefighting apparatus are proposed for the AMP, and no firefighting foams are proposed.

As part of Motorsports Australia Regulations, each flag point (attended by a trained marshal) on a racetrack is required to have 2 × 9 kg fire extinguishers available. The AMP racetrack will likely have 5-6 flag points.

In the case of an emergency in the high risk areas of the AMP, the following actions from *WQPN 100: Motor sport facilities near sensitive waters* (DoW, 2007) will be implemented:

- A contingency plan shall be developed before the operational phase and be available on the Site in order to address emergency situations such as accidents, fires and chemical spills that could put local water resources including surface water and groundwater at risk. Relevant AMV Inc. personnel and contractors shall be familiar with the Site emergency response procedures.
- During larger events (potentially up to 20,000 for national race events), adequate emergency response services (e.g. firefighting, security, communications, medical personnel and emergency vehicle access) shall be provided.
- Portable spill kits and containment booms (land socks or similar) shall be kept at various locations, including flag points within the Site with absorbent material to soak up spilt oil, chemicals and/or fuel. Additionally, sand bags or coir logs will be used in the case of a vehicle accident to block flow to drains.

- The plan should be submitted to Water Corporation, City of Albany and Department of Fire and Emergency Services for advice before implementing.

5.3.5 Non-structural measures

There are a number of temporary and non-structural measures are also key management measures for the development and operation of the Site.

Construction

Construction sites can be a major source of silt and other pollutants. Proponents and builders shall be encouraged to undertake good practice on building sites through preparation of a site-specific Construction Environmental Management Plan (Section 6).

A separate Construction Management Plan is also included the in the AMP Environmental Management Plan.

Maintenance

Regular maintenance of the Site drainage system shall be undertaken prior to the start of the wet season. Cleaning of the drainage system, including base of swale drains, interceptor traps in swale drains and bioretention basins will provide an opportunity to remove gross pollutants and silt build up that may enter the receiving water bodies after heavy rainfall. Any vegetation disturbed in the swales and bioretention basins will be re-established to ensure water quality treatment.

In addition to transporting pollutants, drains with accumulated pollutants may also overflow, leading to localised flooding and erosion, and risks to human safety and constructed assets. Maintenance may also include erosion control measures such as rock pitching if required.

Revegetation and landscape management

- Revegetation of the Protected Exclusion Area (Figure 2), which encompasses the Conservation Class wetland and creek line, shall be undertaken as part of the development. Revegetation shall comprise suitable wetland species identified by Bio Diverse Solutions (2019), including Unit 13, Unit 47 and Unit 49 from the *Albany Regional Vegetation Survey Extent* (Sandiford & Barrett, 2010). The proposed native wetland revegetation species will assist in uptake of nutrients and trap sediment in surface runoff and shallow groundwater discharging to the wetland area. These native species include *Baumea juncea* and *Baumea rubiginosa* which are frequently used in bioretention areas for their nutrient uptake abilities.
- A 50 m wide, low fuel 'Development Exclusion Buffer' comprising a managed grass area will provide a further buffer for stormwater runoff from the development, and any overflow from bioretention basins. The managed grass buffer will assist to filter and trap sediments and nutrients in overland flow discharged to the unnamed creek line / wetland.
- Use of pesticides and fertilisers shall be limited, and completely excluded within the Protected Exclusion Area and Development Exclusion Buffer. Refer to the Protected Exclusion Area Management Plan in the AMP Environmental Management Plan. Use of herbicides shall be in accordance with the *Use of herbicides in water catchment areas* (Circular No: PSCBB, Department of Health).

Erosion and sediment control

A range of measures will be implemented throughout the Site to minimise erosion and prevent sediment loss from the Site impacting on downstream receptors. Erosion and sediment control measures during construction are detailed in Section 6.

During operation of the Site the erosion and sediment control measures include:

- Sediment traps installed in vehicle maintenance areas.
- Drainage swales that convey stormwater runoff will be vegetated with grass to promote sedimentation and feature regularly spaced interceptor traps.
- The base of drainage swales and diversion drains in higher slope areas will be rock protected and feature regular rock weirs and/or check dams to reduce flow velocity.

6. Construction management

Potential impacts to water resources during construction activities include:

- Soil erosion – construction would result in the exposure of the natural ground surface and subsurface through the removal of vegetation, and excavation and landforming works within the Site which may increase the potential for soil erosion to occur. There is further potential for mobilisation of dust associated with the construction works.
- Surface water quality – construction of the project has the potential to impact surface water quality through the pollution of runoff with sediments, fuel and other hazardous materials from the construction site.
- Disturbance of acid sulfate soils – potential for construction activities to disturb acid sulfate soils.

6.1 Construction Environmental Management Plan

The AMP Environmental Management Plan includes a specific Construction Management Plan, which outlines objectives, broad strategies and actions required to minimise environmental impacts associated with construction of the AMP. The Construction Management Plan applies to the GSMG and all appointed contractors during the construction of the AMP.

It is recommended that a site-specific Construction Environmental Management Plan (CEMP) be prepared for the Site that addresses the management of construction works to ensure no detrimental impacts to the receptors. The CEMP should be referred to DWER for approval. The CEMP shall be maintained during the construction period and Site establishment period and include:

- Temporary bunds, coir logs and silt fences to prevent silt runoff into the drainage system
- Litter and waste storage bins to prevent litter to be blown by wind or washed by rainfall
- Establishing a washing-down area behind the bund or silt fence
- Provide a stabilised entry and exit point to prevent vehicle tracking of soil from the building site onto roads
- Position stockpiles of sand and soil stockpiles to prevent material being tracked, washed, or blown into roads, and then into existing surface drainage or constructed stormwater systems.

6.2 Acid Sulfate Soil Management Plan

Surface and/ or groundwater may also become contaminated through the exposure of ASS during construction (excavation). ASS disturbance may have a range of impacts including enhanced phosphorus leaching, death of vegetation irrigated with affected water, the smothering of benthic aquatic animals by the precipitation of iron, and metal bioaccumulation in aquatic plants and animals. However, based on the ASS assessments to date (refer to Section 2.3.3), inorganic sulfidic sources capable of rapid acid release upon disturbance were not observed. Other, more slow releasing acidity sources were observed in the ASS assessment and will require management if disturbed in volumes greater than 100 m³.

The following ASS management recommendations are made with regards to the proposed redevelopment:

- Topsoil (0-300 mm) appears acceptable to be stripped and stockpiled for reuse without treatment (pH on average above 4 across the site).
- Neutralisation treatment and validation of soils *will be required* for silty sand soil units disturbed in the proximity of the watercourse area given that there are exceedances of the DWER action criteria (coarse textured soils) *and* if the proposed disturbance of greater than 100 m³ of soil.
- An ASS management plan will be required (in accordance with DWER guidelines) to enable to the effective excavation, treatment and disposal/reuse of the materials during construction works.
- Soil excavations should only occur during the periods of the year where groundwater is at its lowest point (i.e. outside of winter and post-winter periods) to eliminate the need for temporarily lowering the groundwater table (dewatering). If dewatering is determined to be required, then site specific dewatering risk assessment, management strategies and criteria are required to be developed, approved and implemented.

7. Monitoring

7.1 Monitoring requirements

The objective of the surface water and groundwater monitoring is to assess the operation of the Site against the design criteria (Section 3) and baseline water quality (Section 2.4.5).

Monthly monitoring of surface and groundwater conditions will be completed during the construction and operational period. The monitoring data will be compared to baseline data (Section 2.4.5) to ensure no adverse impacts from construction and operation of the Site on the surface water and groundwater quality and levels.

Event based monitoring will be completed at key locations of drainage infrastructure (bioretention basins) to assess stormwater drainage performance in improving stormwater quality. It is assumed the first flush events will have the highest level of nutrients and chemicals, therefore sampling should occur at the time/after the first significant rainfall event of each wet season, and after extended dry periods. Field notes should include details of the rainfall events, site conditions, time of sampling and time of sample testing.

Additional sampling should also be undertaken in response to any spill events.

A summary of the proposed surface water monitoring program is provided in Table 14. The proposed groundwater monitoring program is provided in Table 15, and the groundwater monitoring sites are shown on Figure 6.

Table 14: Summary of surface water monitoring

Site	Frequency	Duration	Parameters
Surface water - Upstream of the site (TBC) - Mid-stream (CS02) - Downstream of the site (CS01)	Monthly	On-going, with annual reporting	In-situ: pH, EC, temperature Unfiltered sample: pH, EC, TN, FRP, TKN, ammonia, TP, TRH, PAH, BTEXN, surfactants, microbial analysis
Compensating basin - Inlet (6 No.) and Outlet (6 No.) West-B1 West-B7 East-B3 East-B5 East-B6 East-B10 Sub-catchment Inlets and Outlets West 1 Outlet Only (4WD training area) West 3 (DS Culvert W-EXT-CULV & DS Culvert W-CULV1) East 3 Outlet East 1 Outlet (DS of East-E9)	3-4 events per year following 1EY rainfall events or greater		Filtered sample: Filtered total nitrogen and filtered total phosphorus (to quantify organic component), NO ₂ /NO ₃ , PO ₄ , dissolved heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)

Table 15: Summary of groundwater monitoring program

Site	Frequency	Duration	Parameters
Monitoring bores (up to 6 bores across the site locations to be confirmed) To include SB04, SB03, SB08, SB09 and 2 others Production bore/s (location to be confirmed)	Monthly	On-going, with annual reporting	Water level In-situ: pH, EC, temperature Unfiltered sample: pH, EC, TN, FRP, TKN, ammonia, TP, TRH, PAH, BTEXN, surfactants, microbial analysis Filtered sample: Filtered total nitrogen and filtered total phosphorus (to quantify organic component), NO ₂ /NO ₃ , PO ₄ , dissolved heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)

7.2 Quality assurance and quality control

A surface and groundwater monitoring plan will be prepared to support ongoing monitoring of the Site for submission and approval by DWER and Water Corporation.

Monitoring will be completed in accordance with the requirements of the *Australian and New Zealand guidelines for fresh and marine water quality* (ANZECC, 2018). Sample collection, processing, transportation, storage, preservation and labelling of water samples will be conducted in accordance with the appropriate industry standards and general water sampling guidance (AS/NZS 5667.1:1998), with collected samples analysed in a NATA accredited laboratory.

Post-development, permanent groundwater monitoring bore locations and sites should be identified and constructed in accordance with industry standards (ASTM D5092/ D5092-16, *Standard practice for design and installation of groundwater monitoring bores*).

7.3 Contingency plan

Should monitoring of groundwater and/ or surface water identify that water quality objectives are not being met the following contingency measures will be implemented:

- Investigate the source or cause of elevated contaminants through site investigation and/or additional monitoring if required.
- Review installation of stormwater management BMPs to ensure they are designed, installed and maintained as required.
- Review implementation of Site procedures for incident management to ensure appropriate measures are undertaken to respond to incidents such as spills and accidents.
- Should further monitoring identify that water quality objectives are not being met, AMV Inc. will notify DWER and the City of Albany to determine requirements further site investigation or remediation actions.

A water quality response and contingency plan will be developed in consultation with the Water Corporation, City of Albany and DWER. The water quality response and contingency plan shall be included in the surface and groundwater monitoring plan.

7.4 Reporting

The AMV Inc. will prepare an annual water quality monitoring report for submission to the DWER and Water Corporation. The annual water monitoring report will summarise surface water and groundwater monitoring results for the calendar year, including comparison to baseline data and previous years of monitoring. The annual report will include summary reporting of any water quality exceedance, including parameters exceeding water quality objectives, measures taken to investigate exceedances, results of additional monitoring and any further actions undertaken.

8. References

- Allen, A. D., & Sofoulis, J. (1984). *1:250,000 Geological Series Map, Mount Barker - Albany WA Sheet SI 50-11 and part of Sheet SI 50-15*. Government of Western Australia.
- ANZECC. (2018). *Australian and New Zealand guidelines for fresh and marine water quality*. Canberra: ANZECC and ARMCANZ.
- Bio Diverse Solutions. (2018). *Surface water and Groundwater Monitoring*. Unpublished report for City of Albany.
- Bio Diverse Solutions. (2019). *Albany Motorsport Park, Lot 5780 Down Road, Drome WA 6330, Reconnaissance Flora and Level 1 Fauna Survey Report*. Unpublished report for City of Albany.
- BoM. (2018, July 30). *Climate Data Online*. Retrieved from http://www.bom.gov.au/climate/averages/tables/cw_009500.shtml
- BoM. (2019, July 30). *Climate Data Online*. Retrieved from http://www.bom.gov.au/climate/averages/tables/cw_009500.shtml
- BoM. (2020). *Climate statistics for Australian locations*. Retrieved from Bureau of Meteorology: http://www.bom.gov.au/climate/averages/tables/cw_009500_All.shtml
- CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.
- CoA. (2018). *Subdivision & Development Guidelines*. Albany: City of Albany.
- Cook, B., Janicke, G., & Maughan, J. (2008). *Ecological values of waterways in the south coast region, Western Australia*. Perth: University of Western Australia.
- DER. (2014). *Environmentally Sensitive Areas, Clearing Regulation Fact Sheet 24*. Perth: Department of Environment Regulation.
- DER. (2015). *Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes*. Perth: Department of Environment Regulation.
- DoW. (2002). *250K Map Series – Hydrogeology dataset*. Perth: Department of Water.
- DoW. (2006). *WQPN 52 Stormwater management at industrial sites*. Perth: Department of Water.
- DoW. (2007). *Marbelup Brook Catchment Area Drinking Water Source Protection Plan, Water Resource Protection Series Report No. 67*. Perth: Department of Water.
- DoW. (2007). *Stormwater Management Manual for Western Australia*. Perth: Department of Water.
- DoW. (2007). *WQPN 100: Motor sport facilities near sensitive waters*. Perth: Department of Water.
- DoW. (2013). *WQPN 28: Mechanical servicing and workshops*. Department of Water.
- DoW. (2014). *Great Southern Regional Water Supply Strategy*. Department of Water.
- DWER. (2017). *Albany hinterland prospective groundwater resources map: Explanatory notes*. Department of Water and Environmental Regulation.
- Geoscience Australia. (2016). *Australian Rainfall and Runoff*. Canberra: Commonwealth of Australia (Geoscience Australia).
- GHD. (2018). *Albany Motorsport Park Site Feasibility Study Lot 5780 Down Road South, Drome*. Unpublished report for the City of Albany.
- GHD. (2021). *Albany Motorsport Park - Development Plan Hydrocarbon Management Plan*. Unpublished report prepared for City of Albany.
- GHD. (2021). *Albany Motorsports Park Local Water Management Strategy*. Unpublished report prepared for City of Albany.
- GoWA. (2021). *data.wa.gov.au*. Retrieved from <http://www.data.wa.gov.au/>
- GoWA. (2021). *www.data.gov.wa.au*. Retrieved from <http://www.data.wa.gov.au/>
- Great Southern Geotechnics . (2021). *Albany Motorsport Park Development, Pavement Investigation*. Unpublished report prepared for GHD.
- IECA. (2008). *Best Practice Erosion and Sediment Control*. Picton, NSW: International Erosion Control Association.
- Kelly, D. (2018, February 6). Great Southern Motorplex. Perth, WA, Australia.
- MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.
- Roberts Gardiner Architects . (2021). *Albany Motorsport Park Masterplan - Stage 1*. Unpublished masterplan for City of Albany.
- Ryan, S., Yesertener, C., Maughan, A., & Thornton, H. (2017). *Albany hinterland prospective groundwater resources map*. Western Australia: Department of Water.

Sandiford, E., & Barrett, S. (2010). *Albany Regional Vegetation Survey Extent, Type and Status: A project funded by the Western Australian Planning Commission (EnviroPlanning "Integrating NRM into Land Use Planning" and State NRM Program)*. Western Australia: South Coast Natural Resource Management Inc. and City of Albany for the Department of Environment and Conservation.

Water Corporation. (2018, August 20). *Water Pipe (WCORP-002)*. Retrieved from https://services.slip.wa.gov.au/public/services/SLIP_Public_Services/Infrastructure_and_Uilities/MapServer/WMServer

Appendices

Appendix A

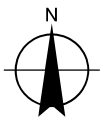
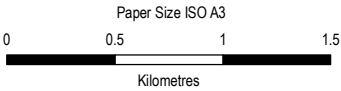
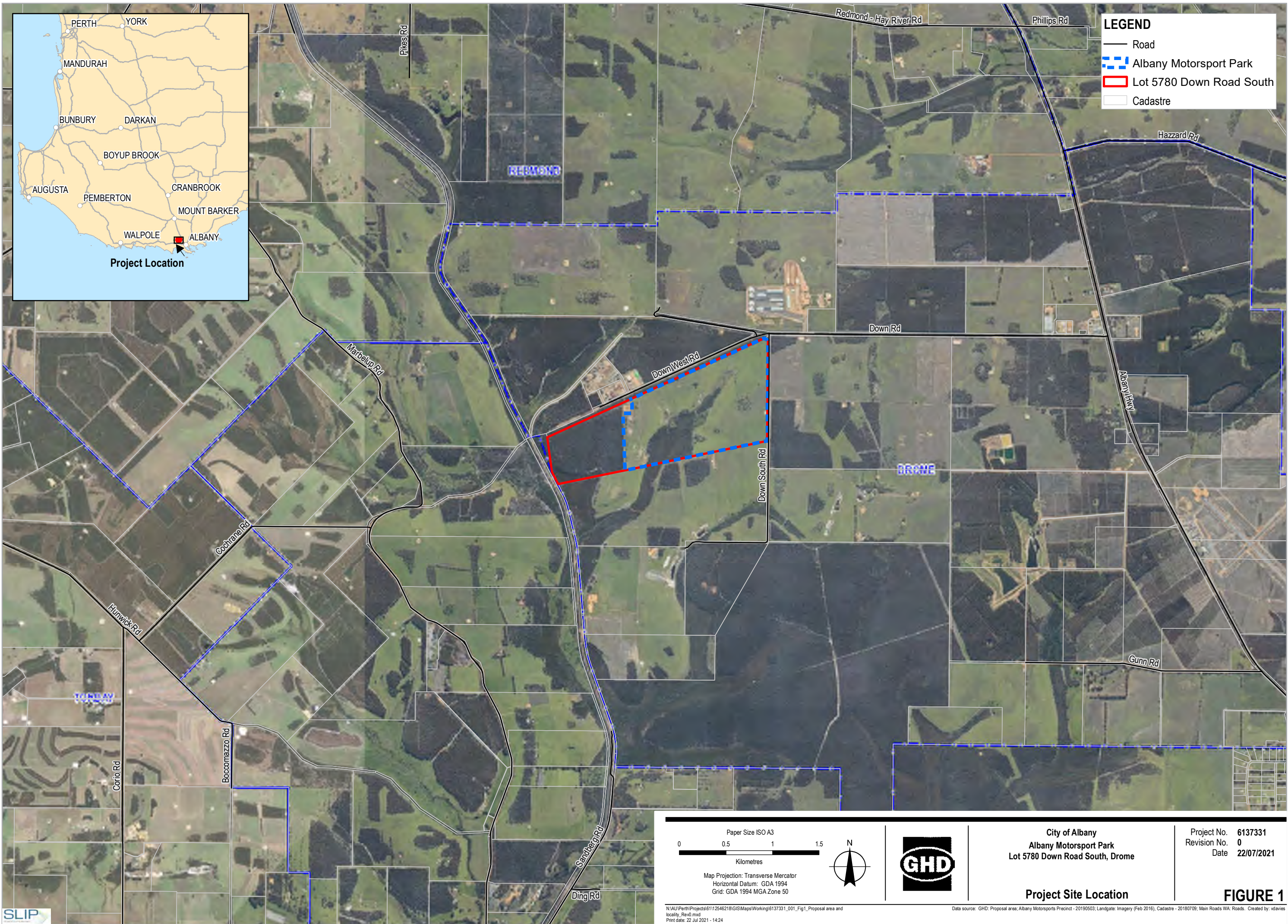
Figures

- Figure 1* *Project site location*
- Figure 2* *Master Plan*
- Figure 3* *DPIRD soil landscape mapping*
- Figure 4* *South Coast Significant Wetlands and extrapolated ASS risk mapping*
- Figure 5* *PDWSA and Water Management Areas*
- Figure 6* *Pre-development catchment plan*
- Figure 7* *1% AEP pre-development maximum flood depths*
- Figure 8* *1% AEP pre-development maximum flow velocities*
- Figure 9* *Stormwater Management Plan – Stage 1A*
- Figure 10* *Stormwater Management Plan – Stage 1B*



LEGEND

- Road
- ▬▬▬ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50

City of Albany
 Albany Motorsport Park
 Lot 5780 Down Road South, Drome

Project No. 6137331
 Revision No. 0
 Date 22/07/2021

Project Site Location

FIGURE 1

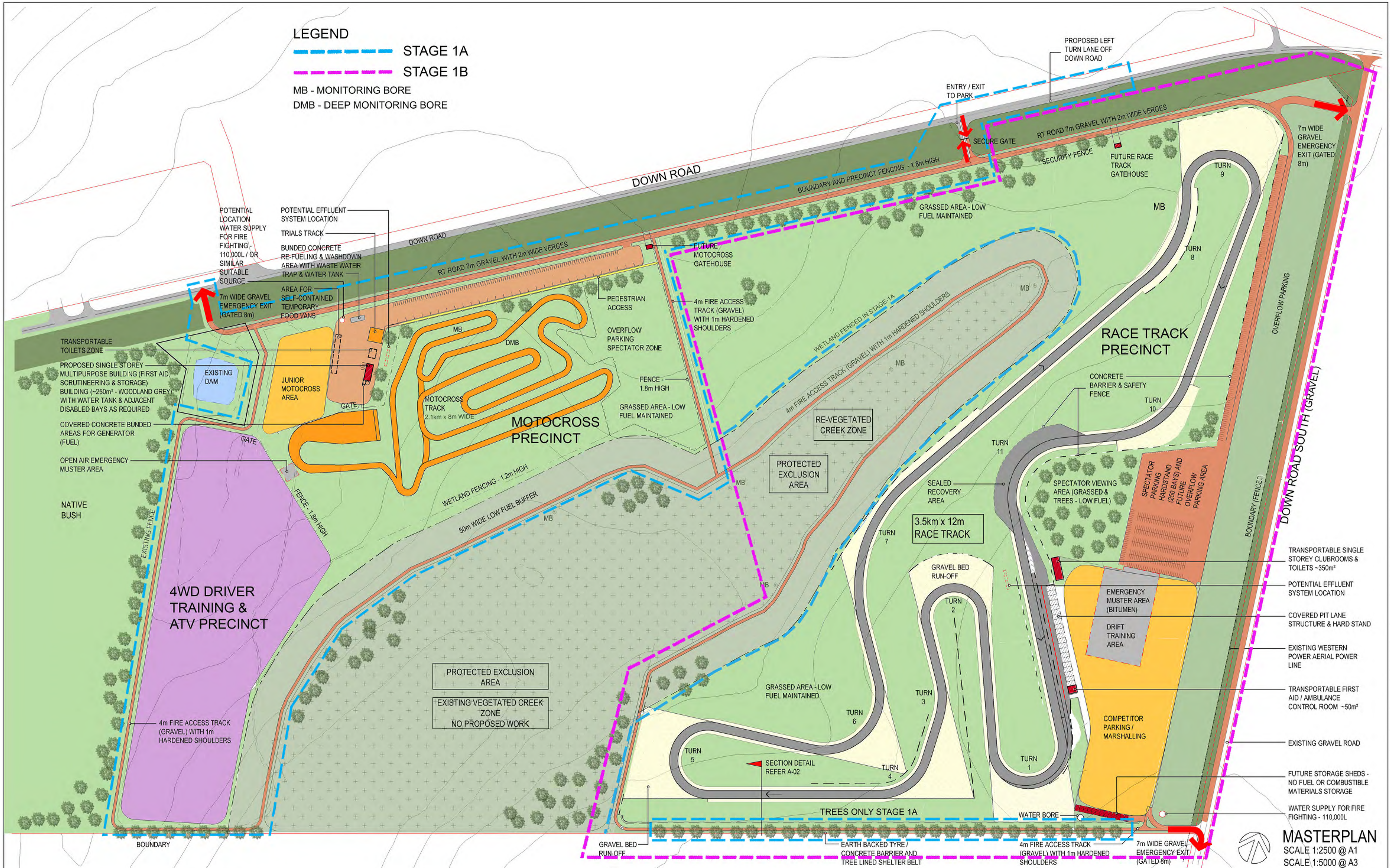


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Data source: GHD: Proposal area; Albany Motorsports Precinct - 20190503; Landgate: Imagery (Feb 2016); Cadastre - 20180709; Main Roads WA: Roads. Created by: v.davies

LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

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 telephone: (08) 9841 5455
 email: admin@rgarchitects.com.au

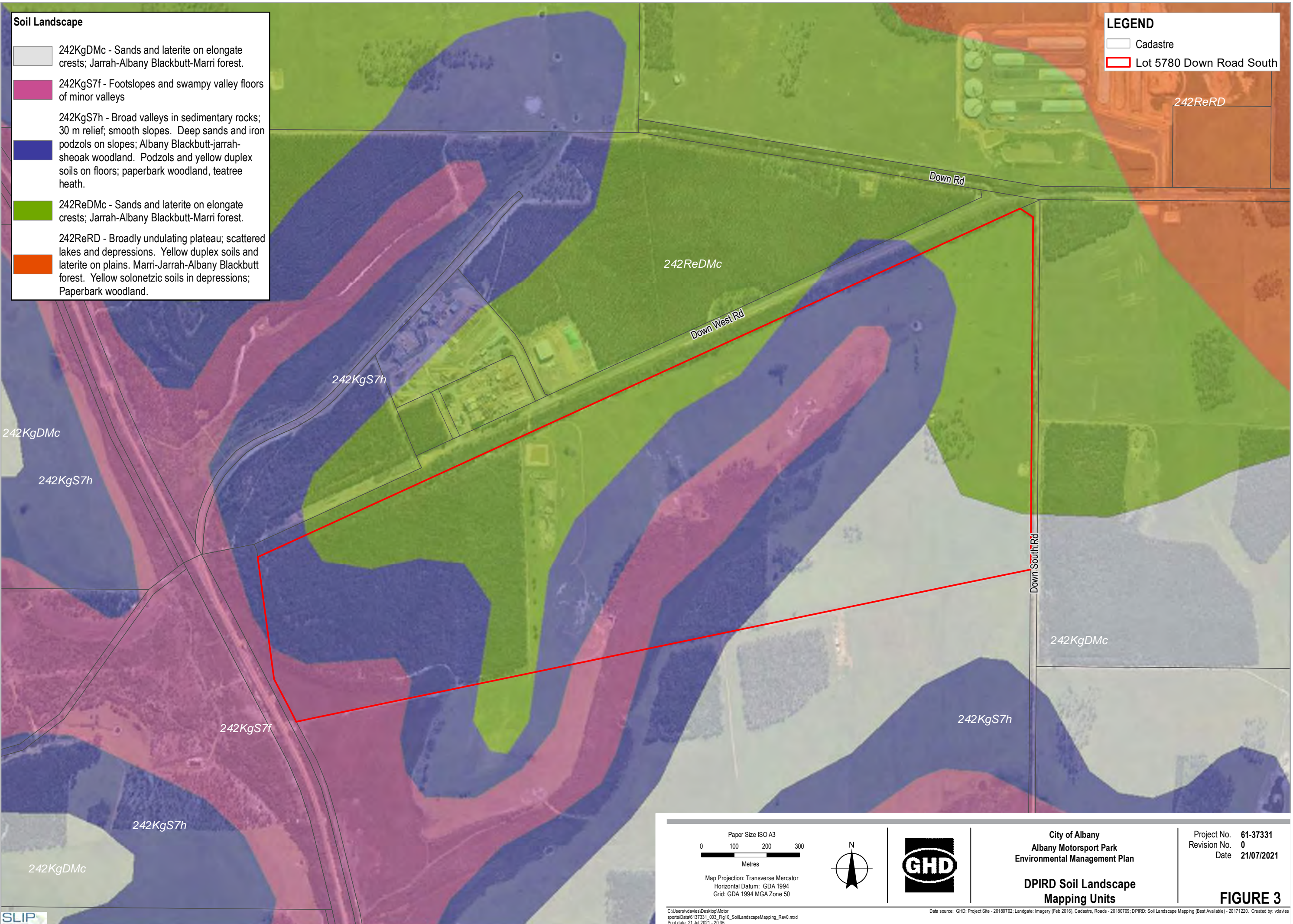


project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file
 drawn CB project number 21-002

scale	date	dwg no.	rev.
1:2500 @ A1	JULY 2021	A-01	E



Soil Landscape

- 242KgDMc - Sands and laterite on elongate crests; Jarrah-Albany Blackbutt-Marri forest.
- 242KgS7f - Footslopes and swampy valley floors of minor valleys
- 242KgS7h - Broad valleys in sedimentary rocks; 30 m relief; smooth slopes. Deep sands and iron podzols on slopes; Albany Blackbutt-jarrah-sheoak woodland. Podzols and yellow duplex soils on floors; paperbark woodland, teatree heath.
- 242ReDMc - Sands and laterite on elongate crests; Jarrah-Albany Blackbutt-Marri forest.
- 242ReRD - Broadly undulating plateau; scattered lakes and depressions. Yellow duplex soils and laterite on plains. Marri-Jarrah-Albany Blackbutt forest. Yellow solonetzic soils in depressions; Paperbark woodland.

LEGEND

- Cadastre
- Lot 5780 Down Road South

242KgDMc
242KgS7h
242KgS7f
242KgS7h
242KgDMc

242KgS7h

242ReDMc

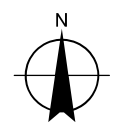
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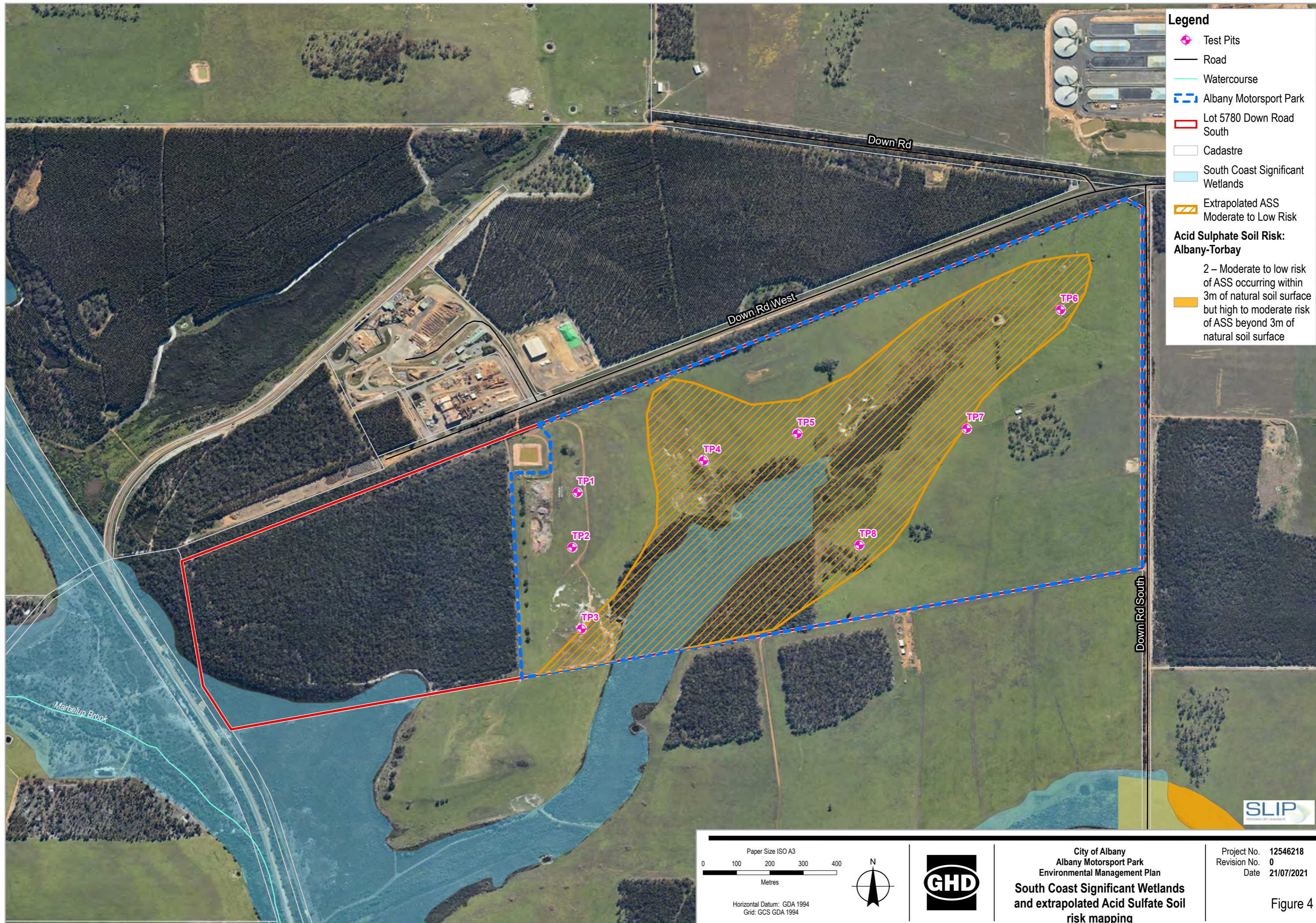


City of Albany
Albany Motorsport Park
Environmental Management Plan

**DPIRD Soil Landscape
Mapping Units**

Project No. 61-37331
Revision No. 0
Date 21/07/2021

FIGURE 3



Legend

- Test Pits
- Road
- Watercourse
- Albany Motorsport Park
- Lot 5780 Down Road South
- Cadastre
- South Coast Significant Wetlands
- Extrapolated ASS Moderate to Low Risk

Acid Sulphate Soil Risk: Albany-Torbay

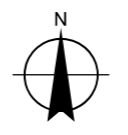
2 – Moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface

Paper Size ISO A3

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Metres

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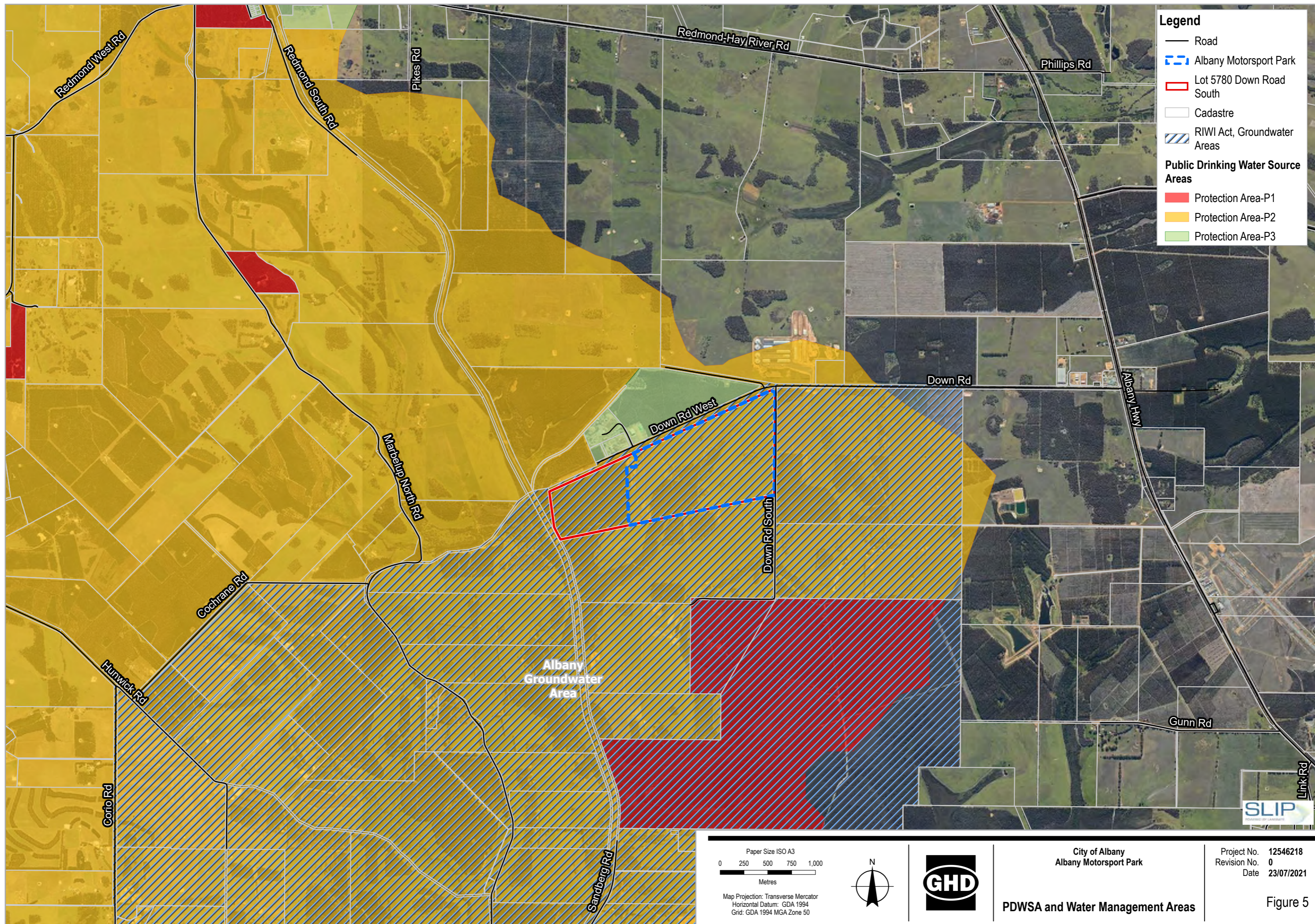


City of Albany
Albany Motorsport Park
Environmental Management Plan

**South Coast Significant Wetlands
and extrapolated Acid Sulphate Soil
risk mapping**

Project No. 12546218
Revision No. 0
Date 21/07/2021

Figure 4



Legend

- Road
- ▭ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre
- ▨ RIWI Act, Groundwater Areas

Public Drinking Water Source Areas

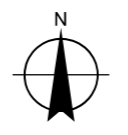
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- ▭ Protection Area-P2
- ▭ Protection Area-P3

Paper Size ISO A3

0 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50

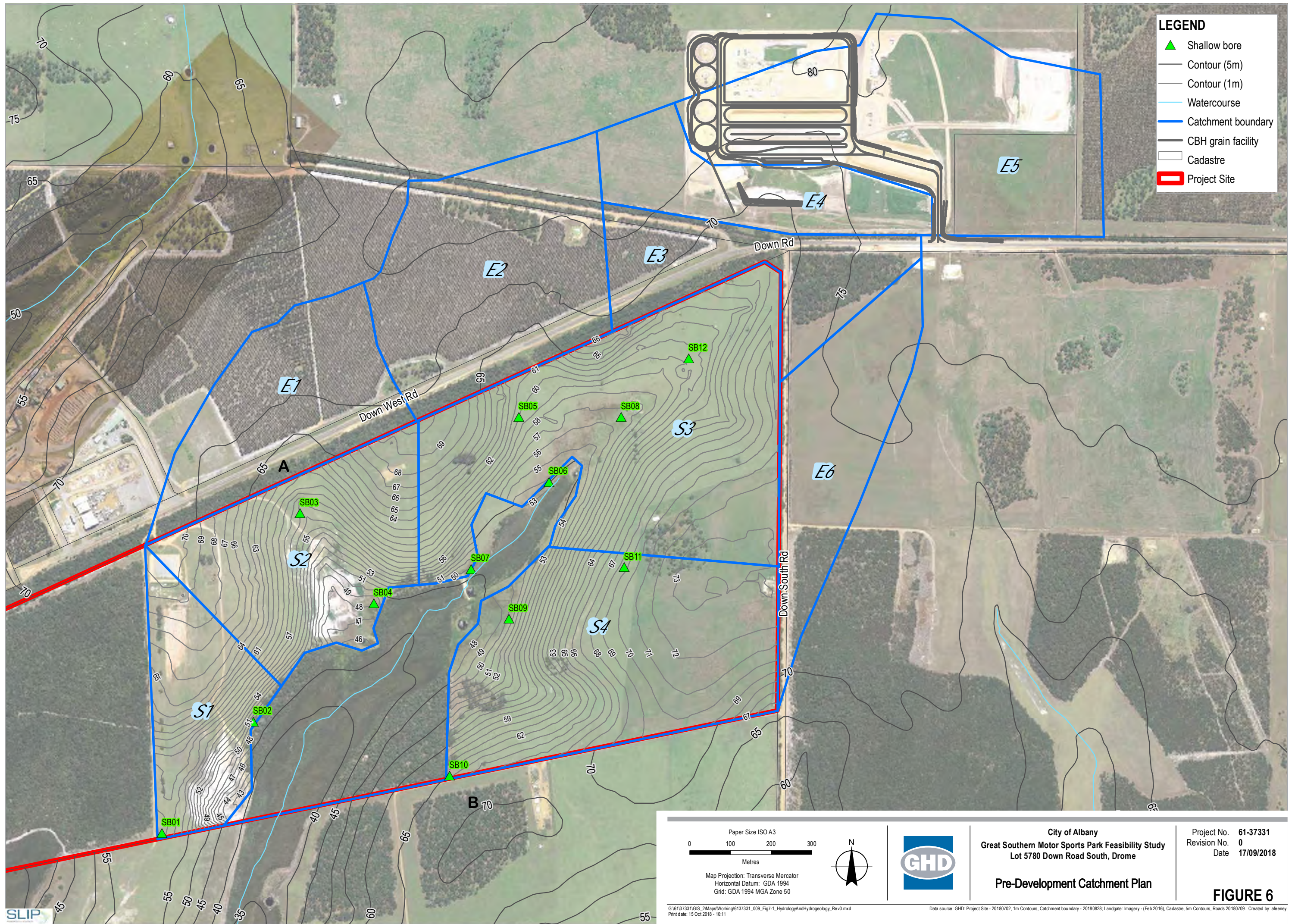


City of Albany
 Albany Motorsport Park

PDWSA and Water Management Areas

Project No. 12546218
 Revision No. 0
 Date 23/07/2021

Figure 5



LEGEND

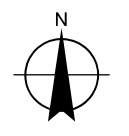
- ▲ Shallow bore
- Contour (5m)
- Contour (1m)
- Watercourse
- Catchment boundary
- CBH grain facility
- ▭ Cadastre
- Project Site

Paper Size ISO A3

0 100 200 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50



City of Albany
Great Southern Motor Sports Park Feasibility Study
Lot 5780 Down Road South, Drome

Pre-Development Catchment Plan

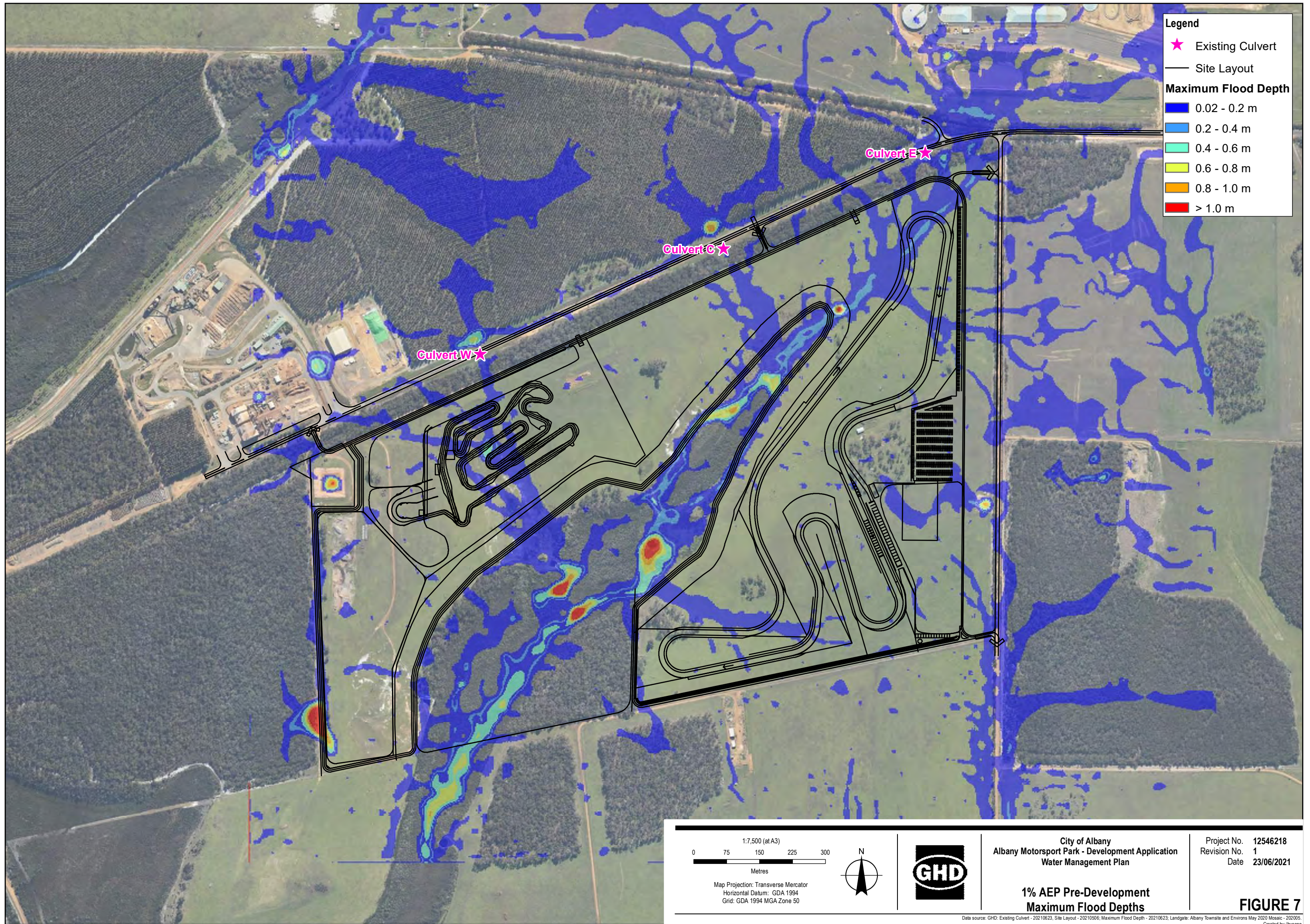
Project No. 61-37331
Revision No. 0
Date 17/09/2018

FIGURE 6

G:\6137331\GIS_2\Maps\Working\6137331_009_Fig7-1_HydrologyAndHydrogeology_Rev0.mxd
Print date: 15 Oct 2018 - 10:11

Data source: GHD; Project Site - 20180702; 1m Contours, Catchment boundary - 20180828; Landgate; Imagery - (Feb 2016); Cadastre, 5m Contours, Roads 20180709. Created by: afeaney





Legend

- ★ Existing Culvert
- Site Layout

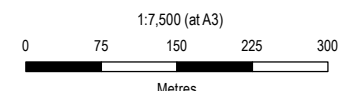
Maximum Flood Depth

- 0.02 - 0.2 m
- 0.2 - 0.4 m
- 0.4 - 0.6 m
- 0.6 - 0.8 m
- 0.8 - 1.0 m
- > 1.0 m

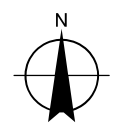
Culvert W ★

Culvert C ★

Culvert E ★



1:7,500 (at A3)
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



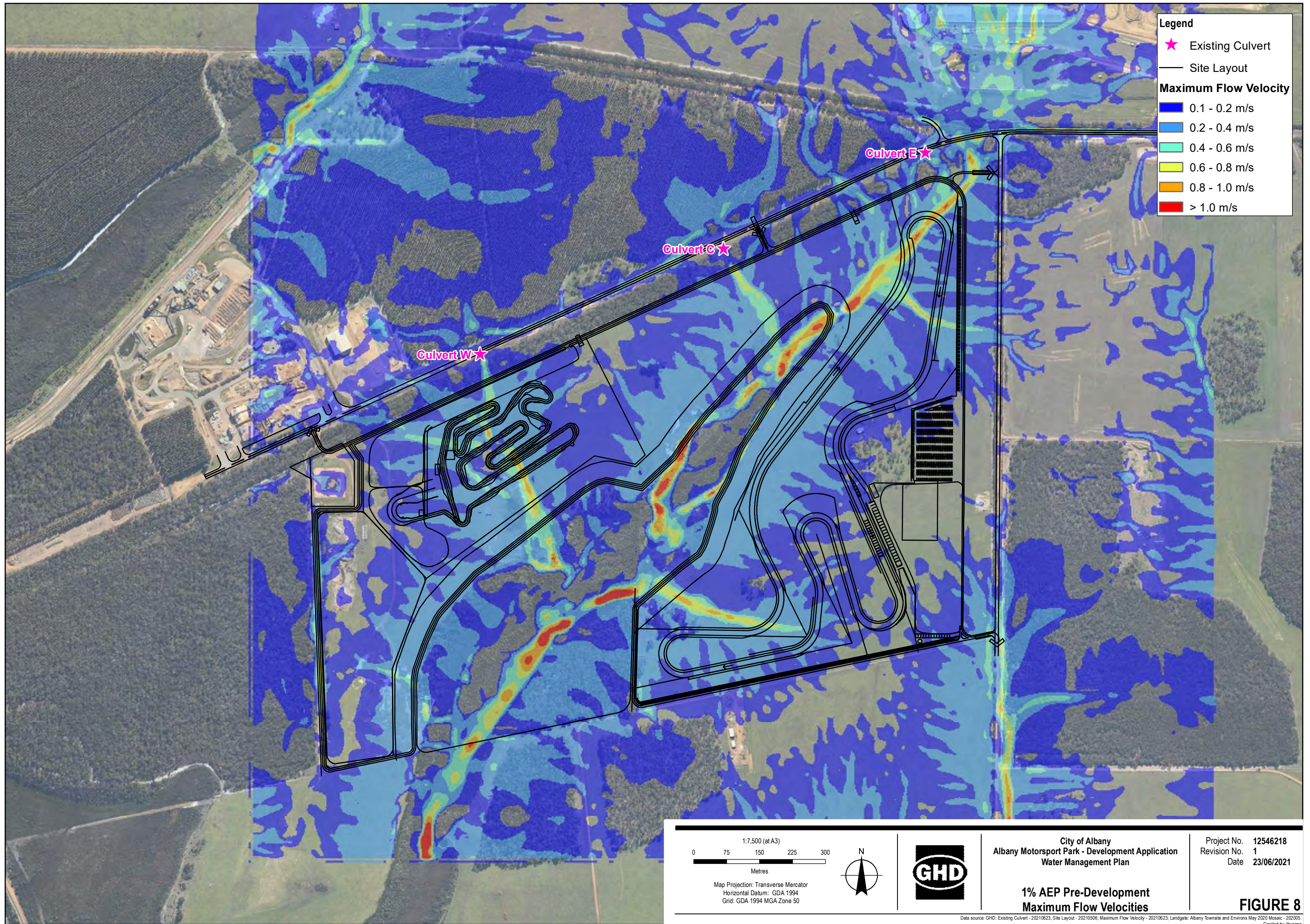
City of Albany
 Albany Motorsport Park - Development Application
 Water Management Plan

1% AEP Pre-Development
 Maximum Flood Depths

Project No. 12546218
 Revision No. 1
 Date 23/06/2021

FIGURE 7

Data source: GHD; Existing Culvert - 20210623; Site Layout - 20210506; Maximum Flood Depth - 20210623; Landgate: Albany Townsite and Environs May 2020 Mosaic - 202005. Created by: Ihyoung



Legend

- ★ Existing Culvert
- Site Layout

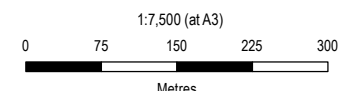
Maximum Flow Velocity

- 0.1 - 0.2 m/s
- 0.2 - 0.4 m/s
- 0.4 - 0.6 m/s
- 0.6 - 0.8 m/s
- 0.8 - 1.0 m/s
- > 1.0 m/s

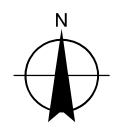
Culvert C ★

Culvert W ★

Culvert E ★



1:7,500 (at A3)
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



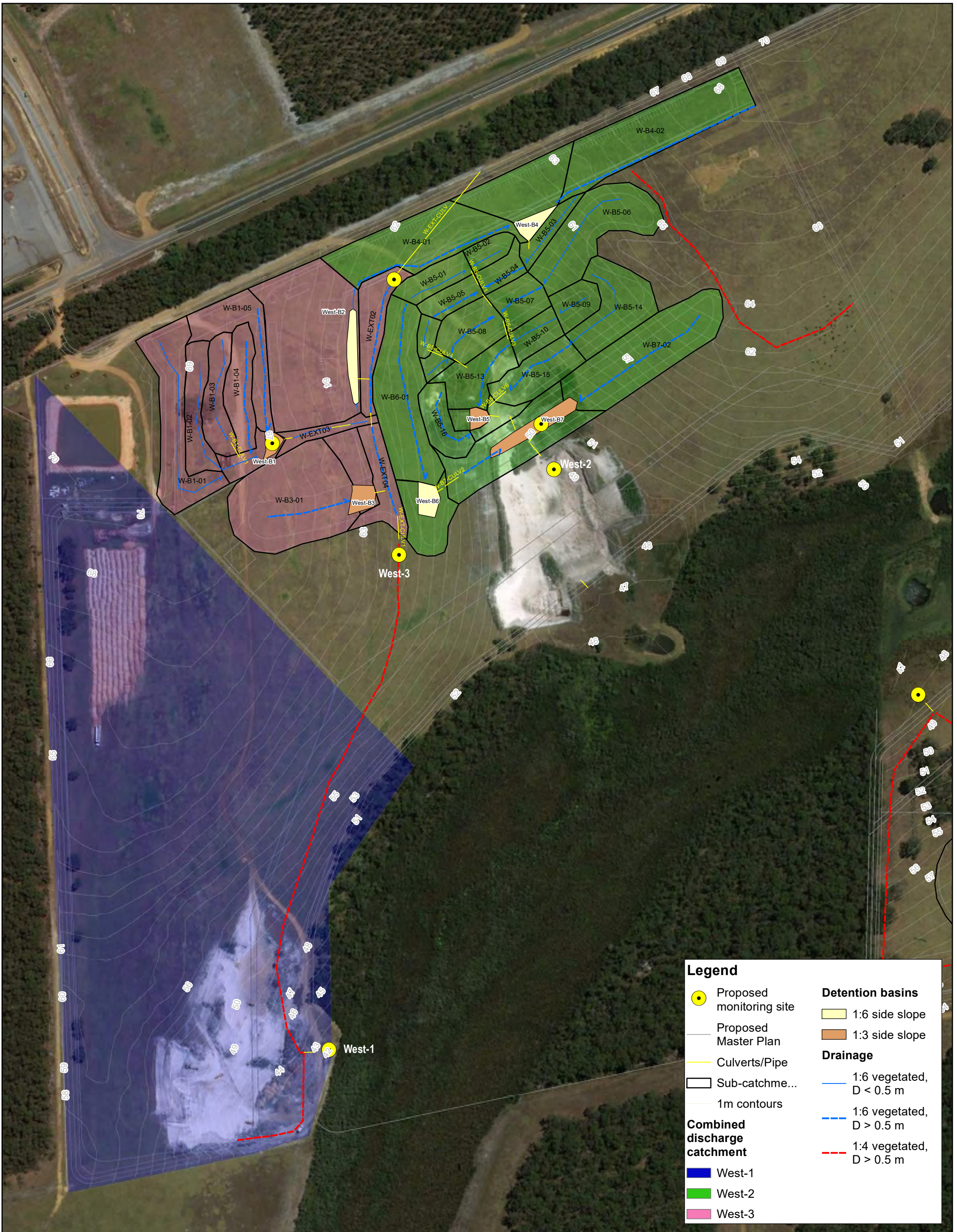
City of Albany
 Albany Motorsport Park - Development Application
 Water Management Plan

1% AEP Pre-Development
 Maximum Flow Velocities

Project No. 12546218
 Revision No. 1
 Date 23/06/2021

FIGURE 8

Data source: GHD; Existing Culvert - 20210623; Site Layout - 20210506; Maximum Flow Velocity - 20210623; Landgate: Albany Townsite and Environs May 2020 Mosaic - 202005. Created by: Ihyoung



Legend

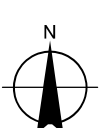
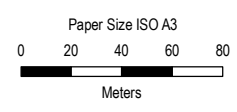
- Proposed monitoring site
- Proposed Master Plan
- Culverts/Pipe
- Sub-catchme...
- 1m contours
- Combined discharge catchment
- West-2
- West-3

Detention basins

- 1:6 side slope
- 1:3 side slope

Drainage

- 1:6 vegetated, D < 0.5 m
- 1:6 vegetated, D > 0.5 m
- 1:4 vegetated, D > 0.5 m



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50

City of Albany
 Albany Motorsport Park

**Stage 1A
 Drainage Management Plan**

Project No. 12546218
 Revision No. A
 Date 16/07/2021

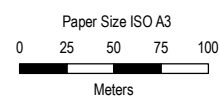
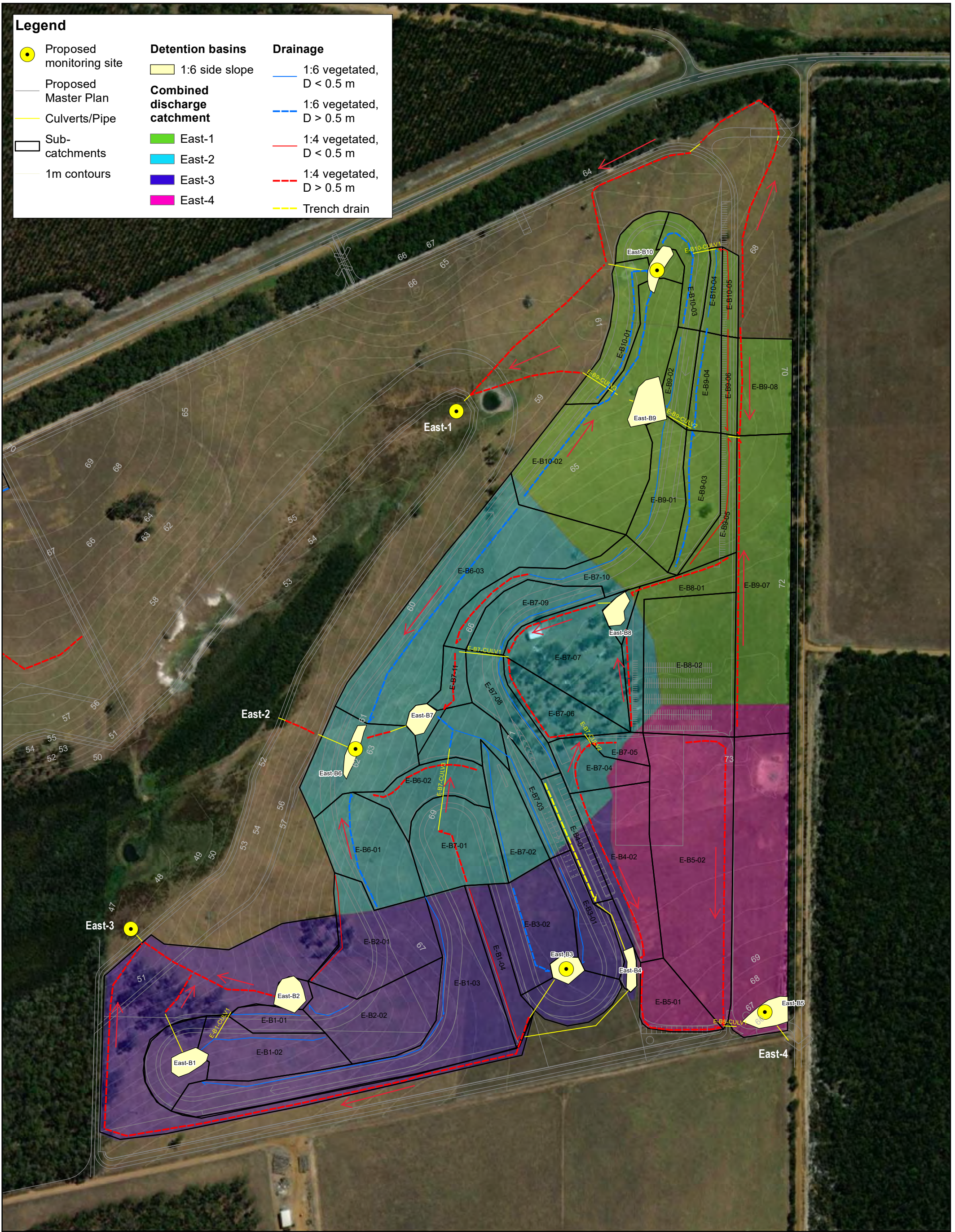
FIGURE 9

G:\7114118\12546218 - Albany\GIS\12546218_Fig9_SWMP-Stage1A.mxd
 Print date: 22 Jul 2021 - 17:00

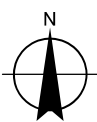
Data source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: bchernandez

Legend

Proposed monitoring site	Detention basins	Drainage
Proposed Master Plan	1:6 side slope	1:6 vegetated, D < 0.5 m
Culverts/Pipe	Combined discharge catchment	1:6 vegetated, D > 0.5 m
Sub-catchments	East-1	1:4 vegetated, D < 0.5 m
1m contours	East-2	1:4 vegetated, D > 0.5 m
	East-3	Trench drain
	East-4	



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park

**Stage 1B
 Drainage Management Plan**

Project No. 12546218
 Revision No. A
 Date 16/07/2021

FIGURE 10

Appendix B

**Albany Motorsport Park Development,
Pavement Investigation (Great Southern
Geotechics , 2021)**



GREAT SOUTHERN GEOTECHNICS

CONSTRUCTION MATERIALS TESTING

Pavement Investigation

Report 4212/1

Friday, 9 April 2021

GHD

Albany Motorsport Park Development

GREAT SOUTHERN GEOTECHNICS

1.0 INTRODUCTION

As authorised by GHD

an investigation for the proposed Albany Motorsport Park Development adjacent to Down Rd, Mirambeena was performed on the 25/03/2021

2.0 GENERAL

The intent of the investigation was to determine the following:

- Soil types and profiles.
- Characteristics of soil properties on select samples including Particle Size and Consistency Limits. (Liquid Limit, Plastic Limit, Plasticity Index & Linear Shrinkage).
- In Situ permeability rates. (Where applicable)
- Groundwater levels at time of investigation.

3.0 SITE INVESTIGATION

Site conditions and test pit locations were recorded and are displayed in [Appendix A - Maps](#).

Test pits logs various materials types are noted in [Appendix B - Test Pit Logs](#)

The field investigation consisted of 8 Boreholes excavated on-site to depths of up to 2.5 meters using a Kubota KX41-3V mini excavator with a 300mm Auger.

Test pits were spread across the extent of the proposed development and locations were predetermined by GHD.

All soil layers encountered were visually assessed and classified on-site.

Samples gathered from site were the taken back to Great Southern Geotechnics Albany Laboratory For further processing and analysis.

IMPORTANT NOTE: The test pits have been spread so that they are representative of the subsurface materials across the intended reconstruction area, however, soil conditions may change dramatically over short distances and our investigations may not locate all soil variations across the site.

4.0 LABORATORY TESTING

Results of any relevant Laboratory testing performed are shown in [Appendix C. \(Test Results Report 4212/2 \)](#)

This report and associated documentation was undertaken for the specific purpose described in the report and shall not be relied on for other purposes.

This report was prepared solely for the use by GHD any reliance assumed by other parties on this report shall be at such parties own risk.



Appendix A

Maps



Figure 1

Test Pits 1 to 8

Test Pit Locations



**GREAT SOUTHERN
GEOTECHNICS**
CONSTRUCTION MATERIALS TESTING

Job No: 4212
Client: GHD
Project: Albany Motorsport Park Development





Appendix B

Test Pit Logs





Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'58.4"S 117°44'13.1"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 200	200	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	MD		No water table encountered.		
200 - 550	350	SANDY gravel: Brown, fine to coarse, sub-rounded to sub-angular. Fine to medium grained sand.	M	MD-D				
550 - 2500	1950	Sandy CLAY: Low to medium plasticity, light brown/orange mottled red. Fine to medium grained sand.	M	F				

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High EH - Extremely High				

Test Pit No.1



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°56'03.7"S 117°44'12.6"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 100	100	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	MD		No water table encountered.		
100 - 500	400	SANDY gravel: Brown, fine to coarse, sub-rounded to sub-angular. Fine to medium grained sand.	M	MD-D				
500 - 2500	2000	Sandy CLAY: Low to medium plasticity, light brown/orange mottled red. Fine to medium grained sand.	M	F				

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
				General		
Cohesive	Non-Cohesive	Rock	Cementation	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated			
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low				
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented			
VSt - Very Stiff	VD - Very Dense	H - High				
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented			
		EH - Extremely High				

Test Pit No.2



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°56'11.6"S 117°44'13.5"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 160	160	(Topsoil) Gravelly SAND with silt: Grey/brown, fine to medium. Fine to medium, sub-rounded to sub-angular, gravel.	DM	L-MD		No water table encountered.		
160 - 2100	1940	(FILL) Sandy GRAVEL with clay: Low to medium plasticity, brown/red Fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand.	M	MD				
2100 - 2500	400	SAND with silt: White, fine.	M	L-MD				

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
				General		
Cohesive	Non-Cohesive	Rock	Cementation	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated			
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low				
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented			
VSt - Very Stiff	VD - Very Dense	H - High				
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented			
		EH - Extremely High				

Test Pit No.3



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'55.3"S 117°44'25.3"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 50	50	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	D	L		No water table encountered.		
50 - 850	800	SAND with silt: Light grey/white, fine to medium.	D-M	L-MD				
850 - 2500	1650	SAND with silt: Brown, fine to medium.	M	D	WC			

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.4



Excavation



Spoil



Job No: 4212
Client: GHD
Project: Albany Motorsport Park Development

Sheet 8 **of** 16



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'52.7"S 117°44'34.4"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 240	240	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	D	L-MD		No water table encountered.		
240 - 1100	860	SAND with silt: Light grey/white, fine to medium.	M	L-MD				
1100 - 2500	1400	Gravelly SAND with silt: Light brown, fine to medium. Fine to medium, sub-rounded to sub-angular gravel.	M	MD	PC			

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.5



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'40.7"S 117°44'59.9"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 180	180	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	M	L-MD		No water table encountered.			
180 - 1400	1220	SAND with silt: Light grey/white, fine to medium.	M	L-MD					
1400 - 2500	1100	SAND with silt: Light brown, fine to medium.	M	MD-D	MC				

*Cobbles noted on outer edge of test pit in shoulder.

Target Depth	✓	2500
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented	
St - Stiff	D - Dense	M - Medium		
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented	
H - Hard	CO - Compact	VH - Very High		
		EH - Extremely High		

Test Pit No.6



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'52.2"S 117°44'50.8"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 170	170	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	D	MD		No water table encountered.			
170 - 450	280	SAND with silt: Light grey, fine to medium.	D	L-MD					
450 - 2100	1650	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular. Fine to medium grained sand.	D	MD-D					
2100 - 2500	400	Gravelly SAND with silt: Light brown, fine to medium. Fine to medium, sub-rounded to sub-angular gravel.	D	MD					

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.7



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°56'03.5"S 117°44'40.4"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 200	200	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	D	MD		No water table encountered.			
200 - 950	750	SAND with silt: Light grey, fine to medium.	D	MD					
950 - 2500	1550	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular. Fine to medium grained sand.	D	MD-D					

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.8



Excavation



Spoil



Appendix C

Test Results



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 4

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G9
------------	--------

Saturated Hydraulic Conductivity (cm/min)	0.0913
Saturated Hydraulic Conductivity (m/day)	1.31
Saturated Hydraulic Conductivity (m/sec)	1.52E-05

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced by use of this spreadsheet or any interpretation based on that data.

Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 5

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G10
------------	---------

Saturated Hydraulic Conductivity (cm/min)	0.0342
Saturated Hydraulic Conductivity (m/day)	0.49
Saturated Hydraulic Conductivity (m/sec)	5.70E-06

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced by use of this spreadsheet or any interpretation based on that data.

Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 6

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G11
------------	---------

Saturated Hydraulic Conductivity (cm/min)	0.2282
Saturated Hydraulic Conductivity (m/day)	3.29
Saturated Hydraulic Conductivity (m/sec)	3.80E-05

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

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Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 7

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G12
------------	---------

Saturated Hydraulic Conductivity (cm/min)	0.2282
Saturated Hydraulic Conductivity (m/day)	3.29
Saturated Hydraulic Conductivity (m/sec)	3.80E-05

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

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Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 8

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G13
------------	---------

Saturated Hydraulic Conductivity (cm/min)	0.0285
Saturated Hydraulic Conductivity (m/day)	0.41
Saturated Hydraulic Conductivity (m/sec)	4.75E-06

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.


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Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:





COLOURS

	BLACK - BROWN (bk)		BLUE (bl)		ORANGE (or)
	BROWN (br)		BLUE - GREEN (bl/gr)		RED (rd)
	GREY - BROWN (gy/br)		GREEN (gr)		RED - BROWN (rd/br)
	GREY (gy)		YELLOW (yl)		PINK (pk)
	BLUE - GREY (bl/gy)		YELLOW - BROWN (yl/br)		PURPLE (pr)

MOISTURE CONDITION OF SOIL

TERM	DESCRIPTION
Dry	Cohesive soils; hard and friable or powdery, well dry of plastic limit. Granular soils; cohesionless and free-running.
Moist	Soil feels cool, darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	Soil feels cool, darkened in colour. Cohesive soils usually weakened and free water forms on hands when handling. Granular soils tend to cohere and free water forms on hands when handling.

PARTICLE SHAPES

ANGULAR	SUB-ANGULAR	SUB-ROUNDED	ROUNDED
			

PARTICLE SIZES

BOULDERS	COBBLES	COARSE GRAVEL	MEDIUM GRAVEL	FINE GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY
>200mm	63-200mm	20-63mm	6-20mm	2.36-6mm	0.6-2.36mm	0.2-0.6mm	0.075-0.2mm	0.002-0.075mm	<0.002mm

GRAIN SIZE

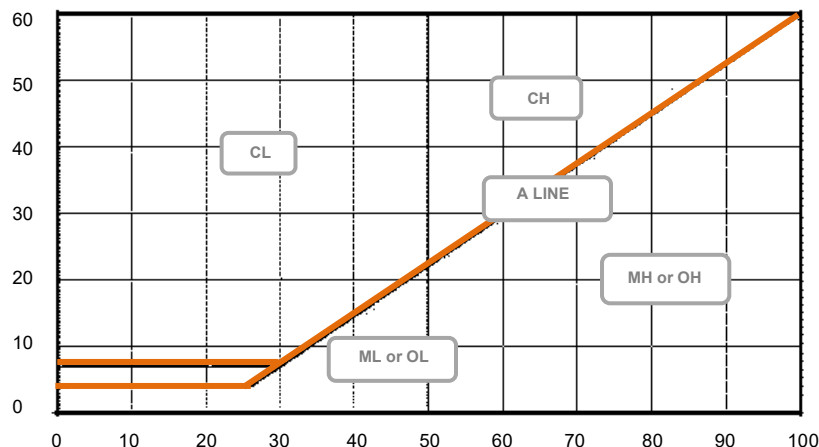
SOIL TYPE (ABBREV.)	CLAY (CL)	SILT (SI)	SAND (SA)			GRAVEL (GR)		COBBLES (CO)	
SIZE	< 2µm	2-75µm	Fine 0.075-0.2mm	Medium 0.2-0.6mm	Coarse 0.6-2.36mm	Fine 2.36-6mm	Medium 6-20mm	Coarse 20-63mm	63-200mm
SHAPE & TEXTURE	Shiny	Dull	angular or sub angular or sub rounded or rounded						
FIELD GUIDE	Not visible under 10x	Visible under 10x	Visible by eye	Visible at < 1m	Visible at < 3m	Visible at < 5m	Road gravel	Rail ballast	Beaching

CLASSIFICATION CHART

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60mm and basing fractions on estimated mass)				GROUP SYMBOLS	TYPICAL NAMES	
COARSE GRAINED SOILS More than 50% of material less than 63 mm is larger than 0.075 mm	GRAVELS More than 50% of coarse fraction is larger than 2.36mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	GW	Well graded gravels, gravel-sand mixtures, little or no fines	
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	GP	Poorly Graded gravels and gravel-sand mixtures, little or no fines, uniform gravels	
		GRAVELS WITH FINES (Appreciable amount of fines)	Dirty' materials with excess of non-plastic fines, zero to medium dry strength	GM	Silty gravels, gravel-sand-silt mixtures	
			'Dirty' materials with excess of plastic fines, medium to high dry strength	GC	Clayey gravels, gravel-sand-clay mixtures	
	SANDS More than 50% of coarse fraction is smaller than 2.36mm	CLEAN SANDS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	SW	Well graded sands, gravelly sands, little or no fines	
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands	
		SANDS WITH FINES (Appreciable amount of fines)	Dirty' materials with excess of non-plastic fines, zero to medium dry strength	SM	Silty sands, sand-silt mixtures	
			'Dirty' materials with excess of plastic fines, medium to high dry strength	SC	Clayey sands, sand-clay mixtures	
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2mm					
	SILTS AND CLAYS Liquid limit less than 50	DRY STRENGTH	DILATANCY	TOUGHNESS		
		None to low	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with low plasticity. Silts of low to medium Liquid Limit.
		Medium to high	None to very slow	Medium	CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
	SILTS AND CLAYS Liquid limit greater than 50	Low to medium	Slow	Low	OL	Organic silts and organic silt-clays of low to medium plasticity.
		Low to medium	Slow to none	Low to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, silts of high Liquid Limit.
		High to very high	None	High	CH	Inorganic clays of high plasticity.
		Medium to high	None to very slow	Low to medium	OH	Organic clays of high plasticity
		HIGHLY ORGANIC SOILS			Readily identified by colour, odour, spongy feel and frequently by fibrous texture	Pt

PLASTICITY CHART

For laboratory classification of fine grained soils



PLASTICITY

DESCRIPTIVE TERM	OF LOW PLASTICITY	OF MEDIUM PLASTICITY	OF HIGH PLASTICITY
Range Of Liquid Limit (%)	≤ 35	> 35 ≤ 50	> 50

DESCRIPTION OF ORGANIC OR ARTIFICIAL MATERIALS

PREFERRED TERMS	SECONDARY DESCRIPTION
Organic Matter	Fibrous Peat/ Charcoal/ Wood Fragments/ Roots (greater than approximately 2mm diameter)/ Root Fibres (less than approximately 2mm diameter)
Waste Fill	Domestic Refuse/ Oil/ Bitumen/ Brickbats/ Concrete Rubble/ Fibrous Plaster/ Wood Pieces/ Wood Shavings/ Sawdust/ Iron Filings/ Drums/ Steel Bars/ Steel Scrap/ Bottles/ Broken Glass/ Leather

CONSISTENCY – Cohesive soils

TERM	VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD
Symbol	VS	S	F	St	VSt	H
Undrained Shear Strength (kPa)	< 12	12 – 25	25 – 50	50 – 100	100 – 200	> 200
SPT (N) Blowcount	0 – 2	2 – 4	4 – 8	8 – 15	15 – 30	> 30
Field Guide	Exudes between the fingers when squeezed	Can be moulded by light finger pressure	Can be moulded by strong finger pressure	Cannot be moulded by fingers. Can be indented by thumb nail	Can be indented by thumb nail	Can be indented with difficulty with thumb nail

CONSISTENCY – Non-cohesive soils

TERM	VERY LOOSE	LOOSE	MEDIUM DENSE	DENSE	VERY DENSE	COMPACT
Symbol	VL	L	MD	D	VD	CO
SPT (N) Blowcount	0 – 4	4 – 10	10 – 30	30 – 50	50 – 100	> 50/150 mm
Density Index (%)	< 15	15 – 35	35 – 65	65 – 85	85 – 95	> 95
Field Guide	Ravels	Shovels easily	Shovelling very difficult	Pick required	Pick difficult	Cannot be picked

MINOR COMPONENTS

TERM	TRACE	WITH
% Minor Component	Coarse grained soils: < 5% Fine grained soils: <15%	Coarse grained soils: 5 – 12% Fine grained soils: 15 – 30%
Field Guide	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary components	Presence easily detectable by feel or eye, soil properties little different to general properties of primary component

GEOLOGICAL ORIGIN

	TYPE	DETAILS
TRANSPORTED SOILS	Aeolian Soils	Deposited by wind
	Alluvial Soils	Deposited by streams and rivers
	Colluvial Soils	Deposited on slopes
	Lacustrine Soils	Deposited by lakes
	Marine Soils	Deposited in ocean, bays, beaches and estuaries
FILL MATERIALS	Soil Fill	Describe soil type, UCS symbol and add 'FILL'
	Rock Fill	Rock type, degree of weathering, and word 'FILL'.
	Domestic Fill	Percent soil or rock, whether pretrucible or not.
	Industrial Fill	Percent soil, whether contaminated, particle size & type of waste product, ie brick, concrete, metal

STRENGTH OF ROCK MATERIAL

TERM	SYMBOL	IS (50)	(MPA)	FIELD GUIDE TO STRENGTH
Extremely Low	EL	≤0.03		Easily remoulded by hand to a material with soil properties.
Very Low	VL	>0.03	≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxle sample by hand. Pieces up to 3 cm thick can be broken by finger pressure.
Low	L	>0.1	≤0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	>0.3	≤1.0	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
High	H	>1	≤3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	VH	>3	≤10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High	EH	>10		Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

ROCK MATERIAL WEATHERING CLASSIFICATION

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported
Extremely Weathered Rock	XW	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded, in water.
Distinctly Weathered Rock	DW	Rock strength usually changed by weathering. Rock may be highly discoloured, usually be iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.
Slightly Weathered Rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh Rock	FR	Rock shows no sign of decomposition or staining.

Appendix C

Bio Diverse Solutions monitoring



Unit 5A, 209 Chester Pass Rd
 Albany, WA 6330
 Australia
 Tel: 08 9842 1575
 Fax: 08 9842 1575



Overview Map Scale 1:100,000

Legend

- Subject Site
- Cadastre
- 5m Contours
- Deep Bore
- Shallow Bore
- Creek Sample
- 50m Buffer



Scale
 1:7,882 @ A3
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: SLIP Virtual Mosaic WMS Service, Landgate 2016
 Cadastre and Contours: Landgate 2016
 Overview Map: World Topographic map service, ESRI 2012

CLIENT
 City of Albany
 Lot 5780 Down Road
 Drome, WA 6330

Monitoring Plan

STATUS	FILE	DATE
FINAL	MSC0137	28/02/2019



29 Hercules Cres
Albany WA 6330
98421575
kath@biodiversesolutions.com.au
ABN 48 138 824 272

21st March 2018

Great Southern Motorplex
PO Box 1905
Albany, WA 6330

Lot 5780 Down Road, Drome WA 6330
Water Quality Monitoring

Dear Great Southern Motorplex Group,

On the 27th February 2018 the shallow monitoring bores were installed at Lot 5780 Down Road, Drome. A total of 12 sampling bores were installed to a depth of 2m as per the DoW Approved Monitoring Plan.

A copy of details relating to this supplied:

- Field test bore logs;
- MPL Laboratory results; and
- BDS Field and Laboratory summary sheets.

Preliminary analysis of the land from the site soil testing indicates that the majority of the land will be sand over gravels/laterite rock. Low lying areas adjacent to the creek will have silty sands with coffee rock and will generally be waterlogged. Water table was only encountered at the lower lying bores of SB06, SB07 and SB09 which I would expect in summer conditions this to prevail. The creek was running albeit at a very low level which indicates there is groundwater movement into the creek system year round.

I am expecting given the soil results, that there will be limited groundwater in test pits SB11, SB03, SB02, SB05, and SB10 through the year. Marginal groundwater will most likely appear in SB04, SB08 and SB12. Refer to finalised Test Pit locations mapping.

Due to limited funds available the deep water bore is yet to be done but recommend this is done as soon as the full quote is approved.

Field analysis of the WQ at the creek indicates the creek is gaining acidity through the catchment. A higher pH in the upper reaches with a pH 6.34 at CS02 and lower (more acidic) pH in the lower catchment CS01 of 4.46, which is to be expected when cattle are entering the system to feed, water and defecating (generally disturbing the upper catchment).

Laboratory testing results are partially available, we are still waiting Salinity, hardness/alkalinity. Biological analytes are not available this round. Full analysis has not been undertaken of the laboratory results as yet.

This information is provided as preliminary, if you have any queries regarding this matter, please feel free to contact me via email on kath@biodiversesolutions.com.au or phone/fax on 9842 1575.

Kind regards,

Kathryn Kinnear
Director,
Bio Diverse Solutions

Soil Profile Sampling



**BIO
DIVERSE
SOLUTIONS**

Location: Lot 5780 Down Road

Date tested: 27/02/2018

Sampled by: Kathryn Kinnear

Weather: Windy, cool 21 degrees Overcast

<u>Location</u>	<u>Site description</u>	<u>Depth of profile (mm)</u>	<u>Soil Description</u>
SB1	South west corner Open Paddock	0-150 150-300 300-500 500-1200 1200-1500 1500-2000	Dark grey sandy top soil, veg matter. Grey silty sand. Orange, light brown sandy gravel pebbles 10-30mm. Laterite rock . Light brown pebbles 10-30mm, orange sandy silty gravel. Light brown sandy clay, slightly moist. No WT.
SB02	Paddock near creek west side Jarrah/Cas/Marri Forrest adjacent	0-50 50-200 200-800 800-1200 1200-1500 1500-2000 2000-2500	Dark grey sandy top soil, veg matter. Grey sandy silt. Light grey sandy silt, slightly moist. Cream sandy silt, slightly moist Laterite rock. Moist light brown orange sandy silt gravel, pebbles 10-30mm, minor clay. Light grey silty sand. No WT.
SB03	Open paddock North in minor Drainage swale	0-50 50-500 500-1000 1000-1200 1200-1600 1600-1800 1800-2000	Light brown slightly moist silty sand top soil, veg matter. Light brown silty gravel, pebbles 5-10mm. Brown silty gravel pebbles 20-30mm. Dark brown gravelly silt pebbles 20-30mm. Grey silty sand. Light grey moist silty sand. Light brown/orange silty sand, gravel pebbles 10-30mm. No WT.
SB04	Paddock near Creek in Depression area.	0-50 50-200 700-900 900-1300 1300-1500 1500-1800 1800-2000	Dark brown peaty organic matter. Dark grey silty sand slightly moist. Light grey silty sand moist. Laterite rock, moist dark brown gravelly silt (coffee rock) mottled orange. Light brown silty clay wet. Light grey moist clay. White clay not wet. No WT.
SB05	North paddock Area	0-50 50-200 200-700 700-900 900-1500 1500-1800 1800-1900 1900-2000	Slightly moist dark brown peaty sandy silt top soil, veg matter. Dry dark grey silty sand. Dry light grey silty sand. Dry gravelly silty sand orange pebbles. Dry cream quartz gravelly silty sand pebbles 30-50mm. Pink/orange silty sand gravel, cemented compacted gavel pebbles 10-30mm. Moist dark clayey sand. Dry compacted silty gravel orange/pink. No WT.

<u>Location</u>	<u>Site description</u>	<u>Depth of profile (mm)</u>	<u>Soil Description</u>
SB06	Near creek North side In reed beds	0-100 100-400 400-700 700-1800 1800-2000	Dark brown peaty organic matter moist. Dark grey silty sand moist. Grey silty sand moist. Light grey silty sand wet (smell). Wet brown silty sand (smell) WT 870mm BGL
SB07	Near creek Crossing North side	0-200 200-400 400-600 600-1800 1800-2000	Dark brown/black peaty moist. Black/dark grey peaty sand moist. Dark grey silty sand moist. Light brown silty sand smell. Cream wet silty sand smell. WT 640mm BGL
SB08	Mid creek near dam	0-50 50-200 200-500 500-900 900-1200 1200-1400 1400-1800 1800-2000	Slightly moist dark brown peaty silt, veg matter. Dark brown sandy peaty silt moist. Dark grey silty sand moist. Grey slightly moist silty sand. Dark brown cemented silt, coffee rock. Dark grey moist to wet silty sand. Grey silty sand wet. Dark brown silt minor pebbles 10mm. No WT.
SB09	South side of creek	0-50 50-200 200-600 600-700 700-1100 1100-1300 1300-2000	Dark brown peaty organic matter moist. Dark grey silty sand. Grey silty sand. Light brown gravelly silt. Laterite rock. Wet silt pebbles 30-40mm. White moist clayey silt. WT 660mm BGL
SB010	South boundary east of bush line in paddock	0-50 50-300 300-500 500-1200 1200-2000	Brown silty sand organic matter dry. Brown silty sand gravels 40-50mm, boulders 200mm Laterite, dry. Brown/orange silty sandy gravel cemented Laterite. Light brown/orange cemented silt. White mottles sandstone dry. Light brown/orange cemented silt. White mottles sandstone dry. No WT.
SB011	Mid paddock, top of hill eastern side of site	0-50 50-300 300-400 400-1200 1200-1800 1800-2000	Dark brown silty sand dry. Grey silty sand dry. Light brown silty gravel pebble 30-50mm. Light brown cemented silt Laterite. Light brown, mottles pink * white clay dry. Orange mottled red dry clay. No WT.
SB012		0-400 400-1000 1000-1500 1500-1800 1800-2000	Grey sandy silt organic matter dry. Light grey silty sand. Cream silty sand slightly moist. Dark brown sandy silt, slightly moist gravel minor pebbles. Light brown silty clayey slightly moist boulder Laterite gravels 40mm. No WT.

Groundwater Monitoring Data Record Sheet



Date 30/05/2018 Name of recorder Kathryn Kinnear / Bianca Theyer
 Location Down Road Project No. MSC0137

Test ID	Time	BCH	WD	WD-BCH	CW	pH	EC	DO	Temp	TDS	Additional Information
SB09	9:15	932	1500	568	N/A	6.28	0.25	4.84	18.13	0.161	Slight smell
SB10	8:30				N/A						Dry
SB11	8:35				N/A						Dry
SB12	8:50				N/A						Dry
SB08	9:45	930	2480	1550	N/A	4.56	0.217	4.68	18.33	0.14	Sediment, tannins and smell
SB06	10:00	955	1653	698	N/A	4.78	0.321	2.24	17.48	0.208	Sediment, tannins and smell
SB07	10:25	965	1500	535	N/A	4.77	0.28	5.34	19.89	0.181	Smell, coloured
SB05	9:22				N/A						Dry
SB04	10:52	920	1830	910	N/A	5.9	0.242	4.79	17.37	0.157	Slight colouration and smell
CS02	10:55				40cm	5.78	1.05	4.66	14.22	0.675	20cm water depth, clear some sediments when disturbed
SB01	10:10				N/A						Dry
SB02	10:20				N/A						Dry
CS01	11:20				1.5m	6.09	0.923	9.54	11.93	0.59	30cm Clear, slight tannin, flowing

BCH = Bore Casing Height WD = Water Depth below casing WD-BCH = Groundwater level BGL

CW = Creek width

Notes:

Groundwater Monitoring Data Record Sheet

Date 27/02/2018 Name of recorder Kathryn Kinnear

Location Down Road Project No. MSC0137



Test ID	Time	BCH	WD	WD-BCH	pH	EC	DO	Temp	TDS	Additional Information
C502	1:10	N/A	N/A	N/A	6.34	0.623	5.14	21.89	0.4	10cm Depth running water.
SB09	1:35	1.0m	1660	660	4.03	0.296	2.22	19.87	0.192	
SB06	3:00	1.0m	1870	870	2.5	0.311	4.53	19.57	0.203	Coloured
SB07	3:10	1.0m	1640	640	2.82	0.337	3.9	19.69	0.224	Smell, coloured
C501	3:30	N/A	N/A	N/A	4.46	0.897	8.78	16.6	0.574	25cm Depth running water, clear

BCH = Bore Casing Height WD = Water Depth below casing WD-BCH = Groundwater level BGL

Notes:



CERTIFICATE OF ANALYSIS 207409

Client Details

Client Biodiverse Solutions
 Attention Kathryn Kinnear
 Address

Sample Details

Your Reference Biodiverse Solutions
 Number of Samples 5 Water
 Date samples received 01/03/2018
 Date completed instructions received 01/03/2018

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
 Samples were analysed as received from the client. Results relate specifically to the samples as received.
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
 Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by 09/03/2018
 Date of Issue 12/03/2018
 NATA Accreditation Number 2901. This document shall not be reproduced except in full.
 Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *

Results Approved By

Joshua Lim, Operations Manager
 Michael Kubiak, Organics Supervisor

Authorised By

Todd Lee, Laboratory Manager

Client Reference: Biodiverse Solutions

Nutrients in Water							
Our Reference			207409-1	207409-2	207409-3	207409-4	207409-5
Your Reference	UNITS	PQL	CS01	CS02	SB09	SB06	SB07
Date Sampled			27/02/2018	27/02/2018	27/02/2018	27/02/2018	27/02/2018
Type of sample			Surface Water	Surface Water	Groundwater	Groundwater	Groundwater
Date prepared	-		08/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018
Date analysed	-		08/03/2018	08/03/2018	08/03/2018	08/03/2018	02/03/2018
Total Nitrogen	mg/L	0.1	1.0	3.0	1.1	0.2	0.3
Nitrate as N	mg/L	0.005	0.26	0.007	<0.005	0.024	0.27
Nitrite as N	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ammonia as N	mg/L	0.005	<0.005	<0.005	0.11	0.70	0.22
Total Phosphorus	mg/L	0.05	<0.05	0.26	<0.05	1.3	0.65
Phosphate as P	mg/L	0.005	<0.005	<0.005	<0.005	1.1	0.52

Client Reference: Biodiverse Solutions

Dissolved Metals in Water							
Our Reference			207409-1	207409-2	207409-3	207409-4	207409-5
Your Reference	UNITS	PQL	CS01	CS02	SB09	SB06	SB07
Date Sampled			27/02/2018	27/02/2018	27/02/2018	27/02/2018	27/02/2018
Type of sample			Surface Water	Surface Water	Groundwater	Groundwater	Groundwater
Date prepared	-		07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Date analysed	-		07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Aluminium-Dissolved	mg/L	0.01	0.06	0.46	1.2	1.8	0.86
Arsenic-Dissolved	mg/L	0.001	<0.001	0.013	0.006	<0.001	<0.001
Cadmium-Dissolved	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002
Chromium-Dissolved	mg/L	0.001	<0.001	0.002	0.003	0.002	0.002
Copper-Dissolved	mg/L	0.001	<0.001	<0.001	0.002	<0.001	0.002
Iron-Dissolved	mg/L	0.01	0.86	40	2.8	0.90	1.1
Mercury-Dissolved	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Manganese-Dissolved	mg/L	0.005	<0.005	<0.005	0.007	0.01	0.009
Nickel-Dissolved	mg/L	0.001	<0.001	<0.001	<0.001	0.003	<0.001
Lead-Dissolved	mg/L	0.001	<0.001	<0.001	<0.001	0.006	0.001
Zinc-Dissolved	mg/L	0.001	0.008	0.002	0.069	0.097	0.065

Client Reference: Biodiverse Solutions

TRH(C6-C10)/MTBE(X) in water							
Our Reference			207409-1	207409-2	207409-3	207409-4	207409-5
Your Reference	UNITS	PQL	CS01	CS02	SB09	SB06	SB07
Date Sampled			27/02/2018	27/02/2018	27/02/2018	27/02/2018	27/02/2018
Type of sample			Surface Water	Surface Water	Groundwater	Groundwater	Groundwater
Date analysed	-		02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018
TRH C ₆ - C ₉	µg/L	10	<10	<10	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	10	<10	<10	<10	<10	<10
TRH C ₆ -C ₁₀ less BTEX (F1)	µg/L	10	<10	<10	<10	<10	<10
MTBE	µg/L	1	<1	<1	<1	<1	<1
Benzene	µg/L	1	<1	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	1	<1	<1	<1	<1	<1
m+p-xylene	µg/L	2	<2	<2	<2	<2	<2
o-xylene	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%		111	110	114	106	112
Surrogate toluene-d8	%		107	103	105	99	105
Surrogate 4-BFB	%		98	97	96	97	96

Client Reference: Biodiverse Solutions

svTRH(C10-C40) in water							
Our Reference			207409-1	207409-2	207409-3	207409-4	207409-5
Your Reference	UNITS	PQL	CS01	CS02	SB09	SB06	SB07
Date Sampled			27/02/2018	27/02/2018	27/02/2018	27/02/2018	27/02/2018
Type of sample			Surface Water	Surface Water	Groundwater	Groundwater	Groundwater
Date extracted	-		02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018
Date analysed	-		06/03/2018	06/03/2018	06/03/2018	06/03/2018	06/03/2018
TRH C ₁₀ - C ₁₄	µg/L	50	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	100	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	100	<100	<100	<100	110	330
TRH >C ₁₀ - C ₁₆	µg/L	50	<50	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less N (F2)	µg/L	50	<50	<50	<50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	100	<100	<100	<100	140	280
TRH >C ₃₄ - C ₄₀	µg/L	100	<100	<100	<100	<100	220
Surrogate o-Terphenyl	%		84	85	94	37	19

Client Reference: Biodiverse Solutions

PAHs in Water							
Our Reference			207409-1	207409-2	207409-3	207409-4	207409-5
Your Reference	UNITS	PQL	CS01	CS02	SB00	SB06	SB07
Date Sampled			27/02/2018	27/02/2018	27/02/2018	27/02/2018	27/02/2018
Type of sample			Surface Water	Surface Water	Groundwater	Groundwater	Groundwater
Date extracted	-		02/03/2018	02/03/2018	02/03/2018	02/03/2018	02/03/2018
Date analysed	-		07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-D14	%		78	76	88	24	14

Client Reference: Biodiverse Solutions

Method ID	Methodology Summary
INORG-055	Nitrite - determined colourimetrically. Soils are analysed from a water extract.
INORG-055	Nitrate - determined colourimetrically. Soils are analysed from a water extract.
INORG-055	Total Nitrogen by colourimetric analysis based on APHA 4500-P J, 4500-NO3 F.
INORG-057	Ammonia by colourimetric analysis based on APHA latest edition 4500-NH3 F.
INORG-060	Phosphate- determined colourimetrically. Soils are analysed from a water extract.
METALS-020	Metals in soil and water by ICP-OES.
METALS-021	Determination of Mercury by Cold Vapour AAS.
METALS-022	Determination of various metals by ICP-MS.
ORG-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
ORG-004	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
ORG-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
ORG-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM draft B1 Guideline on Investigation Levels for Soil and Groundwater.
ORG-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Client Reference: Biodiverse Solutions

Test Description	QUALITY CONTROL: Nutrients in Water				Duplicate			Spike Recovery %		
	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			02/03/2018					02/03/2018	
Date analysed	-			02/03/2018					02/03/2018	
Total Nitrogen	mg/L	0.1	INORG-055	<0.1					96	
Nitrate as N	mg/L	0.005	INORG-055	<0.005					116	
Nitrite as N	mg/L	0.005	INORG-055	<0.005					117	
Ammonia as N	mg/L	0.005	INORG-057	<0.005					100	
Total Phosphorus	mg/L	0.05	METALS-020	<0.05					103	
Phosphate as P	mg/L	0.005	INORG-060	<0.005					92	

Client Reference: Biodiverse Solutions

QUALITY CONTROL - Dissolved Metals in Water				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	207409-2
Date prepared	-			07/03/2018	1	07/03/2018	07/03/2018		07/03/2018	07/03/2018
Date analysed	-			07/03/2018	1	07/03/2018	07/03/2018		07/03/2018	07/03/2018
Aluminium-Dissolved	mg/L	0.01	METALS-022	<0.01	1	0.06	0.06	0	109	77
Arsenic-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.001	<0.001	0	103	108
Cadmium-Dissolved	mg/L	0.0001	METALS-022	<0.0001	1	<0.0001	<0.0001	0	104	109
Chromium-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.001	<0.001	0	105	104
Copper-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.001	<0.001	0	103	99
Iron-Dissolved	mg/L	0.01	METALS-022	<0.01	1	0.86	0.87	1	105	#
Mercury-Dissolved	mg/L	0.00005	METALS-021	<0.00005	1	<0.00005	<0.00005	0	102	104
Manganese-Dissolved	mg/L	0.005	METALS-022	<0.005	1	<0.005	<0.005	0	108	107
Nickel-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.001	<0.001	0	103	98
Lead-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.001	<0.001	0	101	101
Zinc-Dissolved	mg/L	0.001	METALS-022	<0.001	1	0.008	0.008	0	103	104

Client Reference: Biodiverse Solutions

QUALITY CONTROL - VTRH(C6-C10)/METEXN in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date analysed	-			02/03/2018					02/03/2018	
TRH C ₆ - C ₉	µg/L	10	ORG-016	<10					95	
TRH C ₆ - C ₁₀	µg/L	10	ORG-016	<10					95	
MTBE	µg/L	1	ORG-016	<1						
Benzene	µg/L	1	ORG-016	<1					110	
Toluene	µg/L	1	ORG-016	<1					103	
Ethylbenzene	µg/L	1	ORG-016	<1					89	
m+p-xylene	µg/L	2	ORG-016	<2					86	
o-xylene	µg/L	1	ORG-016	<1					87	
Naphthalene	µg/L	1	ORG-016	<1						
Surrogate Dibromofluoromethane	%		ORG-016	109					106	
Surrogate toluene-d8	%		ORG-016	107					105	
Surrogate 4-BFB	%		ORG-016	99					105	

Client Reference: Biodiverse Solutions

QUALITY CONTROL: sv/TH(C10-C40) in water				Duplicate			Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			02/03/2018	2	02/03/2018	02/03/2018		02/03/2018	
Date analysed	-			06/03/2018	2	06/03/2018	06/03/2018		06/03/2018	
TRH C ₁₀ - C ₁₄	µg/L	50	ORG-003	<50	2	<50	<50	0	73	
TRH C ₁₅ - C ₂₀	µg/L	100	ORG-003	<100	2	<100	<100	0	86	
TRH C ₂₀ - C ₃₀	µg/L	100	ORG-003	<100	2	<100	<100	0	81	
TRH >C ₁₀ - C ₁₆	µg/L	50	ORG-003	<50	2	<50	<50	0	78	
TRH >C ₁₆ - C ₂₄	µg/L	100	ORG-003	<100	2	<100	<100	0	88	
TRH >C ₂₄ - C ₂₀	µg/L	100	ORG-003	<100	2	<100	<100	0	75	
Surrogate o-Terphenyl	%		ORG-003	97	2	85	101	17	80	

Client Reference: Biodiverse Solutions

QUALITY CONTROL			PAHs in Water			Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			02/03/2018	2	02/03/2018	02/03/2018		02/03/2018	
Date analysed	-			07/03/2018	2	07/03/2018	07/03/2018		07/03/2018	
Naphthalene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0	94	
Acenaphthylene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0		
Acenaphthene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0		
Fluorene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0	108	
Phenanthrene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0	115	
Anthracene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0		
Fluoranthene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0	114	
Pyrene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0	112	
Benzo(a)anthracene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0		
Chrysene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0	100	
Benzo(b,j+k)fluoranthene	µg/L	0.2	ORG-012	<0.2	2	<0.2	<0.2	0		
Benzo(a)pyrene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0	72	
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0		
Dibenzo(a,h)anthracene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0		
Benzo(g,h,i)perylene	µg/L	0.1	ORG-012	<0.1	2	<0.1	<0.1	0		
Surrogate p-Terphenyl-D ₁₄	%		ORG-012	91	2	76	77	1	74	

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

#4,5 - PAH: Surrogate recovery was low due to sample emulsifying during extraction

Percent recovery not available due to the analyte signal being much greater than the spike amount. An acceptable recovery was achieved for the LCS.

#4,5 for Nox PQL raised due to sample matrix. Very dark samples

Groundwater Monitoring Data Record Sheet



Date 4/09/2018 Name of recorder Bianca Theyer / Chiquita Cramer

Location Down Road Project No. MSC0137

Test ID	Time	BCH (cm)	WD (cm)	WD-BCH (cm)	pH	EC (mg/cm)	DO (mg/L)	Temp (C°)	TDS	Additional Information
SB9	9:35	92.7	136.8	44.1	5.86	0.389		17.2	0.253	Lightly coloured brown
SB12	10:28	85	189	104	7.52	0.077		16.55	0.05	Lots of sediment, lightly coloured brown
SB8	10:48	95	113	18	4.41	1.2	2.57	15.86	0.768	Moderate amount of sediment, brown in colour
SB6	11:17	93	93	0	4.16	1.07	8.95	14.23	0.686	Moderate amount of sediment, brown in colour
SB7	11:35	91	135	44	4.5	0.211		15.55	0.137	Moderate to high amount of sediment, brown in colour
CS1	12:02	N/A	10	N/A	5.68	0.885	3.93	14.91	0.566	Clear water, creek flowing
SB3	12:29	92	213	121	6.09	0.963	2.07	16.73	0.616	Lightly coloured brown
SB4	12:35	90.6	121	30.4	5.38	0.328	1.93	16.12	0.213	Lightly coloured brown
CS2	12:48	N/A	20	N/A	6.09	0.659	7.83	12.35	0.422	clear water, creek flowing

BCH = Bore Casing Height WD = Water Depth below casing WD-BCH = Groundwater level BGL

CW = Creek width

Notes:

Appendix D

Conceptual hydrogeological model

A-4 Conceptual hydrogeological model

A Conceptual Site Model was completed to assess the connectivity between shallow and deeper hydrogeological features of the Site and surrounds, and to identify key pathways for transport of potential contaminants in surface and groundwater, and potential receptors based on site

A-4-1 Sources of information

- Local shallow soil setting from Motorplex Development, Down Road Surface and Groundwater Monitoring 2018 Summary Report (Bio Diverse Solutions 2018)
- Regional hydrogeological setting from Albany hinterland prospective groundwater resources map (Ryan, Yesertener, Maughan, & Thornton, 2017)
- Shallow soil profile descriptions
- Deep groundwater bore

A-4-2 Local shallow hydrogeology

The typical local surficial geology is presented in Plate 3, and shows the following features:

- A thin shallow sandy/silty layer up to 1 meter thick overlies the Pallinup formation in areas leading to the creek, while on the upper-slopes lateritic gravels/cobbles predominate.
- Underlying the sandy/silty layer, the Pallinup formation comprises silty clays which appears to extend to 25 meters below the ground level.
- Although not tested, the permeability of the upper sandy/silt is likely higher than the underlying Pallinup Formation (silty clays) which may result in temporary perching of shallow groundwater in the sandy/silt (particularly during winter rainfall).
- Shallow groundwater levels derived from the monitoring of the shallow bores indicates that the levels appear to vary seasonally up to 1 meter.
- Shallow groundwater flow within the sandy/silty layer (and upper parts of the Pallinup Formation) are inferred as towards the creek line where groundwater is inferred to discharge.

A-4-3 “Deeper” hydrogeology

The deeper hydrogeology setting is presented on the cross section and shows the following features:

- The site (shallow hydrogeology) is underlain by approximately 25 metres of the Pallinup formation, deemed to comprise silt, sand and clay (Ryan *et al.* 2017). The Pallinup aquifer is inferred to contain minor water resources and exhibits a low permeability.
- The Pallinup Formation is underlain by the Werillup Aquitard described as comprising clay, silt and sand and which is deemed to hydraulically separate the overlying Pallinup Formation with underlying units (Ryan *et al.*, 2017). The drilling logs indicates that the thickness of the Werillup aquitard is 31 meters and comprises predominantly clay. Based on map notes (Ryan *et al.* 2017) the Werillup aquitard is inferred as extensive throughout the King River area and likely lies below all areas of the site and beyond.
- Werillup aquitard is probably underlain by granite, based on evidence of minor cuttings returned to the surface exhibiting angular quartz and some mica.
- The groundwater levels of the Pallinup formation appears to be similar to the shallow groundwater levels. That is to say that, excluding times when winter rainfall may perch shallow groundwater, the shallow sandy silts are probably hydraulically connected with the Pallinup Formation.
- The groundwater flow direction of the Pallinup Formation is not well known, however, beneath the Site groundwater it is likely to follow the regional topography, and flow towards the south west where groundwater is likely to discharge into the rivers and creeks, such as dominant surface water feature in areas close to the Site - Marbelup Brook.

A-4-4 Discussion/interpretations on pathway

The hydrogeological setting indicates the following Conceptual Site Model:

- The depth to groundwater plan indicates that in areas adjacent to the surface water creek/ feature, the depth to groundwater is less than 2 metres. In these areas, it is considered that there is an increased risk of impacts to groundwater from surface contaminants and spills given the thin geological profile (e.g. low adsorptive capacity).
- The shallow groundwater migration direction (shallow sands/silt and Pallinup Formation) indicates that any Site based groundwater impacts should migrate towards the creek line (on Site) where groundwater (and any impacted groundwater) is inferred to discharge. Any impacted surface water will migrate towards areas off-site and discharge into the major drainage of the area, the Marbelup Brook.
- Any Site based groundwater impacts should preferentially migrate within shallow sands/silts (towards the creek lines) and not migrate downwards into the deeper levels of the Pallinup Formation given the similar groundwater levels between the Pallinup Formation and the overlying shallow sandy silts, and that the shallow sandy silts have a higher permeability than the Pallinup Formation
- Given the low permeability of the Pallinup Formation, any Site based groundwater impacts, which may migrate downwards into the Pallinup formation should be subject to attenuation processes, which should limit the extent and migration rate of the any impacts.
- It appears from the limited drilling information (one monitoring well) that the Pallinup Formation is underlain by the Werillup Aquitard and granite, which should constrain any potential groundwater impacts to the Pallinup Formation.

A-4-5 Potential receptors

The Conceptual Site Model indicates that Site groundwater impacts will migrate towards the on-site creek, the receptors comprise the following:

- the environment of the onsite creek (flora and fauna)
- creek systems down-gradient of the site (flora and fauna)
- groundwater bore users - where bores are located close to, and are in hydraulic connection, with the creek system
- surface water users/abstraction of surface water; and
- livestock accessing creek.

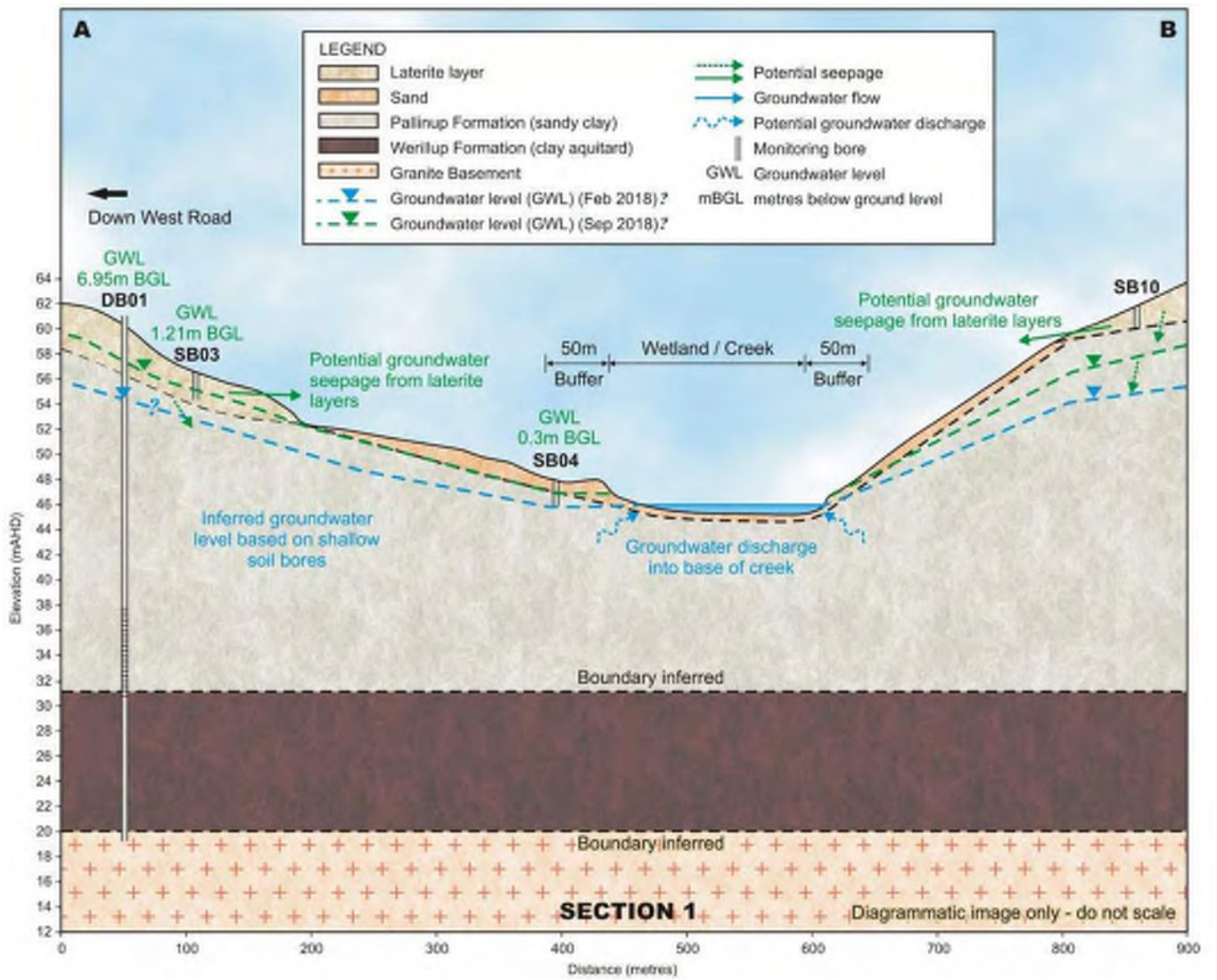


Plate 3 Preliminary hydrogeological section 1 (A-B)

Appendix E

Potential water users

Figure E.1 Potential surface water users

Table E.1 Licensed groundwater abstractions

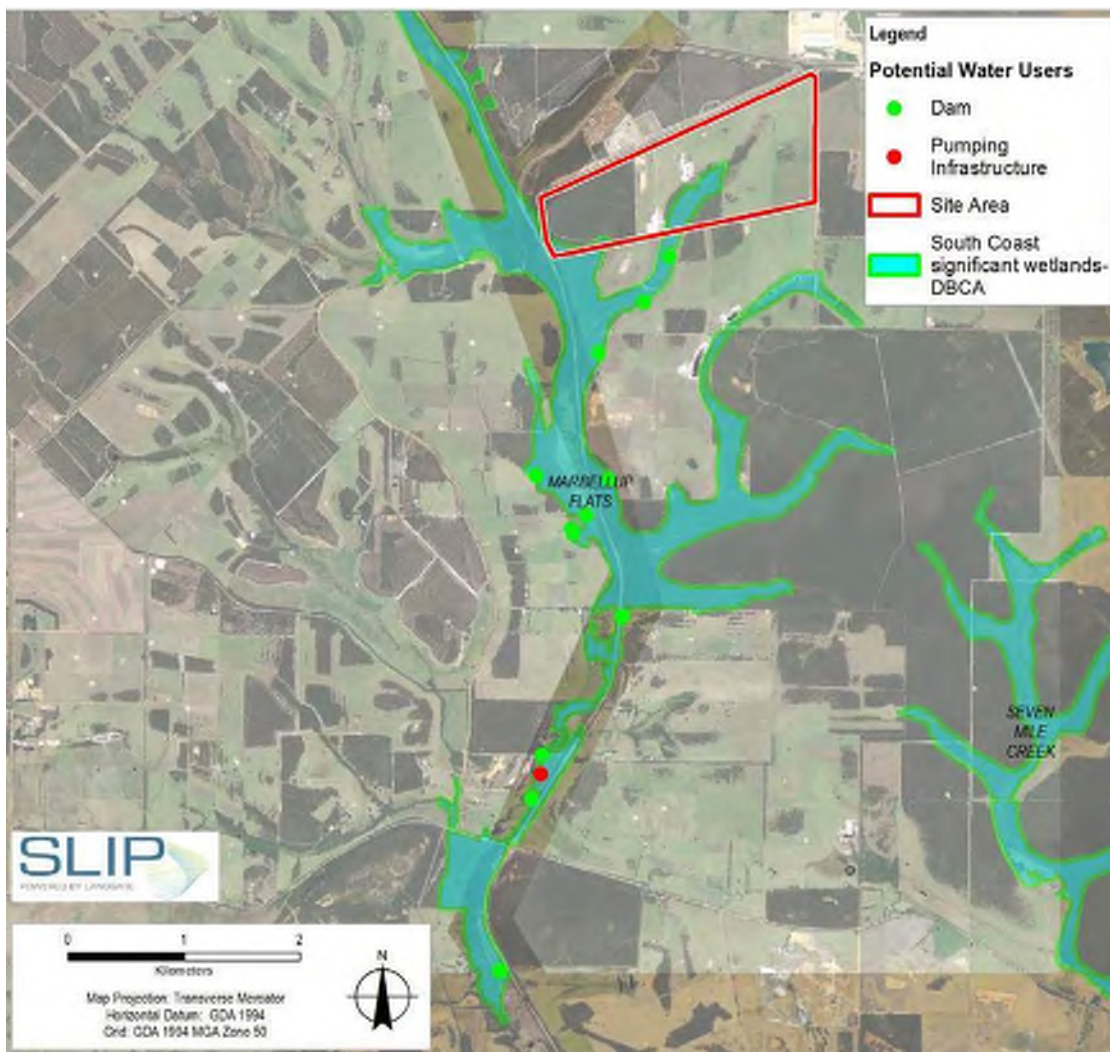


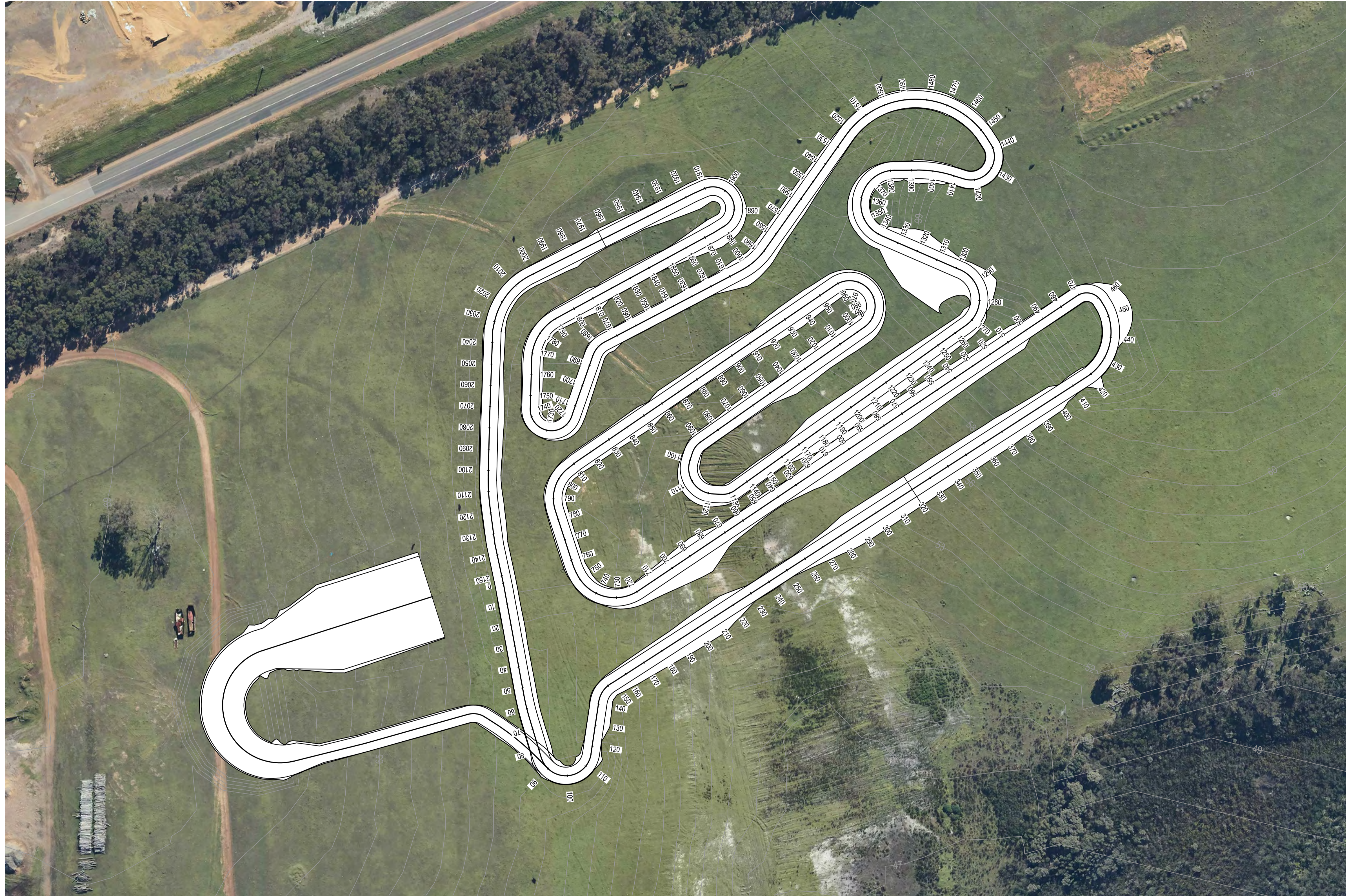
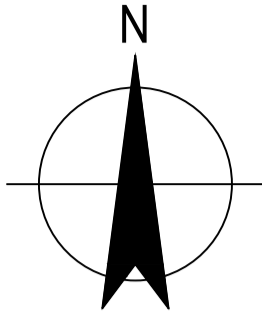
Figure E.1 Potential surface water users

Table E.1 Licensed groundwater abstractions

Licence No.	Licence allocation (kL/yr)	Expiry date	Location	Aquifer
168308	4000	31/8/2028	Project Site Lot 5780 Down Road, Drome	168308
156374	1400	30/09/2024	Lot 7235 Marbelup ~3.5 km downgradient	156374
76457	33200	8/04/2020	Lot 500 Marbelup ~6.5 km downgradient	76457
160280	1000	13/05/2026	Lot 86 Elleker Crown Reserve ~8 km downgradient	Bremer West – Superficial
155130	26000	20/10/2022	Lot 200 Lower Denmark Rd Elleker ~9.5 km downgradient	Bremer West – Sedimentary
173352	2100	16/05/2021	Wilgie Rd, Torbay	Bremer West – Superficial

Appendix F

Motocross track drawings



PLAN
SCALE 1:1000



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Project No.

Client CITY OF ALBANY

Project ALBANY MOTORSPORTS PARK
MX TRACK

Status PRELIMINARY

Drawing Title PLAN

Size
A1

Rev

Rev	Description	Checked	Approved	Date
Author	B SHAW		Drafting Check	
Designer	B SHAW		Design Check	

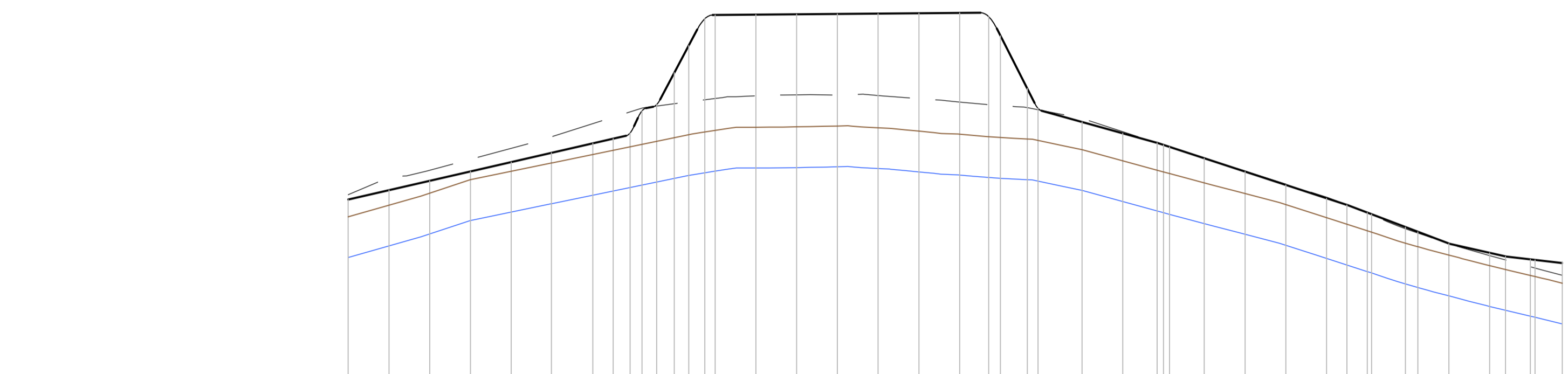
Plot Date: 12 August 2021 - 1:34 PM Plotted by: Bradley Shaw

File Name: C:\12d\SWdata\IP-00-12D-00161-12546218 - Albany Motorsport Park DA_1367\CADD\Drawings\12546218-C001.dwg

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Status Code

Drawing No.
12546218-C001



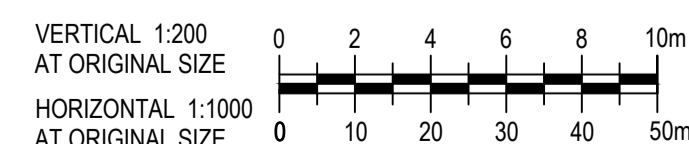
DATUM RL. 53.00

GROUNDWATER	59.98	60.55	61.14	61.80	62.22	62.82	63.04	63.25	63.42	63.54	63.69	63.86	64.01	64.14	64.22	64.38	64.40	64.44	64.35	64.19	64.03	63.91	63.87	63.80	63.73	63.28	62.73	62.27	62.18	62.10	61.65	61.12	60.58	59.94	59.62	59.29	58.23	56.69	56.51	56.10	55.58	54.72	53.72				
BULK EARTHWORKS SURFACE LEVEL	61.98	62.55	63.14	63.80	64.22	64.62	65.04	65.25	65.42	65.54	65.69	65.86	66.01	66.14	66.22	66.38	66.40	66.44	66.35	66.19	66.03	65.91	65.87	65.80	65.73	65.28	64.73	64.27	64.18	64.10	63.65	63.12	62.58	61.94	61.62	61.29	60.23	58.69	58.51	58.10	57.58	56.72					
LEVEL DIFFERENCE CUT - / FILL +	-0.24	-0.62	-0.52	-0.59	-0.67	-0.79	-0.96	-1.05	-1.03	-0.14	0.07	0.07	0.06	0.11	0.14	0.08	0.04	0.01	0.02	0.02	0.03	0.02	0.01	0.01	0.01	-0.17	-0.08	-0.00	-0.00	-0.00	-0.01	-0.03	-0.04	-0.05	0.03	0.04	0.08	0.06	0.00	0.14	0.17	0.36	0.40	0.67			
TRACK DESIGN SURFACE LEVEL	62.830	63.200	63.750	64.210	64.670	65.122	65.590	65.920	66.098	66.176	66.249	66.318	66.383	66.444	66.502	66.557	66.609	66.658	66.704	66.747	66.787	66.824	66.857	66.886	66.911	66.932	66.949	66.957	66.956	66.946	66.927	66.899	66.862	66.816	66.762	66.700	66.632	66.560	66.483	66.402	66.317	66.228	66.135	66.038	65.937	65.832	65.714
EXISTING SURFACE LEVEL	63.07	63.91	64.27	64.80	65.34	65.91	66.55	66.87	67.13	67.31	67.42	67.53	67.62	67.72	67.79	67.92	68.00	68.07	68.13	68.19	68.24	68.28	68.31	68.33	68.35	68.36	68.37	68.37	68.36	68.34	68.31	68.27	68.22	68.16	68.09	68.01	67.91	67.80	67.68	67.55	67.41	67.26	67.10	66.92	66.73	66.52	66.29
CHAINAGE	0.00	10.00	20.00	30.00	40.00	48.84	60.00	65.00	69.15	72.05	75.65	80.00	83.53	87.50	90.00	100.00	110.00	120.00	130.00	140.00	150.00	157.11	160.00	166.58	169.23	180.00	190.00	198.41	200.00	201.47	210.00	220.00	230.00	240.00	245.00	250.00	251.05	259.33	262.39	270.00	280.00	283.88	290.00	291.13	297.81		

LONGITUDINAL SECTION - MX ENTRY STAGE

HORZ 1:1000 VERT 1:200

Rev	Description	Checked	Approved	Date
Author	B SHAW		Drafting Check	
Designer	B SHAW		Design Check	



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Project No.

Client	CITY OF ALBANY
Project	ALBANY MOTORSPORTS PARK MX TRACK
Status	PRELIMINARY

Drawing Title
LONGITUDINAL SECTION
MX ENTRY STAGE

Status Code

Drawing No.
12546218-C005

Size
A1

Rev

Appendix G

DRAINS modelling results schematics

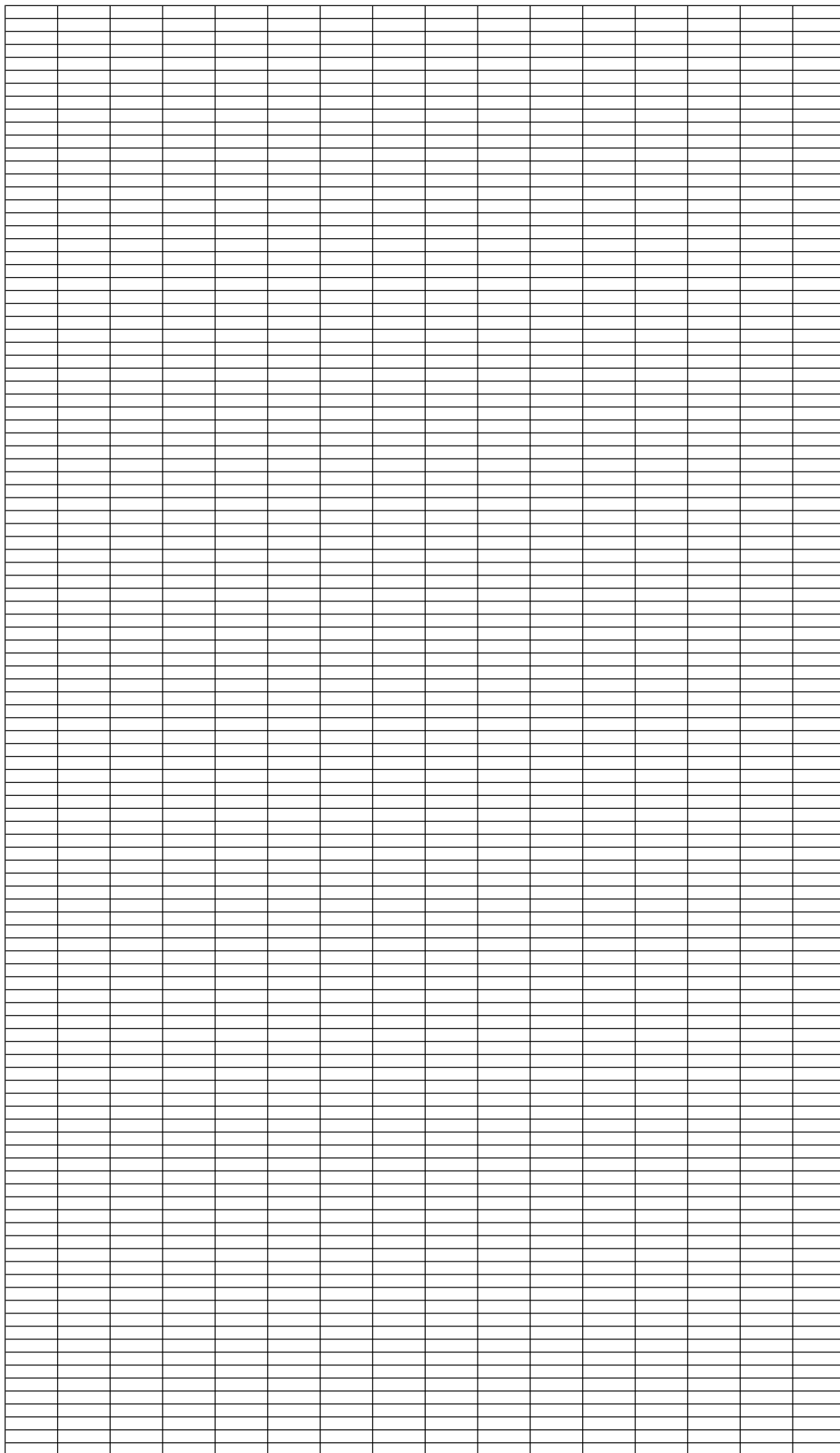
Sheet: 14 (SHEET: 14) Sheet Date: 2020-10-10

SUB-CANAL HEADS		Channel No.		Location		Channel Dimensions		Channel Bed		Channel Slope		Channel Material		Channel Construction		Channel Status		Channel Notes	
ID	Name	From	To	Length	Width	Depth	Side Slope	Bottom	Slope	Material	Construction	Status	Notes	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks
SUB-CANAL HEADS - HEADS																			
1	HEAD	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUB-CANAL HEADS - CHANNELS																			
2	CH1	1	2	100	1.5	0.5	1:1	Concrete	0.01	1:1	Completed	Open	Channel, 1.5m wide, 0.5m deep, concrete, 1:1 slope.						
3	CH2	2	3	100	1.5	0.5	1:1	Concrete	0.01	1:1	Completed	Open	Channel, 1.5m wide, 0.5m deep, concrete, 1:1 slope.						
SUB-CANAL HEADS - BOX CHANNELS																			
4	BOX1	1	1	0	1.5	0.5	0	Concrete	0.01	1:1	Completed	Open	Box channel, 1.5m wide, 0.5m deep, concrete, 1:1 slope.						
SUB-CANAL HEADS - WEIRS																			
5	WEIR1	1	1	0	1.5	0.5	0	Concrete	0.01	1:1	Completed	Open	Weir, 1.5m wide, 0.5m high, concrete, 1:1 slope.						
SUB-CANAL HEADS - CROSSINGS																			
6	CROSS1	1	1	0	1.5	0.5	0	Concrete	0.01	1:1	Completed	Open	Crossing, 1.5m wide, 0.5m high, concrete, 1:1 slope.						

Stage 1A (WEST) DRAINS Results							
DRAINS results prepared from Version 2020.036							
1EY							
PIT / NODE DETAILS				Version 8			
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
DUMMY-SCALE2	10		0				
DUMMY-SCALE1	8		0				
W1-B1-01-US	69		0				
W-B1-02-US	68.65		0				
W-B1-03-US	68.65		0				
W-B1-04-US	67		0				
W-B1-05-US	66.5		0				
W-B4-01-US	62		0				
W-B4-02-US	68.5		0				
W-B5-CULV1-HW	56.49		0.008			0.51	0 None
W-B5-CULV1-DS	56.2		0				
W-B5-CULV2-HW	56.02		0.115			0.48	0 None
W-B5-CULV2-DS	55.52		0				
W-B5-CULV3-HW	54.97		0.112			0.53	0 None
W-B5-CULV3-DS	54.43		0.013				
W-B5-CULV4-HW	56.91		0			1.09	0 None
W-B5-CULV4-DS	56.51		0				
W-B5-CULV5-HW	55.35		0.002			1.15	0 None
W-B5-CULV5-DS	54.44		0				
W-B7-CULV2-HW	55.92		0			1.08	0 None
W-B7-CULV2-DS	55.42		0				
W-B5-CULV6-HW	52.12		0.028			0.88	0 None
N87219	51.86		0				
W-B1-CULV1-HW	68.22		0.011			0.78	0 None
W1-01-DS	67.87		0.032				
N87159	65.15		0				
N87076	64.01		0				
N87168	61.29		0				
W-EXT02-US	61.09		0.002				
W-EXT	60.57		0.016				
W-EXT-CULV1-HW	59.23		0.016			1.27	0 None
W-EXT-CULV1-DS	59.07		0				
N87207	61.65		0				
N87255	61.01		0				
W-EXT-HW	64.2		0			0.8	0 None
N87181	58.21		0				
W-B5-03-DS	57.1		0				
W-B5-03-US	62		0				
W-B5-06-US	63.5		0				
W-B5-01-US	59		0				
W-B5-02-US	57.5		0				
W-B5-05-US	58		0				
W-B5-08-US	56		0				
W-B5-09-US	58		0				
W-B5-11-US	58		0				
W-B5-12-US	57.5		0				
N87237	57.26		0				
N87238	57.1		0				
W-B6-01-US	59.2		0				
N87225	52.7		0				
N87218	52.42		0				
W-B5-16-US	56.5		0				
W-B5-CULV14-US	59.2		0				
W-B7-CULV1-HW	51.85		0.093			1.15	0 None
N87244	49.24		0				
N87245	49.01		0				
W-B7-02-US	62.5		0				
HW12	53.04		0.016			0.96	0 None
N87149	51.91		0				
HW13	47.01		0.009			0.99	0 None
N87150	46.8		0				
W-B3-01-US	67.2		0				
S1 US	57.5		0				
SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
W-B5-CULV1-CAT	0.007	0	0.007	0	0	6.1	1EY AEP, 2 hour burst, Storm 2
W-B5-CULV2-CAT	0.008	0	0.008	0	0	8.08	3.94 1EY AEP, 2 hour burst, Storm 3
W-B5-CULV3-CAT	0.038	0	0.038	0	0	5.22	2.54 1EY AEP, 1 hour burst, Storm 1
W-B5-CULV3-DS-CAT	0.012	0	0.012	0	0	4.04	1.97 1EY AEP, 1 hour burst, Storm 1
W-B5-CULV4-CAT	0	0	0	0	0	1.98	0 1EY AEP, 10 min burst, Storm 5
W-B5-CULV5-CAT	0.002	0	0.002	0	0	4.6	2.24 1EY AEP, 1 hour burst, Storm 9
W-B5-CULV6-CAT	0.025	0	0.025	0	0	5.18	2.52 1EY AEP, 2 hour burst, Storm 3
W-B1-03-CAT	0.01	0	0.01	0	0	3.83	1.87 1EY AEP, 1 hour burst, Storm 1
W-B1-01-CAT	0.03	0	0.03	0	0	5.33	2.6 1EY AEP, 1 hour burst, Storm 1
WEST-B1-CAT	0.012	0	0.012	0	0	11.03	5.38 1EY AEP, 2 hour burst, Storm 3
WEST-B2-CAT	0.137	0.137	0	3.8	0	0	0 1EY AEP, 10 min burst, Storm 10
W-EXT-CAT	0	0	0	0	0	2.62	0 1EY AEP, 10 min burst, Storm 5
W-EXT04-CAT	0	0	0	0	0	2.18	1.06 1EY AEP, 10 min burst, Storm 5
WEST-B3-CAT	0.066	0	0.066	0	0	8.4	4.1 1EY AEP, 15 min burst, Storm 1
CulvW_ext	0	0	0	5	0	75	2 1EY AEP, 10 min burst, Storm 5
WEST-B4-CAT	0.161	0.161	0	4.34	0	10.08	0 1EY AEP, 10 min burst, Storm 4
W-B5-03-CAT	0	0	0	0	0	2.69	0 1EY AEP, 10 min burst, Storm 5
WEST-B6-CAT	0	0	0	0	0	3.56	1.74 1EY AEP, 10 min burst, Storm 5
WEST-B5-CAT	0	0	0	0	0	3.65	1.78 1EY AEP, 10 min burst, Storm 5
W-B7-01-CAT	0	0	0	0	0	3.33	0 1EY AEP, 10 min burst, Storm 5
WEST-B7-CAT	0.065	0	0.065	0	0	4.8	2.34 1EY AEP, 15 min burst, Storm 1
S1_catch	0	0	0	0	0	24.81	0 1EY AEP, 10 min burst, Storm 5
PIPE DETAILS							
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm		
DUMMY-SCALE	0	0	10	8	1EY AEP, 10 min burst, Storm 5		
W-B5-CULV1	0.002	0.47	56.485	56.199	1EY AEP, 2 hour burst, Storm 9		
W-B5-CULV2	0.042	1.84	56.024	55.515	1EY AEP, 1 hour burst, Storm 1		
W-B5-CULV3	0.05	1.46	54.974	54.574	1EY AEP, 2 hour burst, Storm 3		
W-B5-CULV4	0	0	56.91	56.51	1EY AEP, 10 min burst, Storm 5		
W-B5-CULV5	0.001	0.31	55.347	54.44	1EY AEP, 2 hour burst, Storm 2		
Pipe20528	0	0	55.913	55.416	1EY AEP, 10 min burst, Storm 5		
W-B5-CULV6	0.012	0.87	52.121	51.862	1EY AEP, 2 hour burst, Storm 4		
W-B1-CULV1	0.004	0.23	68.22	67.869	1EY AEP, 2 hour burst, Storm 4		
Pipe20532	0	0	65.25	65.152	1EY AEP, 10 min burst, Storm 5		

Stage 1A (WEST) DRAINS Results							
DRAINS results prepared from Version 2020.036							
10% AEP							
PIT / NODE DETAILS				Version 8			
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
DUMMY-SCALE2	10		0				
DUMMY-SCALE1	8		0				
W1-B1-01-US	69		0				
W-B1-02-US	68.65		0				
W-B1-03-US	68.65		0				
W-B1-04-US	67		0				
W-B1-05-US	66.64		0				
W-B4-01-US	62		0				
W-B4-02-US	68.5		0				
W-B5-CULV1-HW	56.6		0.028			0.4	0 None
W-B5-CULV1-DS	56.31		0				
W-B5-CULV2-HW	56.3		0.314			0.2	0 None
W-B5-CULV2-DS	55.59		0				
W-B5-CULV3-HW	55.19		0.29			0.31	0 None
W-B5-CULV3-DS	54.53		0.032				
W-B5-CULV4-HW	56.98		0.006			1.02	0 None
W-B5-CULV4-DS	56.55		0				
W-B5-CULV5-HW	55.39		0.012			1.11	0 None
W-B5-CULV5-DS	54.47		0				
W-B7-CULV2-HW	55.92		0			1.08	0 None
W-B7-CULV2-DS	55.42		0				
W-B5-CULV6-HW	52.37		0.074			0.63	0 None
N87219	52.36		0				
W-B1-CULV1-HW	68.31		0.026			0.69	0 None
W1-01-DS	67.92		0.087				
N87159	65.27		0				
N87076	64.13		0				
N87168	61.33		0				
W-EXT02-US	61.24		0.093				
W-EXT	60.69		0.371				
W-EXT-CULV1-HW	59.64		0.372			0.86	0 None
W-EXT-CULV1-DS	59.19		0				
N87207	61.73		0				
N87255	61.07		0				
W-EXT-HW	64.63		0.26			0.37	0 None
N87181	58.28		0				
W-B5-03-DS	57.16		0.038				
W-B5-03-US	62		0				
W-B5-06-US	63.5		0				
W-B5-01-US	59		0				
W-B5-02-US	57.5		0				
W-B5-05-US	58		0				
W-B5-08-US	56		0				
W-B5-09-US	58		0				
W-B5-11-US	58		0				
W-B5-12-US	57.5		0				
N87237	57.26		0				
N87238	57.1		0				
W-B6-01-US	59.2		0				
N87225	52.82		0				
N87218	52.52		0				
W-B5-16-US	56.5		0				
W-B5-CULV14-US	59.2		0				
W-B7-CULV1-HW	52.36		0.379			0.64	0 None
N87244	49.39		0				
N87245	49.17		0				
W-B7-02-US	62.5		0				
HW12	53.44		0.317			0.56	0 None
N87149	51.93		0				
HW13	47.42		0.239			0.58	0 None
N87150	46.81		0				
W-B3-01-US	67.2		0				
S1 US	57.5		0				
SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
W-B5-CULV1-CAT	0.04	0	0.04	0	0	2.63	10% AEP, 10 min burst, Storm 5
W-B5-CULV2-CAT	0.035	0	0.035	0	0	3.48	10% AEP, 10 min burst, Storm 7
W-B5-CULV3-CAT	0.169	0	0.169	0	0	2.76	10% AEP, 10 min burst, Storm 5
W-B5-CULV3-DS-CAT	0.053	0	0.053	0	0	2.14	10% AEP, 10 min burst, Storm 4
W-B5-CULV4-CAT	0.007	0	0.007	0	0	1.56	10% AEP, 10 min burst, Storm 3
W-B5-CULV5-CAT	0.009	0	0.009	0	0	2.35	10% AEP, 10 min burst, Storm 5
W-B5-CULV6-CAT	0.118	0	0.118	0	0	2.23	10% AEP, 10 min burst, Storm 5
W-B1-03-CAT	0.044	0	0.044	0	0	2.02	10% AEP, 10 min burst, Storm 4
W-B1-01-CAT	0.132	0	0.132	0	0	2.82	10% AEP, 10 min burst, Storm 5
WEST-B1-CAT	0.103	0	0.103	0	0	4.75	10% AEP, 10 min burst, Storm 3
WEST-B2-CAT	0.269	0.269	0	3	0	0	10% AEP, 10 min burst, Storm 1
W-EXT-CAT	0.043	0	0.043	0	0	2.06	10% AEP, 10 min burst, Storm 3
W-EXT04-CAT	0.029	0	0.029	0	0	1.72	10% AEP, 10 min burst, Storm 9
WEST-B3-CAT	0.175	0	0.175	0	0	6.04	10% AEP, 10 min burst, Storm 9
CulvW_ext	0.142	0	0.142	5	0	75	10% AEP, 3 hour burst, Storm 6
WEST-B4-CAT	0.335	0.322	0.013	3.42	0	7.95	10% AEP, 10 min burst, Storm 4
W-B5-03-CAT	0.013	0	0.013	0	0	2.12	10% AEP, 10 min burst, Storm 3
WEST-B6-CAT	0.124	0	0.124	0	0	2.81	10% AEP, 10 min burst, Storm 9
WEST-B5-CAT	0.073	0	0.073	0	0	2.88	10% AEP, 10 min burst, Storm 9
W-B7-01-CAT	0.007	0	0.007	0	0	2.63	10% AEP, 10 min burst, Storm 6
WEST-B7-CAT	0.225	0	0.225	0	0	3.45	10% AEP, 10 min burst, Storm 5
S1 catch	0.27	0	0.27	0	0	39.9	10% AEP, 3 hour burst, Storm 2
PIPE DETAILS							
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm		
DUMMY-SCALE	0	0	10	8	10% AEP, 10 min burst, Storm 5		
W-B5-CULV1	0.025	0.57	56.603	56.313	10% AEP, 15 min burst, Storm 6		
W-B5-CULV2	0.209	2.98	56.12	55.63	10% AEP, 30 min burst, Storm 5		
W-B5-CULV3	0.249	2.03	55.046	54.684	10% AEP, 30 min burst, Storm 5		
W-B5-CULV4	0.004	0.64	56.982	56.545	10% AEP, 2 hour burst, Storm 3		
W-B5-CULV5	0.007	0.61	55.393	54.465	10% AEP, 10 min burst, Storm 3		
Pipe20528	0	0	55.913	55.416	10% AEP, 10 min burst, Storm 5		
W-B5-CULV6	0.064	0.46	52.365	52.363	10% AEP, 30 min burst, Storm 7		
W-B1-CULV1	0.02	0.58	68.308	67.923	10% AEP, 30 min burst, Storm 5		
Pipe20532	0.091	2.66	65.459	65.27	10% AEP, 9 hour burst, Storm 5		

Stage 1A (WEST) DRAINS Results							
DRAINS results prepared from Version 2020.036							
1% AEP							
PIT / NODE DETAILS				Version 8			
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
DUMMY-SCALE2	10		0				
DUMMY-SCALE1	8		0				
W1-B1-01-US	69		0				
W-B1-02-US	68.65		0				
W-B1-03-US	68.65		0				
W-B1-04-US	67		0				
W-B1-05-US	66.71		0				
W-B4-01-US	62		0				
W-B4-02-US	68.5		0				
W-B5-CULV1-HW	56.72		0.05			0.28	0 None
W-B5-CULV1-DS	56.57		0				
W-B5-CULV2-HW	56.56		0.789			-0.06	0.243 Headwall height/system capacity
W-B5-CULV2-DS	55.66		0.471				
W-B5-CULV3-HW	55.45		0.864			0.05	0 None
W-B5-CULV3-DS	54.61		0.317				
W-B5-CULV4-HW	57.06		0.011			0.94	0 None
W-B5-CULV4-DS	56.57		0				
W-B5-CULV5-HW	55.5		0.032			1	0 None
W-B5-CULV5-DS	54.51		0				
W-B7-CULV2-HW	56.2		0.148			0.8	0 None
W-B7-CULV2-DS	55.51		0				
W-B5-CULV6-HW	52.64		0.129			0.36	0 None
N87219	52.62		0				
W-B1-CULV1-HW	68.4		0.045			0.6	0 None
W1-01-DS	67.98		0.151				
N87159	65.29		0				
N87076	64.14		0.032				
N87168	61.39		0				
W-EXT02-US	61.36		0.252				
W-EXT	60.79		0.912				
W-EXT-CULV1-HW	60.52		1.092			-0.02	0.051 Headwall height/system capacity
W-EXT-CULV1-DS	59.26		0.321				
N87207	61.8		0				
N87255	61.12		0				
W-EXT-HW	65.04		0.694			-0.04	0.176 Headwall height/system capacity
N87181	58.35		0				
W-B5-03-DS	57.25		0.239				
W-B5-03-US	62		0				
W-B5-06-US	63.5		0				
W-B5-01-US	59		0				
W-B5-02-US	57.5		0				
W-B5-05-US	58		0				
W-B5-08-US	56		0				
W-B5-09-US	58		0				
W-B5-11-US	58		0				
W-B5-12-US	57.5		0				
N87237	57.39		0				
N87238	57.19		0				
W-B6-01-US	59.2		0				
N87225	52.93		0				
N87218	52.63		0.134				
W-B5-16-US	56.5		0				
W-B5-CULV14-US	59.2		0				
W-B7-CULV1-HW	52.62		1.016			0.38	0 None
N87244	49.54		0				
N87245	49.27		0.121				
W-B7-02-US	62.5		0				
HW12	54.03		0.745			-0.03	0.107 Headwall height/system capacity
N87149	51.94		0.373				
HW13	48.04		0.805			-0.04	0.153 Headwall height/system capacity
N87150	46.83		0.448				
W-B3-01-US	67.2		0				
S1 US	57.5		0				
SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
W-B5-CULV1-CAT	0.082	0	0.082	0	0	2.33	1.13 1% AEP, 15 min burst, Storm 8
W-B5-CULV2-CAT	0.074	0	0.074	0	0	2.82	1.37 1% AEP, 10 min burst, Storm 4
W-B5-CULV3-CAT	0.319	0	0.319	0	0	2.45	1.19 1% AEP, 15 min burst, Storm 4
W-B5-CULV3-DS-CAT	0.091	0	0.091	0	0	1.9	0.92 1% AEP, 15 min burst, Storm 4
W-B5-CULV4-CAT	0.018	0	0.018	0	0	1.38	0 1% AEP, 15 min burst, Storm 8
W-B5-CULV5-CAT	0.016	0	0.016	0	0	2.08	1.01 1% AEP, 15 min burst, Storm 4
W-B5-CULV6-CAT	0.215	0	0.215	0	0	1.98	0.96 1% AEP, 15 min burst, Storm 8
W-B1-03-CAT	0.075	0	0.075	0	0	1.79	0.87 1% AEP, 15 min burst, Storm 4
W-B1-01-CAT	0.252	0	0.252	0	0	2.5	1.22 1% AEP, 15 min burst, Storm 4
WEST-B1-CAT	0.211	0	0.211	0	0	3.84	1.87 1% AEP, 10 min burst, Storm 4
WEST-B2-CAT	0.435	0.435	0	2.43	0	0	0 1% AEP, 10 min burst, Storm 4
W-EXT-CAT	0.107	0	0.107	0	0	1.83	0 1% AEP, 15 min burst, Storm 8
W-EXT04-CAT	0.068	0	0.068	0	0	1.53	0.74 1% AEP, 15 min burst, Storm 8
WEST-B3-CAT	0.324	0	0.324	0	0	4.89	2.38 1% AEP, 10 min burst, Storm 4
CulvW_ext	0.479	0	0.479	5	5	75	2 1% AEP, 3 hour burst, Storm 8
WEST-B4-CAT	0.589	0.516	0.082	3.03	0	7.05	0 1% AEP, 15 min burst, Storm 8
W-B5-03-CAT	0.032	0	0.032	0	0	1.88	0 1% AEP, 15 min burst, Storm 8
WEST-B6-CAT	0.281	0	0.281	0	0	2.49	1.22 1% AEP, 15 min burst, Storm 8
WEST-B5-CAT	0.162	0	0.162	0	0	2.55	1.24 1% AEP, 15 min burst, Storm 8
W-B7-01-CAT	0.018	0	0.018	0	0	2.13	0 1% AEP, 10 min burst, Storm 4
WEST-B7-CAT	0.427	0	0.427	0	0	2.79	1.36 1% AEP, 10 min burst, Storm 4
S1 catch	1.641	0	1.641	0	0	19.68	0 1% AEP, 25 min burst, Storm 8
PIPE DETAILS							
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm		
DUMMY-SCALE	0	0	10	8	1% AEP, 10 min burst, Storm 5		
W-B5-CULV1	0.069	0.71	56.696	56.566	1% AEP, 15 min burst, Storm 8		
W-B5-CULV2	0.286	3.27	56.204	55.668	1% AEP, 15 min burst, Storm 1		
W-B5-CULV3	0.517	2.46	55.197	54.783	1% AEP, 30 min burst, Storm 3		
W-B5-CULV4	0.017	1.24	57.056	56.575	1% AEP, 15 min burst, Storm 8		
W-B5-CULV5	0.033	1.31	55.496	54.507	1% AEP, 15 min burst, Storm 8		
Pipe20528	0.069	2.46	56.107	55.515	1% AEP, 2 hour burst, Storm 10		
W-B5-CULV6	0.163	1.03	52.637	52.624	1% AEP, 15 min burst, Storm 8		
W-B1-CULV1	0.053	0.9	68.389	67.978	1% AEP, 15 min burst, Storm 1		
Pipe20532	0.143	3.23	65.513	65.295	1% AEP, 2 hour burst, Storm 10		



Stage 1B (EAST) DRAINS Results							
DRAINS results prepared from Version 2020.036							
1EY							
PIT / NODE DETAILS							
Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
E-B2-02-US	60.5		0				
N57	56.3		0				
N58	56		0				
E-B2-01-US	63.5		0				
E-B5-CULV1-HW	67.48		0.22			0.52	0 Headwall height/system capacity
N61643	65.3		0				
N302	64.61		0				
DUMMY-SCALE2	10		0				
DUMMY-SCALE1	8		0				
E-B5-01-US	71		0				
E-B5-02-US	72.5		0				
E-B7-CULV2-HW	72.69		0.041			0.81	0 Headwall height/system capacity
E-B7-CULV2-DS	72.14		0				
E-B7-04-US	73		0				
E-B7-05-US	73		0				
E-B9-CULV1-HW	67.41		0			1.09	0 Headwall height/system capacity
E-B9-CULV1-DS	66.47		0.014				
E-B9-07-US	73		0				
E-B9-08-US	68.5		0				
E-B9-05-US	71		0				
E-B9-06-US	68		0				
E-B9-CULV2-HW	65.01		0.016			0.99	0 Headwall height/system capacity
E-B9-CULV2-DS	64.1		0.041				
E-B9-03-US	71		0				
E-B9-04-US	67		0				
E-B9-01-US	69.5		0				
E-B9-02-US	65.5		0				
N306	60.2		0				
N297	55.5		0				
E-B7-07-US	70.01		0				
N296	62.23		0				
N305	56.98		0				
N304	53.99		0				
N61649	64.24		0				
N298	63.09		0				
N367	61.33		0				
N294	60.59		0				
E-B9-CULV3-HW	60.92		0			1.08	0 Headwall height/system capacity
E-B9-CULV3-DS	60.01		0				
E-B10-01-US	63		0				
E-B10-02-US	63.5		0				
E-B10-03-US	65.5		0				
E-B10-CULV1-HW	64.41		0.003			1.09	0 None
E-B10-CULV1-DS	62.97		0.008				
E-B10-04-US	67		0				
E-B10-05-US	68		0				
E-B6-01-US	66.5		0				
E-B6-02-US	69.5		0				
E-B6-03-US	63.5		0				
E-B7-01-US	69.5		0				
E-B7-02-DS	69.56		0.027				
E-B7-03-DS	70.57		0.017				
E-B7-02-US	70.5		0				
E-B7-03-US	72		0				
E-B7-CULV1-HW	68.23		0.068			0.77	0 None
Pit1448	67.18	68	0.077	0		0.73	0 Inlet Capacity
E-B7-CULV1-DS	65.68		0.007				
E-B7-08-US	72		0				
E-B7-09-US	70		0				
E-B7-10-US	69.5		0				
E-B7-11-DS	65.52		0.109				
E-B3-02-US	70.6		0				
E-B3-01-US	72		0				
E-B4-01-US	72		0				
E-B4-02-DS	71.18		0.075				
E-B4-02-US	73		0				
E-B1-01-US	58.5		0				
E-B1-CULV1-DS	59.83		0.006				
E-B1-02-US	60.5		0				
E-B1-03-SPLIT	65.59		0.05				
E-B1-03-US	68.5		0				
E-B1-04-DS	68.5		0				
E-B1-04-US	69.5		0				
Pit8	67.6	69.04	0.015	0.6		1.4	0 Inlet Capacity
E-B7-CULV3-DS	67.09		0				
N266	66.83		0.049				
E-B8-01A-US	71.2		0				
E-B8-01B-US	73		0				
N388	55.5		0.008				
N511	67.05		0.005				
N539	51.59		0.056				
Pit1296	71.6	71.86	0.029	0		0.2	0 Inlet Capacity
N61629	69.24		0				
N259	68		0				
HW1478	48.6		0.044			0.9	0 None
N59	47.42		0				
HW1479	52.04		0.138			0.96	0 None
N38873	50.98		0				
HW1480	56.56		0.026			0.94	0 None
N38880	55.5		0				
SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
EAST-B2-CAT	0.062	0	0	4.85		11.28	5.5 1EY AEP, 10 min burst, Storm 10
E-B5	0.409	0	0	4.96		0	0 1EY AEP, 10 min burst, Storm 10
EAST-B5-CAT	0	0	0	0		25.62	0 1EY AEP, 10 min burst, Storm 5
E-B7-A	0.078	0	0	5.95		0	0 1EY AEP, 10 min burst, Storm 10
E-B9-A	0	0	0	0		14.24	0 1EY AEP, 10 min burst, Storm 5
E-B9-B	0.023	0	0	1.7		3.96	0 1EY AEP, 10 min burst, Storm 9
E-B9-C	0	0	0	0		5.97	0 1EY AEP, 10 min burst, Storm 5
E-B9-D	0.06	0	0	2.59		6.01	2.93 1EY AEP, 10 min burst, Storm 7
EAST-B6-CAT	0.066	163.253	0.255	3.11		7.23	3.53 1EY AEP, 10 min burst, Storm 9
EAST-B8-CAT	0.041	0	0	1.59		3.69	0 1EY AEP, 10 min burst, Storm 9
EAST-B9-CAT	0	-9999	0	0		3.51	0 1EY AEP, 10 min burst, Storm 5
EAST-B1-CAT	0.116	0	0	3.34		7.76	3.78 1EY AEP, 10 min burst, Storm 9
EAST-B7-CAT	0	0.178	0	0		10.99	0 1EY AEP, 10 min burst, Storm 5
EAST-B10-CAT	0.091	0	0	2.36		5.48	2.67 1EY AEP, 10 min burst, Storm 9
E-B10-A	0	0	0	1.68		3.91	1.91 1EY AEP, 10 min burst, Storm 5
E-B10-03-CATA	0.014	0	0	1.87		4.35	2.12 1EY AEP, 10 min burst, Storm 9
E-B7-02-CAT	0	0	0	0		8.69	0 1EY AEP, 10 min burst, Storm 5
E-B7-03-CAT	0.029	0	0	3.4		7.89	3.85 1EY AEP, 10 min burst, Storm 9
E-B7-B-CAT	0	0	0	0		17.2	0 1EY AEP, 10 min burst, Storm 5
E-B7-C	0.125	0	0	3.58		8.31	4.05 1EY AEP, 10 min burst, Storm 9
E-B7-10-CATB	0	0	0	4.02		9.34	4.55 1EY AEP, 10 min burst, Storm 5
E-B7-11-CAT	0	0	0	0		5.77	0 1EY AEP, 10 min burst, Storm 5
E-B4-02-CAT	0.144	0	0	6.48		0	0 1EY AEP, 10 min burst, Storm 10
E-B1-02-CATA	0.01	0	0	2.71		6.3	3.07 1EY AEP, 10 min burst, Storm 9
E-B1-03-US-CAT	0.086	0	0	3.76		8.73	4.26 1EY AEP, 10 min burst, Storm 7
E-B1-04-CAT	0	0	0	0		3.99	0 1EY AEP, 10 min burst, Storm 5
E-B7-01-CAT	0.025	0	0	4		9.29	4.53 1EY AEP, 10 min burst, Storm 9

OF32192	0.494	0.494	0.029	0.347		0.36	2.78	1.03	1% AEP, 1 hour burst, Storm 7
OF32197	0.264	0.266	0.047	1.189		0.29	9.51	1.28	1% AEP, 1 hour burst, Storm 2
OF322	0.03	0.03	1.333	0.347		0.06	4	5.34	1% AEP, 1 hour burst, Storm 7
OF32200	0.706	0.706	0.069	1.189		0.62	9.51	2.17	1% AEP, 1 hour burst, Storm 2
OF32206	0.545	0.545	0.644	0.046		0.07	11.31	1.57	1% AEP, 1 hour burst, Storm 6
OF32209	0.919	0.919	17.383	0.051		0.03	32	0.56	1% AEP, 1 hour burst, Storm 6
OF32213	1.385	1.385	19.179	1.041		0.04	32	1.12	1% AEP, 30 min burst, Storm 2
OF32216	0	0	0.744	0		0	0	0	
OF32218	1.193	1.193	0.062	0.351		0.84	2.81	2.41	1% AEP, 1 hour burst, Storm 6
OF32220	0.244	0.243	0.049	1.122		0.28	8.98	1.29	1% AEP, 2 hour burst, Storm 3
OF32222	0.58	0.579	0.04	1.122		0.44	8.98	1.35	1% AEP, 30 min burst, Storm 8
OF32227	0.088	0.088	0.576	0.022		0.02	7.74	0.82	1% AEP, 2 hour burst, Storm 1
OF32229	0.45	0.45	0.041	0.292		0.38	2.34	1.32	1% AEP, 2 hour burst, Storm 1
OF324	0.045	0.039	0.576	0.328		0.01	31.6	0.66	1% AEP, 30 min burst, Storm 8
OF326	1.224	1.224	1.533	0.614		0.87	4.91	2.48	1% AEP, 9 hour burst, Storm 10
OF330	0.497	0.497	1.345	0.352		0.17	4	3.21	1% AEP, 9 hour burst, Storm 10
OF334	0.759	0.759	1.115	0.043		0.11	10.95	2.9	1% AEP, 30 min burst, Storm 2
OF336	0.406	0.406	1.393	0.228		0.14	4	2.31	1% AEP, 15 min burst, Storm 6
OF339	0	0	1.337	0		0	0	0	
OF341	0	0	1.559	0		0	0	0	
OF343	0.499	0.499	1.491	0.655		0.39	7.86	1.87	1% AEP, 15 min burst, Storm 1
OF345	0.255	0.255	1.266	0.609		0.26	7.31	1.58	1% AEP, 2 hour burst, Storm 3
OF351	0	0	1.347	0		0	0	0	
OF380	0	0	1.343	0		0	0	0	
OF383	0	0	0.766	0		0	0	0	
OF385	0	0	1.125	0		0	0	0	
OF387	0	0	0.582	0		0	0	0	
OF389	0	0	0.531	0		0	0	0	
OF526	0.484	0.484	1.639	0.28		0.45	2.24	1.66	1% AEP, 30 min burst, Storm 2
OF53403	0	0	1.291	0		0	0	0	
DETENTION BASIN DETAILS									
Name	Max WL	MaxVol	Max Q	Max Q	Max Q				
			Total	Low Level	High Level				
EAST-B2	57.65	0	0.254	0.241		0.012			
EAST-B5	67.23	0	0.494	0.424		0.07			
EAST-B6	61.61	0	1.387	0.592		0.794			
EAST-B8	71.04	0	0.024	0.024		0			
EAST-B9	63.65	0	0.255	0.255		0			
EAST-B1	59.06	0	0.484	0.45		0.014			
EAST-7	65.97	0	1.199	0.663		0.635			
EAST-B10	62.52	0	0.595	0.496		0.098			
Bio-retention	73.19	0	0	0		0			
EAST-B4	71.41	0	0.201	0.201		0			
EAST-B3	70.75	0	0.281	0.241		0.04			
Run Log for 12546218 AlbanyMotorPark east run at 03:50:40 on 13/7/2021 using version 2020.036									
E-B10-03 The maximum water level in these storages exceeds the maximum elevation you specified: EAST-B10, EAST-B6.									
DRAINS has extrapolated the Elevation vs Storage table to a higher Elevation. Please provide accurate values for higher elevations.									
No water upwelling from any pit.									
Freeboard was less than 0.15m at Pit1448, Pit1296									
The maximum pond depth in these sag pits is unsafe: Pit1296									
Peak water levels spilled in these Overflow Routes: OF324 spilled. You cannot rely on these results. You really MUST specify data for higher levels for these cross sections.									
IGNORE THESE WARNINGS AT YOUR OWN PERIL\cf1									

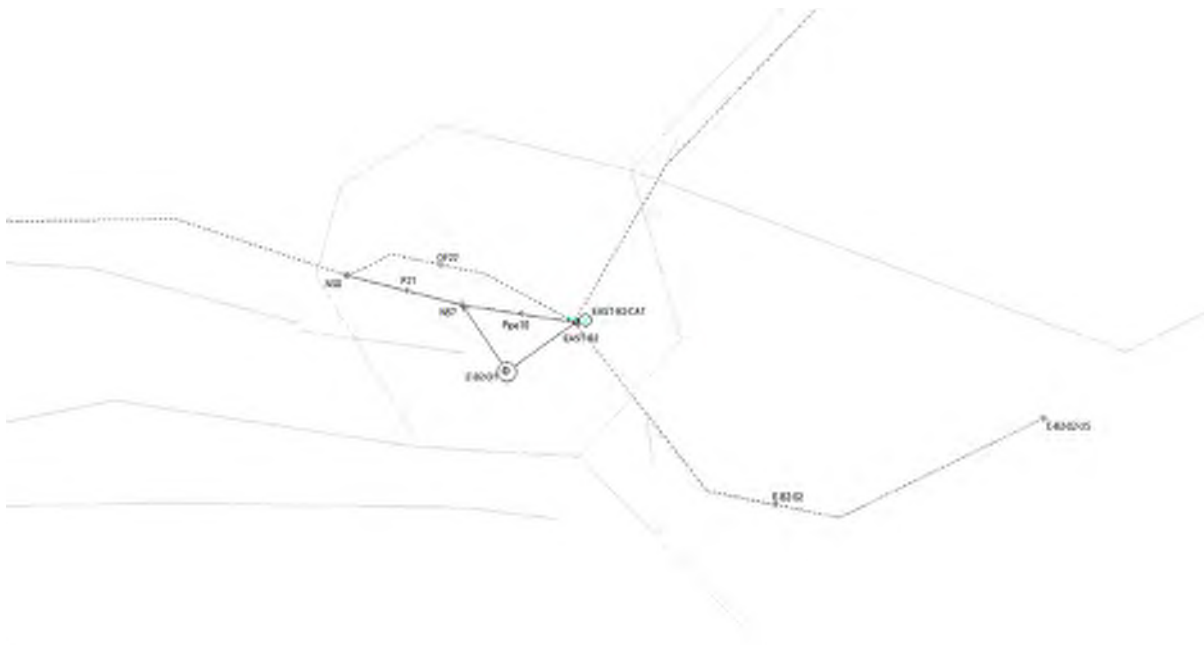


Figure G.1 Typical basin set-up

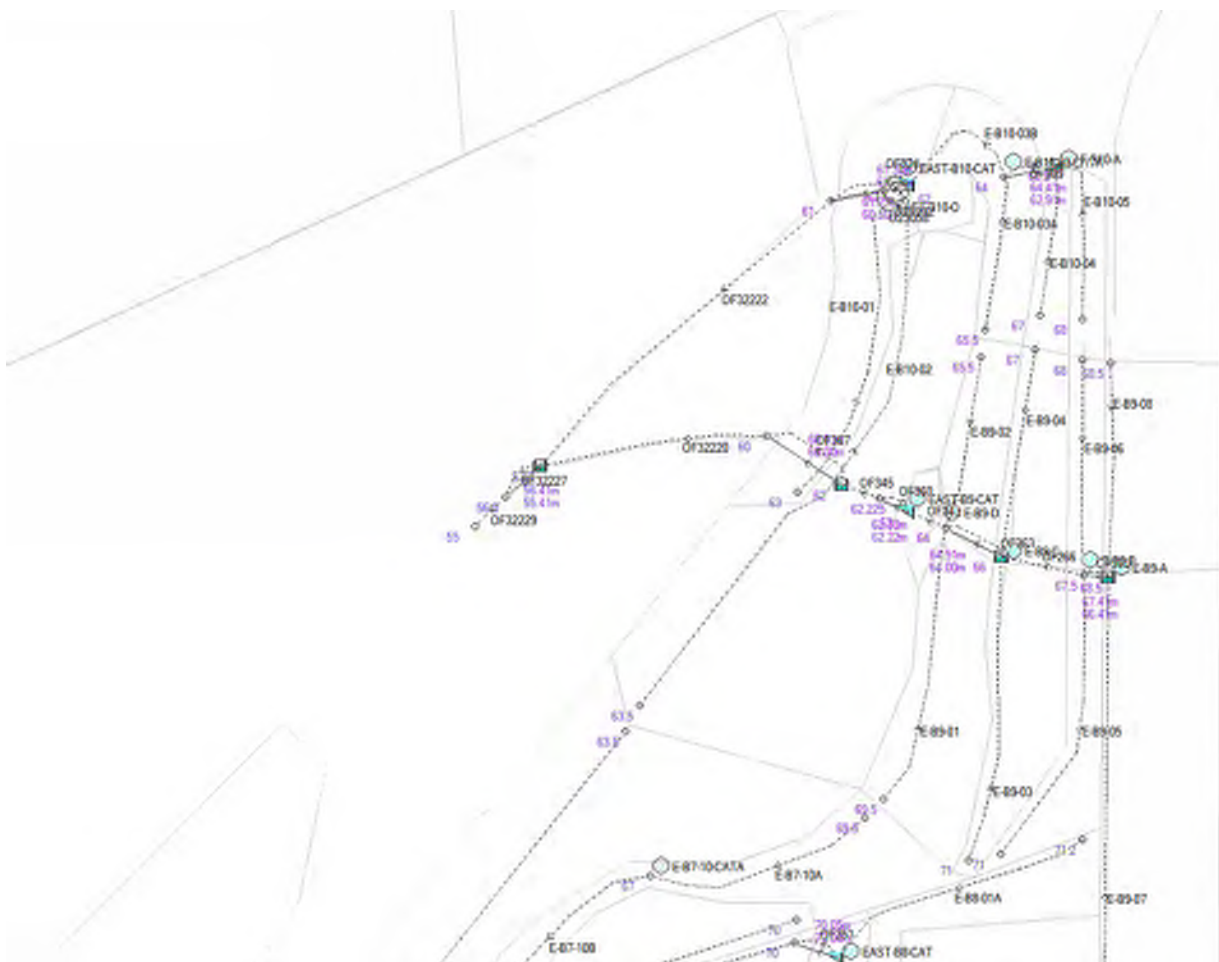


Figure G.2 East-1 schematic diagram

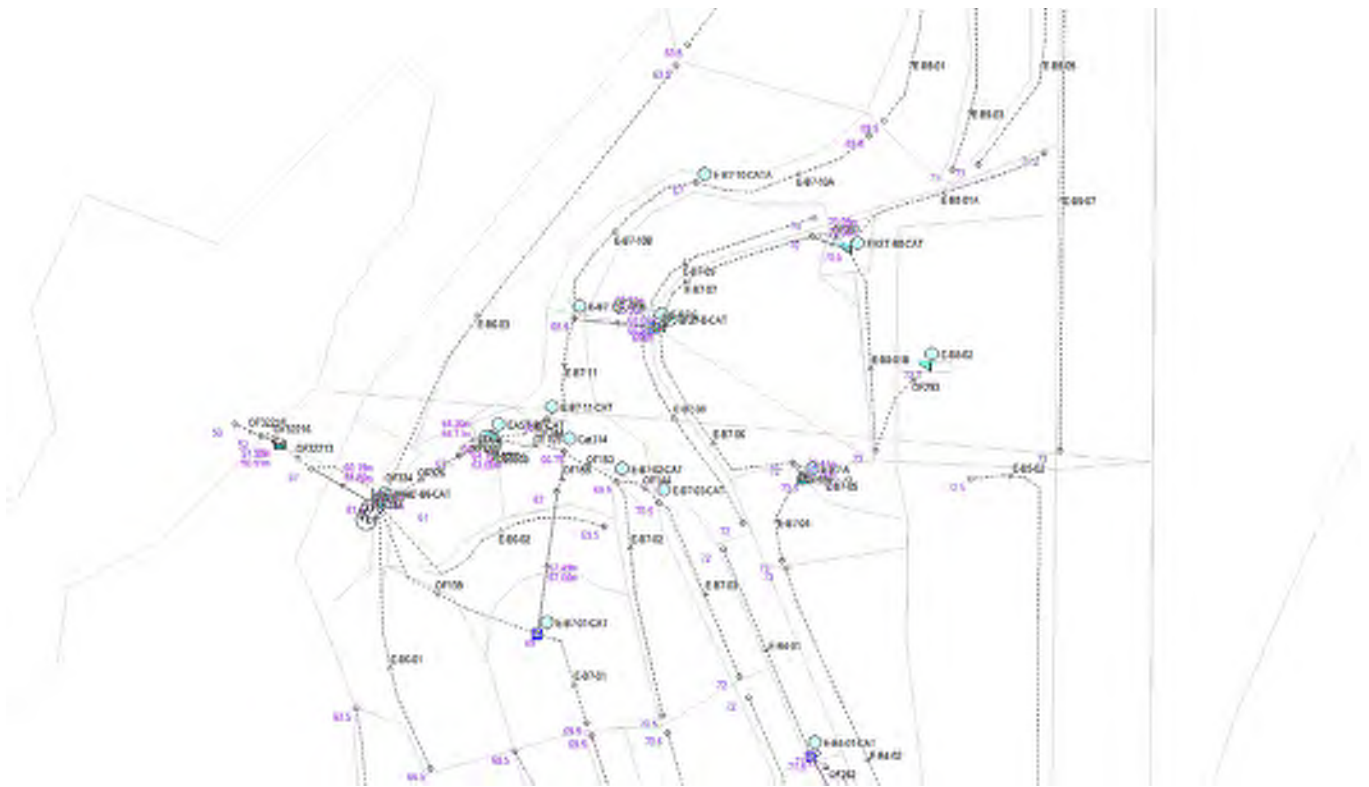


Figure G.3 East-2 schematic diagram

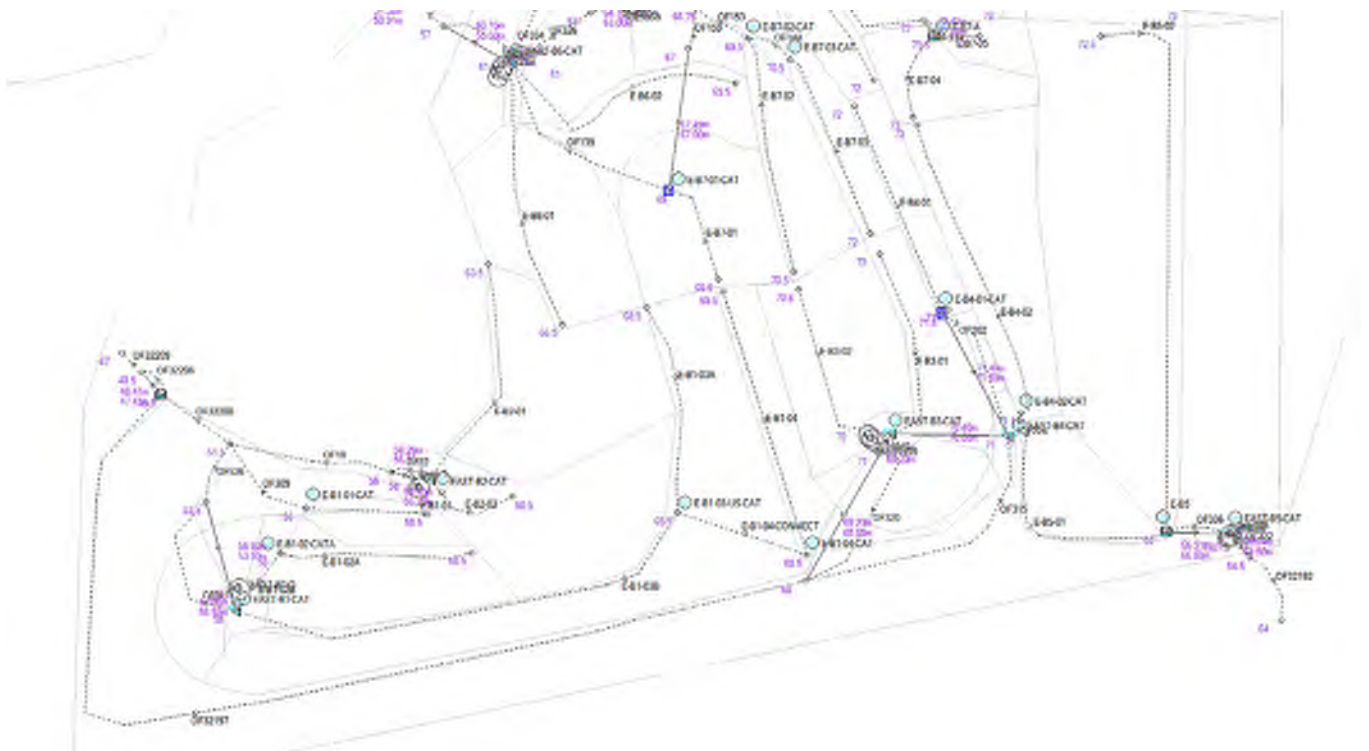


Figure G.4 East-3 and East-4 schematic diagram

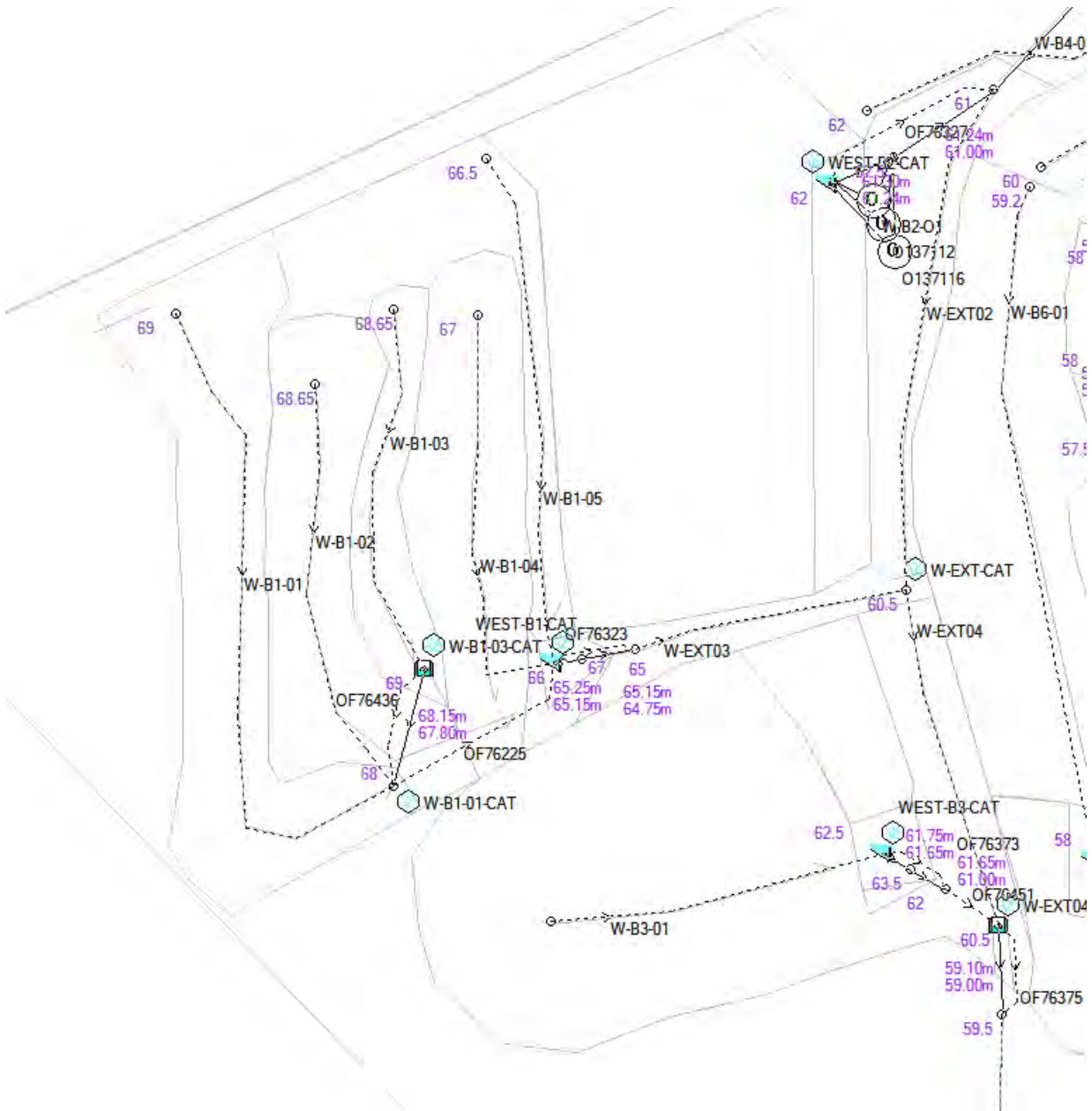


Figure G.5 West-3 schematic diagram

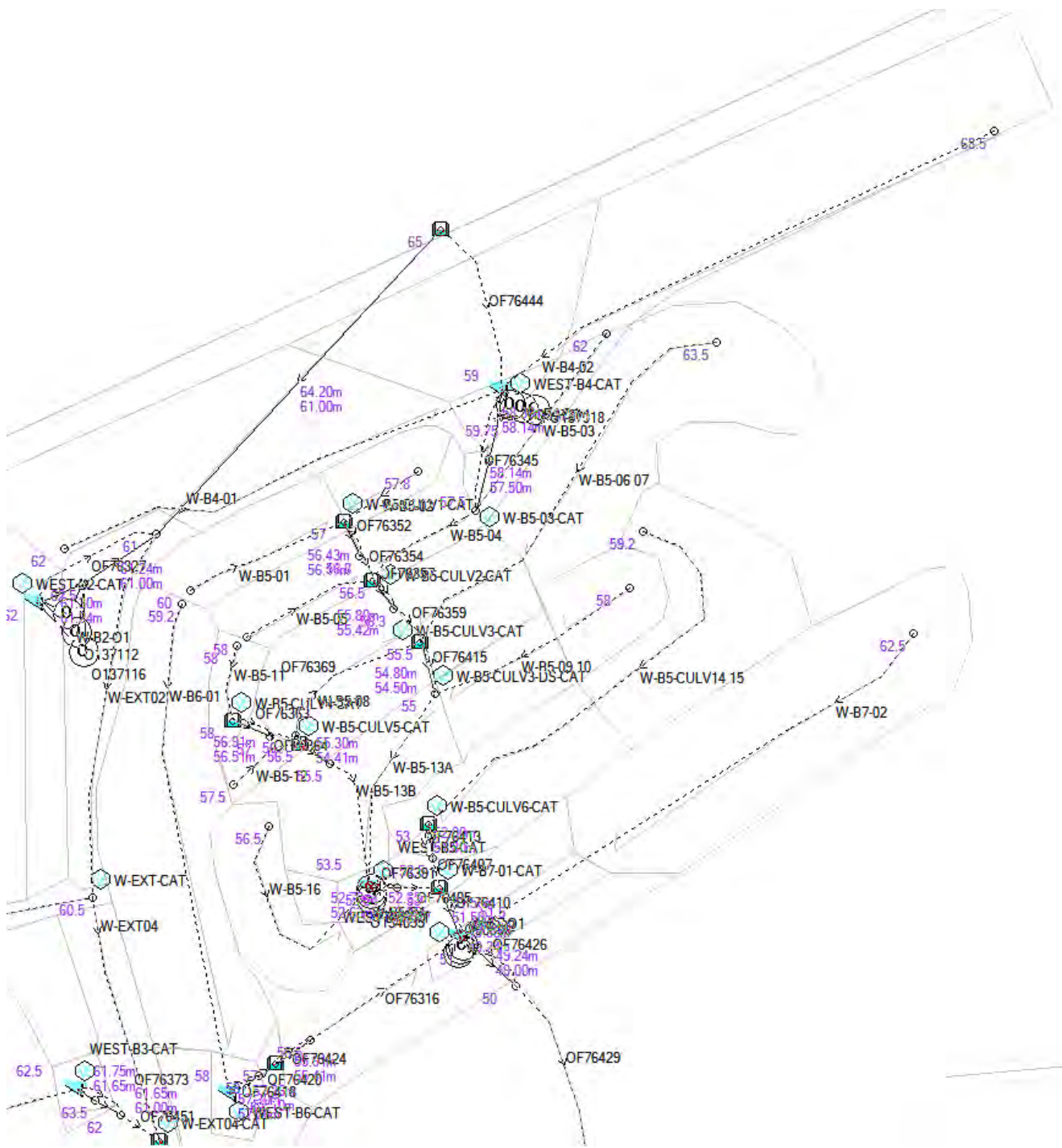


Figure G.6 West-2 schematic diagram

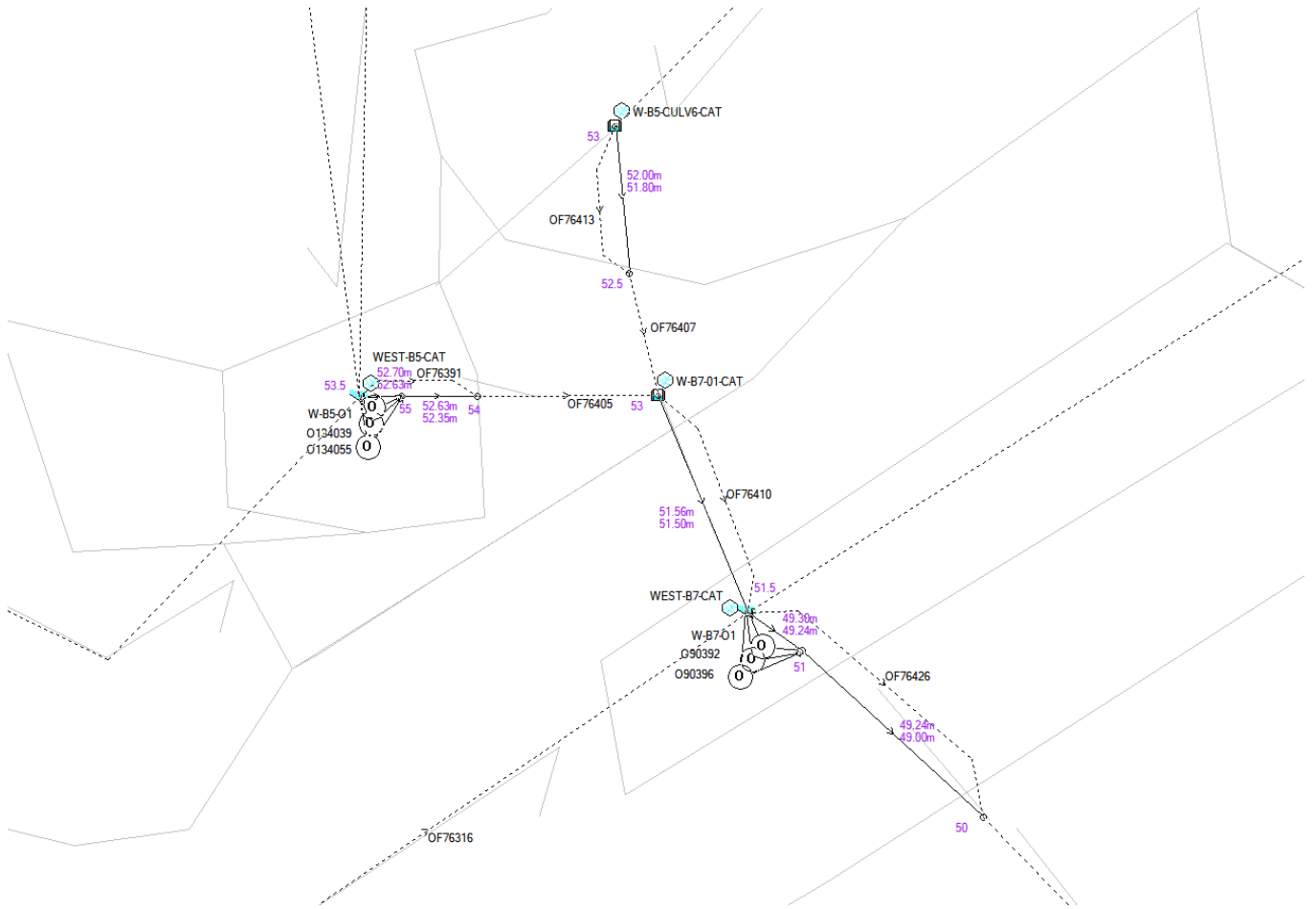


Figure G.7 West-B7 schematic diagram

Appendix H

**Site and soil evaluation for onsite
wastewater management**



Albany Motorsport Park – Development Application

**Site and Soil Evaluation for Onsite
Wastewater Management**

City of Albany

19 August 2021

→ **The Power of Commitment**



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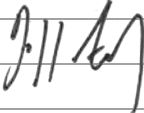
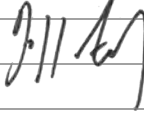
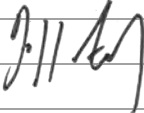
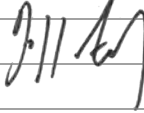
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Executive summary

The City of Albany (CoA) has engaged GHD to prepare a Site and Soil Evaluation for Onsite Wastewater Management report for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure 1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

Due to the scale and nature of the proposed development, the works have been broken down into two key stages which comprise the following:

- Stage 1:
 - Stage 1A: Construction of motocross track and 4WD driver training, ATV area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

This Site and Soil Evaluation for Onsite Wastewater Management report has been developed as per the Department of Health, Western Australia (DOHWA) template report based on the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*, Government Sewerage Policy 2019, State Planning Policy 2.9, AS/NZS 1547 and other supporting documentation (DOHWA, 2021).

The purpose of this Site and Soil Evaluation (SSE) report is to outline the site, soil and groundwater conditions at the proposed AMP site with regarding to suitability for onsite effluent disposal during operation of the AMP. This report provides supporting information for the Development Application for the Stage 1 of the Site.

Based on an assessment of the soil physical and chemical results for the six test pit locations, it is recommended that the LAAs for the Race Track Precinct and Motocross Precinct are located at TP01 and TP06, respectively. The sizing for a wastewater treatment system and LAA has been developed in this SSE report for Stage 1A in the Motocross Precinct only.

The proposed clubhouse within the Motocross Precinct will be constructed in Stage 1A of the development. It is anticipated that this will be an unlicensed facility (15 L/ person/ day) however provision has been made for anticipated wastewater volumes for a licensed facility (35 L/ person/ day), to allow for possible increased loading at the site if it were to become a licensed facility.

The Motocross Precinct clubhouse is expected to have intermittent use throughout the Motocross season and on a weekly basis, with up to 300 patrons on Sunday or Saturday followed by minimal usage during the week and off-season downtime. Therefore, for the purpose of calculating anticipated wastewater volumes it is assumed that there is an average of 100 people/ day.

In order to accommodate spikes in wastewater volumes on event days when there is up to 300 patrons using the Motocross Precinct clubhouse facilities, it is proposed to install a 15,000 L holding tank, to balance storage over the course of a typical week.

The results of a water balance for the Motocross Precinct, for an average of 100 persons/day, indicate that 1,100 m² will be required for the sub-soil irrigation area. There is adequate area of land available within the vicinity of TP01 to accommodate the site of the required LAA.

As per the requirements of the Department of Water *WQPN 100* (DoW, 2007) and the *Government Sewerage Policy* (DPLH, 2019) a 'Secondary' wastewater treatment plant, with engineering certification to meet effluent quality of Biological Oxygen Demand (BOD) < 20 mg/L; Total Suspended Solids (TSS) < 30 mg/L; Total Nitrogen (TN) < 10 mg/L; Total Phosphorus (TP) < 1 mg/L; and *Escherichia coli* < 10 cfu/100mL is required in a Priority 2 PDWSA.

It is recommended that a DOHWA approved 'Secondary' treatment system, certified to AS1546.3:2008, is selected and installed for the Motocross Precinct during Stage 1A of development.

At time of writing, an onsite effluent disposal system was not proposed to be installed in the Race Track Precinct. All liquid waste from transportable buildings, toilets and washdown facilities is proposed to be removed offsite, as required, by an approved contractor. If onsite effluent disposal is proposed in the future is it expected a similar system, with holding tank, will be utilised to manage spikes in wastewater volumes for events and off-season downtime.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.2 and the assumptions and qualifications contained throughout the Report.

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1. Introduction

1.1 Background

The City of Albany (CoA) has engaged GHD to prepare a Site and Soil Evaluation for Onsite Wastewater Management report for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure 1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

The Great Southern Motorplex Group Inc. (GSMG), the Proponent, in partnership with the City of Albany, intend to develop the site as a regional motorsport facility. In October 2018, the City of Albany Council resolved to purchase the site and settlement of the land purchase was concluded in 2019. Once constructed, the AMP will be operated and managed by Albany Motorsport Venue Incorporated (AMV Inc.).

The proposed AMP forms part of the CoA's strategy to expand upon its existing motorsports facilities within the greater Albany area. The AMP is to be the largest facility of its kind in Western Australia and will support the local economy.

1.2 Purpose of this report

This Site and Soil Evaluation for Onsite Wastewater Management report has been developed as per the Department of Health, Western Australia (DOHWA) template report based on the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*, Government Sewerage Policy 2019, State Planning Policy 2.9, AS/NZS 1547 and other supporting documentation (DOHWA, 2021).

The purpose of this Site and Soil Evaluation (SSE) report is to outline the site, soil and groundwater conditions at the proposed AMP site with regarding to suitability for onsite effluent disposal during operation of the AMP. This report provides supporting information for the Development Application for the Stage 1 of the Site.

1.3 Evaluator's qualifications, experience and professional indemnity

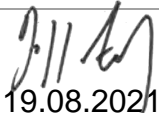
The SSE has been undertaken by Dr Jeff Foley who is a Chemical Engineer with 20 years' technical experience specialising in the areas of wastewater treatment and recycling and integrated water management. His involvement in water cycle projects has ranged from policy and planning, concept design and process modelling, through to detailed design, construction, commissioning and process optimisation.

GHD's site evaluation has been supported in the field by Great Southern Geotechnics (GSG), who specialise in high-quality testing of construction materials and consultancy services to the civil construction, agriculture, environmental, mining and resources industries across WA's Great Southern region. GSG operates an independent NATA Accredited Construction Materials Testing Laboratory, in compliance with AS ISO/IEC 17025 and ISO 9001.

Dr Foley is suitably qualified to provide interpretation of site, soil and climate conditions, undertake water balances, selection and design of appropriate wastewater treatment systems, disposal and reuse options. A summary of the Dr Foley's site evaluator details has been provided in Table 1 and a copy of his CV and qualifications can be provided on request.

A copy of GHD's Professional Indemnity Insurance certificate is included in Appendix C.

Table 1 Site Evaluator Details

Site evaluator details	
Name Company	Dr Jeff Foley, Technical Director – Wastewater process engineering GHD Pty Ltd
Phone Email	(08) 9840 5101 Jeff.Foley@ghd.com
Qualification Knowledge, skills and practical experience	MIEAust, BE(Chem) (Hons I), BA, PhD (UQ) – <i>Life cycle assessment of wastewater treatment systems</i> Employed as a wastewater process designer (inc. on-site systems) by GHD 2001 – 2021.
Date of site assessment	16/08/2021
Signature	
Date	19.08.2021

1.4 Scope and limitations

This report: has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and City of Albany as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Site development description

The AMP is proposed to be developed at Lot 5780 Down Road South, Drome which is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Two areas within Lot 5780 are excluded from the AMP development and include 49.47 ha at the western end of the Site which is covered with native vegetation and a dam area (1.37 ha) on the northern boundary which is subleased to Plantation Energy.

The Site is zoned as 'Special Use – SU26' under Local Planning Scheme No. 1, Scheme Amendment No. 35.

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide* (CAMS, 2012) and Motorcycling Australia (MA) *Track Guidelines* (MA, 2011)
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing)
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

2.1 Staging of the development

Due to the scale and nature of the proposed development, the works have been broken down into two key stages which comprise the following:

- Stage 1:
 - Stage 1A: Construction of motocross track and 4WD driver training, ATV area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

A Master Plan, which illustrates the various aspects of the Site and staging areas, has been developed by the GSMG and CoA to support the Development Application for the AMP (Figure 2, Appendix A).

2.2 Anticipated wastewater volumes

The proposed clubhouse within the Motocross Precinct will be constructed in Stage 1A of the development. It is anticipated that this will initially be an unlicensed facility (15 L/ person/ day) however provision has been made for anticipated wastewater volumes for a licensed facility (35 L/ person/ day), to allow for possible increased loading at the site if it were to become a licensed facility.

The Motocross Precinct clubhouse is expected to have intermittent use throughout the Motocross season (approx. March to October) and on a weekly basis, with up to 300 patrons on Sunday or Saturday followed by minimal usage (max. 20 persons per day) during the week and off-season downtime. Therefore, for the purpose of calculating anticipated wastewater volumes (Table 2) it is assumed that there is an average of 100 people/ day (Appendix B).

In order to accommodate spikes in wastewater volumes on event days when there is up to 300 patrons using the Motocross Precinct clubhouse facilities, it is proposed to install a 15,000 L holding tank, to balance out wastewater flows over the course of a typical week. The holding tank will also help store effluent during the off-season period.

At this stage, an onsite effluent disposal system is not proposed to be installed in the Race Track Precinct. All liquid waste from transportable buildings, toilets and washdown facilities is proposed to be removed offsite, as required, by an approved contractor. If onsite effluent disposal is proposed in the future is it expected a similar system, with holding tank, will be utilised to manage spikes in wastewater volumes for events and off-season downtime.

Table 2 Anticipated wastewater volumes

Type	Input volume	Load per person	Daily flow (L/day)
Stage 1A – Motocross Precinct			
Permanent building (5 x sinks, 4 x toilet pans, urinal)	Up to 300 persons (average 100 persons/day)	35 L/person/day	3,500 L/day (average)
Transportable toilets	One permanent block and additional transportables for special events	35 L/person/day	Liquid waste to be removed offsite by an approved contractor, as required
Washdown area	Variable	-	
Total			3,500 L/day (average)
Stage 1B – Racetrack Precinct			
Transportable building	500 persons	35 L/person/day	Liquid waste to be removed offsite by an approved contractor, as required
Transportable toilets	Special events	35 L/person/day	
Washdown area	Variable	-	
Total			

2.3 Site development description

The AMP site development description is outlined in Table 3.

Table 3 Description of the development

Development characteristic	Description		
Site address	Lot 5780 (No. 54) Down Road South, Drome		
Owner/ developer	City of Albany		
Proponent	Great Southern Motorplex Group (GSMG)		
Postal address	PO Box 484, ALBANY WA 6331		
Contact for SSE	Ph: 9840 5101	Mob: 0410 541 971	Email: jeff.foley@ghd.com
Date of field work	25 June 2021		
Local Government	City of Albany		
Zoning	Special Use		
Lot size	192.34 ha		
Proposal	Albany Motorsport Park		
Water supply	Bore and rainwater		
Availability of sewer	Unavailable		
Development located within:	Public drinking water source area: Yes – Priority 2 PDWSA	Sewage sensitive areas Yes – Sewerage Category (f) Within 1 km of significant wetlands	
Anticipated wastewater volume:	Sewage (L): Motocross Precinct 3,500 L/day (average)	Trade waste (L): Zero	

3. Site and soil assessment

3.1 Site assessment

GHD have undertaken a number of site walkovers for the AMP site from 2018 to 2021 and are very familiar with the existing site conditions. In addition, an intrusive field investigation was undertaken, by Great Southern Geotechnics, on 25 June 2021. This investigation involved excavating six test pits to a depth of 2500 mm below ground level (bgl), using a mini excavator with a 300 mm auger. Soil types, profiles and groundwater levels were then visually assessed and recorded onsite at time of site investigation, as per the DOHWA (2021) SSE template guidelines (Great Southern Geotechnics, 2021).

The findings of the desktop and field assessment, level of constraint and proposed mitigation measures, for the proposed Motocross Precinct and Race Track Precinct onsite effluent disposal locations, have been summarised in Table 4.

Table 4 Key site characteristics, level of constraint and proposed mitigation measures for the proposed Motocross Precinct and Race Track Precinct effluent disposal areas

Site characteristics	Investigations and reporting	Level of constraint	Mitigation measures																																																				
Climate	Albany is located on the south coast of Western Australia and the climate is broadly described as Mediterranean, with warm dry summers and mild wet winters. The nearest Bureau of Meteorology (BoM) official recording station that has mean daily evaporation data (1968 to 2012) is the Albany Airport Comparison weather station (Site number 9741) (BoM, 2021).	High	Divert stormwater from upslope around sub-soil irrigation area																																																				
	Mean monthly rainfall levels at the Albany Airport Comparison weather station (BoM, 2021) and pan evaporation data (DPIRD, 1987) are presented below. This shows that mean monthly evaporation exceeds mean monthly rainfall for seven months of the year, from November to April.																																																						
	<table border="1"> <thead> <tr> <th>Month</th> <th>Jan</th> <th>Feb</th> <th>Mar</th> <th>Apr</th> <th>May</th> <th>Jun</th> <th>Jul</th> <th>Aug</th> <th>Sep</th> <th>Oct</th> <th>Nov</th> <th>Dec</th> </tr> </thead> <tbody> <tr> <td>Mean Rainfall (mm)</td> <td>23.6</td> <td>22.3</td> <td>33.6</td> <td>61.3</td> <td>89.8</td> <td>108.0</td> <td>119.3</td> <td>106.3</td> <td>88.5</td> <td>70.8</td> <td>47.0</td> <td>27.8</td> </tr> <tr> <td>Evap. (mm)</td> <td>220</td> <td>171</td> <td>150</td> <td>91</td> <td>63</td> <td>47</td> <td>49</td> <td>67</td> <td>84</td> <td>106</td> <td>150</td> <td>199</td> </tr> <tr> <td>Evap. Exceeds Rainfall</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>No</td> <td>No</td> <td>No</td> <td>No</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> </tbody> </table>			Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean Rainfall (mm)	23.6	22.3	33.6	61.3	89.8	108.0	119.3	106.3	88.5	70.8	47.0	27.8	Evap. (mm)	220	171	150	91	63	47	49	67	84	106	150	199	Evap. Exceeds Rainfall	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes
	Month			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec																																								
	Mean Rainfall (mm)			23.6	22.3	33.6	61.3	89.8	108.0	119.3	106.3	88.5	70.8	47.0	27.8																																								
Evap. (mm)	220	171	150	91	63	47	49	67	84	106	150	199																																											
Evap. Exceeds Rainfall	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes																																											
Exposure	The proposed Land Application Areas (LAA) within the Race Track and Motocross Precincts have a high exposure to sun, with no shade cover and good ventilation.	Nil to Low	Not required																																																				

Site characteristics	Investigations and reporting	Level of constraint	Mitigation measures
Vegetation	The majority of the Site has been previously cleared for agriculture with isolated stands of trees (112.9 ha). The proposed Land Application Area (LAA) is open grassland. Refer to site photographs in the Great Southern Geotechnics (2021) Site Investigation report (Appendix D).	Nil to Low	Maintain grassed area within the LAA
Landform and drainage	The Site is mapped as the following Department of Primary Industries and Regional Development (DPIRD) landscape mapping units (Figure 3, Appendix A): TP01-TP03 – 242KgDMc Sands on laterite on elongate crests. TP04-TP05 – 242ReDMc Sands on laterite on elongate crests. TP06 – Broad valleys in sedimentary in sedimentary rocks; 30 m relief, smooth slopes. Deep sands and iron podzols on slopes.	Nil to Low	Not required
Slope	Slope of land within the site investigation areas for the Race Track Precinct and Motocross Precinct is approximately 6% (Figure 4, Appendix A).	Nil to Low	Diversion of stormwater from upslope around sub-soil irrigation area proposed
Fill (imported)	No imported fill was encountered during the site investigation	Nil to Low	Not required
Surface gravel and rock outcrops	During the Site Investigation, the soil profile (to 2500 mm bgl) was generally found to have Topsoil over Sandy GRAVEL over Sandy CLAY. No rock outcrops were observed within the test pit location areas and gravel soils had approximately 10% coarse fragments (Great Southern Geotechnics, 2021)	Nil to Low	Not required
Erosion potential	The water erosion risk mapped by DPIRD indicates that for test pit locations TP01 – TP05 “<3% of map unit has a high to extreme water erosion risk”. TP06 is mapped as “3-10% of map unit has a high to extreme water erosion risk” (Figure 5, Appendix A). The test pit locations within the Site are currently grassed and considered likely to be Nil or low if sub-soil irrigation is installed and grassed surface is maintained. Refer to photos in the Site Investigation report (Appendix D).	Nil to Low	Maintain as grassed area and divert stormwater from upslope around sub-soil irrigation area to maintain Nil or Low risk rating
Separation from groundwater	During the Site Investigation, undertaken in late June (Appendix D), ground water was not intercepted at 2500 mm bgl at any of the six test pit locations (Figure 4, Appendix A). These locations meet the vertical separation of greater than 2 m separation to groundwater in PDWSA.	Nil to Low	Not required
Public Drinking Water Source Area (PDWSA) and Sewage Sensitive Area (SSA)	The Site is located in a Priority 2 PDWSA – Marbellup Brook Catchment Area and SSA (<1 km from conservation category wetland) (Figure 4, Appendix A).	High	Maintain >2 m vertical separation to groundwater

Site characteristics	Investigations and reporting	Level of constraint	Mitigation measures
Surface waters and separation from water resources	All sub-soil irrigation areas will be located >100 m to Protected Exclusion Area and Marbelup Flats (Conservation Class wetland) (Figure 3, Appendix A).	Nil to Low	Not required
Rainfall run-off and seepage	The test pit location areas, in both the Race Track Precinct and Motocross Precinct, are located on waxing upperslope (UX) (National Committee on Soil and Terrain, 2009). No evidence of evidence of water pooling on the surface or seepage was observed during the Site Investigation (Great Southern Geotechnics, 2021) or during site walkovers undertaken by GHD.	Nil to Low	Diversion of stormwater from upslope around sub-soil irrigation area proposed
Flood potential	The flood erosion risk mapped by DPIRD indicates that test pit locations TP01 – TP05 that “<3% of map unit has a moderate to high flood risk”. TP06 is mapped as “3-10% of map unit has a moderate to high flood risk” (Figure 9, Appendix A).	Nil to Low	Not required
Horizontal setback distances	All sub-soil irrigation areas will be setback >100 m to site boundaries, Protected Exclusion Area and Marbelup Flats (Conservation Class wetland) (Figure 3, Appendix A).	Nil to Low	Not required
Available Land Application Area (LAA)	Sufficient land is available within the Race Track and Motocross Precinct area for sub-soil irrigation of wastewater.	Nil to Low	Not required

3.2 Soil assessment

During the Site Investigation, undertaken by Great Southern Geotechnics, three test pits were excavated in each of the Motocross Track Area and Race Track Area. Table 5 includes a summary of the soil physical and chemical characteristics (Appendix E) for SSE at the six test pit locations.

Table 5 Summary of soil physical and chemical characteristics for SSE of the AMP site

Location	Layer depth (mm)	Sample depth (mm)	Soil strata	Depth to GW	Coarse fragments (%)	Soil colour & mottling	Soil field texture	Soil structure	Indicative soil permeability (m/d) (K_{sa}^{-1})	Design loading rate (DLR) (mm/d) Trenches and beds			pH	EC (dS/m)	Sodicity (ESP) (%)	Phosphate Sorption Capacity (mg P sorbed/kg)
										Primary treated effluent		Secondary treated effluent				
										Conservative rate	Maximum rate					
Race Track Precinct																
TP01	0-180		(Topsoil) SAND with silt	Not intercepted	Roots and root fibres	Dark grey	Sand - Fine to medium	Structureless	>3.0	20	35	50	-	-	-	-
TP01	180-490		Sandy GRAVEL		Contains approximately 10% Cobbles and Boulders in excess of 250 mm diameter	Brown	Gravel and sand - Fine to coarse, sub-rounded to sub-angular, (F:20% / M:20% / C:15%)	Structureless	>3.0	20	35	50	-	-	-	-
TP01	550-2500	900-1100	Sandy CLAY		NA	Brown/red mottled Light brown/orange (40%)	Light Clay - Low to medium plasticity	Massive	<0.06	NA	NA	8	6.1	0.022	5.8	688
TP02	0-140		(Topsoil) SAND with silt	Not intercepted	Roots and root fibres	Dark grey	Sand - Fine to medium	Structureless	>3.0	20	35	50	-	-	-	-
TP02	140-400		Sandy GRAVEL		Contains approximately 10% Cobbles and Boulders in excess of 400 mm diameter	Brown	Gravel and sand - Moderately cemented - Fine to coarse, sub-rounded to sub-angular, (F:20% / M:20% / C:15%)	Structureless	>3.0	20	35	50	-	-	-	-
TP02	400-1400	500-900	Sandy CLAY		NA	Light brown	Low to medium plasticity	Massive	<0.06	NA	NA	8	6.1	0.025	4.8	1650
TP02	1400-2500		Sandy CLAY		NA	Brown/red mottled Light brown/orange (40%)	Low to medium plasticity	Massive	<0.06	NA	NA	8	-	-	-	-
TP03	0-250		(Topsoil) SAND with silt	Not intercepted	Roots and root fibres	Dark grey to grey	Sand - Fine to medium	Structureless	>3.0	20	35	50	-	-	-	-
TP03	250-830	300-600	Sandy GRAVEL		Contains approximately 10% Cobbles and Boulders in excess of 400 mm diameter	Brown	Gravel and sand - Fine to medium, sub-rounded to sub-angular, (F:30% / M:30%)	Structureless	>3.0	20	35	50	5.7	0.028	5.7	3660
TP03	830-1600		Sandy CLAY		NA	Light brown	Low to medium plasticity	Massive	<0.06	NA	NA	8	-	-	-	-
TP03	1600-2500		Sandy CLAY		NA	Brown/red mottled Light brown/grey (30%)	Low to medium plasticity	Massive	<0.06	NA	NA	8	-	-	-	-

Location	Layer depth (mm)	Sample depth (mm)	Soil strata	Depth to GW	Coarse fragments (%)	Soil colour & mottling	Soil field texture	Soil structure	Indicative soil permeability (m/d) (K_{sa}^{-1})	Design loading rate (DLR) (mm/d)			pH	EC (dS/m)	Sodicity (ESP) (%)	Phosphate Sorption Capacity (mg P sorbed/kg)
										Trenches and beds		Secondary treated effluent				
										Primary treated effluent	Conservative rate					
Motocross Precinct																
TP04	0-220		(Topsoil) SAND with silt	Not intercepted	Roots and root fibres	Dark grey	Sand - Fine to medium	Structureless	>3.0	20	35	50	-	-	-	-
TP04	220-1250	400-800	Sandy GRAVEL		Contains approximately 10% Cobbles and Boulders in excess of 400 mm diameter	Brown	Gravel and sand - Fine to coarse, sub-rounded to sub-angular, (F:25% / M:20% / C:10%)	Structureless	>3.0	20	35	50	5.8	0.028	6.2	3000
TP04	1250-1750		Sandy CLAY		NA	Light brown/ orange	Low to medium plasticity	Massive	<0.06	NA	NA	8	-	-	-	-
TP04	1750-2500		Sandy CLAY		NA	Grey mottled red (30%) & orange (10%).	Low to medium plasticity	Massive	<0.06	NA	NA	8	-	-	-	-
TP05	0-230		(Topsoil) SAND with silt	Not intercepted	Roots and root fibres	Dark grey	Sand - Fine to medium	Structureless	>3.0	20	35	50	-	-	-	-
TP05	230-880	400-800	SAND with silt		NA	Grey	Sand - Fine to medium	Structureless	>3.0	20	35	50	5.4	0.004	<0.1	<250
TP05	880-2500		Sandy GRAVEL		Contains approximately 10% Cobbles and Boulders in excess of 400 mm diameter	Brown	Gravel and sand - Fine to coarse, sub-rounded to sub-angular, (F:15% / M:30% / C:10%).	Structureless	>3.0	20	35	50	-	-	-	-
TP06	0-350		(Topsoil) SAND with silt	Not intercepted	Roots and root fibres	Dark grey	Sand - Fine to medium	Structureless	>3.0	20	35	50	-	-	-	-
TP06	350-1200	500-800	Sandy GRAVEL		Contains approximately 10% Cobbles and Boulders in excess of 400 mm diameter	Brown	Gravel and sand - Fine to coarse, sub-rounded to sub-angular, (F:20% / M:20% / C:10%)	Structureless	>3.0	20	35	50	5.9	0.02	1.4	966
TP06	1200-1800		Sandy GRAVEL			Brown	Gravel and sand - Fine to coarse, sub-rounded to sub-angular, (F:20% / M:30% / C:10%)	Structureless	>3.0	20	35	50	-	-	-	-
TP06	1800-2500		Sandy GRAVEL			Brown	Gravel and sand - Fine to coarse, sub-rounded to sub-angular, (F:40% / M:20%)	Structureless	>3.0	20	35	50	-	-	-	-

3.3 Site assessment results

Based on an assessment of the soil physical and chemical results for the six test pit locations in Table 5, it is recommended that the LAAs for the Race Track and Motocross Precincts are located at TP01 and TP06, respectively.

- Motocross Precinct (TP06):
 - AS1547 soil type = Gravel
 - Indicative soil permeability (Ksat) = > 3.0 m/d
 - Design irrigation rate = 5 mm/d
- Race Track Precinct (TP01):
 - AS1547 soil type = Light clay
 - Indicative soil permeability (Ksat) = < 0.06 m/d
 - Design irrigation rate = 3 mm/d

As per the DOHWA (2021) guidance, a Level of Constraint (Low, Moderate or High) is determined by applying a risk assessment to each site characteristic and the following mitigation measures may be applied:

- Nil or Low
 - *If all constraints are Low, standard designs are generally satisfactory and no mitigation measures are required.*
- Moderate
 - *For each Moderate constraint an appropriate mitigation measure or design modification over and above that of a standard design, should be outlined.*
- High
 - *Any High constraint might prove an impediment to successful on-site wastewater management, or alternatively will require in-depth investigation and incorporation of sophisticated mitigation measures in the design to permit compliant onsite wastewater management.*

A summary of site assessment results, including the level of constraint for each characteristic, within the Motocross Precinct in Table 6 and Race Track Precinct is outlined in Table 7.

3.3.1 Motocross Precinct

A summary of site assessment results for SSE for the recommended LAA within the Motocross Precinct (TP06) has been provided in Table 6.

Table 6 Summary of site assessment results for SSE of the proposed LAA within the Motocross Precinct (TP06)

Characteristic	Level of Constraint			Results for TP06	Assessed Level of Constraint for Site
	Nil or Low	Moderate	High		
General Characteristics					
Climate (difference between average annual rainfall and average pan evaporation, mm/year)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	Rainfall in excess of evaporation from May to September	High
Exposure to sun and wind	Full sun and/or high wind or minimal shading and North / North-East	Dappled light East / West / South-East / South-West aspect	Limited patches of light and little wind to heavily shaded all day and South aspect	Full sun	Nil or Low

Characteristic	Level of Constraint			Results for TP06	Assessed Level of Constraint for Site
	Nil or Low	Moderate	High		
	/North-West aspect				
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake Turf or pasture	Limited variety of vegetation	Sparse vegetation or no vegetation, dense forest with little understorey	Good cover of existing pasture	Nil or Low
Landslip (or landslip potential)	Nil	Low to moderate	High or Severe	No landslip evident	Nil or Low
Slope Form (affects water shedding ability)	Hill crests, convex or divergent side-slopes and plains	Straight side-slopes and footslopes	Floodplains, concave or convergent side-slopes and incised channels	Straight waxing upslope (UX)	Moderate
Site Drainage (qualitative)	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness Moist soil but no standing water in soil pit	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface	No visible signs or likelihood of dampness, even in wet season	Nil or Low
Slope gradient (%)					
(a) for absorption trenches and beds	<5%	5-15%	>15%	Approximately 6%	Moderate
(b) for surface/subsurface irrigation	<10%	10-20%	>20%	Approximately 6%	Nil or Low
Erosion (or potential for erosion)	Nil or Low	Moderate	Severe	Good cover of existing pasture, upslope stormwater diversion and sub-surface irrigation proposed	Nil or Low
Fill (imported)	No fill at present or fill is good quality topsoil or minimal fill required	Moderate coverage and good quality fill	Extensive poor-quality fill and variable quality fill	No fill at present	Nil or Low
Flood frequency (AEP)	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	Less than 1 in 100 years	Nil or Low
Private bore used for household/drinking water purposes	No bores onsite or on neighbouring properties	>30 m to the nearest private bore	<30 m to the nearest private bore	APEC bores located >30 m	Moderate
Proximity to water resources	>100 m	<100 m but reduced setback is supported (refer to Section 5.2.2 of the GSP)	<100 m and reduced setback is not supported (refer to Section 5.2.2 of the GSP)	>100 m to Protected Exclusion Area and Marbellup Flats	Nil or Low

Characteristic	Level of Constraint			Results for TP06	Assessed Level of Constraint for Site
	Nil or Low	Moderate	High		
Public Drinking Water Source Areas (PDWSA) and Sewage Sensitive Areas (SSA)	Site not located within a PDWSA or SSA	Site located within a PDWSA or SSA	Site located within both a PDWSA and SSA	Priority 2 PDWSA – Marbellup Brook Catchment Area SSA (<1 km from conservation category wetland)	High
Groundwater (wettest time of the year)	>2 m	2.0 – 0.6 m need for fill to achieve setbacks listed in Appendix 1	<0.6 m fill is not practical to achieve setbacks listed in Appendix 1	Groundwater not intercepted >2.5 m	Nil or Low
Land area available for LAA	Exceeds the minimum required LAA size of AS1547 or Schedule 2 of the GSP	Meets the minimum required LAA size of AS1547 or Schedule 2 of the GSP	Insufficient area available for LAA as per AS1547 or Schedule 2 of the GSP	550 m ² available for sub-surface irrigation	Nil or Low
Rock outcrops (% of surface)	<10%	10-20%	>20%	No rock outcrops observed	Nil or Low
Site Drainage (qualitative)	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness Moist soil but no standing water in soil pit.	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface	No visible signs or likelihood of dampness, even in wet season	Nil or Low
Stormwater run-on/run-off	Low likelihood of stormwater run-on/run-off	Moderate likelihood of stormwater run-on/run-off, need for diversionary structures	High likelihood of inundation by stormwater run-on/run-off, diversion not practical	Upslope stormwater diversion proposed	Nil or Low
Soil profile characteristics					
Soil permeability Category (AS1547)	2 and 3	4 and 5	1 and 6	1	High
Profile depth	>2 m	2.0-1.0	< 1.0 m	2.5 m bgl	Nil or Low
Hardpan or bedrock	>1.5 m	1.5-0.6 m Special design requirements and distribution techniques or soil modification will be necessary, depends on quality of treated wastewater and type of LAS	<0.6 m	Sandy GRAVEL encountered to 2.5 m bgl	Nil or Low
Presence of mottling	None	Moderate	Extensive	None	Nil or Low
Coarse fragments	< 10%	10-40%	>40%	10% Cobbles and boulders in excess of 400 mm diameter	Nil or Low

Characteristic	Level of Constraint			Results for TP06	Assessed Level of Constraint for Site
	Nil or Low	Moderate	High		
pH	6.0 - 8.0	4.5 – 6.0	<4.5, >8	5.9 - pH between <5 and >8 therefore likely to be suitable for plant growth	Moderate
Electrical Conductivity (ECe)(dS/m)	<0.3	0.3 - 2	>2	0.02	Nil or Low
Sodicity ESP%	<3	3.0 - 8.0	>8	1.4	Nil or Low
Phosphorus adsorption (mg/kg)	>500	200-500	<200	966	Nil or Low

3.3.2 Race Track Precinct

A summary of site assessment results for SSE for the recommended LAA within the Race Track Precinct (TP01) has been provided in Table 7.

Table 7 Summary of site assessment results for SSE of the proposed LAA within the Race Track Precinct (TP01)

Characteristic	Level of Constraint			Results for TP01	Assessed Level of Constraint for Site
	Nil or Low	Moderate	High		
General Characteristics					
Climate (difference between average annual rainfall and average pan evaporation, mm/year)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	Rainfall in excess of evaporation from May to September	High
Exposure to sun and wind	Full sun and/or high wind or minimal shading and North / North-East /North-West aspect	Dappled light East / West / South-East / South-West aspect	Limited patches of light and little wind to heavily shaded all day and South aspect	Full sun	Nil or Low
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake Turf or pasture	Limited variety of vegetation	Sparse vegetation or no vegetation, dense forest with little understorey	Good cover of existing pasture	Nil or Low
Landslip (or landslip potential)	Nil	Low to moderate	High or Severe	No landslip evident	Nil or Low
Slope Form (affects water shedding ability)	Hill crests, convex or divergent side-slopes and plains	Straight side-slopes and footslopes	Floodplains, concave or convergent side-slopes and incised channels	Straight waxing upperslope (UX)	Moderate

Characteristic	Level of Constraint			Results for TP01	Assessed Level of Constraint for Site
	Nil or Low	Moderate	High		
Site Drainage (qualitative)	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness Moist soil but no standing water in soil pit	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface	No visible signs or likelihood of dampness, even in wet season	Nil or Low
Slope gradient (%)					
(a) for absorption trenches and beds	<5%	5-15%	>15%	Approximately 6%	Moderate
(b) for surface/ subsurface irrigation	<10%	10-20%	>20%	Approximately 6%	Nil or Low
Erosion (or potential for erosion)	Nil or Low	Moderate	Severe	Good cover of existing pasture, upslope stormwater diversion and sub-surface irrigation proposed	Nil or Low
Fill (imported)	No fill at present or fill is good quality topsoil or minimal fill required	Moderate coverage and good quality fill	Extensive poor-quality fill and variable quality fill	No fill at present	Nil or Low
Flood frequency (AEP)	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	Less than 1 in 100 years	Nil or Low
Private bore used for household/drinking water purposes	No bores onsite or on neighbouring properties	>30 m to the nearest private bore	<30 m to the nearest private bore	APEC bores located >30 m	Moderate
Proximity to water resources	>100 m	<100 m but reduced setback is supported (refer to Section 5.2.2 of the GSP)	<100 m and reduced setback is not supported (refer to Section 5.2.2 of the GSP)	>100 m to Protected Exclusion Area and Marbellup Flats	Nil or Low
Public Drinking Water Source Areas (PDWSAs) and Sewage Sensitive Areas (SSA)	Site not located within a PDWSA or SSA	Site located within a PDWSA or SSA	Site located within both a PDWSA and SSA	Priority 2 PDWSA – Marbellup Brook Catchment Area and SSA (<1 km from conservation category wetland)	High
Groundwater (wettest time of the year)	>2 m	2.0 – 0.6 m need for fill to achieve setbacks listed in Appendix 1	<0.6 m fill is not practical to achieve setbacks listed in Appendix 1	Groundwater not intercepted >2.5 m	Nil or Low
Land area available for LAA	Exceeds the minimum required LAA size of AS1547 or Schedule 2 of the GSP	Meets the minimum required LAA size of AS1547 or Schedule 2 of the GSP	Insufficient area available for LAA as per AS1547 or Schedule 2 of the GSP	Sufficient area available for sub-surface irrigation	Nil or Low
Rock outcrops (% of surface)	<10%	10-20%	>20%	No rock outcrops observed	Nil or Low

Characteristic	Level of Constraint			Results for TP01	Assessed Level of Constraint for Site
	Nil or Low	Moderate	High		
Site Drainage (qualitative)	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness Moist soil but no standing water in soil pit.	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface	No visible signs or likelihood of dampness, even in wet season	Nil or Low
Stormwater run-on/run-off	Low likelihood of stormwater run-on/run-off	Moderate likelihood of stormwater run-on/run-off, need for diversionary structures	High likelihood of inundation by stormwater run-on/run-off, diversion not practical	Upslope stormwater diversion proposed	Nil Low
Soil profile characteristics					
Soil permeability Category (AS1547)	2 and 3	4 and 5	1 and 6	5	Moderate
Profile depth	>2 m	2.0-1.0	< 1.0 m	2.5 m bgl	Nil or Low
Hardpan or bedrock	>1.5 m	1.5-0.6 m Special design requirements and distribution techniques or soil modification will be necessary, depends on quality of treated wastewater and type of LAS	<0.6 m	Sandy CLAY intercepted at 550 mm bgl	High
Presence of mottling	None	Moderate	Extensive	Sandy CLAY mottled	Moderate
Course fragments	< 10%	10-40%	>40%	10% Cobbles and boulders in excess of 250 mm diameter	Nil or Low
pH	6.0 - 8.0	4.5 – 6.0	<4.5, >8	6.1	Nil or Low
Electrical Conductivity (ECe)(dS/m)	<0.3	0.3-2	>2	0.022	Nil or Low
Sodicity Exchangeable sodium percentage (ESP%)	<3	3.0 - 8.0	>8	5.8 – no evidence of dispersion, slaking, or structural decline	Moderate
Phosphorus adsorption (mg/kg)	>500	200-500	<200	688	Nil or Low

3.3.3 Mitigation measures

The majority of constraints assessed in 3.3.1 and 3.3.1 were found to be Nil or Low, however several key constraints were found to be High or Moderate. Proposed mitigation measures for the aspects which are considered to have a High or Moderate constraint within the Race Track Precinct and Motocross Precinct are included in Table 8.

Table 8 Proposed mitigation measures for High and Moderate constraints

Constraints		
Race Track Precinct	Motocross Precinct	Proposed mitigation measures
High		
Climate - Rainfall in excess of evaporation from May to September		Diversion of stormwater from upslope around sub-soil irrigation area
Priority 2 PDWSA – Marbellup Brook Catchment Area and SSA (<1 km from conservation category wetland)		The proposed LAA achieves a 2 m vertical separation to groundwater
Hardpan or bedrock <0.6 m - Sandy CLAY intercepted at 550 mm bgl	-	Amend soils in LAA
-	Soil permeability Category (AS1547) – (1) Gravels and sands	Accommodate permeability via Design Loading Rates (DLRs) and Design Irrigation Rates (DIRs)
Moderate		
Slope Form (affects water shedding ability) – Straight waxing upslope		Diversion of stormwater from upslope around sub-soil irrigation area
Slope gradient (%) (a) for absorption trenches and beds – 5-15%		No absorption trenches or beds proposed
APEC bores located >30 m		APEC bore located 250 m away – no modification considered necessary
Presence of mottling - Sandy CLAY mottled	-	Amend soils in potential LAA
Soil permeability Category (AS1547) – (5) Light clay	-	Accommodate permeability via Design Loading Rates (DLRs) and Design Irrigation Rates (DIRs)
Sodicity ESP – 5.8%	-	No evidence of dispersion, slaking or structural decline in the soils on or near the potential LAA
-	pH 5.9	No evidence of scald or bare areas on or near the potential LAA

4. Wastewater management system type and design

4.1 Specific assessment SSE – Sizing for treatment system and land application area

The sizing for a wastewater treatment system and LAA has been developed in this SSE report for Stage 1A in the Motocross Precinct only.

As per the requirements of the Department of Water *WQPN 100* (DoW, 2007) and the *Government Sewerage Policy* (DPLH, 2019) a 'Secondary' wastewater treatment plant, with engineering certification to meet effluent quality of Biological Oxygen Demand (BOD) < 20 mg/L; Total Suspended Solids (TSS) < 30 mg/L; Total Nitrogen (TN) < 10 mg/L; Total Phosphorus (TP) < 1 mg/L; and *Escherichia coli* < 10 cfu/100mL is required in a Priority 2 PDWSA.

It is recommended to install a 'Secondary' treatment system, with nutrient removal such as Aquarius Wastewater Systems Pty Ltd, which provide DOHWA approved systems. An example of the type of system that would meet the requirement of a 'Secondary' treatment system is provided in Appendix F. These systems have a nutrient reduction capability of which includes reduction of TN to < 10 mg/L and TP to < 1 mg/L and are certified to AS1546.3:2008.

4.1.1 Water balance

A water balance has been developed for the operation of the wastewater system, as per the water balance in the DOHWA (2021) guidance, for Stage 1A of the AMP development in the Motocross Precinct and included in Appendix B.

The water balance has been developed based on the following:

- A design wastewater flow of 3,500 L/day (average of 100 persons and 15,000 L storage tank)
- Design irrigation rate for sub-surface irrigation of 5.0 mm/day
- Rainfall run-off factor of 0.9
- Mean monthly rainfall levels at the Albany Airport Comparison weather station (BoM, 2021)
- Pan evaporation data (DPIRD, 1987)

The results of the water balance for the Motocross Precinct, for an average of 100 persons/day, indicate that 1,100 m² will be required for the sub-soil irrigation area. There is adequate area of land available within the vicinity of TP06 to accommodate the site of the required LAA.

4.2 Siting and configuration of the Land Application Area

4.2.1 Setback distances

Based on an assessment of the soil physical and chemical results for the six test pit locations in Table 5, it is recommended that the LAAs for the Race Track and Motocross Precincts are located at TP01 and TP06, respectively.

All sub-soil irrigation areas will be located >100 m to Protected Exclusion Area and Marbelup Flats (Conservation Class wetland) (Figure 3, Appendix A).

The sub-soil irrigation area will be fenced and will be separate from the activities within the Precinct to maintain public amenity.

4.2.2 Stormwater management

Stormwater management will include diversion drains, water treatment areas and attenuation basins to control stormwater across the Race Track Precinct and Motocross Precinct as per the Stormwater Management Plan (GHD, 2021) prepared for the Development Application for the AMP.

5. Monitoring, operation and maintenance

Baseline groundwater and surface water quality sampling of the Site was undertaken by Bio Diverse Solutions in 2018 and 2019 (Bio Diverse Solutions, 2018). DWER has been consulted during the development of the Site Local Water Management Strategy (LWMS) (GHD, 2021) as part of the Scheme Amendment process. The following surface and groundwater pre-development, construction and post-development monitoring is outlined as per the approved LWMS.

5.1 Surface water monitoring

5.1.1 Pre-development and construction monitoring

Ongoing quarterly monitoring of existing Site surface water conditions shall be continued prior to development, and during construction of the AMP as per the Local Water Management Strategy approved by DWER as part of the Scheme Amendment process.

In combination with the existing 2018 and 2019 data, the ongoing monitoring will be used as a baseline for ongoing assessment of the potential impact of the development on shallow groundwater and surface water quality. Additionally, pre-development water monitoring data will be used to identify water quality trigger levels at which a response is required.

For surface water monitoring during the construction phase of the development, a CEMP shall be prepared by the Contractor which will include erosion and sedimentation control measures, as well as drainage and dewatering systems (if required) in order to minimise potential pollution impacts and prevent contamination to surface water and groundwater.

5.1.2 Post-development monitoring

Ongoing monthly monitoring of surface water conditions shall be continued post-development (for the duration of the operation of the facility), with continued monitoring at sites CS01 and CS02, and establishment of a new upstream monitoring location. Additional sampling shall also be undertaken in response to any spill events.

The post-development monitoring program will also involve the collection of grab samples from the compensating basins. Sampling of basins should comprise 3-4 events per year, during or immediately following significant rainfall events (1EY, 1 year ARI event). It is assumed the first flush events will have the highest level of nutrients and chemicals, therefore sampling should occur at the time/after the first significant rainfall event of each wet season, and after extended dry periods. Field notes should include details of the rainfall events, site conditions, time of sampling and time of sample testing.

Monitoring of the compensation basin inlet and outlet water quality will be used to assess performance of the basins in improving stormwater quality.

Annual water monitoring reports shall be submitted to DWER and the Water Corporation. A water quality response and contingency plan will be prepared and provided to the Water Corporation, City of Albany and DWER for advice.

5.1.3 Monitoring program summary

The recommended monitoring parameters for the ongoing pre-development, construction and post-development monitoring program are outlined in Table 9.

Table 9 Summary of surface water monitoring

Site	Frequency	Duration	Parameters
Surface water - Upstream of the site (TBC) - Mid-stream (CS02) - Downstream of the site (CS01)	Monthly	Ongoing, with annual reporting	In-situ: pH, EC, temperature Unfiltered sample: pH, EC, TN, FRP, TKN, ammonia, TP, TRH, PAH, BTEXN, Surfactants, microbial analysis Filtered sample: Filtered total nitrogen and filtered total phosphorus (to quantify organic component), NO ₂ /NO ₃ , PO ₄ , dissolved heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)
Compensating basin - Inlet (4 No.) - Outlet (4 No.)	3-4 events per year following 1EY rainfall events		

5.2 Groundwater monitoring

5.2.1 Pre-development and construction monitoring

Ongoing monitoring of existing Project Site shallow groundwater conditions shall be continued prior to development, and during construction of the AMP. In combination with the existing 2018 and 2019 data, the ongoing monitoring will be used as a baseline for ongoing assessment of the potential impact of the development on shallow groundwater and surface water quality.

Additionally, pre-development water monitoring data will be used to identify water quality trigger levels at which a response is required.

5.2.2 Post-development monitoring

A groundwater monitoring network should be established post development, the locations of which will be based on groundwater monitoring strategy.

Ongoing monitoring of the groundwater monitoring bores shall be conducted for the duration of the operation of the facility and in accordance with the groundwater monitoring program in Table 10.

Annual water monitoring reports will be submitted to DWER and the Water Corporation.

A water quality response and contingency plan will be prepared and provided to the Water Corporation, City of Albany and DWER for advice.

In addition if the development proposal seeks a licence to take water and approval to install a production bore for abstraction of groundwater as a water supply source for the development, then six-monthly groundwater monitoring for water levels and salinity will be a required.

5.2.3 Monitoring program summary

The program and parameters outlined in Table 10 will provide a suitable representation of groundwater quality at the site. The groundwater bores established for pre-development monitoring will be used for construction phase and incorporated into the post-development monitoring network.

Table 10 Summary of groundwater monitoring

Site	Frequency	Duration	Parameters
Monitoring bores Production bore	Monthly	Pre-development, during construction, on-going throughout the life of development.	Water level In-situ: pH, EC, temperature Unfiltered sample: pH, EC, TN, FRP, TKN, ammonia, TP, TRH, PAH, BTEXN, Surfactants, microbial analysis Filtered sample: Filtered total nitrogen and filtered total phosphorus (to quantify organic component), NO ₂ /NO ₃ , PO ₄ , dissolved heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)

5.2.4 Contingency measures

Pre-development water monitoring data shall be used to identify water quality trigger levels at which a management response is required. A water quality response and contingency plan shall be included in the surface and groundwater monitoring plans.

In the event of a major water quality incident at the Site, it is recommended that increased monitoring be undertaken to quantify if there is any impact to surface and groundwater quality. Contingency monitoring and response measures shall be developed in consultation with DWER and documented in the post-development monitoring program.

Potential incidents due to system failure and/ or mechanical breakdown during operation and maintenance of the installed system shall be addressed, as required, as per the manufacturer and installation instructions.

6. Conclusion and recommendations

The SSE report for the AMP site involved evaluation of site and soil, physical and chemical properties, to identify appropriate onsite effluent disposal LAAs within the Race Track Precinct and Motocross Precinct. Based on an assessment of the soil physical and chemical results for the six test pit locations, it is recommended that the LAAs for the Race Track Precinct and Motocross Precinct are located at TP01 and TP06, respectively.

The sizing for a wastewater treatment system and LAA has been developed in this SSE report for Stage 1A in the Motocross Precinct only.

The proposed clubhouse within the Motocross Precinct will be constructed in Stage 1A of the development. It is anticipated that this will be an unlicensed facility (15 L/ person/ day) however provision has been made for anticipated wastewater volumes for a licensed facility (35 L/ person/ day), to allow for possible increased loading at the site if it were to become a licensed facility.

The Motocross Precinct clubhouse is expected to have intermittent use throughout the Motocross season and on a weekly basis, with up to 300 patrons on Sunday or Saturday followed by minimal usage during the week and off-season downtime. Therefore, for the purpose of calculating anticipated wastewater volumes it is assumed that there is an average of 100 people/ day.

In order to accommodate spikes in wastewater volumes on event days when there is up to 300 patrons using the Motocross Precinct clubhouse facilities, it is proposed to install a 15,000 L holding tank, to balance storage over the course of a typical week.

The results of a water balance for the Motocross Precinct, for an average of 100 persons/day, indicate that 1,100 m² will be required for the sub-soil irrigation area. There is adequate area of land available within the vicinity of TP06 to accommodate the site of the required LAA.

As per the requirements of the Department of Water *WQPN 100* (DoW, 2007) and the *Government Sewerage Policy* (DPLH, 2019) a 'Secondary' wastewater treatment plant, with engineering certification to meet effluent quality of Biological Oxygen Demand (BOD) < 20 mg/L; Total Suspended Solids (TSS) < 30 mg/L; Total Nitrogen (TN) < 10 mg/L; Total Phosphorus (TP) < 1 mg/L; and *Escherichia coli* < 10 cfu/100mL is required in a Priority 2 PDWSA.

It is recommended that a DOHWA approved 'Secondary' treatment system, certified to AS1546.3:2008, is selected and installed for the Motocross Precinct during Stage 1A of development.

At time of writing, an onsite effluent disposal system was not proposed to be installed in the Race Track Precinct. All liquid waste from transportable buildings, toilets and washdown facilities is proposed to be removed offsite, as required, by an approved contractor. If onsite effluent disposal is proposed in the future is it expected a similar system, with holding tank, will be utilised to manage spikes in wastewater volumes for events and off-season downtime.

In addition it is recommended, as per the DOHWA (2021) guidelines, that the following is undertaken:

- *Have a suitably qualified maintenance contractor service the secondary and advanced secondary treatment system every three months, as required by Council under the approval to operate.*
- *Annual inspections should be undertaken on treatment tanks and desludging undertaken on annual, two yearly or four yearly cycles depending on the size of the tank installed.*
- *All land application systems should be sited in an area that will not be frequented by vehicle or foot traffic or will not be built on or covered with paved over.*
- *Any subsurface irrigation areas should be vegetated (i.e. with grass that can be mown regularly) to encourage growth and maximise nutrient uptake.*
- *Irrigation lines should be maintained as per manufacturer's instructions (e.g. flushing).*
- *Stormwater and surface run-on should be diverted around, or away from, land application areas.*

- *Landowners should be cognisant of the operation of their system and monitor the treatment and land application area to identify any potential issues (e.g. insufficient septic treatment, clogging of the system, pooling of treated effluent).*
- *The volume of wastewater produced should remain the same and not exceed the operational capacity of the system, it will ensure the effective long-term operation of the systems*
- *Chemicals, large quantities of cleaning products, fats, oils and grease, and food scraps should not be discharged to the wastewater treatment and disposal system, as they risk overloading or interfering with the functioning of the system.*

7. References

- Bio Diverse Solutions. (2018). *Surface water and Groundwater Monitoring*. Unpublished report for City of Albany.
- BoM. (2021). *Climate statistics for Australian locations*. Retrieved from Bureau of Meteorology: http://www.bom.gov.au/climate/averages/tables/cw_009741.shtml
- CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.
- DOHWA. (2021). *Site and soil evaluation for onsite wastewater management*. Retrieved from Department of Health: https://ww2.health.wa.gov.au/Articles/S_T/Site-and-soil-evaluation-for-onsite-wastewater-management
- DoW. (2007). *Water Quality Protection Note 100: Motor sport facilities near sensitive water*. Perth: Department of Water.
- DPIRD. (1987). *Evaporation Data for Western Australia, Resource Management Technical Report No. 65*. Department of Primary Industries and Regional Development.
- DPLH. (2019). *Government Sewerage Policy September 2019*. Department of Planning, Lands and Heritage.
- GHD. (2021). *Albany Motorsport Park - Development Application Water Management Plan*. Unpublished report for City of Albany.
- GHD. (2021). *Albany Motorsports Park Local Water Management Strategy*. Unpublished report prepared for City of Albany.
- Great Southern Geotechnics. (2021). *Albany Motorsport Park Development Site Investigation Report 4626/1*. Unpublished report prepared for GHD Pty Ltd.
- MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.
- National Committee on Soil and Terrain. (2009). *Australian Soil and Land Survey Field Handbook*. (Third, Ed.) Melbourne: CSIRO Publishing.
- Roberts Gardiner Architects . (2021). *Albany Motorsport Park Masterplan - Stage 1*. Unpublished masterplan for City of Albany.

Appendix A

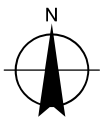
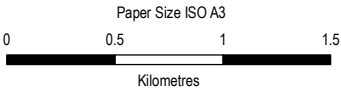
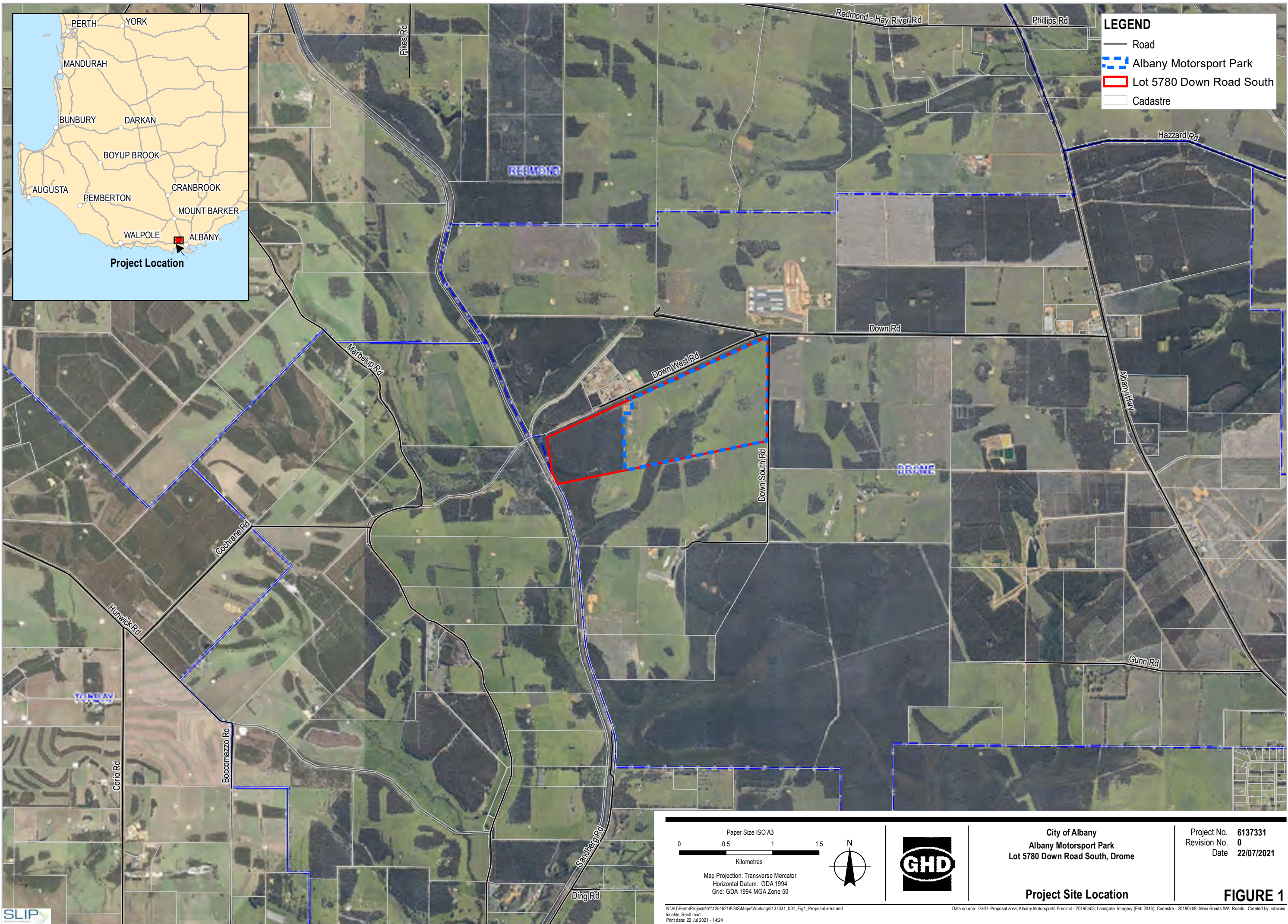
Figures

- Figure 1* *Project Site Location*
- Figure 2* *Albany Motorsport Park Master Plan – Stage 1 (Roberts Gardiner Architects, 2021)*
- Figure 3* *DPIRD Soil Landscape Mapping Units and Test Pit Locations*
- Figure 4* *Groundwater Conditions, Topography and Test Pit Locations*
- Figure 5* *Water Erosion Risk (DPIRD-013)*
- Figure 6* *Hydrology and Hydrogeology*
- Figure 7* *PDWSA and Water Management Areas*
- Figure 8* *Master Plan – 100 m Setback to Protected Exclusion Area and Marbellup Flats (Conservation Class)*
- Figure 9* *Flood Risk (DPIRD-007)*



LEGEND

- Road
- ▬▬▬ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park
 Lot 5780 Down Road South, Drome

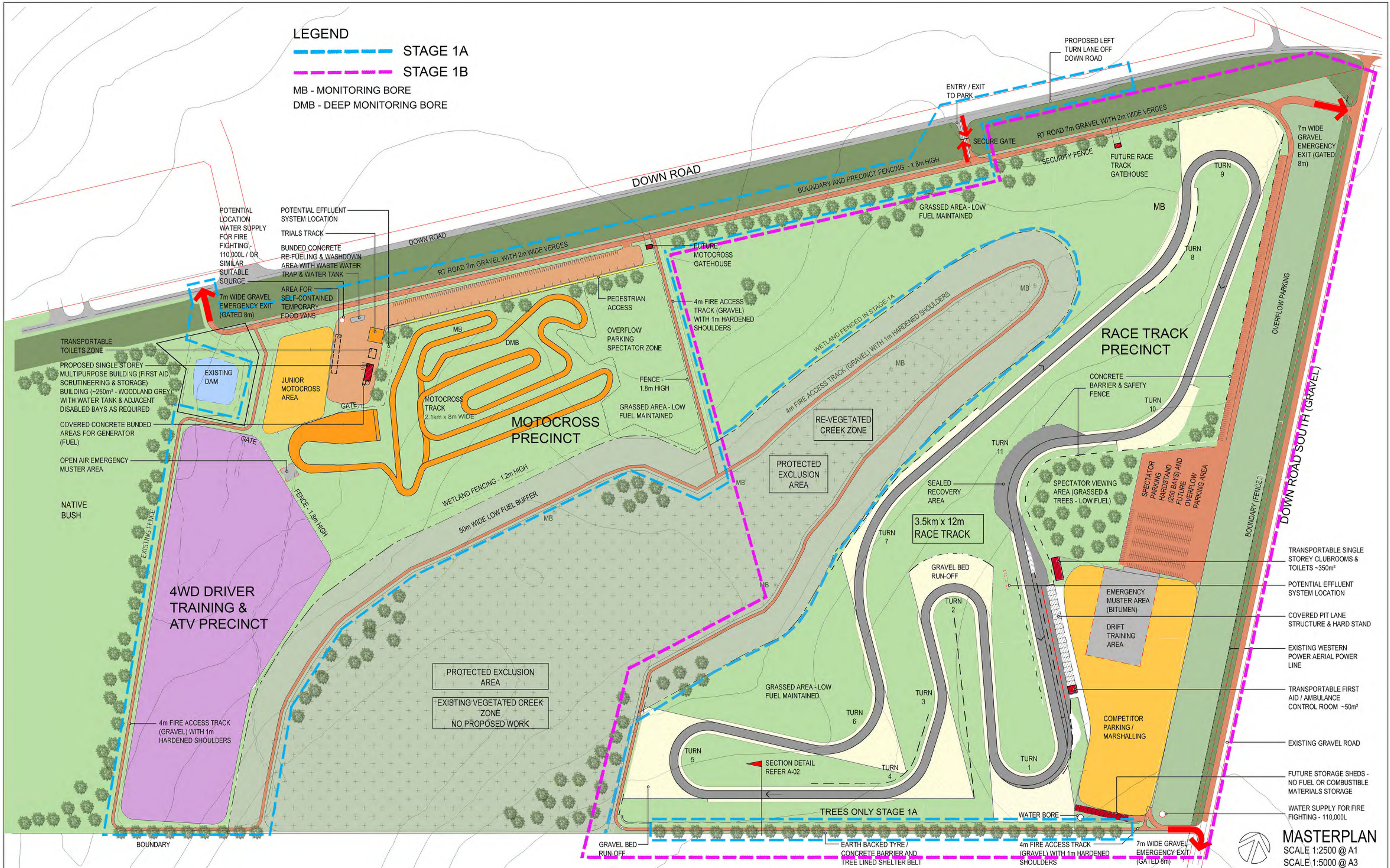
Project No. 6137331
 Revision No. 0
 Date 22/07/2021

Project Site Location

FIGURE 1



LEGEND
 --- STAGE 1A
 --- STAGE 1B
 MB - MONITORING BORE
 DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

p.o. box 1502, albany, western australia 6331
 telephone: (08) 9841 5455
 email: admin@rgarchitects.com.au

Roberts Gardiner
Architects

project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file
 drawn CB project number 21-002

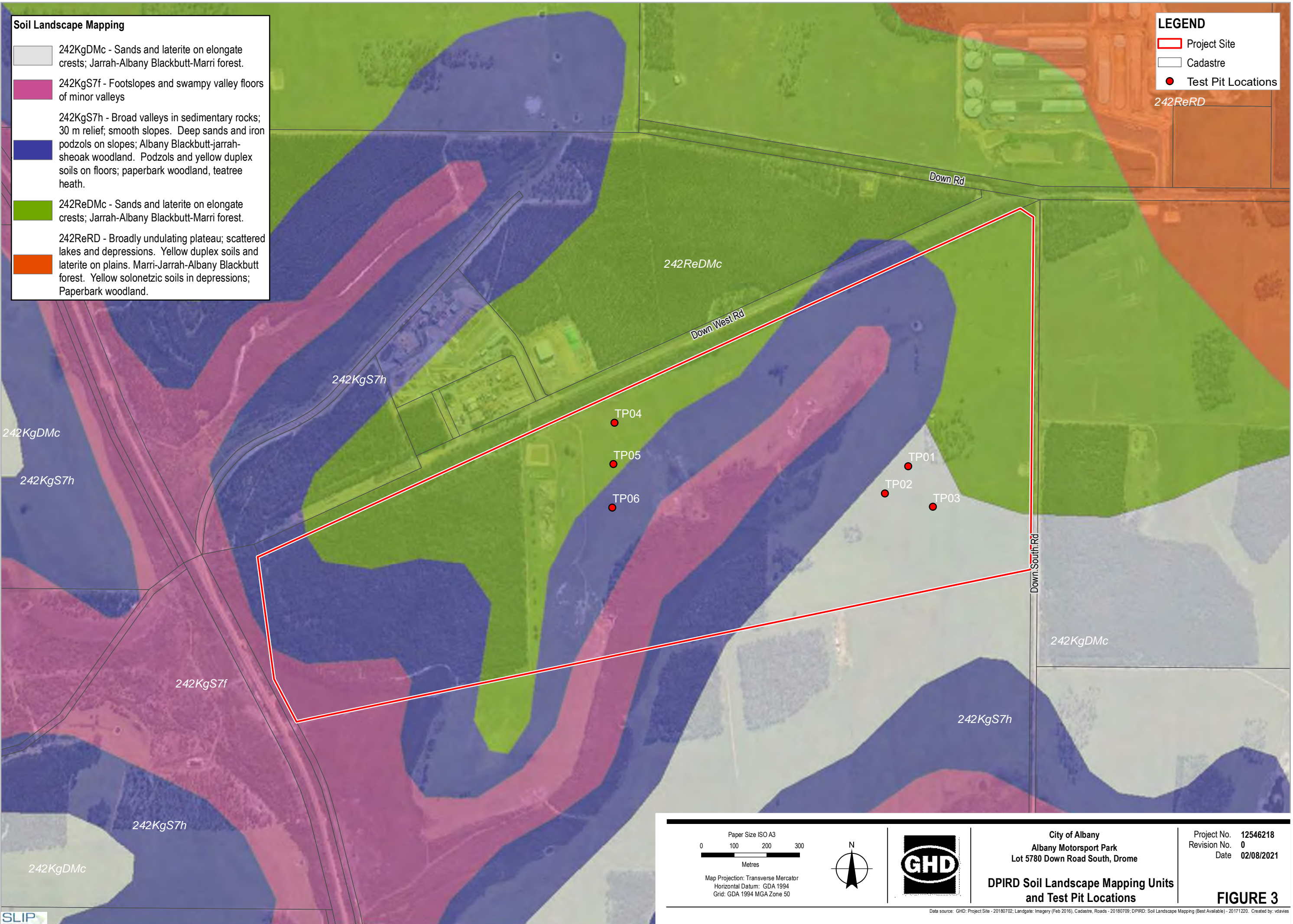
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 date JULY 2021
 dwg no. **A-01** rev. **E**

Soil Landscape Mapping

- 242KgDMc - Sands and laterite on elongate crests; Jarrah-Albany Blackbutt-Marri forest.
- 242KgS7f - Foothlopes and swampy valley floors of minor valleys
- 242KgS7h - Broad valleys in sedimentary rocks; 30 m relief; smooth slopes. Deep sands and iron podzols on slopes; Albany Blackbutt-jarrah-sheoak woodland. Podzols and yellow duplex soils on floors; paperbark woodland, teatree heath.
- 242ReDMc - Sands and laterite on elongate crests; Jarrah-Albany Blackbutt-Marri forest.
- 242ReRD - Broadly undulating plateau; scattered lakes and depressions. Yellow duplex soils and laterite on plains. Marri-Jarrah-Albany Blackbutt forest. Yellow solonetzic soils in depressions; Paperbark woodland.

LEGEND

- Project Site
- Cadastre
- Test Pit Locations



<p>Paper Size ISO A3</p> <p>0 100 200 300</p> <p>Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 50</p>			<p>City of Albany Albany Motorsport Park Lot 5780 Down Road South, Drome</p> <p>DPIRD Soil Landscape Mapping Units and Test Pit Locations</p>	<p>Project No. 12546218 Revision No. 0 Date 02/08/2021</p>
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FIGURE 3

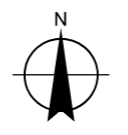
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- Legend**
- Groundwater Level (BGL) August 2019
 - Contours (1m)
 - Road
 - Cadastre
 - Albany Motorsport Park
 - Lot 5780 Down Road South
 - Test Pit Locations

Paper Size ISO A3
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 Metres



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50

City of Albany
 Albany Motorsport Park

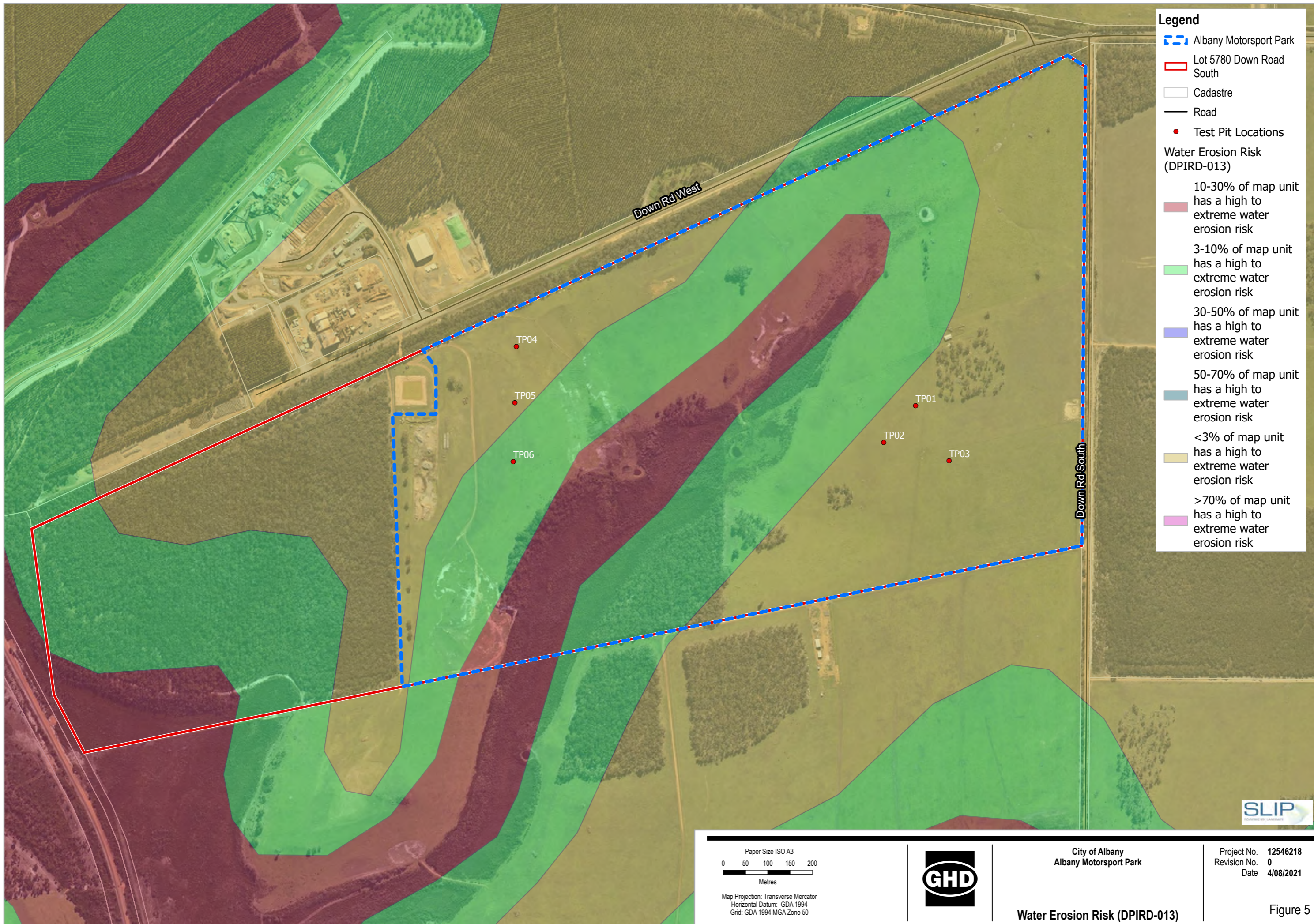
**Groundwater Conditions,
 Topography and Test Pit Locations**

Project No. 12546218
 Revision No. 0
 Date 2/08/2021

FIGURE 4

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Data source: Landgate_Subscription_Imagery\WAnow: Landgate / SLIP. Created by: v-davies



Legend

- Albany Motorsport Park
- Lot 5780 Down Road South
- Cadastre
- Road
- Test Pit Locations

Water Erosion Risk (DPIRD-013)

- 10-30% of map unit has a high to extreme water erosion risk
- 3-10% of map unit has a high to extreme water erosion risk
- 30-50% of map unit has a high to extreme water erosion risk
- 50-70% of map unit has a high to extreme water erosion risk
- <3% of map unit has a high to extreme water erosion risk
- >70% of map unit has a high to extreme water erosion risk

Paper Size ISO A3
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 Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park

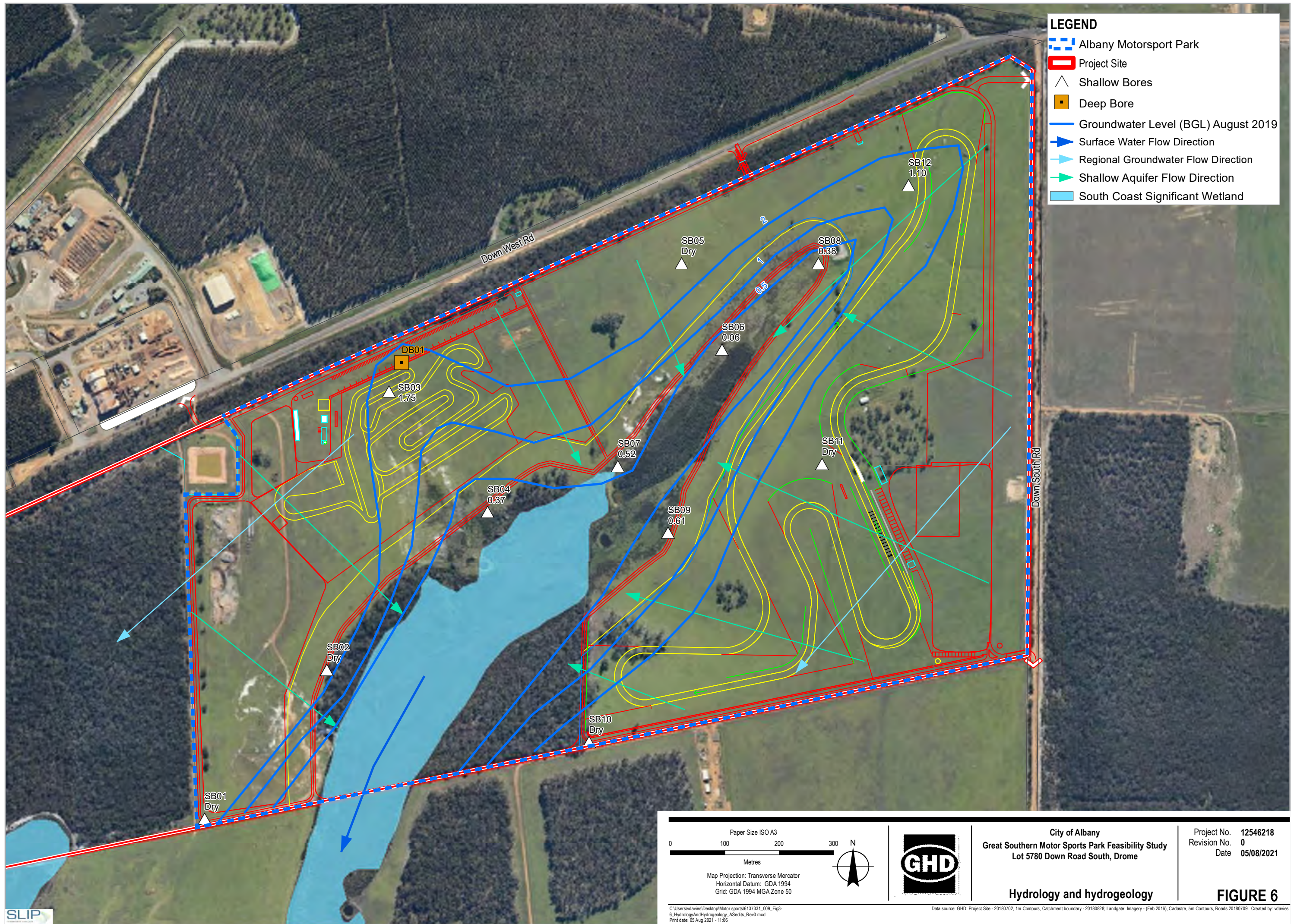
Water Erosion Risk (DPIRD-013)

Project No. 12546218
 Revision No. 0
 Date 4/08/2021

Figure 5

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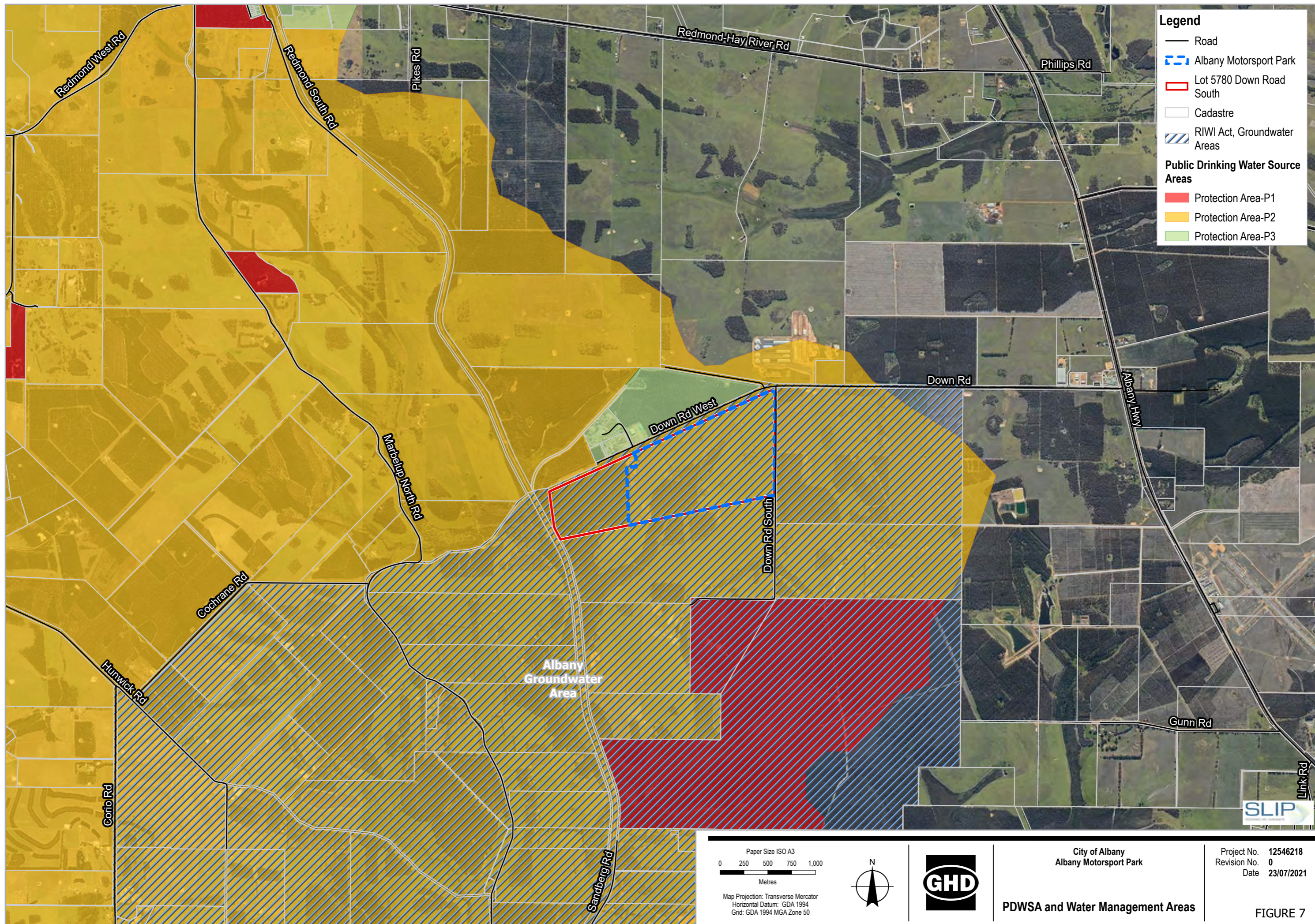
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LEGEND

- Albany Motorsport Park
- Project Site
- Shallow Bores
- Deep Bore
- Groundwater Level (BGL) August 2019
- Surface Water Flow Direction
- Regional Groundwater Flow Direction
- Shallow Aquifer Flow Direction
- South Coast Significant Wetland

<p>Paper Size ISO A3</p> <p>0 100 200 300</p> <p style="text-align: center;">Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 50</p>			<p>City of Albany</p> <p>Great Southern Motor Sports Park Feasibility Study</p> <p>Lot 5780 Down Road South, Drome</p>	<p>Project No. 12546218</p> <p>Revision No. 0</p> <p>Date 05/08/2021</p>
<p>Hydrology and hydrogeology</p>			<p>FIGURE 6</p>	



Legend

- Road
- ▭ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre
- ▨ RIWI Act, Groundwater Areas

Public Drinking Water Source Areas

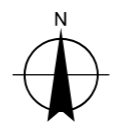
- ▭ Protection Area-P1
- ▭ Protection Area-P2
- ▭ Protection Area-P3

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park

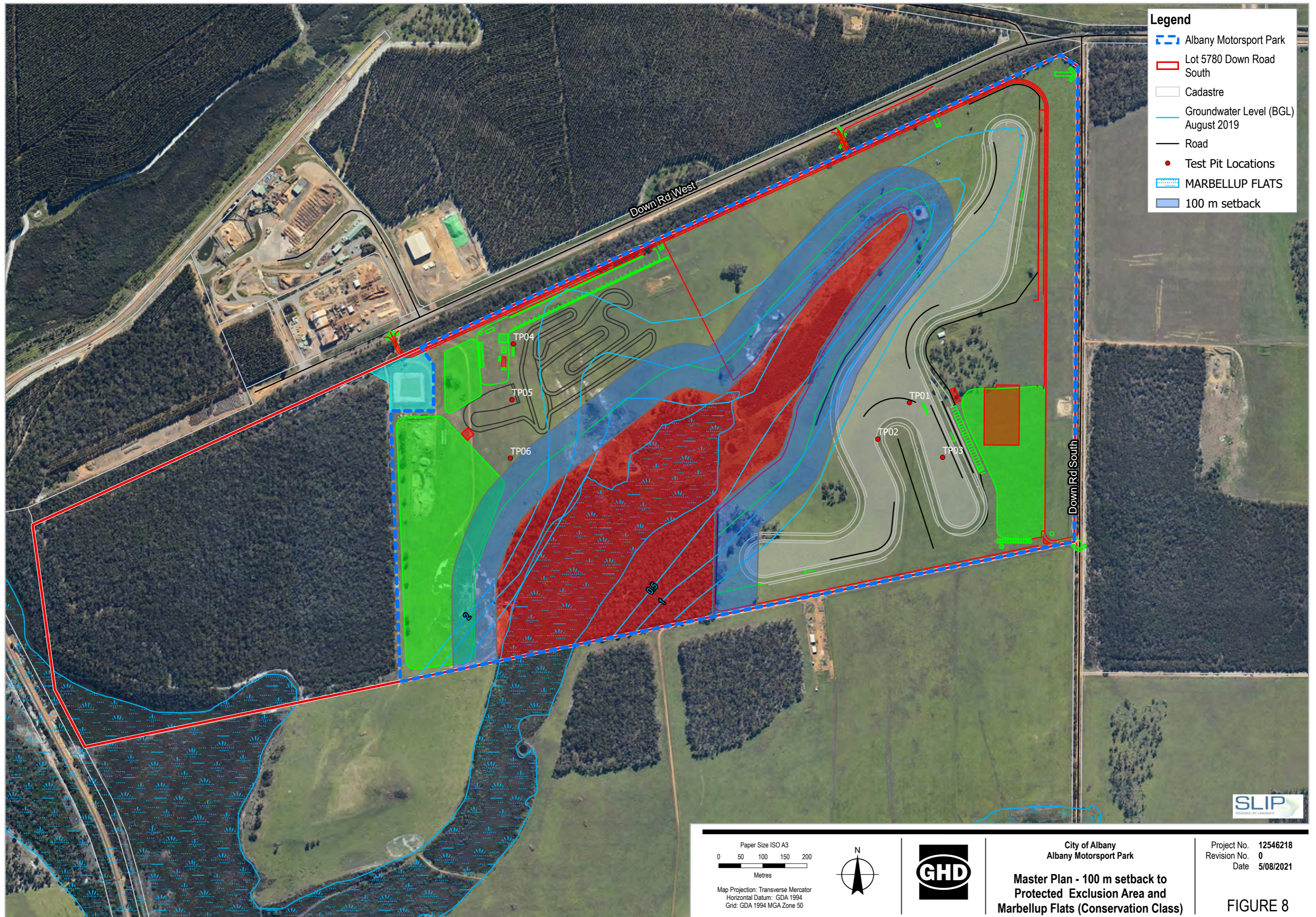
PDWSA and Water Management Areas

Project No. 12546218
 Revision No. 0
 Date 23/07/2021

FIGURE 7

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- Legend**
- Albany Motorsport Park
 - Lot 5780 Down Road South
 - Cadastre
 - Groundwater Level (BGL) August 2019
 - Road
 - Test Pit Locations
 - MARBELLUP FLATS
 - 100 m setback

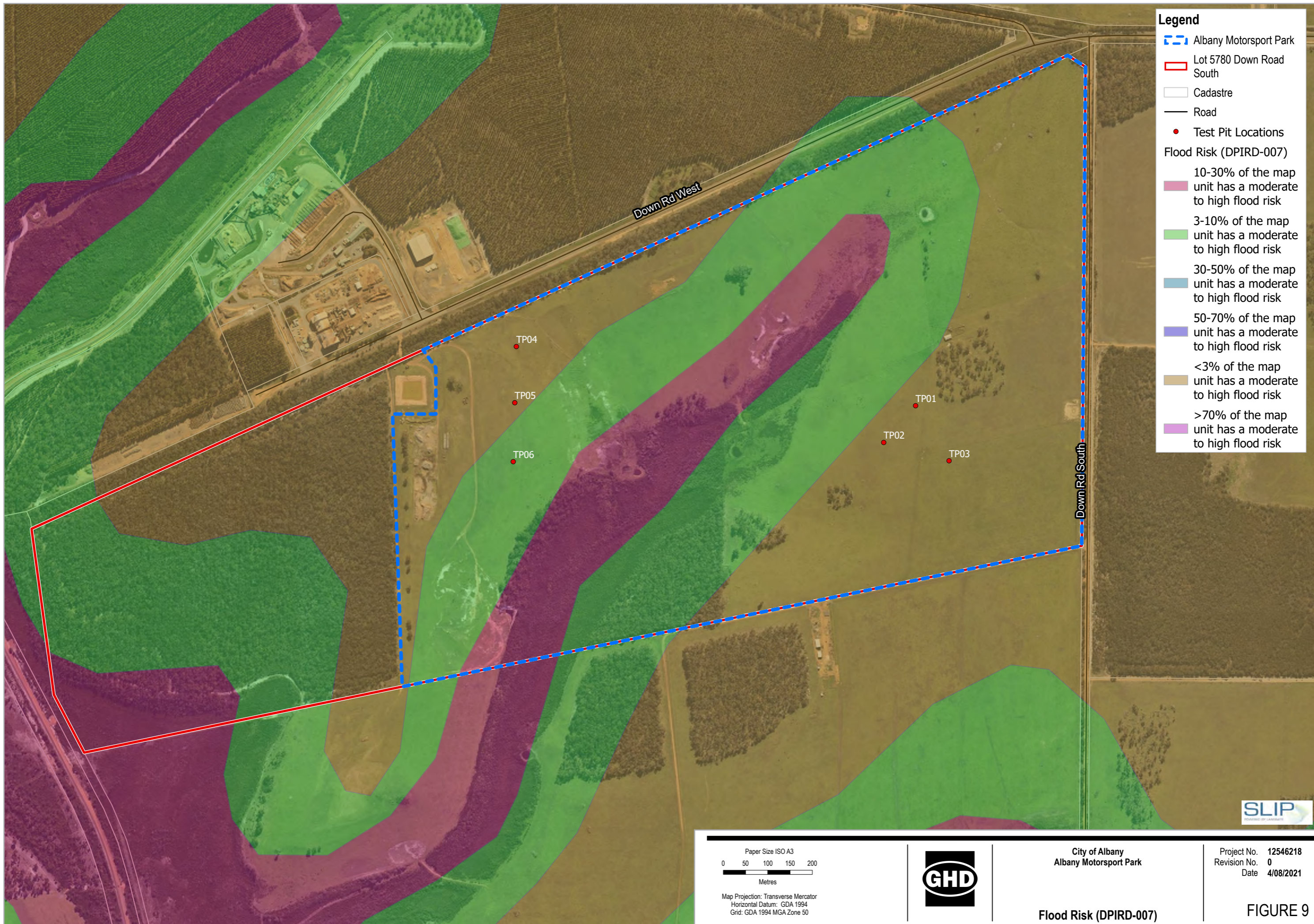
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 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park
**Master Plan - 100 m setback to
 Protected Exclusion Area and
 Marbellup Flats (Conservation Class)**

Project No. 12546218
 Revision No. 0
 Date 5/08/2021

FIGURE 8



- Legend**
- - - Albany Motorsport Park
 - Lot 5780 Down Road South
 - Cadastre
 - Road
 - Test Pit Locations
- Flood Risk (DPIRD-007)**
- 10-30% of the map unit has a moderate to high flood risk
 - 3-10% of the map unit has a moderate to high flood risk
 - 30-50% of the map unit has a moderate to high flood risk
 - 50-70% of the map unit has a moderate to high flood risk
 - <3% of the map unit has a moderate to high flood risk
 - >70% of the map unit has a moderate to high flood risk

Paper Size ISO A3
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 Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park

Project No. 12546218
 Revision No. 0
 Date 4/08/2021

Flood Risk (DPIRD-007)

FIGURE 9

Appendix B

Water balance

Albany Motorsport Park
Motocross - Effluent Disposal Water Balance

Hydraulic loading: **35** L/person/d

Section 29 of *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*

Activity	Mon	Tues	Wed	Thu	Fri	Sat	Sun			
Training - attendees	20	20	20	20	20					
Club event - attendees						300	300			
Flow	700	700	700	700	700	10500	10500	24,500	L/week (total)	
								3,500	L/d (average)	
									100	persons
Cum. IN	700	1400	2100	2800	3500	14000	24500			
Cum. OUT	3,500	7,000	10,500	14,000	17,500	21,000	24,500			
	11,200	8,400	5,600	2,800	0	7,000	14,000		Tank size:	14,000

Water Balance for Zero Storage

Site Address:	Lot 5780 Down Road South, Drome		
Date:	Thursday, 12 August 2021	Assessor:	Jeff Foley

INPUT DATA

Design Wastewater Flow	Q	3,500	L/day	Based on maximum potential occupancy and derived from the Supplement to Regulation 29 and Schedule 9 - Wastewater system loading rates
Design Irrigation Rate	DIR	5.0	mm/day	Based on soil texture class/permeability and derived from Table M1 of AS/NZS 1547:2012
Nominated Land Application Area	L	1100	m ²	¹
Crop Factor	C	0.8-1.0	unitless	Estimates evapotranspiration as a fraction of pan evaporation; varies with season and crop type ²
Rainfall Runoff Factor	RF	0.9	unitless	Proportion of rainfall that remains onsite and infiltrates, allowing for any runoff
Mean Monthly Rainfall Data	om.gov.au/climate/averages/tables/cw_009			BoM Station and number
Mean Monthly Pan Evaporation Data	Albany - Agric reference			BoM Station and number or data from the Evaporation Data for Western Australia Report https://researchlibrary.agric.wa.gov.au/cgi/viewcontent.cgi?article=1058&context=rmt

Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D		days	31	28	31	30	31	30	31	31	30	31	30	31	365
Rainfall	R		mm/month	23.6	22.3	33.6	61.3	89.8	108	119.3	106.8	88.5	70.8	47	27.8	798.8
Evaporation	E		mm/month	220	171	150	91	63	47	59	67	84	106	150	199	1407
Crop Factor	C		unitless	1.00	1.00	0.90	0.90	0.80	0.80	0.80	0.80	0.90	1.00	1.00	1.00	

OUTPUTS

Evapotranspiration	ET	ExC	mm/month	220	171	135	82	50	38	47	54	76	106	150	199	1327.3
Percolation	B	DIRxD	mm/month	155.0	140	155.0	150.0	155.0	150.0	155.0	155.0	150.0	155.0	150.0	155.0	1825.0
Outputs		ET+B	mm/month	375.0	311	290.0	231.9	205.4	187.6	202.2	208.6	225.6	261.0	300.0	354.0	3152.3

INPUTS

Retained Rainfall	RR	RxRF	mm/month	20.06	18.955	28.56	52.105	76.33	91.8	101.405	90.78	75.225	60.18	39.95	23.63	678.98
Applied Effluent	W	(QxD)/L	mm/month	98.6	89.1	98.6	95.5	98.6	95.5	98.6	98.6	95.5	98.6	95.5	98.6	1161.4
Inputs		RR+W	mm/month	118.7	108.0	127.2	147.6	175.0	187.3	200.0	189.4	170.7	158.8	135.4	122.3	1840.3

STORAGE CALCULATION

Storage remaining from previous month			mm/month	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Storage for the month	S	(RR+W)-(ET+B)	mm/month	-256.3	-203.0	-162.8	-84.3	-30.4	-0.3	-2.2	-19.2	-54.9	-102.2	-164.6	-231.7	
Cumulative Storage	M		mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Maximum Storage for Nominated Area	N		mm	0.00												
	V	NxL	L	0												

LAND AREA REQUIRED FOR ZERO STORAGE

		m ²	306	336	415	584	841	1096	1076	921	698	540	404	328		
--	--	----------------	-----	-----	-----	-----	-----	------	------	-----	-----	-----	-----	-----	--	--

MINIMUM AREA REQUIRED FOR ZERO STORAGE:

1097 m²

CELLS

	Please enter data in blue cells
XX	Enter available Land Application Area
XX	Data in yellow cells is calculated by the spreadsheet, DO NOT ALTER THESE CELLS

NOTES

¹ This value should be the largest of the following: land application area required based on the most limiting nutrient balance or minimum area required for zero storage

² Values selected are suitable for grass in WA

Appendix C

GHD Pty Ltd Professional Indemnity Insurance Certificate

Telephone: +61 2 9285 4000
Fax: +61 2 9995 7297
Website: www.willistowerswatson.com.au
Direct Line: +61 2 9285 4060
Email: tanya.stevenson@willistowerswatson.com

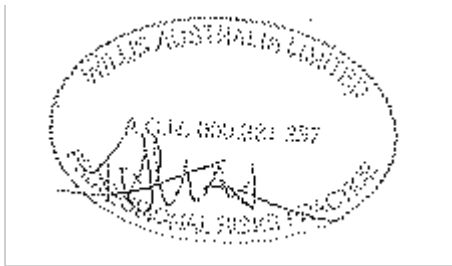
Issue Date: 24 November 2020

To Whom It May Concern

Certificate of Placement – Professional Indemnity

In our capacity as Insurance Broker to the Named Insured shown below, we confirm having arranged the following insurance, the details of which are correct as at the Issue Date:

Named Insured: GHD Group Limited and Subsidiaries including GHD Pty Ltd
Form: Civil Liability Wording which includes coverage for the Trade Practices Act and the Competition and Consumer Act
Policy Number: B080113856P20
Limit of Indemnity: AUD2,000,000 any one claim and in the aggregate
Period of Insurance: 1 December 2020 at 4.00pm to 1 December 2021 at 4.00pm
Insurer: Certain Underwriters at Lloyd's of London



Signed for and on behalf of
Willis Australia Ltd ("Willis Towers Watson")

Disclaimer:

This document has been prepared at the request of our client and does not represent an insurance policy, guarantee or warranty and cannot be relied upon as such. All coverage described is subject to the terms, conditions and limitations of the insurance policy and is issued as a matter of record only. This document does not alter or extend the coverage provided or assume continuity beyond the Expiry Date. It does not confer any rights under the insurance policy to any party. Willis Towers Watson is under no obligation to inform any party if the insurance policy is cancelled, assigned or changed after the Issue Date.

Appendix D

**Albany Motorsport Park Development -
Site Investigation Report 4626/1 (Great
Southern Geotechnics, 2021)**



GREAT SOUTHERN GEOTECHNICS

CONSTRUCTION MATERIALS TESTING

Site Investigation

Report 4626/1

Monday, 28 June 2021

GHD

Albany Motorsport Park Development

GREAT SOUTHERN GEOTECHNICS

1.0 INTRODUCTION

As authorised by GHD

an investigation for the proposed Albany Motorsport Park Development adjacent to Down Rd, Mirambeena was performed on the 25/06/2021

2.0 GENERAL

The intent of the investigation was to determine the following:

- Soil types and profiles.
- Groundwater levels at time of investigation.

3.0 SITE INVESTIGATION

Site conditions and test pit locations were recorded and are displayed in [Appendix A - Maps](#).

Test pits logs/ soil profiles are noted in [Appendix B - Test Pit Logs](#)

The field investigation consisted of 6 Boreholes excavated on-site to depths of up to 2.5 meters using a Kubota KX41-3V mini excavator with a 300mm Auger.

Test pits were spread across the extent of the proposed development and locations were predetermined by GHD.

All soil layers encountered were visually assessed and classified on-site.

Samples gathered from site were the taken back to Great Southern Geotechnics Albany Laboratory then

IMPORTANT NOTE: The test pits have been spread so that they are representative of the subsurface materials across the intended reconstruction area, however, soil conditions may change dramatically over short distances and our investigations may not locate all soil variations across the site.

4.0 LABORATORY TESTING

No laboratory testing have been undertaken at Great southern Geotechnics laboratory.

Sampled taken have been transported by freight to Eurofins Scientific for further analysis.

Testing requirements will be confirmed by GHD post review of investigation findings.

This report and associated documentation was undertaken for the specific purpose described in the report and shall not be relied on for other purposes.

This report was prepared solely for the use by GHD any reliance assumed by other parties on this report shall be at such parties own risk.



Appendix A

Maps



Figure 1

Test Pits 1 to 6

Test Pit Locations



**GREAT SOUTHERN
GEOTECHNICS**
CONSTRUCTION MATERIALS TESTING

Job No: 4626
Client: GHD
Project: Albany Motorsport Park Development





Appendix B

Test Pit Logs





Client: GHD
Project: Albany Motorsport Park Development
Project No. QU-0498
Location: 34°55'55.6"S 117°44'53.0"E

Date Commenced
25/06/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 180	180	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	L-MD		No water table encountered.			
180 - 490	310	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular, (F:20% / M:20% / C:15%). Fine to medium grained sand. Contains approximately 10% Cobbles & Boulders in excess of 250mm diameter.	M	MD-D				#	
550 - 2500	1950	Sandy CLAY: Low to medium plasticity, Brown/red mottled Light brown/orange (40%). Fine to medium grained sand.	M	F				#	

Samples Taken				Target Depth	✓	2500
TP1 - 180mm to 490mm				Cave In		
TP1 - 900mm to 1100mm				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.1



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. QU-0498
Location: 34°55'58.3"S 117°44'50.2"E

Date Commenced
25/06/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 140	140	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	L-MD		No water table encountered.			
140 - 400	260	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular, (F:20% / M:20% / C:15%). Fine to medium grained sand. Contains approximately 10% Cobbles & Boulders in excess of 400mm diameter.	M	VD	MC				
400 - 1400	1000	Sandy CLAY: Low to medium plasticity, Light brown. Fine to medium grained sand.	M	F				#	
1400 - 2500	1100	Sandy CLAY: Low to medium plasticity, Brown/red mottled Light brown/orange (40%). Fine to medium grained sand.	M	F				#	

Samples Taken				Target Depth	✓	2500
TP2 - 500mm to 900mm				Cave In		
TP2 - 1700mm to 2000mm				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.2



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No.: QU-0498
Location: 34°55'59.6"S 117°44'56.4"E

Date Commenced
25/06/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 250	250	(Topsoil) SAND with silt: Dark grey to grey, fine to medium. Roots and root fibres.	M	L-MD		No water table encountered.			
250 - 830	580	Sandy GRAVEL: Brown, fine to medium, sub-rounded to sub-angular, (F:30% / M:30%). Fine to medium grained sand. Contains approximately 10% Cobbles & Boulders in excess of 400mm diameter.	M	MD-D				#	
830 - 1600	770	Sandy CLAY: Low to medium plasticity, Light brown. Fine to medium grained sand.	M	F				#	
1600 - 2500	900	Sandy CLAY: Low to medium plasticity, Brown/red mottled Light brown/grey (30%). Fine to medium grained sand.	M	F				#	

Samples Taken				Target Depth	✓	2500
TP3 - 300mm to 600mm				Cave In		
TP3 - 900mm to 1200mm				Refusal		
TP3 - 1600mm to 2000mm				Near Refusal		
Cohesive	Non-Cohesive	Rock	Cementation	Flooding		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	Lack of Reach		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	General		
F - Firm	MD - Medium Dense	L - Low		MC - moderately Cemented	D - Dry M - Moist W - Wet	
St - Stiff	D - Dense	M - Medium	N/A - Not Applicable			
VSt - Very Stiff	VD - Very Dense	H - High	N/D - Not Determined			
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented			
		EH - Extremely High				

Test Pit No.3



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. QU-0498
Location: 34°55'51.5"S 117°44'17.6"E

Date Commenced
25/06/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 220	220	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	L-MD		No water table encountered.			
220 - 1250	1030	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular, (F:25% / M:20% / C:10%). Fine to medium grained sand. Contains approximately 10% Cobbles & Boulders in excess of 400mm diameter.	M	D				#	
1250 - 1750	500	Sandy CLAY: Low to medium plasticity, Light brown/orange. Fine to medium grained sand.	M	F				#	
1750 - 2500	750	Sandy CLAY: Low to medium plasticity, grey mottled red (30%) & orange (10%). Fine to medium grained sand.	M	F				#	

Samples Taken				Target Depth	✓	2500
TP4 - 400mm to 800mm				Cave In		
TP4 - 1350mm to 1650mm				Refusal		
TP4 - 1800mm to 2200mm				Near Refusal		
Cohesive	Non-Cohesive	Rock	Cementation	Flooding		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	Lack of Reach		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	General		
F - Firm	MD - Medium Dense	L - Low		MC - moderately Cemented	D - Dry	M - Moist
St - Stiff	D - Dense	M - Medium	N/A - Not Applicable			
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented		N/D - Not Determined	
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.4



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No.: QU-0498
Location: 34°55'55.6"S 117°44'17.5"E

Date Commenced
25/06/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 230	230	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	L-MD		No water table encountered.			
230 - 880	650	SAND with silt: Grey, fine to medium.	M	MD				#	
880 - 2500	1620	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular, (F:15% / M:30% / C:10%). Fine to medium grained sand. Contains approximately 10% Cobbles & Boulders in excess of 400mm diameter.	M	MD-D				#	

Samples Taken				Target Depth	✓	2500
TP5 - 400mm to 800mm				Cave In		
TP5 - 1200mm to 1500mm				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.5



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. QU-0498
Location: 34°55'59.9"S 117°44'17.4"E

Date Commenced
25/06/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 350	350	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	L-MD		No water table encountered.			
350 - 1200	850	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular, (F:20% / M:20% / C:10%). Fine to medium grained sand. Contains approximately 10% Cobbles & Boulders in excess of 400mm diameter.	M	D-VD				#	
1200 - 1800	600	Sandy GRAVEL: Light brown, fine to coarse, sub-rounded to sub-angular, (F:20% / M:30% / C:10%). Fine to medium grained sand.	M	D				#	
1800 - 2500	700	Sandy GRAVEL: Brown/orange, fine to medium, sub-rounded to sub-angular, (F:40% / M:20%). Fine to medium grained sand.	M	MD-D				#	

Samples Taken				Target Depth	✓	2500
TP6 - 500mm to 800mm				Cave In		
TP6 - 1300mm to 1600mm				Refusal		
TP6 - 2000mm to 2300mm				Near Refusal		
Cohesive	Non-Cohesive	Rock	Cementation	Flooding		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	Lack of Reach		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	General		
F - Firm	MD - Medium Dense	L - Low		MC - moderately Cemented	D - Dry M - Moist W - Wet	
St - Stiff	D - Dense	M - Medium	N/A - Not Applicable			
VSt - Very Stiff	VD - Very Dense	H - High	N/D - Not Determined			
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented			
		EH - Extremely High				

Test Pit No.6



Excavation



Spoil





COLOURS

	BLACK - BROWN (bk)		BLUE (bl)		ORANGE (or)
	BROWN (br)		BLUE - GREEN (bl/gr)		RED (rd)
	GREY - BROWN (gy/br)		GREEN (gr)		RED - BROWN (rd/br)
	GREY (gy)		YELLOW (yl)		PINK (pk)
	BLUE - GREY (bl/gy)		YELLOW - BROWN (yl/br)		PURPLE (pr)

MOISTURE CONDITION OF SOIL

TERM	DESCRIPTION
Dry	Cohesive soils; hard and friable or powdery, well dry of plastic limit. Granular soils; cohesionless and free-running.
Moist	Soil feels cool, darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	Soil feels cool, darkened in colour. Cohesive soils usually weakened and free water forms on hands when handling. Granular soils tend to cohere and free water forms on hands when handling.

PARTICLE SHAPES

ANGULAR	SUB-ANGULAR	SUB-ROUNDED	ROUNDED
			

PARTICLE SIZES

BOULDERS	COBBLES	COARSE GRAVEL	MEDIUM GRAVEL	FINE GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY
>200mm	63-200mm	20-63mm	6-20mm	2.36-6mm	0.6-2.36mm	0.2-0.6mm	0.075-0.2mm	0.002-0.075mm	<0.002mm

GRAIN SIZE

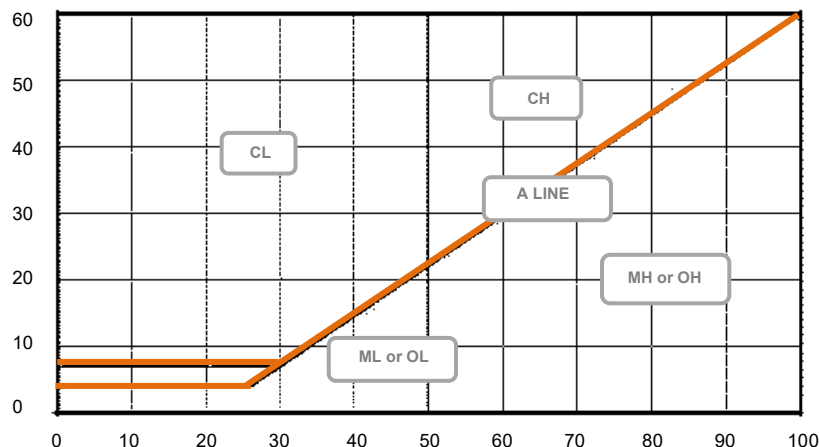
SOIL TYPE (ABBREV.)	CLAY (CL)	SILT (SI)	SAND (SA)			GRAVEL (GR)		COBBLES (CO)	
SIZE	< 2µm	2-75µm	Fine 0.075-0.2mm	Medium 0.2-0.6mm	Coarse 0.6-2.36mm	Fine 2.36-6mm	Medium 6-20mm	Coarse 20-63mm	63-200mm
SHAPE & TEXTURE	Shiny	Dull	angular or sub angular or sub rounded or rounded						
FIELD GUIDE	Not visible under 10x	Visible under 10x	Visible by eye	Visible at < 1m	Visible at < 3m	Visible at < 5m	Road gravel	Rail ballast	Beaching

CLASSIFICATION CHART

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60mm and basing fractions on estimated mass)				GROUP SYMBOLS	TYPICAL NAMES	
COARSE GRAINED SOILS More than 50% of material less than 63 mm is larger than 0.075 mm	GRAVELS More than 50% of coarse fraction is larger than 2.36mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	GW	Well graded gravels, gravel-sand mixtures, little or no fines	
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	GP	Poorly Graded gravels and gravel-sand mixtures, little or no fines, uniform gravels	
		GRAVELS WITH FINES (Appreciable amount of fines)	Dirty materials with excess of non-plastic fines, zero to medium dry strength	GM	Silty gravels, gravel-sand-silt mixtures	
			'Dirty' materials with excess of plastic fines, medium to high dry strength	GC	Clayey gravels, gravel-sand-clay mixtures	
	SANDS More than 50% of coarse fraction is smaller than 2.36mm	CLEAN SANDS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	SW	Well graded sands, gravelly sands, little or no fines	
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands	
		SANDS WITH FINES (Appreciable amount of fines)	Dirty materials with excess of non-plastic fines, zero to medium dry strength	SM	Silty sands, sand-silt mixtures	
			'Dirty' materials with excess of plastic fines, medium to high dry strength	SC	Clayey sands, sand-clay mixtures	
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2mm					
	SILTS AND CLAYS Liquid limit less than 50	DRY STRENGTH	DILATANCY	TOUGHNESS		
		None to low	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with low plasticity. Silts of low to medium Liquid Limit.
		Medium to high	None to very slow	Medium	CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
	SILTS AND CLAYS Liquid limit greater than 50	Low to medium	Slow	Low	OL	Organic silts and organic silt-clays of low to medium plasticity.
		Low to medium	Slow to none	Low to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, silts of high Liquid Limit.
		High to very high	None	High	CH	Inorganic clays of high plasticity.
	SILTS AND CLAYS Liquid limit greater than 50	Medium to high	None to very slow	Low to medium	OH	Organic clays of high plasticity
		HIGHLY ORGANIC SOILS			Readily identified by colour, odour, spongy feel and frequently by fibrous texture	Pt

PLASTICITY CHART

For laboratory classification of fine grained soils



PLASTICITY

DESCRIPTIVE TERM	OF LOW PLASTICITY	OF MEDIUM PLASTICITY	OF HIGH PLASTICITY
Range Of Liquid Limit (%)	≤ 35	> 35 ≤ 50	> 50

DESCRIPTION OF ORGANIC OR ARTIFICIAL MATERIALS

PREFERRED TERMS	SECONDARY DESCRIPTION
Organic Matter	Fibrous Peat/ Charcoal/ Wood Fragments/ Roots (greater than approximately 2mm diameter)/ Root Fibres (less than approximately 2mm diameter)
Waste Fill	Domestic Refuse/ Oil/ Bitumen/ Brickbats/ Concrete Rubble/ Fibrous Plaster/ Wood Pieces/ Wood Shavings/ Sawdust/ Iron Filings/ Drums/ Steel Bars/ Steel Scrap/ Bottles/ Broken Glass/ Leather

CONSISTENCY – Cohesive soils

TERM	VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD
Symbol	VS	S	F	St	VSt	H
Undrained Shear Strength (kPa)	< 12	12 – 25	25 – 50	50 – 100	100 – 200	> 200
SPT (N) Blowcount	0 – 2	2 – 4	4 – 8	8 – 15	15 – 30	> 30
Field Guide	Exudes between the fingers when squeezed	Can be moulded by light finger pressure	Can be moulded by strong finger pressure	Cannot be moulded by fingers. Can be indented by thumb nail	Can be indented by thumb nail	Can be indented with difficulty with thumb nail

CONSISTENCY – Non-cohesive soils

TERM	VERY LOOSE	LOOSE	MEDIUM DENSE	DENSE	VERY DENSE	COMPACT
Symbol	VL	L	MD	D	VD	CO
SPT (N) Blowcount	0 – 4	4 – 10	10 – 30	30 – 50	50 – 100	> 50/150 mm
Density Index (%)	< 15	15 – 35	35 – 65	65 – 85	85 – 95	> 95
Field Guide	Ravels	Shovels easily	Shovelling very difficult	Pick required	Pick difficult	Cannot be picked

MINOR COMPONENTS

TERM	TRACE	WITH
% Minor Component	Coarse grained soils: < 5% Fine grained soils: <15%	Coarse grained soils: 5 – 12% Fine grained soils: 15 – 30%
Field Guide	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary components	Presence easily detectable by feel or eye, soil properties little different to general properties of primary component

GEOLOGICAL ORIGIN

	TYPE	DETAILS
TRANSPORTED SOILS	Aeolian Soils	Deposited by wind
	Alluvial Soils	Deposited by streams and rivers
	Colluvial Soils	Deposited on slopes
	Lacustrine Soils	Deposited by lakes
	Marine Soils	Deposited in ocean, bays, beaches and estuaries
FILL MATERIALS	Soil Fill	Describe soil type, UCS symbol and add 'FILL'
	Rock Fill	Rock type, degree of weathering, and word 'FILL'.
	Domestic Fill	Percent soil or rock, whether pretrucible or not.
	Industrial Fill	Percent soil, whether contaminated, particle size & type of waste product, ie brick, concrete, metal

STRENGTH OF ROCK MATERIAL

TERM	SYMBOL	IS (50)	(MPA)	FIELD GUIDE TO STRENGTH
Extremely Low	EL	≤0.03		Easily remoulded by hand to a material with soil properties.
Very Low	VL	>0.03	≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxle sample by hand. Pieces up to 3 cm thick can be broken by finger pressure.
Low	L	>0.1	≤0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	>0.3	≤1.0	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
High	H	>1	≤3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	VH	>3	≤10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High	EH	>10		Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

ROCK MATERIAL WEATHERING CLASSIFICATION

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported
Extremely Weathered Rock	XW	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded, in water.
Distinctly Weathered Rock	DW	Rock strength usually changed by weathering. Rock may be highly discoloured, usually be iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.
Slightly Weathered Rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh Rock	FR	Rock shows no sign of decomposition or staining.

Appendix E

Laboratory results

CERTIFICATE OF ANALYSIS

Work Order : EP2107544 Client : GHD PTY LTD Contact : MS VICKI DAVIES Address : 999 HAY STREET PERTH WA, AUSTRALIA 6000 Telephone : ---- Project : 12546218 Albany Motorsports Park DA Order number : 12546218 C-O-C number : ---- Sampler : ---- Site : ---- Quote number : EP/444/21 No. of samples received : 15 No. of samples analysed : 6	Page : 1 of 4 Laboratory : Environmental Division Perth Contact : Nick Courts Address : 26 Rigali Way Wangara WA Australia 6065 Telephone : +61-8-9406 1301 Date Samples Received : 01-Jul-2021 13:30 Date Analysis Commenced : 02-Jul-2021 Issue Date : 13-Jul-2021 13:47
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Phosphorus Sorption Index + Capacity conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H⁺ + Al³⁺).



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP1 - 900mm to 1100mm	TP2 - 500mm to 900mm	TP3 - 300mm to 600mm	TP4 - 400mm to 800mm	TP5 - 400mm to 800mm
Sampling date / time			25-Jun-2021 00:00	25-Jun-2021 00:00	25-Jun-2021 00:00	25-Jun-2021 00:00	25-Jun-2021 00:00	25-Jun-2021 00:00
Compound	CAS Number	LOR	Unit	EP2107544-002	EP2107544-003	EP2107544-005	EP2107544-008	EP2107544-011
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	6.1	6.1	5.7	5.8	5.4
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	22	25	28	24	4
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	0.8	0.8	1.6	0.8	<0.1
Exchangeable Magnesium	----	0.1	meq/100g	0.5	1.0	0.2	0.2	<0.1
Exchangeable Potassium	----	0.1	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.1	<0.1	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	1.4	1.9	2.0	1.1	0.1
Exchangeable Sodium Percent	----	0.1	%	5.8	4.8	5.7	6.2	<0.1
EK072: Phosphate Sorption Capacity								
Phosphate Sorption Capacity	----	250	mg P sorbed/kg	688	1650	3660	3000	<250
Phosphate Sorption Index	----	1	mgkg-1/log10 ugL-1	60	157	289	244	<1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		TP6 - 500mm to 800mm	----	----	----	----
		Sampling date / time		25-Jun-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EP2107544-013	-----	-----	-----	-----
				Result	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	5.9	----	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	20	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	1.0	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	0.2	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	<0.1	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	<0.1	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	1.3	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	1.4	----	----	----	----
EK072: Phosphate Sorption Capacity								
Phosphate Sorption Capacity	----	250	mg P sorbed/kg	966	----	----	----	----
Phosphate Sorption Index	----	1	mgkg-1/log10 ugL-1	62	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EK072: Phosphate Sorption Capacity

QUALITY CONTROL REPORT

Work Order	: EP2107544	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Contact	: Nick Courts
Address	: 999 HAY STREET	Address	: 26 Rigali Way Wangara WA Australia 6065
	PERTH WA, AUSTRALIA 6000		
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: 12546218 Albany Motorsports Park DA	Date Samples Received	: 01-Jul-2021
Order number	: 12546218	Date Analysis Commenced	: 02-Jul-2021
C-O-C number	: ----	Issue Date	: 13-Jul-2021
Sampler	: ----		
Site	: ----		
Quote number	: EP/444/21		
No. of samples received	: 15		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA002: pH 1:5 (Soils) (QC Lot: 3770355)									
EP2107544-002	TP1 - 900mm to 1100mm	EA002: pH Value	----	0.1	pH Unit	6.1	6.1	0.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 3770356)									
EP2107544-002	TP1 - 900mm to 1100mm	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	22	22	0.0	0% - 20%
ED007: Exchangeable Cations (QC Lot: 3780436)									
EP2107521-057	Anonymous	ED007: Exchangeable Sodium Percent	----	0.1	%	2.9	3.0	3.6	0% - 20%
		ED007: Exchangeable Calcium	----	0.1	meq/100g	16.8	14.7	13.3	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	0.4	0.4	0.0	No Limit
		ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	<0.1	0.0	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	0.5	0.5	0.0	No Limit
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	17.8	15.6	13.1	0% - 20%
EK072: Phosphate Sorption Capacity (QC Lot: 3776718)									
EP2107544-002	TP1 - 900mm to 1100mm	EK072: Phosphate Sorption Capacity	----	250	mg P sorbed/kg	688	409	50.9	No Limit
		EK072: Phosphate Sorption Index	----	1	mgkg ⁻¹ /log10ug L ⁻¹	60	60	0.0	0% - 20%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EA002: pH 1:5 (Soils) (QCLot: 3770355)									
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	100	70.0	130	
				----	7 pH Unit	100	70.0	130	
EA010: Conductivity (1:5) (QCLot: 3770356)									
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	99.6	93.6	106	
ED007: Exchangeable Cations (QCLot: 3780436)									
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	21.6 meq/100g	91.0	82.9	117	
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.76 meq/100g	91.3	78.4	119	
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	1 meq/100g	107	87.9	129	
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.9 meq/100g	103	92.9	132	
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	25.3 meq/100g	92.0	84.7	117	
ED007: Exchangeable Sodium Percent	----	0.1	%	<0.1	----	----	----	----	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP2107544	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: +61-8-9406 1301
Project	: 12546218 Albany Motorsports Park DA	Date Samples Received	: 01-Jul-2021
Site	: ----	Issue Date	: 13-Jul-2021
Sampler	: ----	No. of samples received	: 15
Order number	: 12546218	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA002: pH 1:5 (Soils)								
Snap Lock Bag (EA002) TP3 - 300mm to 600mm, TP5 - 400mm to 800mm,	TP4 - 400mm to 800mm, TP6 - 500mm to 800mm	25-Jun-2021	02-Jul-2021	02-Jul-2021	✓	02-Jul-2021	02-Jul-2021	✓
Soil Glass Jar - Unpreserved (EA002) TP1 - 900mm to 1100mm,	TP2 - 500mm to 900mm	25-Jun-2021	02-Jul-2021	02-Jul-2021	✓	02-Jul-2021	02-Jul-2021	✓
EA010: Conductivity (1:5)								
Snap Lock Bag (EA010) TP3 - 300mm to 600mm, TP5 - 400mm to 800mm,	TP4 - 400mm to 800mm, TP6 - 500mm to 800mm	25-Jun-2021	02-Jul-2021	02-Jul-2021	✓	02-Jul-2021	30-Jul-2021	✓
Soil Glass Jar - Unpreserved (EA010) TP1 - 900mm to 1100mm,	TP2 - 500mm to 900mm	25-Jun-2021	02-Jul-2021	02-Jul-2021	✓	02-Jul-2021	30-Jul-2021	✓
ED007: Exchangeable Cations								
Snap Lock Bag (ED007) TP3 - 300mm to 600mm, TP5 - 400mm to 800mm,	TP4 - 400mm to 800mm, TP6 - 500mm to 800mm	25-Jun-2021	08-Jul-2021	23-Jul-2021	✓	08-Jul-2021	23-Jul-2021	✓
Soil Glass Jar - Unpreserved (ED007) TP1 - 900mm to 1100mm,	TP2 - 500mm to 900mm	25-Jun-2021	08-Jul-2021	23-Jul-2021	✓	08-Jul-2021	23-Jul-2021	✓
EK072: Phosphate Sorption Capacity								
Soil Glass Jar - Unpreserved (EK072) TP1 - 900mm to 1100mm, TP3 - 300mm to 600mm, TP5 - 400mm to 800mm,	TP2 - 500mm to 900mm, TP4 - 400mm to 800mm, TP6 - 500mm to 800mm	25-Jun-2021	----	----	----	06-Jul-2021	22-Dec-2021	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Electrical Conductivity (1:5)	EA010	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
P Sorption Index & P Sorption Capacity	EK072	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Electrical Conductivity (1:5)	EA010	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	2	6	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Exchangeable Cations	ED007	SOIL	In house: Referenced to Rayment & Lyons Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM Schedule B(3).
P Sorption Index & P Sorption Capacity	EK072	SOIL	In house: Referenced to Rayment & Lyons Method 9H1 & 9I1 Soil is brought to equilibrium with a solution of P at known concentration. P absorbed, released is determined by FIA analysis of the final solution.

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Lyons method 15A1. A 1M NH ₄ Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

Appendix F

Aquarius Wastewater Systems Pty Ltd

AQUARIUS[®] Systems

1 – 5 Bedrooms	O-3 ATU	O-2 NR ATU	O-2 ATU
6 – 9 Bedrooms	O-3 3KL ATU	O-2 NR 3KL ATU	O-2 3KL ATU
Commercial	AQUARIUS [®] Standard or Custom Designed Commercial Systems Please speak to our Sales Consultant		

Specifications

	O-3	O-2 NR	O-2
<u>System Features</u>			
Poly/Duralen Plastic or Concrete Tank Construction	✓	✓	✓
Nutrient Retentive (Phosphorous removal)	✓	✓	
Ozone Disinfection	✓		
Recycles all wastewater through irrigation into gardens, orchards, etc.	✓	✓	✓
Supplied complete with irrigation components, electrical components and pumps	✓	✓	✓
Footprint required approx 6m x 2.5m x 2m**	✓	✓	✓
Low Energy use	✓	✓	✓
<u>Irrigation Area</u>			
Above Ground Dripper Irrigation	✓		
Sub-Surface Dripper Irrigation	✓	✓	✓
Irrigation area in sandy soil conditions – *150m ²	✓	✓	✓
<u>Other Disposal options</u>			
Leach Drains / Soakwells / Aquasafe Drains	✓	✓	✓
<u>Maintenance</u>			
Service calls per year as per DoH WA requirements	2	2	2
<u>Manufacturers Warranties</u>			
Poly/Duralen Plastic Tanks 15 years	✓	✓	✓
Orange Pumps 1 year	✓	✓	✓
Irrigation and Electrical components 1 year	✓	✓	✓
<u>Approvals</u>			
Fully approved by the WA Department of Health	✓	✓	✓
Australian Standards approved AS/NZS 1546.3	✓	✓	✓
<u>Why choose Aquarius</u>			
Wholly owned West Australian Company	✓	✓	✓
Manufactured in Western Australia	✓	✓	✓
Extensive Support Network covering all of WA	✓	✓	✓
Local Agents fully trained and registered with Department of Health WA	✓	✓	✓

*Subject to local authority approval

**Subject to configuration of ATU

Treatment Process

	O-3	O-2 NR	O-2
<p><u>Primary Tank</u> Retains the solids and uses aerobic and anaerobic bacteria to breakdown the BOD₅ levels in the sewage.</p>	✓	✓	✓
<p><u>Alum Tank</u> Doses the Clarifying chamber of the Treatment tank with Alum. Alum acts as a flocculent to remove the nutrients and suspended solids and settle them to the bottom of the tank for further aerobic bacteria breakdown.</p>	✓	✓	
<p><u>Treatment Tank</u></p> <p>Secondary / Aeration Chamber Incorporates aeration to further break down BOD₅ and nitrates.</p> <p>Clarifying Chamber The Clarifying Chamber provides a settling and clarifying period for the water prior to discharge.</p> <p>Discharge Chamber The Discharge chamber contains the Discharge Pump to pump the treated water out to irrigation or other disposal methods.</p> <p>Ozonation Pump Ozone is a powerful disinfectant, many times more effective than chlorine and kills all bacteria.</p>	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓
<p><u>DoH WA ATU Water Quality Criteria</u></p> <p><20mg/L BOD₅</p> <p><30mg/L suspended solids</p> <p><10 E.coli/100ml</p> <p>>3mg/L Ozone concentration</p> <p><1mg/L (98.5%) TP (% removal)</p> <p><10mg/L (97.8%) TN (% removal)</p>	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓



ghd.com

→ **The Power of Commitment**

Appendix E

Hydrocarbon Management Plan



Albany Motorsport Park - Development Application

Hydrocarbon Management Plan

City of Albany

27 July 2021

→ The Power of Commitment

GHD Pty Ltd | ABN 39 008 488 373



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File name	https://projectsportal.ghd.com/sites/pp18_05/albanymotorsportpark/ProjectDocs/Environmental Management Plan/12546218_REP_0_Albany Motorsport Park Hydrocarbon Management Plan.docx
Author	Vicki Davies
Project manager	Vicki Davies
Client name	City of Albany
Project name	Albany Motorsport Park - Development Application
Document title	Albany Motorsport Park - Development Application Hydrocarbon Management Plan
Revision version	Rev 0
Project number	12546218

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	V. Davies	J. Cramer		J. Foley		17/05/21
S4	0	V. Davies	J. Cramer		J. Foley		Jeff Foley 2021.07.30 11:10:47 +08'00'

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Executive summary

The purpose of this Hydrocarbon Management Plan is to minimise environmental impact due to potential hydrocarbon spills or inappropriate disposal during the operation of the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (the Site) (Figure 1, Appendix A). The Hydrocarbon Management Plan has been created to minimise potential impacts to the environment and/or human health from hydrocarbon waste.

This Hydrocarbon Management Plan is appended to the overarching Environmental Management Plan (EMP) which has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development.

Measures to mitigate environmental impacts, due to potential hydrocarbon spills or inappropriate disposal, during the construction of the AMP have been included in the Construction Management Plan (Appendix J of the EMP).

The objectives of this management plan are to ensure:

- Hydrocarbons are used and managed appropriately on the site
- Hydrocarbon waste is disposed of appropriately
- All hydrocarbon spill kits, disposal areas/ containers are supplied, managed and maintained
- All accidental or uncontrolled release of hydrocarbons to the environment are reported and remediated to protect environmental/ health values and maintain biological diversity and ecological integrity of the Site
- All responsible persons are appropriately trained and responsibilities are assigned for implementing these measures.

If hydrocarbons and hydrocarbon waste is not appropriately managed within the AMP the following potential impacts/ risks may occur:

- Contamination of surrounding soil, groundwater, and surface water
- Contaminated of air quality due to vapor generation
- Potential ignition source for fire
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value
- Community and stakeholder dissatisfaction.

Measures to mitigate environmental impacts, due to potential hydrocarbon spills or inappropriate disposal, during the construction of the AMP have also been included in the Construction Management Plan (Appendix J of the EMP).

It is the responsibility of Albany Motorsport Venue Incorporated (AMV Inc) to implement this Hydrocarbon Management Plan during operation of the AMP.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

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1.4 Limitations	1
2. Potential environmental impacts	3
3. Management strategies, actions, timeframes and responsibilities	4
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---------	---	---

Appendices

Appendix A	Figures
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1. Introduction

1.1 Purpose of this report

The purpose of this Hydrocarbon Management Plan is to minimise environmental impact due to potential hydrocarbon spills or inappropriate disposal during the operation of the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (the Site) (Figure 1, Appendix A). The Hydrocarbon Management Plan has been created to minimise potential impacts to the environment and/ or human health from hydrocarbon waste.

Measures to mitigate environmental impacts, due to potential hydrocarbon spills or inappropriate disposal, during the construction of the AMP have also been included in the Construction Management Plan (Appendix J of the EMP).

1.2 Objectives

The objectives of this management plan are to ensure:

- Hydrocarbons are used and managed appropriately on the site
- Hydrocarbon waste is disposed of appropriately
- All hydrocarbon spill kits, disposal areas/ containers are supplied, managed and maintained
- All accidental or uncontrolled release of hydrocarbons to the environment are reported and remediated to protect environmental/ health values and maintain biological diversity and ecological integrity of the Site
- All responsible persons are appropriately trained and responsibilities are assigned for implementing these measures.

1.3 Legislation and guidelines

Legislation and guidelines associated with hydrocarbon use and disposal include, but may not be limited to the following:

- *Environmental Protection Act 1986*
- *Environmental Protection Regulations 1987*
- *Dangerous Goods Safety Act 2004*
- *Contaminated Sites Act 2003*
- *AS1940:2004 – The Storage and Handling of Combustible Liquids*
- Water Quality Protection Note (WQPN) 100: Motor sport facilities near sensitive waters (DoW, 2007).

1.4 Limitations

This report: has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and City of Albany as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible. The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect. GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Potential environmental impacts

Operation of the AMP is considered likely to generate hydrocarbons, via the following sources:

- Hydrocarbons (fuel, oil, grease, etc.) being brought to site by competitors.
- There are to be no above or below ground bulk fuel storage tanks located onsite. All competitors will bring their own fuel and remove all hydrocarbon waste offsite at the completion of each event.
- Spills on the tracks.
- Spills in the concrete bunded, covered, hardstand areas.

It is expected that all competitors will remove their own hydrocarbon wastes, such as fuel, grease, oil etc. at the completion of each event and dispose of at an appropriately licenced facility.

The AMP operators will store small quantities of hydrocarbons on-site for use in maintenance machinery only (e.g. lawn mowers, etc.).

If hydrocarbons and hydrocarbon waste is not appropriately managed within the AMP the following potential impacts/ risks may occur:

- Contamination of surrounding soil, groundwater, and surface water
- Contaminated of air quality due to vapor generation
- Potential ignition source for fire
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value
- Community and stakeholder dissatisfaction.

3. Management strategies, actions, timeframes and responsibilities

Broad management strategies have been developed to minimise potential impacts associated with hydrocarbons. The management strategies, timing and responsibilities are outlined in Table 1.

It is the responsibility of the Operations Manager of the AMV Inc. to implement this Hydrocarbon Management Plan during operation of the AMP.

Table 1 Hydrocarbon management strategies, actions, timeframes and responsibilities

Management Strategies	Actions	Timeframes	Responsibility
Site induction	Site induction includes the following specific hydrocarbon management components: <ul style="list-style-type: none"> – Spill kit locations and instructions for use – Location of hardstand areas for vehicle refuelling and minor servicing activities – Each competitor will remove their own hydrocarbon wastes, such as fuel, grease, oil etc at the completion of each event and disposal of at an appropriately licenced facility. 	On entry to site	All personnel (AMV Inc. Operations Manager, volunteers and competitors)
	All responsible persons to undertake the necessary training on the handling of, and disposal of, hydrocarbons and spill kits used at the AMP.	Site induction	AMV Inc. Operations Manager
Refuelling and minor servicing in self-bunded designated areas only	Refuelling and minor servicing of vehicles will be undertaken on designated bunded hardstand areas with wastewater trap to contain hydrocarbon contaminated water (Figure 2, Appendix A). All refuelling and minor servicing must be not be carried out without a fully stocked spill kit available. Bunding will be designed as per requirements of AS1940-2004. No refuelling or hydrocarbon storage shall occur within 200 m of the Protected Exclusion Area.	At all times	All personnel
No major servicing onsite	No major servicing of vehicles will be permitted onsite. Minor servicing, refuelling and wash down may occur in the designated concrete bunded, covered, hardstand areas with wastewater trap to contain hydrocarbon contaminated water (Figure 2, Appendix A).	At all times	All personnel
No above or below ground fuel tanks onsite	No permanent above or below ground bulk fuel storage tanks will be installed onsite. Fuel for generators will be stored in drums on a designated concrete bunded, covered, hardstand area with wastewater trap to contain hydrocarbon contaminated water (Figure 2, Appendix A).	At all times	All personnel
Containment of spills	Appropriately located and stocked Spill Kits will be held on site (wheelie bin or similar) to assist with containment of minor spills.	At all times	AMV Inc. Operations Manager
	A mobile Spill Kit and fire-fighting unit (trailer/ ute mounted, or similar) will be used on site to move to various parts of the Site in the event of a hydrocarbon spill in an area which does not have a permanent spill kit i.e. racetrack.	At all times	AMV Inc. Operations Manager

Management Strategies	Actions	Timeframes	Responsibility
	<p>Fuel and oil Containment Booms (Land Socks), or similar, to be held on site in the event of a serious hydrocarbon spill resulting in surface runoff.</p> <p>Containment Booms are to be placed around the perimeter of a spill in order to contain the liquid spilled and assist with stopping its spread.</p>	At all times	AMV Inc. Operations Manager
Remediation of spills	<p>All minor spills shall be remediated immediately by using a Spill Kit and disposing of contaminated material to an appropriately licensed facility.</p> <p>In the event of a serious/ major spill, it will be contained using appropriate Spill Kit and relevant specialists contacted regarding soil and ground water testing/ determine if further remediation is required.</p>	As required	AMV Inc. Operations Manager / Licensed contractor
Storage of waste hydrocarbons	<p>No bulk hydrocarbon storage shall occur on the site. Small quantities for hydrocarbons (for site maintenance machinery) shall not be stored within 200 m of the Protected Exclusion Area.</p> <p>All hydrocarbons will be stored in concrete bunded, covered, hardstand area (Figure 2, Appendix A).</p>	At all times	All personnel
Offsite disposal of waste hydrocarbons	<p>Wastewater traps/ storage areas in the self-bunded areas, such as the washdown bays, refuelling and minor servicing areas, will be maintained and regularly inspected.</p> <p>Hydrocarbon contaminated wastewater traps will be emptied as required by a licensed waste oil/ separator contractor</p>	Monthly or as required	Licensed contractor
	<p>All waste oils and oily materials, including oil filters and rags, used spill kit materials will be collected and stored in properly labelled containers at the waste oil storage area until they are collected by the waste oil recycler for disposal or recycling according to the relevant legislation and guidelines.</p>	Monthly or as required	Licensed contractor

4. Monitoring

Monitoring of the Site will be undertaken, by the AMV Inc., so as to meet the following performance criteria:

- All spill kits placed in appropriate locations and checked on a weekly basis or after an incident to ensure they are present and adequate materials are available for potential hydrocarbon spills
- No major accidental or uncontrolled release of hydrocarbons to the surrounding environment
- All minor releases of hydrocarbons to be managed, remediated and reported in the AMP Incidents Register
- All hydrocarbon wastes stored appropriately onsite and removed offsite to appropriately approved disposal locations on an as required basis
- All waste hydrocarbon volumes being transported off-site recorded for inclusion in annual reporting
- No detrimental impact to surface water and groundwater quality compared to baseline water quality records
- No hydrocarbons stored onsite following an event
- No complaints relating to hydrocarbon waste storage or handling.

Any incidents identified during Site inspections, which have not met the performance criteria, will be documented and corrective actions raised to mitigate these issues. These will be entered into the AMP Incident Register to track and monitor completion of corrective actions.

Where a hydrocarbon related pollution incident is a life-threatening incident or pollution emergency it will be reported to Department of Fire and Emergency Services (DFES) by calling 000. DFES will call out Department of Water and Environmental Regulation (DWER) for major pollution/ hazardous materials incidents.

Where a hydrocarbon related pollution incident occurs, which causes or threatens to cause a pollution emergency, that is not life-threatening it will be reported to DWER via the 24-hour Pollution Watch hotline as soon as practicable.

5. Review

The Hydrocarbon Management Plan will be reviewed and updated no later than annually. A review may occur sooner if there is a material change in risk, legal requirements or an incident relevant to hydrocarbon management. Management strategies will be reviewed for effectiveness and any corrective actions will be implemented.

6. References

- DoW. (2007). *Water Quality Protection Note 100: Motor sport facilities near sensitive water*. Perth: Department of Water.
- Roberts Gardiner Architects . (2021). *Albany Motorsport Park Masterplan - Stage 1*. Unpublished masterplan for City of Albany.

Appendix A

Figures

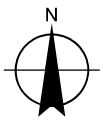
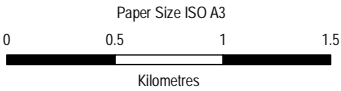
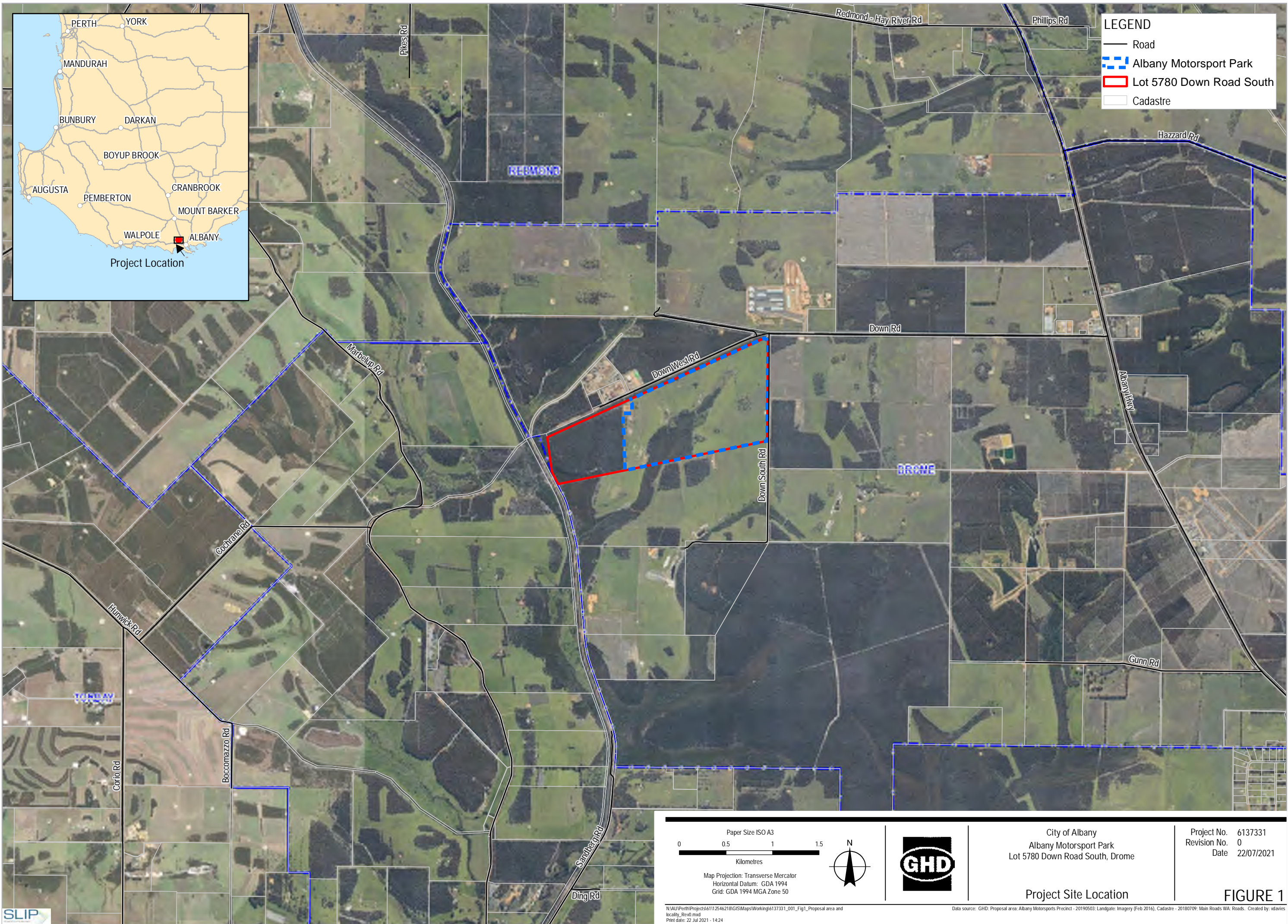
Figure 1 *Project site location*

Figure 2 *Master plan*



LEGEND

- Road
- ▬▬▬ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



City of Albany
 Albany Motorsport Park
 Lot 5780 Down Road South, Drome

Project No. 6137331
 Revision No. 0
 Date 22/07/2021

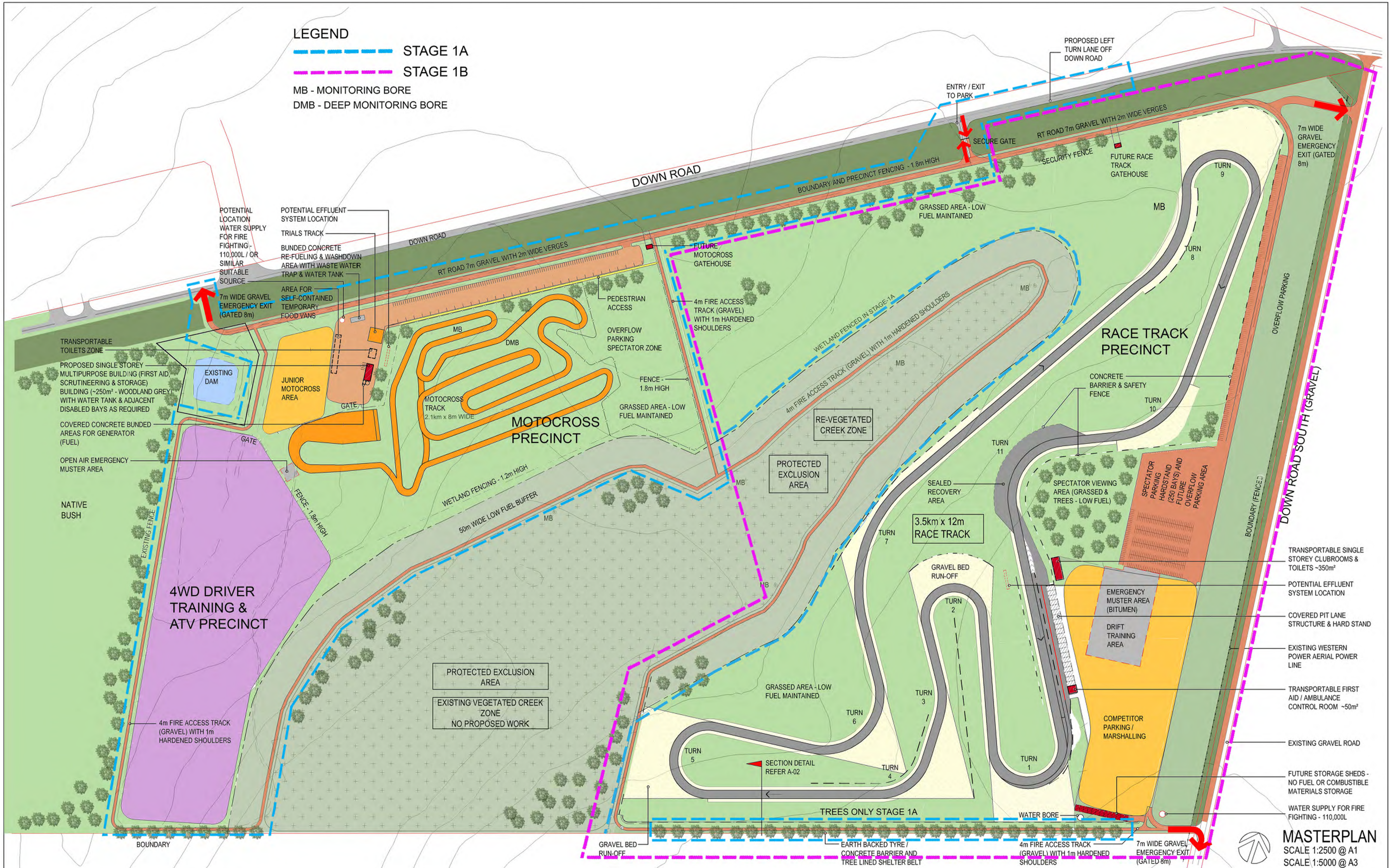
Project Site Location

FIGURE 1



LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

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project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file

drawn CB project number 21-002

scale	date	dwg no.	rev.
1:2500 @ A1	JULY 2021	A-01	E



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→ **The Power of Commitment**

Appendix F

Waste Management Plan



Albany Motorsport Park – Development Application

Waste Management Plan

City of Albany

27 July 2021

→ The Power of Commitment



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Author	Vicki Davies
Project manager	Vicki Davies
Client name	City of Albany
Project name	Albany Motorsport Park - Development Application
Document title	Albany Motorsport Park – Development Application Waste Management Plan
Revision version	Rev 0
Project number	12546218

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	V. Davies	J. Cramer		J. Foley		17/05/2021
S4	0	V. Davies	J. Cramer		J. Foley		

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Executive summary

The purpose of this Waste Management Plan is to ensure the safe and responsible segregation and disposal of waste materials generated during the operation of the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (the Site) (Figure 1, Appendix A). The Waste Management Plan has been developed to minimise potential impacts to the environment and/or human health from waste generation.

This Waste Management Plan is appended to the overarching Environmental Management Plan (EMP) which has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development.

The objectives of this management plan are to ensure:

- All waste is identified and characterises all potential waste streams
- Waste is stored and disposed of appropriately
- Disposal areas are managed and maintained
- A waste recycling program is in place to foster the “Reduce, Reuse and Recycle” philosophy.

The management of hydrocarbon storage and wastes are captured under the separate Hydrocarbon Management Plan (Appendix E of the EMP).

If waste is not appropriately managed within the AMP the following potential impacts/ risks may occur:

- Contamination of surrounding soil, groundwater, and surface water
- On-site waste category segregation to avoid cross-contamination not practiced
- Introduction and/ or spread of weeds
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value
- Community and stakeholder dissatisfaction.

Measures to mitigate environmental impacts, due to inappropriate waste characterisation and disposal, during the construction of the AMP have also been included in the Construction Management Plan (Appendix J of the EMP).

It is the responsibility of Albany Motorsport Venue Incorporated (AMV Inc) to implement this Waste Management Plan during operation of the AMP.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

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1. Introduction

1.1 Purpose of this report

The purpose of this Waste Management Plan is to ensure the safe and responsible segregation and disposal of waste materials generated during the operation of the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (the Site) (Figure 1, Appendix A). The Waste Management Plan has been developed to minimise potential impacts to the environment and/ or human health from waste generation.

This Waste Management Plan is appended to the overarching EMP which has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development.

Measures to mitigate environmental impacts, due to inappropriate waste characterisation and disposal, during the construction of the AMP have also been included in the Construction Management Plan (Appendix J of the EMP).

1.2 Objectives

The objectives of this management plan are to ensure:

- All waste is identified and characterises all potential waste streams
- Waste is stored and disposed of appropriately
- Disposal areas are managed and maintained
- A waste recycling program is in place to foster the “Reduce, Reuse and Recycle” philosophy.

The management of hydrocarbon storage and wastes are captured under the separate Hydrocarbon Management Plan (Appendix E of the EMP).

1.3 Legislation and guidelines

Waste and recycling activities are legislated under the following, but may not be limited to:

- *Contaminated Sites Act 2003*
- *Dangerous Goods Safety Act 2004*
- *Environmental Protection Act 1986*
- *Environmental Protection Regulations 1987*
- *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*
- *Waste Reduction and Recycling Act 2011*
- *Waste Avoidance and Resource Recovery Act 2007.*

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2. Waste sources and potential environmental impacts

2.1 Waste hierarchy

The waste hierarchy is set out in the *Waste Avoidance and Resource Recovery Act 2007* (WARR Act), which ranks waste management options in order of most preferred to least preferred (Plate 1).

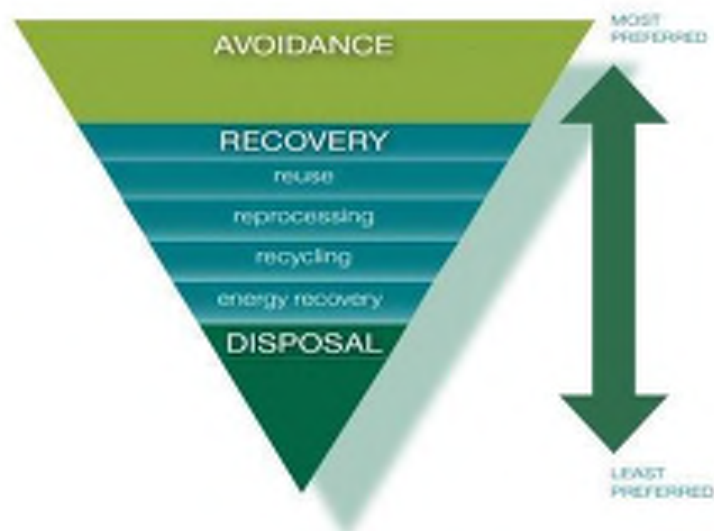


Plate 1 Waste hierarchy based on the WARR Act (Waste Authority, 2013)

2.2 Waste categories

Waste has the potential to impact human health and/ or the surrounding environment. The Waste Management Plan has been developed to provide a framework for waste management at the AMP. This management includes storage, handling and disposal requirements.

Waste in the context of this Waste Management Plan refers to all substances requiring recycling or disposal generated by the operation of the AMP, with the exception of the hydrocarbons, which are covered in the Hydrocarbon Management Plan (Appendix E of the EMP).

2.2.1 Non-hazardous waste

Non-hazardous wastes are wastes composed of, or containing, materials which are not harmful to humans and which would not have a serious impact on the environment. Non-hazardous wastes can include putrescible solids and liquids, inert solids, food waste, domestic waste, plastics and concrete

2.2.2 Hazardous waste

Hazardous wastes are defined by the “*Landfill Waste Classification and Waste Definitions (December 2019)*” (DWER, 2019) as “*the component of the waste stream which by its characteristics poses a threat or risk to public health, safety or the environment (includes substances which are toxic, infectious, mutagenic, carcinogenic, teratogenic, explosive, flammable, corrosive, oxidising and radioactive)*”.

Hazardous waste which may be used within the Site can include batteries, engine coolants and glycols, flammable liquids (hydrocarbons and fuels), fluorescent tubes, gas cylinders, cleaning chemicals, pesticides, herbicides, paint, solvents etc.

Hazardous waste, with the exception of hydrocarbons, will be addressed in this Waste Management Plan. Strategies for management and disposal of hydrocarbons will be addressed separately in the Hydrocarbon Management Plan (Appendix E of the EMP).

2.2.3 Recyclables

Recycle/recovery is the conversion of wastes into usable materials and/or extraction of energy or materials from wastes. Recyclable materials can include paper, cardboard, plastics, glass, metal, wood, tyres, vegetation and organic matter.

2.2.4 Liquid waste

For the purposes of this management plan liquid waste will include all effluent and grey water from transportable buildings. This plan excludes management of hydrocarbons which are addressed in Appendix E of the EMP.

2.3 Waste sources

Operation of the AMP is considered likely to generate wastes, excluding hydrocarbons, via the following sources:

- Putrescible waste from canteen, competitors and spectators
- Paper, plastic and printer cartridge waste through office use
- Recyclables such as, but not limited to, cardboard, aluminium cans, bottles, plastics etc from canteen, competitors and spectators
- Inert waste such as tyres from competitors
- Hazardous wastes such as, but not limited to, batteries, engine coolants and glycols, flammable liquids (hydrocarbons and fuels), fluorescent tubes, gas cylinders, cleaning chemicals, pesticides, herbicides, paint, solvents from competitors and site maintenance.
- Liquid waste from transportable toilet facilities.

It is expected that all competitors will remove their own hazardous wastes, such as coolant and other chemicals, tyres, batteries etc at the completion of each event and dispose of them at an appropriately licenced facility.

2.4 Potential environmental impacts

If waste is not appropriately managed within the AMP the following potential impacts/ risks may occur:

- Contamination of surrounding soil, groundwater, and surface water
- On-site waste category segregation to avoid cross-contamination not practiced
- Introduction and/or spread of weeds
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value
- Community and stakeholder dissatisfaction.

3. Management strategies, actions, timeframes and responsibilities

Broad management strategies have been developed to minimise potential impacts associated with waste. The management strategies, timing and responsibilities are outlined in Table 1.

It is the responsibility of the Operations Manager of the AMV Inc. to implement this Waste Management Plan during operation of the AMP.

Table 1 Waste management strategies, actions, timeframes and responsibilities

Management Strategies	Actions	Timeframes	Responsibility
Site induction	Site induction includes the following specific waste management components: <ul style="list-style-type: none"> – Waste hierarchy – Identification of waste types and associated disposal requirements – All waste/items removed from Site for appropriate disposal – Each competitor will remove their own waste offsite and dispose to an appropriately licensed facility. 	On entry to site	All personnel (AMV Inc. Operations Manager, volunteers and competitors)
	All responsible persons to undertake the necessary training on the handling of, and disposal of, waste material types generated at the AMP.	Site induction	AMV Inc. Operations Manager
Offsite disposal	Wherever practical and economically viable, all waste materials will be recycled.	At all times	All personnel
	Separation of waste for disposal, recycling and recovery.	At all times	All personnel
	Putrescible water will be collected and disposed of at a designated landfill site.	As required	All personnel
	Collection areas and bins will be appropriately maintained.	At all times	All personnel
	Provision of the appropriate number and types of bins on site for each of the different types of waste. Bins will be clearly marked and monitored for cross-contamination of wastes	As required	AMV Inc. Operations Manager
	For office waste, providing receptacles or processes for recycling (as a minimum), paper, general waste, aluminium cans, and bottles, batteries and fluorescent lighting tubes	As required	AMV Inc. Operations Manager
	Batteries, tyres, scrap metal, recycled materials and putrescible waste, hazardous waste and liquid waste from transportable toilets (Figure 2, Appendix A), will be transported off-site for disposal to appropriately licensed facilities.	As required	Licensed contractor
	Hazardous waste or materials shall be stored onsite in a covered, lockable, self-bunded building prior to either use onsite (i.e. pesticides, herbicides, paints) or removal offsite.	As required	AMV Inc. Operations Manager/ Licensed contractor

Management Strategies	Actions	Timeframes	Responsibility
Onsite reuse	Vegetation waste (weed free) will be managed on site through reuse for ground surface stabilisation and rehabilitation. Vegetation waste shall not be reused within the Protected Exclusion Area or Development Exclusion Buffer.	As required	AMV Inc. Operations Manager
Promote a high standard of housekeeping, thereby minimising litter and vermin attraction and infestation	Ensure domestic waste bins are lidded to minimise litter and vermin attraction and infestation	At all times	All personnel
Inspection and monitoring	Litter sweep of the site on weekly intervals required to collect any windblown waste	Weekly	AMV Inc. Operations Manager

4. Monitoring

All waste types and volumes generated on-site and being transported off-site will be recorded for the purpose of annual reporting.

Monitoring of the Site will be undertaken, by the AMV Inc., so as to meet the following performance criteria:

- Waste collections sites containing wastes with limited interaction with vermin/ pests
- No cross contamination of waste disposal bins
- All non-hazardous, recyclable, hazardous and liquid wastes removed offsite to appropriately approved disposal locations on an as required basis
- Identifying locations where additional bins may be required
- Presence of litter and windblown waste around the Site cleaned up on a weekly basis
- Record waste types and volumes generated on-site and being transported off-site.

Any waste incidents identified during Site inspections, which have not met the performance criteria, will be documented and corrective actions raised to correct these issues. These will be entered into the AMP Incident Register to track and monitor completion of corrective actions.

Where a waste related pollution incident is a life-threatening incident or pollution emergency it will be reported to Department of Fire and Emergency Services (DFES) by calling 000. DFES will call out Department of Water and Environmental Regulation (DWER) for major pollution/ hazardous materials incidents.

Where a waste related pollution incident occurs, which causes or threatens to cause a pollution emergency, that is not life-threatening it will be reported to DWER via the 24-hour Pollution Watch hotline as soon as practicable.

Nuisance issues and minor waste discharges will be reported to the City of Albany.

5. Review

This Waste Management Plan will be reviewed and updated no later than annually. A review may occur sooner if there is a material change in risk, legal requirements or an incident relevant to waste management. Management strategies will be reviewed for effectiveness and any corrective actions will be implemented.

6. References

- DWER. (2019). *Landfill Waste Classifications and Waste Definitions 1996 (As amended 2019)*. Perth: Department of Water and Environmental Regulation.
- Roberts Gardiner Architects . (2021). *Albany Motorsport Park Masterplan - Stage 1*. Unpublished masterplan for City of Albany.
- Waste Authority. (2013). *Waste Authority Communication on the Waste Hierarchy*. Government of Western Australia.

Appendix A

Figures

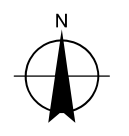
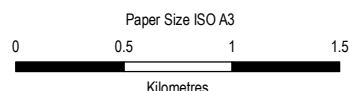
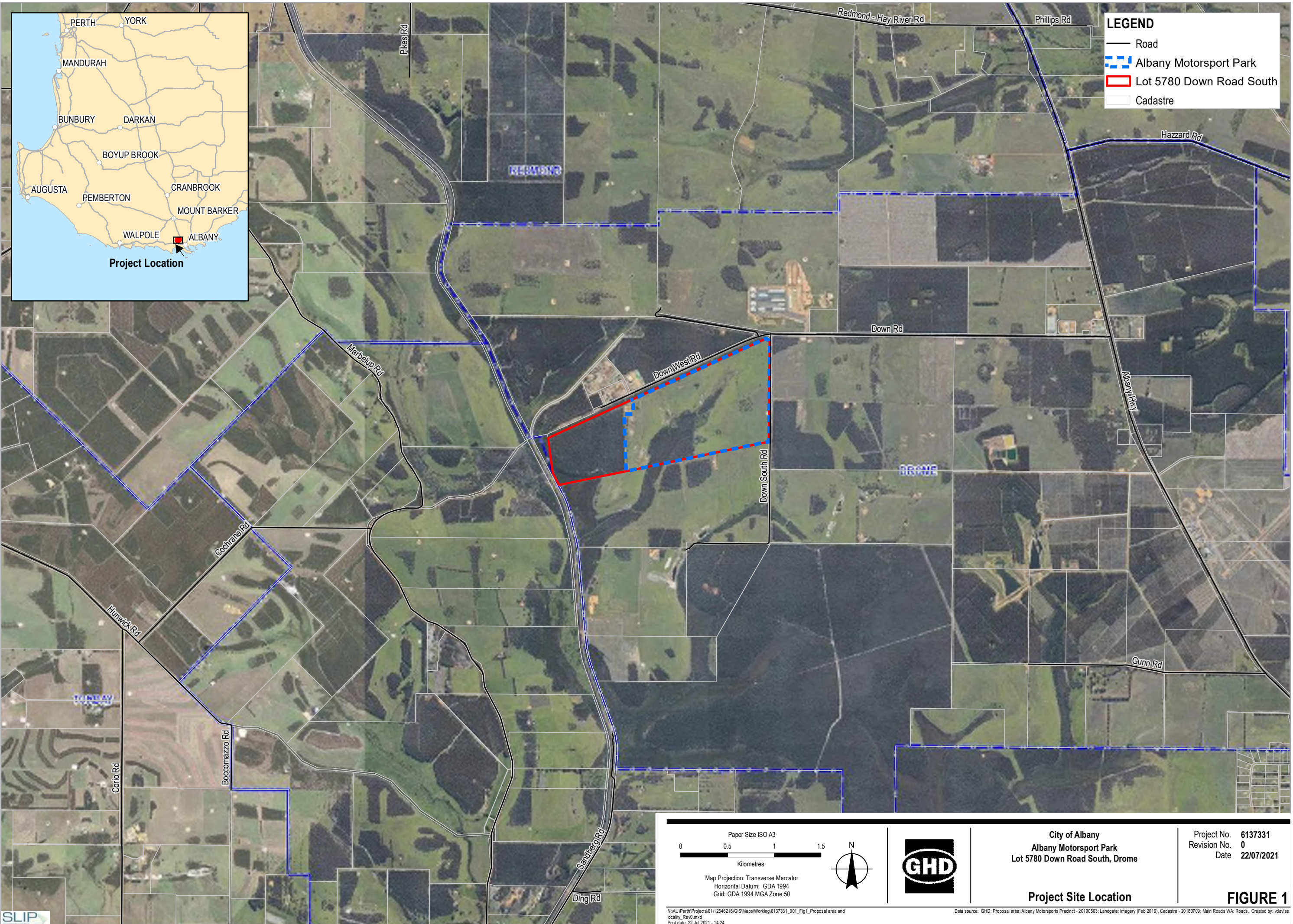
Figure 1 *Project site location*

Figure 2 *Master plan*



LEGEND

- Road
- ▬▬▬ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre



City of Albany
Albany Motorsport Park
Lot 5780 Down Road South, Drome

Project No. 6137331
Revision No. 0
Date 22/07/2021

Project Site Location

FIGURE 1

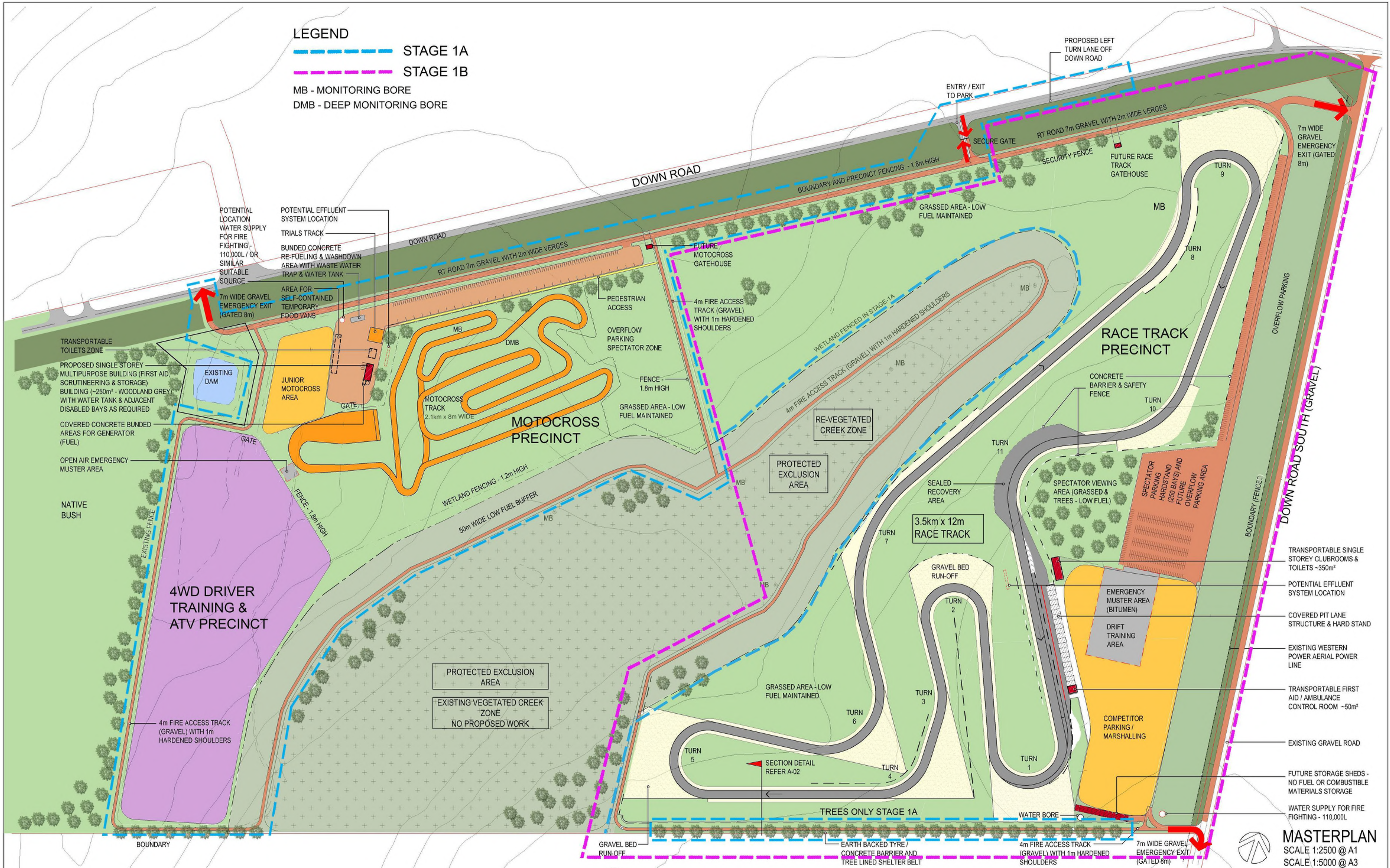
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Print date: 22 Jul 2021 - 14:24

Data source: GHD: Proposal area; Albany Motorsports Precinct - 20190503; Landgate: Imagery (Feb 2016); Cadastre - 20180709; Main Roads WA: Roads. Created by: vdvavies



LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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 telephone: (08) 9841 5455
 email: admin@rgarchitects.com.au

Roberts Gardiner
Architects

project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file

drawn CB project number 21-002

scale 1:2500 @A1
 date JULY 2021
 dwg no. **A-01** rev. **E**



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→ **The Power of Commitment**

Appendix G

Noise Management Plan



Albany Motorsport Park - Development Application

Noise Management Plan

City of Albany

27 July 2021

→ The Power of Commitment

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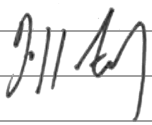
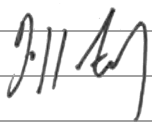
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Executive summary

The City of Albany (CoA) has engaged GHD Pty Ltd (GHD) to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure A.4.1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*¹ and Motorcycling Australia (MA) *Track Guidelines*².
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

The purpose of this Noise Management Plan (NMP) is to provide guidance on the management of construction and operational noise from the proposed Albany Motorsport Park.

- The construction NMP outlines noise standards, site wide noise control measures and a complaints procedure. Adoption of such measures will lead to construction noise meeting required noise standards.
- The operational NMP has been developed to allow the AMP to exceed the assigned noise levels in the *Environmental Protection (Noise) Regulations 1997*, provided motor racing activities are carried out in accordance with the operational NMP. This operational NMP outlines the noise control requirements and measures to achieve operational noise objectives.

As AMP is a new facility, it is recommended that GSMG undertake a noise monitoring program to measure levels of noise associated with the loudest motorsport events at AMP. Monitoring should take place on at least three occasions per 12 month period at the four closest noise sensitive premises at times corresponding to the worst case meteorological conditions for sound propagation to that premises.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.4 and the assumptions and qualifications contained throughout the report.

¹ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

² MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

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Glossary of acronyms and terms

AMP	Albany Motorsport Park
AMV	Albany Motorsport Venues Inc.
ATV	All-terrain vehicle
CEO	Chief Executive Officer
CoA	City of Albany
DWER	Department of Water and Environmental Regulation
FIA	Fédération Internationalé de l'Automobile
FIM	Fédération Internationalé Motocyclisme
GHD	GHD Pty Ltd
GSMG	Great Southern Motorplex Group Inc.
MA	Motorcycling Australia
NMP	Noise Management Plan
SPL	Sound pressure level
SWL	Sound power level
4WD	Four wheel drive

1. Introduction

1.1 Project description

The City of Albany (CoA) has engaged GHD Pty Ltd (GHD) to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure A.4.1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

Lot 5780 Down Road South, Drome is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Two areas within Lot 5780 are excluded from the AMP development and include 49.47 ha at the western end of the Site which is covered with native vegetation and a dam area (1.37 ha) on the northern boundary which is subleased to Plantation Energy.

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*^[3] and Motorcycling Australia (MA) *Track Guidelines*^[4].
 - To be licensed by Motorsport Australia for Fédération Internationale de l'Automobile (FIA) Grade 2 and Fédération Internationale Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the complex, the works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

A Master Plan, which illustrates the various aspects of the Site and staging areas, has been developed by the GSMG and CoA to support the Development Application for the AMP (Figure A.4.2, Appendix A).

1.2 Purpose of this report

The purpose of this Noise Management Plan (NMP) is to provide guidance on the management of construction and operational noise from the proposed Albany Motorsport Park at Lot 5780 Down Road South, Drome (the Site).

An operational NMP has been developed to allow the AMP to exceed the assigned noise levels in the *Environmental Protection (Noise) Regulations 1997*, provided motor racing activities are carried out in accordance with the operational NMP.

³ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

⁴ MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

1.3 Scope of work

The following scope has been completed:

- Introduction and site characteristics relevant to the management of noise from the AMP.
- A noise management plan for construction noise impacts during development of the AMP.
- An operational noise management plan for the AMP, to the satisfaction of the Department of Water and Environmental Regulation (DWER) and the Chief Executive Officer (CEO) of the City of Albany.

1.4 Limitations

This report has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and City of Albany as set out in Section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section(s) 1.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

2. Site characteristics

2.1 Existing site

Lot 5780 Down Road South, Drome is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Two areas within Lot 5780 are excluded from the AMP development and include 49.47 ha at the western end of the Site which is covered with native vegetation and a dam area (1.37 ha) on the northern boundary which is subleased to Plantation Energy.

The site is zoned 'Special Use – SU26' under City of Albany Local Planning Scheme No. 1.

2.2 Surrounding land use

Surrounding land use is shown in Figure A.4.3, Appendix A and summarised below:

- North: The site is bound to the north by Down Road West. The land is zoned 'General industry' directly adjacent to Down Road West, where the Mirambeena Timber Processing Precinct is located. Beyond this the land is within the industrial buffer area (IA4BA) within approximately 1000 m of the site and then zoned 'Priority Agriculture' beyond.
- East: The site is bound to the east by Down Road South, with land within the industrial buffer area within approximately 500 m of the site and then zoned 'Priority Agriculture' beyond.
- South: The site is bound to the south by the land within the industrial buffer area within approximately 500 m of the site and then zoned 'Priority Agriculture' beyond.
- West: The site is bound to the south by the land within the industrial buffer area within approximately 500 m of the site and then zoned 'Priority Agriculture' beyond.

2.3 Sensitive receptors

A number of residential receptors were identified in proximity to the AMP, as listed in Table 2.1 and shown in Figure A.4.4, Appendix A.

Table 2.1 Sensitive receptor locations

ID	Location (MGA94)		Distance from nearest AMP boundary (m)	Worst case wind direction (°)
	Easting	Northing		
SR01	569713	6133385	1150	310
SR02	567355	6132573	1120	10
SR03	564483	6133265	1930	80
SR04	565029	6134675	1920	100

The AMP is wholly located within the 'General industry' buffer area surrounding the Mirambeena Timber Processing Precinct which lies to the north of the Site (Figure A.4.4, Appendix A).

2.4 Topography

The surface elevation of the Site ranges from approximately 41 m AHD to 73 m AHD. The lowest elevation is on the southern boundary and extends through the centre of the Site within a gully (a tributary to Marbelup Brook) that lies in a north-easterly direction. The highest elevation occurs on the eastern boundary of the Site^[5].

⁵ GoWA. (2021). www.data.gov.wa.au. Retrieved from <http://www.data.gov.wa.au>

2.5 Climate

Albany is located on the south coast of Western Australia and the climate is broadly described as Mediterranean, with warm dry summers and mild wet winters. The nearest Bureau of Meteorology (BoM) official recording station is Albany (Station No. 9500). This station records temperature, rainfall, relative humidity, wind speed and direction and has data available dating back to 1877. Figure 2.1 illustrates recorded average monthly meteorological data for the Albany AWS BoM station for years 1877 to 2020^[6].

Temperatures range from a mean maximum of 22.9 °C in summer and drop to a mean maximum of 15.8 °C in winter. Mean minimum temperatures follow a similar trend, reaching 15.6 °C in summer and 8.2 °C in winter. Rainfall is low throughout the summer months and peaks in July, with a monthly average of 142.6 mm. The mean annual rainfall is 925.2 mm, with approximately 103.1 rain days a year. Relative humidity at Albany reflects the Mediterranean climate, demonstrating drier summers and a comparatively high relative humidity of 82 percent in the morning in winter^[6].

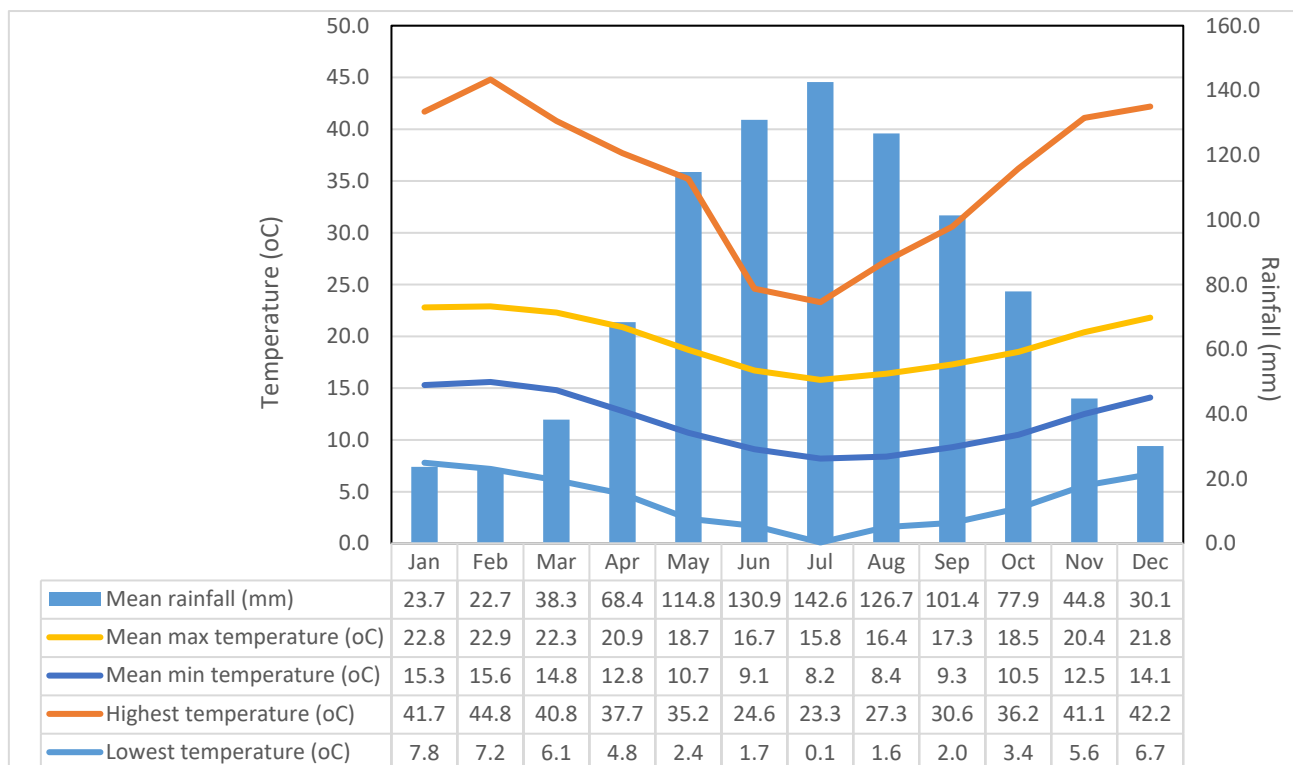


Figure 2.1 Mean rainfall and temperatures in the Albany region (Site No. 9500)

Figure 2.2 presents the seasonal and annual day time wind roses for Albany for the period from 2001 to 2019. As only day time events are scheduled at AMP, wind roses only include day time winds.

Review of the wind roses provides an indication of how often worst case noise levels may occur at each receptor, with wind speeds up to 4 m/s (yellow and light green categories on the wind roses) representing worst case wind speed during the day period. The prevalence of worst case wind conditions at each sensitive receptor is as follows:

- SR01 – Worst case wind direction is a north-westerly, which is likely to occur approximately five percent of day time hours (between 7:00 am and 7:00 pm) (219 hours per year).
- SR02 – Worst case wind direction is a northerly, which is likely to occur approximately three percent of day time hours (132 hours per year).

⁶ BoM. (2020). *Climate statistics for Australian locations*. Retrieved from Bureau of Meteorology: http://www.bom.gov.au/climate/averages/tables/cw_009500_All.shtml

- SR03 – Worst case wind direction is an easterly, which is likely to occur approximately two percent of day time hours (88 hours per year).
- SR04 – Worst case wind direction is a south-easterly, which is likely to occur approximately two percent of day time hours (88 hours per year).

For each sensitive receptor, worst case wind conditions are most likely to occur during autumn and winter, rather than spring and summer. Events will conclude earlier in autumn and winter as it is darker earlier, therefore being less intrusive than events which potentially conclude later during spring and summer.

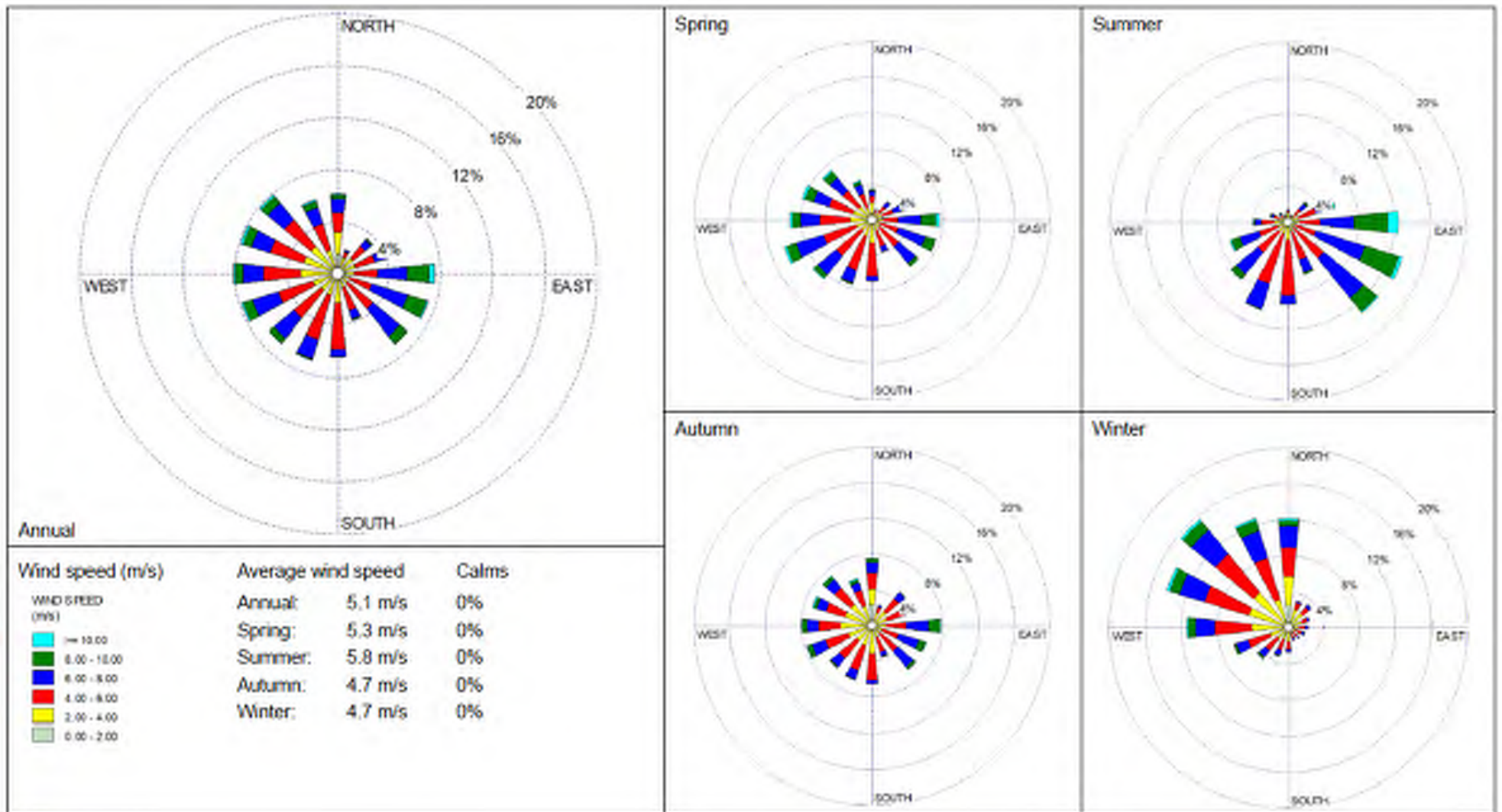


Figure 2.2 Annual and seasonal day time wind roses for observed meteorological data at Albany Airport

3. Construction noise management plan

3.1 Construction noise standards

Environmental noise is managed through the *Environmental Protection (Noise) Regulations 1997* (the Regulations). The Regulations specify requirements for construction activities.

The Regulations state that for construction work carried out between 7.00 am and 7.00 pm on any day which is not a Sunday or public holiday:

- Construction work must be carried out in accordance with control of environmental noise practices set out in Section 6 of *AS 2436-2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites* (AS 2436-2010).
- The equipment used for construction must be the quietest reasonably available.
- The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) may request that a noise management plan be submitted for the construction work at any time and complied with during construction activities.

For construction work done outside these hours:

- The construction work must be carried out in accordance with control of environmental noise practices set out in Section 6 of AS 2436-2010.
- The equipment used for construction must be the quietest reasonably available.
- The contractor must advise all nearby sensitive receptors likely to receive noise levels which fail to comply with the assigned levels under Regulation 8 of the work to be done at least 24 hours before it commences.
- The contractor must show that it was reasonably necessary for the work to be done out of hours.
- The contractor must submit to the CEO a noise management plan at least seven days prior to the commencement of out of hours work and the plan must be approved by the CEO before work commences. The plan must include details of:
 - Reasons for the construction work needing to be completed out of hours.
 - Details of activities which are likely to result in noise emissions that lead to exceedance of assigned levels.
 - Predictions of the noise emissions on the site.
 - Details of measures used to control noise (including vibration) emissions.
 - Procedures to be adopted for monitoring noise (including vibration) emissions.
 - Complaint response procedures to be adopted.

Construction works are due to commence as soon as all relevant approvals and permits are obtained (likely to be late 2021 / early 2022) and are expected to occur over a 18 to 24 month period.

Construction activities expected to be undertaken include earthworks, road and race track construction, building construction, waste removal and materials transfer.

Construction activities will occur during normal construction hours (7.00 am and 7.00 pm Monday to Saturday). Work outside these times would only occur if required for special tasks or to recover lost time due to project delays. Where possible, activities that could result in elevated noise levels will be scheduled during normal construction hours.

A construction noise assessment was completed in September 2020^[1], provided in Appendix C, which concluded:

¹ GHD, 2020., *Albany Motorsport Park - Noise Assessment*, Prepared for City of Albany, September 2020.

The closest noise sensitive receptor to any potential noise source during construction is located approximately 1120 m from the AMP. Noise levels exceeding the day assigned level of 45 dBA are not expected to impact on the closest noise sensitive receptors, with the exception of noisy equipment with a sound power level (SWL) higher than 115 dBA.

Accordingly, the construction noise impacts are considered negligible and able to be managed by adopting standard noise mitigation and management practices, as outlined in the following section, where required.

3.2 Site wide noise control

The Regulations require that construction work be carried out in accordance with Section 6 of AS 2436:2010 *Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*. AS 2436 outlines a series of measures which should be undertaken in order to manage noise emissions such that they result in the lowest practicable impact to neighbours.

These mitigation measures are applicable to both day and out of hours construction works. There is more importance placed on out of hours activities as these are generally more sensitive for residences.

3.2.1 Selection of alternate equipment or process

Where a particular item of equipment or activity is found to generate noise levels that exceed the assigned noise levels, it may be possible to select alternate equipment or approaches to reduce noise levels.

For example, smaller, quieter front end loaders will be used onsite rather than larger equipment, where operationally practicable.

3.2.2 Acoustic barriers

Barriers or screens may be effective in reducing noise levels from work sites, when located at either the source or receptors. Barriers at the source generally only reduce noise levels from static equipment. The extent of noise reduction achieved is dependent on the degree to which the line of sight is blocked. If receptor is totally shielded, noise reduction of up to 15 dBA is possible, whereas, partial obstruction may only achieve noise reduction of 7 to 10 dBA.

3.2.3 Silencing

Where processes or equipment are noisy, the use of additional silencing may be required. This can be in the form of engine shrouding or residential grade exhaust silencers.

Due to the distance to the nearest sensitive receptors, this measure is considered unlikely to be required.

3.2.4 Establishment of site practices

Establishment of site practices involves formulation of work practices to reduce noise exposure to nearby sensitive receptors. The following management and mitigation measures are available to ameliorate noise impacts as far as practicable:

- All plant and equipment should be selected to minimise noise emissions, maintained in good repair and operated in accordance with the manufacturer's instructions. All engine covers should be kept closed while equipment is operating.
- All combustion engine plant, such as generators, compressors and welders should be checked to ensure they produce minimal noise with particular attention to residential grade exhaust silencers.
- Fixed equipment (i.e. pumps, generators and air compressors) should be located as far as practicable from noise sensitive receptors and locations of equipment rotated to provide respite to receptors.
- Where practical, machines will be operated at low speed or power and will be switched off when not being used rather than left idling for prolonged periods.
- Machines found to produce excessive noise compared to industry best practice will be removed from the site or stood down until repairs or modifications can be made.

- Where practical, impact wrenches will be used sparingly within close proximity to sensitive receptors, with hand tools or quiet hydraulic torque units preferred. Metal to metal contact on material should be avoided where practical.
- Whenever possible, loading and unloading areas should be located as far as practicable from the noise sensitive receptors.
- Materials dropped from heights into or out of trucks should be minimised. Care will be taken when loading or unloading to avoid noise resulting from material being dropped or thrown into the tray of trucks.
- Vehicles will be kept properly serviced and fitted with appropriate mufflers. The use of exhaust brakes will be eliminated, where practicable.
- Minimise reversing. The preference will be for broadband (croaker) reversing alarms to be installed onsite equipment, subject to meeting occupational health and safety requirements.
- Where practical, vehicular movements to and from the construction site should be undertaken during normal working hours. Information to be provided to truck drivers outlining designated vehicle routes, parking locations and delivery hours.
- Vehicle routes to and from site will be selected to minimise impact to neighbours, by following major roads where possible. Truck drivers will also be advised of using good techniques when driving through residential areas, in particular to limit engine braking.

3.2.5 Strategic positioning of processes onsite

Strategic positioning of processes onsite may involve changing the location of particular processes or activities such that direct line of site to the receptor is obstructed.

3.2.6 Site induction

All site managers and workers should be made aware of the noise limits established for the site and noise control measures to be implemented. Site managers to review daily expected noise emission from activities and prepare options for noise control and providing respite to specific residential areas.

Prior to commencing any new activity, determine the likely effect on adjoining properties. Where the level of noise is likely to be high, carry out the following procedure:

- Decide if alternate methods are available for the specific situation.
- Implement necessary procedures to minimise the effect on adjoining properties.
- Advise the nominated contact in sufficient time to allow a minimum of 24 hours' notice to be given to neighbours.

In addition, all site workers should be sensitised to the potential for noise impacts and encouraged to take practical and reasonable measures to minimise the impact during the course of their activities, including:

- No radios are to be played during the night in work areas.
- Two-way radios, public address systems or other methods of site communication are also to be limited so as to not affect residents.
- Plant and equipment will be regularly inspected and maintained to minimise noise levels.

3.3 Complaints procedure

Two weeks before construction activity is to begin all noise sensitive residents within 2 km of the AMP boundary are to be provided with contact details for the direction of noise complaints related to construction work. Such information will also be provided on signage at the entrance of the site.

3.3.1 Normal working hours

In the event that noise complaints are received, prompt follow-up will be required as follows:

- Immediate attention to urgent/critical issues: Complaints will be reported to the Approving Authority (and other relevant stakeholders) as soon as possible during normal working hours. Multiple complaints regarding the same issue will also be reported to the Approving Authority (and other relevant stakeholders) as soon as possible during normal working hours.
- Acknowledgment of contact: Each complaint received will be acknowledged within 24 hours of the initial contact and logged into the management system.
- Offered additional information: Each caller will be given the opportunity to be added to the project database, which is used to distribute project information and updates.
- Registration of noise complaint: Completed complaint form to be retained and made available to Approving Authority or an authorised DWER officer on request.
- Determine whether any unusual activities were taking place at the time of the complaint that may have generated higher noise levels than usual.
- Assessment of noise level if above the assigned noise level – complaint to be forwarded to Approving Authority. Conduct noise monitoring at the location of the complainant (if required).
- Corrective action to mitigate noise emission if found to be unreasonable using pre-determined mitigation measures.
- Reassessment at conclusion of works to ensure the implemented noise control procedure was successful.

Complaints received will be reported to the Approving Authority on a monthly basis. The complaint report will include: the location, date, time, issue summary, response from the contractor and action taken and resolution status.

3.3.2 Out of hours

In addition to the above, out of hours contacts and complaints will be received as follows:

- All calls will be made to the contractor's Site Manager.
- The Site Manager will provide further information to resolve the enquiry and if required, contact the site Night Shift Supervisor to further investigate the complaint.

To assist in resolving complaints made directly to the Approving Authority outside of normal working hours, the mobile contact number for the Site Manager will be provided.

If work must continue outside of the approval conditions at short notice i.e. during the shift for safety reasons, the Night Shift Supervisor will contact the Approving Authority as soon as possible the following morning.

Emergency issues outside normal working hours will be raised with the Approving Authority as soon as possible during the next business day.

4. Operational noise management plan

An operational NMP has been developed to allow the AMP to exceed the assigned noise levels in the *Environmental Protection (Noise) Regulations 1997*, provided motor racing activities are carried out in accordance with the operational NMP.

This operational NMP, provided at Appendix B, outlines the noise control requirements and measures to achieve operational noise objectives.

Appendices

Appendix A

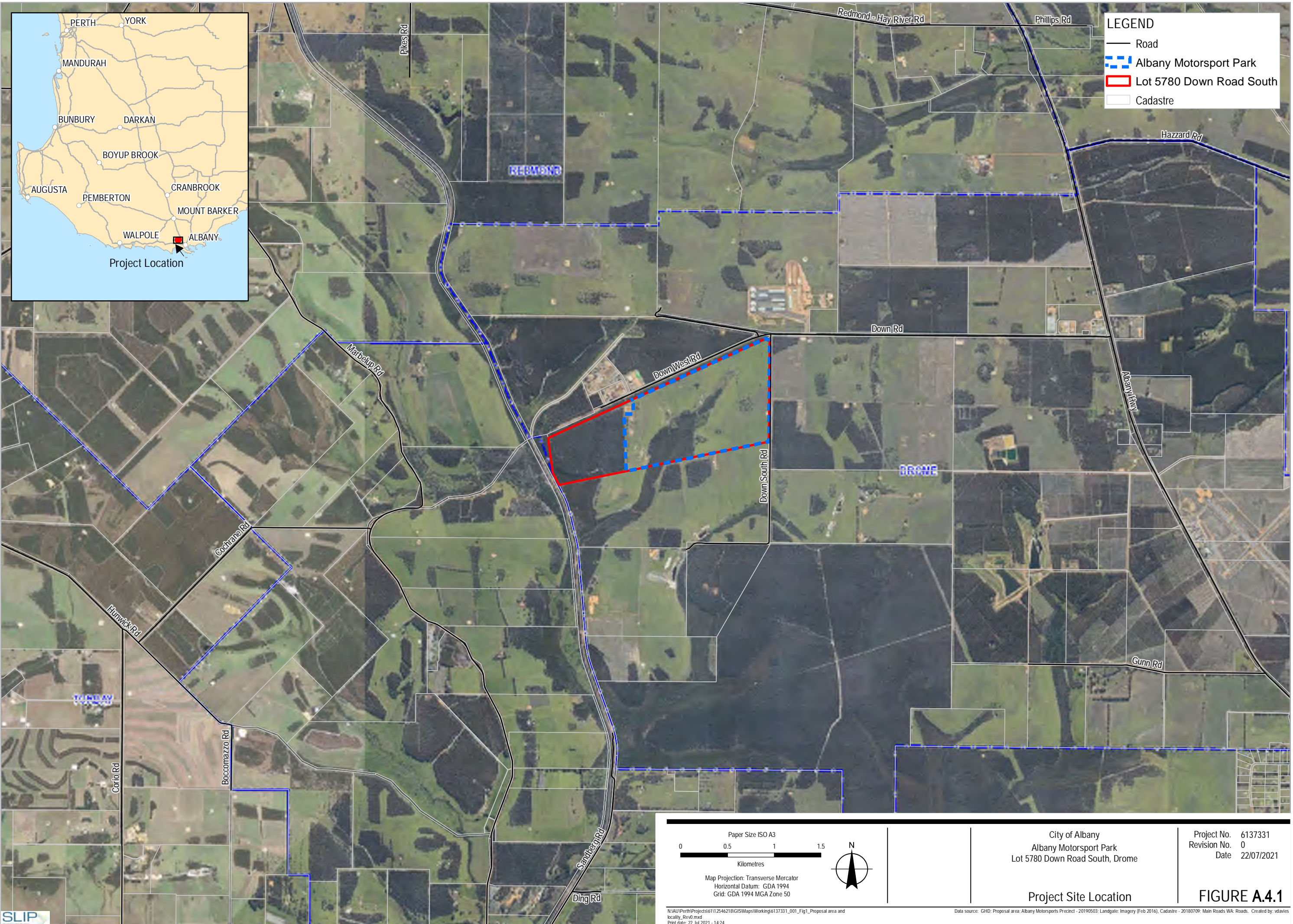
Figures

Figure A.4.1 Project site location

Figure A.4.2 Master plan

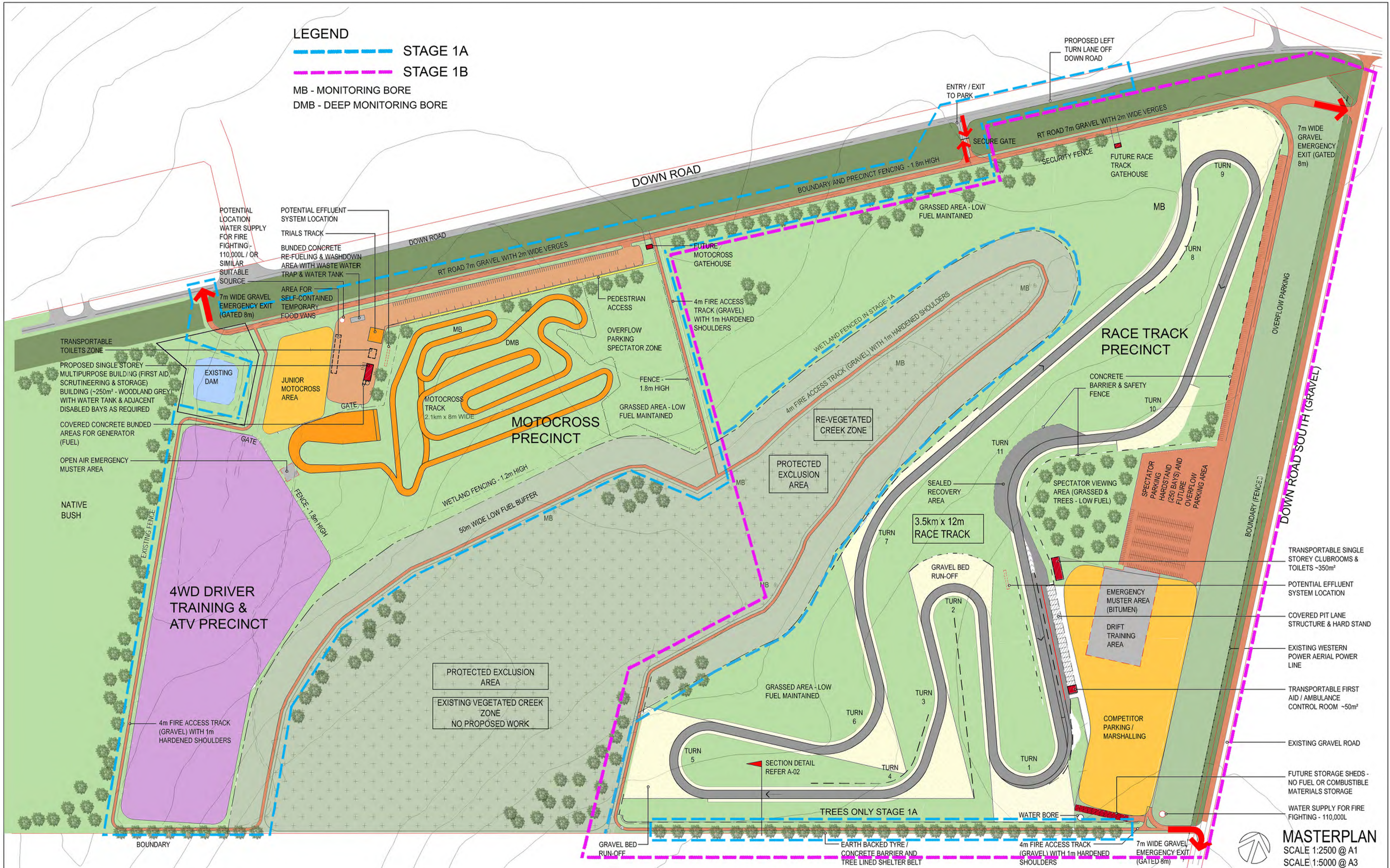
Figure A.4.3 City of Albany Local Planning Scheme

Figure A.4.4 Sensitive receptor locations



LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

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Architects

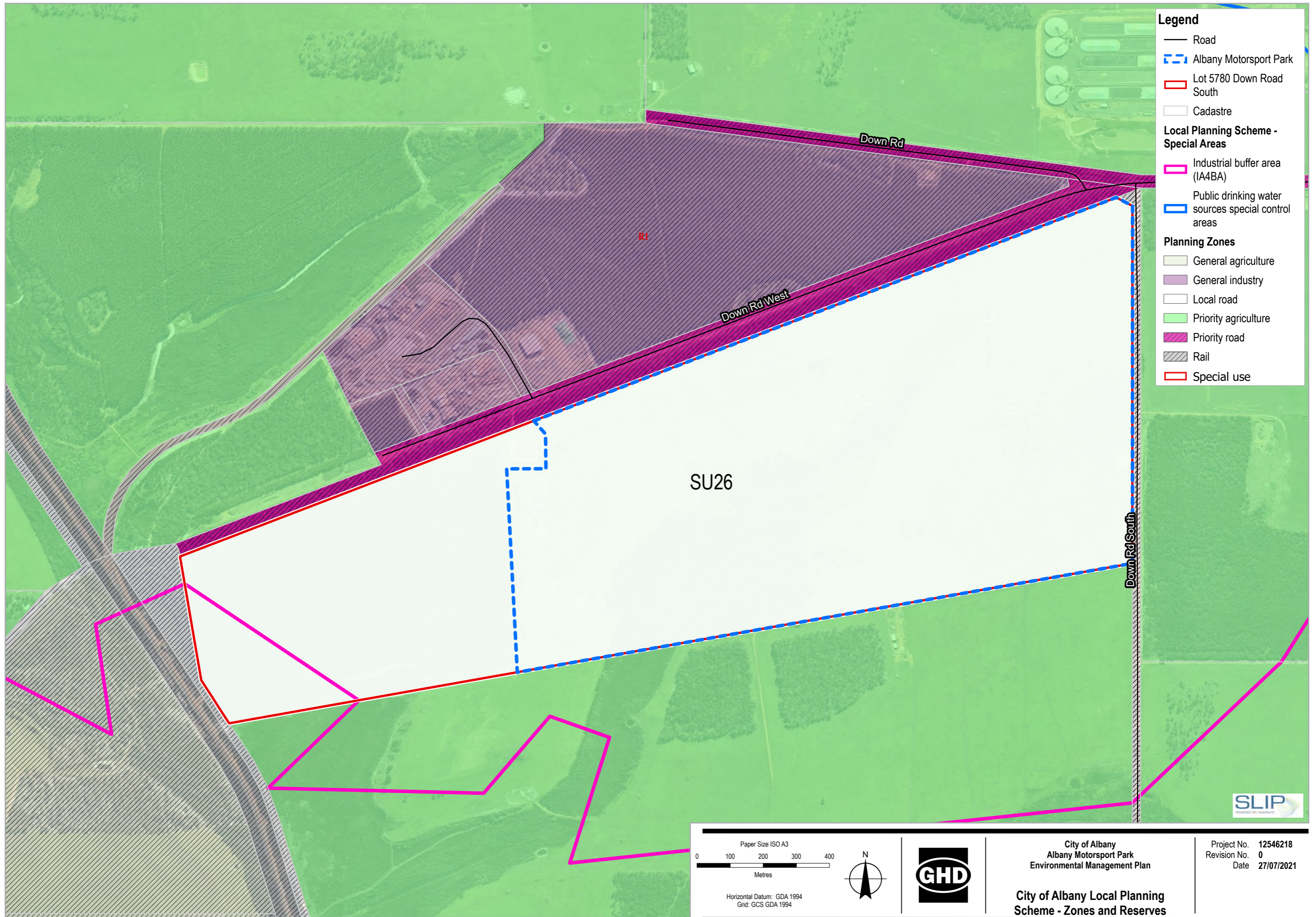
project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file

drawn CB project number 21-002

scale 1:2500 @A1
 date JULY 2021
 dwg no. **A-01** rev. **E**



Legend

- Road
- Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre

Local Planning Scheme - Special Areas

- ▭ Industrial buffer area (IA4BA)
- ▭ Public drinking water sources special control areas

Planning Zones

- ▭ General agriculture
- ▭ General industry
- ▭ Local road
- ▭ Priority agriculture
- ▭ Priority road
- ▭ Rail
- ▭ Special use

SU26

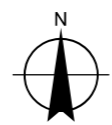
Down Rd

Down Rd West

Down Rd South



Horizontal Datum: GDA 1994
Grid: GCS GDA 1994

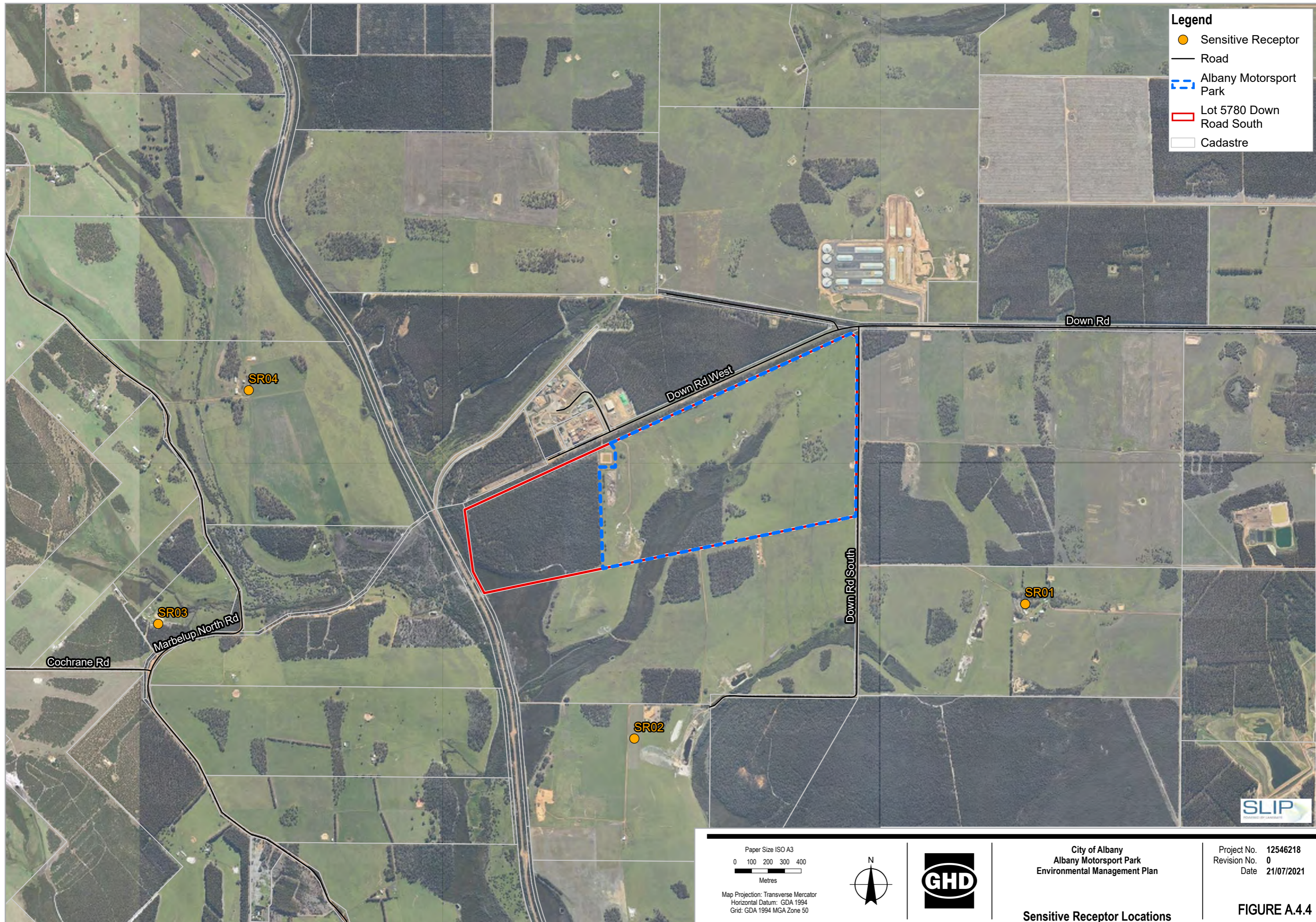


City of Albany
Albany Motorsport Park
Environmental Management Plan

City of Albany Local Planning Scheme - Zones and Reserves

Project No. 12546218
Revision No. 0
Date 27/07/2021





Appendix B

Operational Noise Management Plan

ALBANY MOTORSPORT VENUE INC.

NOISE MANAGEMENT PLAN

ALBANY MOTORSPORT PARK

This noise management plan ('the NMP') has been approved by the Chief Executive Officer (CEO) of the City of Albany ('the CEO') for the purposes of Division 3 of the Environmental Protection (Noise) Regulations 1997.

1. Definitions

Definition	
Race	A specific race held within an Event.
Event	A discrete group of races making up a racing program to be held at the AMP in any day or consecutive days. Races in which only muffled road going vehicles compete or make use of the Venue will not be classed as an Event.
Major Event	May include State, National or International championships or be an event with a significant feature attraction.
State Events	An event that may be conducted over one to three days; and is associated with a State motor sports body.
National Events	An event that may be conducted over one to four days; and is associated with a National motor sport body.
International Event	An event that may be conducted over one to four days; and is associated with an International motor sport body.
Special Event	An event that is to be open to the public is proposed to be held at the venue, but the event cannot be conducted within the limits for scheduled race meetings and practice sessions. The Occupier is to apply to the CEO for approval of the event under Regulation 18.
Event Duration	The period of time from the scheduled start time of the first race or practice session to the scheduled finish time of the last race in the event.
Media Session	Demonstration by racing vehicles or exhibition vehicles for media or corporate purposes. Media Sessions do not constitute events or practice sessions.
Race Track	The multi-use sealed track designed to Motorsport Australia and Motorcycling Australia specifications for car and motorcycle racing, learner, emergency services and commercial driver training.
Motocross Track	The sandy/clay circuit designed to Motorcycling Australia specifications for off-road motorcycles. This includes a Junior Motocross Track and Trials area.
4WD Training Precinct	An area designed for four wheel drive and all-terrain vehicle training.

2. Venue details

Venue details	
Name of venue	Albany Motorsport Park (the Park)
Location of venue	Lot 5780 Down Road South, Drome
Occupier and Manager of venue	Albany Motorsport Venue Inc. (AMV)
Affiliations	Motorsport Australia and Motorcycling Australia
Venue maps	Attachment 1 – Map of venue showing facilities

3. Application

The NMP applies:

1. While the Occupier is the leaseholder of the Park
2. To racing activities at the Park organised by the Occupier
3. To the emission of noise during a racing activity at the Park
4. From the date of approval by the CEO for a period of three years

Regulation 7 of the *Environmental Protection (Noise) Regulations 1997* does not apply to noise emitted from the Park during a racing activity if the activity is conducted in accordance with the NMP. Predicted noise impacts from the operating Park are presented in the *Albany Motorsport Park - Noise Assessment*¹.

The Occupier must ensure that the conditions and ancillary measures designated as such in the CEO's approval notice are implemented.

4. Classes of vehicles

The following classes of vehicles which may compete in events at this venue may include but is not limited to:

- Various classes of cars including street cars, Formula Vee, Formula Classic, Formula Ford, HQ Holden sedans, saloon cars, sports sedans, production sports cars and marque sports cars, historic touring cars, improved production cars, Formula 1000 and Excel Cup.
- Various drift cars
- Various classes of motorcycles including historic, 125 cc, 250 cc, 500 cc, Grand Prix, Superbikes, solo and sidecar bikes
- Various classes of motocross bikes including junior, senior, 50 cc, 65 cc, 85 cc, 125 cc, 250 cc and 450 cc
- Various other vehicles of smaller engine capacity, including road registered vehicles

5. Types of racing activities

The types of racing events covered by this Noise Management Plan include:

- Car test and tune and practice days, coaching and driver assessment
- Car speed events (Club, State, National and International)
- Motorcycle test and tune days, coaching and rider assessment
- Motorcycle speed events (Club, State, National and International)
- Motocross training, coaching and rider assessment
- Motocross events including Junior, Trial and Minikhana events (Club, State and National)

¹ GHD, 2020., *Albany Motorsport Park - Noise Assessment*, Prepared for City of Albany, September 2020.

- Drifting days (Club and State)
- Motorkhana events (Club)
- Special Events

6. Duration and timings of events

Duration of racing events covered by this Noise Management Plan as outlined below.

Driver and rider training with road registered cars and motorcycles

Includes commercial and emergency services driver training			
Type	Day(s)	Time	How often
Driver training (road registered)	Monday - Friday	10:00 am to 4:00 pm	Not when circuit allocated for test and tune.

Driver and rider test and tune with road registered and speed vehicles

Includes coaching clinics and driver/rider assessment Includes vehicle scrutineering Cars and motorcycles on the same day but do not share the track No more than six vehicles permitted on the track at the same time (as per track permits) This includes drifting test, tune and training Multiple vehicle disciplines may not be using the track at the same time			
Type	Day(s)	Time	Comment
Car test and tune on race circuit	Friday	12:00 pm to 4:00 pm	Once per fortnight
Motorcycle test and tune on race circuit	Friday	12:00 pm to 4:00 pm	Once per fortnight
Drifting test and tune at race circuit	Friday	12:00 pm to 4:00 pm	Once per fortnight
Motocross	Tuesday and Thursday	3:00 pm to 6:00 pm	Weekly

Club speed/competition events

No performance vehicle engines permitted to be started before 8:00 am or 9:00 am on Sundays and public holidays or after 6:00 pm all days Motocross includes main track, junior track, trials and minikhana events Additional race circuit events can be held if motocross is not being conducted Additional motocross events can be held if race circuit events are not being conducted Motocross is generally a seasonal sport conducted during the cooler damp months of May to October			
Type	Day(s)	Time	How often
Car speed events	Saturday and Sunday	9:00 am to 6:00 pm	Once per month
Motorcycle speed events	Saturday and Sunday	9:00 am to 6:00 pm	Once per month
Drifting events	Saturday and Sunday	9:00 am to 6:00 pm	Once per month
Motorkhana events	Saturday and Sunday	9:00 am to 6:00 pm	Once per month
Motocross events	Saturday and Sunday	9:00 am to 6:00 pm	Once per month

In addition to the above:

- The 4WD Precinct may be used any day of the week between the hours of 9:00 am to 6:00 pm with road registered vehicles only, and with quadbikes and all-terrain vehicles.
- All events must have a Motorsport Australia, Motorcycling Australia or Motorcycling Western Australia permit and hence comply with the relevant sound emissions specification.
- Drivers and riders in events, including test and tune, must be registered with the appropriate governing motor sport body.
- State events in all disciplines are conducted the same as club events but will attract more entrants and spectators. State events will replace a club event and follow the same format.
- National events in all disciplines are conducted under the control of the relevant national body and will be classified as Major events. These events have a long lead time allowing the community to be well informed.
- International events in all disciplines are conducted under the control of the relevant international body and will be classified as Major events. These events have a long lead time allowing the community to be well informed.
- Special event is an event that is to be open to the public that is proposed to be held at the venue, but the event cannot be conducted within the limits for scheduled race meetings and practice sessions. The Occupier is to apply to the CEO for approval of the event under Regulation 18.

7. Limitations on racing activities

The following limits apply to scheduled race meetings and practice sessions:

- Race Events on the multi-use track may not coincide with events on the motocross tracks.
- State Events may be conducted on one to three days between the hours of 8:00 am to 6:00 pm on Monday to Saturday and 9:00 am and 6:00 pm on Sunday and public holidays.
- National Events may be conducted on one to four days between the hours of 8:00 am to 6:00 pm on Monday to Saturday and 9:00 am and 6:00 pm on Sunday and public holidays.
- International Events may be conducted on one to four consecutive days between the hours of 8:00 am to 6:00 pm on Monday to Saturday and 9:00 am and 6:00 pm on Sunday and public holidays.
- Special Events – A significant event approved by the CEO of CoA of which those living within the noise buffer area must be notified not less than 28 days in advance.
- Where a Special Event that is to be open to the public is proposed to be held at the Venue, but the event cannot be conducted within the limits for scheduled race meetings and practice sessions, the Venue Manager is to apply to the CEO of CoA for approval of the event under Regulation 18.

8 Noise emissions - General

8.1 Access to venue

In order to prevent noise emissions due to unauthorised use of the race track or motocross tracks by racing vehicles, the gates to these precincts are to remain locked at all times other than:

1. In preparation for and during race meetings and practice sessions approved by the Venue Manager
2. In preparation for and during Special Events as approved by the CEO of the City of Albany
3. During maintenance or improvement of the precinct facilities
4. Driver and rider training on the race track

8.2 Responsibility for noise measurement and record keeping

The Venue Manager will ensure that only persons nominated by the Club as their Sound Control Officer (SCO) and competent in utilising equipment conforming to the requirements of Section 9.3 and Section 10.3 are engaged as required to assess compliance. Also, that all noise measurements, testing requirements and record keeping are met for Venue events under the control of the Venue Manager to the requirements of the CEO of CoA.

9 Noise emissions from car events

Each car that is to use the Venue must have a record of test indicating that its noise level does not exceed a noise limit of 95 dBA ('noise limit') when tested at 30 m from the vehicle in accordance with the noise test procedure (Section 9.1). Racing car sound emissions and sound testing will comply with the current Motorsport Australia specification on noise emission.

Vehicles that have been measured in accordance with accepted measurement procedures (Section 9.1) at another racing venue are deemed to have complied with the requirement for testing of noise emissions providing the measurements have been conducted by a nominated Sound Control Officer.

If the exhaust system or engine of a racing vehicle is modified or replaced after the level of noise emitted by the vehicle had been measured, the Venue Manager is to ensure that the level of noise emitted by the vehicle is measured again and the vehicle complies before the vehicle is raced at an event.

Noise test results are valid for 24 months only.

Information shall be recorded as part of normal vehicle scrutineering and shall include:

1. Details of the racing vehicle tested including make, model and exhaust type
2. The racing vehicle's owner
3. The date and location of testing
4. Make, model, serial number and copies of calibration certificate of the sound level meter used for measurement
5. Name and signature of the Sound Control Officer measuring noise levels
6. Measured sound pressure (noise) level

Records of tests are to be provided to the Venue Manager who will provide them to the CEO CoA on request.

9.1 Noise test procedure

The level of noise emitted by a racing vehicle (the tested vehicle) is to be measured with the sound level meter/microphone fixed on a tripod, in the horizontal position, 30 m from the edge of the track at a high speed point with the measuring microphone not less than 1.2 m or more than 1.4 m above the ground plane.

Tests will be carried out as requested by the Sound Control Office and can be repeated at random.

9.2 Instruments

Instruments used to measure noise emissions shall:

1. Be calibrated in accordance with and otherwise comply with Schedule 4 of the *Environmental Protection (Noise) Regulations 1997*.
2. Be operated by a Sound Control Officer who is approved by the Venue Manager.
3. Set to fast response, A weighted and high 80-130 dB range.
4. Meet or exceed the relevant performance requirements of a Class 2 sound level meter.

10 Noise emissions from motorcycle events

Each motorcycle that is to use the Venue must have a record of test indicating that its noise level does not exceed the permissible sound emission level specified in the current Motorcycling Australia *Manual of Motorcycle Sport Appendix C: Sound Emissions and Fuel* when tested in accordance with that Manual.

Motorcycling Australia sound emission limits and test methods

	Road Race	Historic Road Race	Motocross and Supercross	Classic MX and Classic Dirt Track	Trial	Minikhana
Sound emission limit, dBA	95	95	112	95	112	112
Method	A	A	B	A	B	B

Vehicles that have been measured in accordance with accepted measurement procedures (Section 10.1) at another racing venue are deemed to have complied with the requirement for testing of noise emissions providing the measurements have been conducted by a nominated Sound Control Officer.

If the exhaust system or engine of a racing vehicle is modified or replaced after the level of noise emitted by the vehicle had been measured, the Venue Manager is to ensure that the level of noise emitted by the vehicle is measured again and the vehicle complies before the vehicle is raced at an event.

Noise test results are valid for 24 months only.

Information shall be recorded as part of normal vehicle scrutineering and shall include:

1. Details of the racing vehicle tested including make, model, and exhaust type
2. The racing vehicle's owner
3. The date and location of testing
4. Make, model, serial number and copies of calibration certificate of the sound level meter used for measurement
5. Name and signature of the Sound Control Officer measuring noise levels
6. Measured sound pressure (noise) level

Records of tests are to be provided to the Venue Manager who will provide them to the CEO CoA on request.

10.1 Noise test procedure

Tests will be carried out as requested by the Sound Control Office and can be repeated at random.

10.1.1 Method A – 30 m ride by test (road race, historic road race and classic MX and classic dirt track)

The sound levels will be measured with the sound level meter/microphone fixed on a tripod, in the horizontal position, 30 m from the edge of the track at a high speed point with the measuring microphone not less than 1.2 m or more than 1.4 m above the ground plane.

10.1.2 Method B – 2 metre maximum method (motocross and supercross, trial and minikhana)

The level of noise emitted by a racing motorcycle (the tested vehicle) is by using a sound level meter (2 m maximum method) with the motorcycle on its wheels or on a stand with a hot engine in accordance with *Appendix C: Sound Emission and Fuel* of the Motorcycling Australia *Manual of Motorcycle Sport* (Attachment 2).

10.3 Instruments

Instruments used to measure noise emissions shall:

1. Be calibrated in accordance with and otherwise comply with Schedule 4 of the *Environmental Protection (Noise) Regulations 1997*.
2. Be operated by a Sound Control Officer who is approved by the Venue Manager.
3. Set to fast response, A weighted and high 80-130 dB range.
4. Meet or exceed the relevant performance requirements of a Class 2 sound level meter.
5. Copies of the calibration certificates must be provided to the CEO CoA on request.

11 Scrutiny of racing vehicles

1. An Accredited Scrutineer or Sound Control Officer shall be designated for the duration of a race meeting and practice session to evaluate noise emissions from race vehicles.
2. The Accredited Scrutineer or Sound Control Officer may require a new test where a racing vehicle has been modified to the extent that the previous record of noise test is no longer representative of noise emission from the vehicle.
3. If a racing vehicle at the event emits a level of noise that is conspicuously louder than that of the other racing vehicles in the same class at the meeting, the Accredited Scrutineer or Sound Control Officer may require that vehicle to immediately cease racing and may prevent that vehicle from further racing at the Venue until that vehicle's noise level has been shown to comply with the noise limit.

12 Public address system

There will be no permanent public address (PA) system installed. A temporary PA system consisting of loudspeaker towers placed around the track, facing towards the track and angled down towards the track will be installed as required.

The loudspeakers are not to be moved or adjusted by any person without the approval of the Venue Manager.

Sound emissions from the public address system at the Venue are to be under the control of the Venue Manager, who is to designate persons who are authorised to use the system.

The public address system controls are to be set to provide a suitable audience sound level during the preliminary meeting each year, with the assistance of such persons as the Venue Manager requires, ensuring the minimum practicable 'spill' of sound into nearby noise sensitive areas.

The public address cabinet is to be locked for access only by the Venue Manager and his authorised assistants at all other times.

The public address system will only be used during race meetings; it is not to be used during practice sessions or at any other time except in the case of an emergency.

13 Recording and reporting

The Venue Manager is to make a record of all racing vehicles that have been required to cease racing by the Accredited Scrutineer or Sound Control Officer under Section 11 and retain that record for two years in a form that shows:

1. Details of the racing vehicle required to cease racing
2. The racing vehicle's owner
3. The date and time at which the request to cease racing occurred
4. The action taken by the driver of the racing vehicle following the request

5. The action taken by the owner of the racing vehicle to remedy the excessive noise emissions

If requested to do so in writing by the CEO CoA, the Venue Manager is to forward a copy of all or any of the records made under Section 13 within 21 days of the request.

14 Information to public

The times and dates on which it is proposed to hold events at the Venue will be made publicly available via the Venue website and through social media channels before the start of each season. Should this program be changed for any reason during the season, the details of the changes will be made publicly available via the Venue website and social media channels before the changes occur.

A schedule of programmed events, regularly updated, including test and tune, practice sessions and media sessions (where possible), is to be publicly available at all times on the Venue website.

Notice of the program for racing activities for a season is to be published and distributed to members of the public as follows:

1. The notice is to be published on the Venue website, showing proposed dates of racing activities (where known) for the coming season and the telephone number for noise complaints.
2. In addition to (1), the notice is to be delivered to the address of each noise sensitive premises at locations within 5 km of the venue.
3. The notice is to be published and delivered during the month of the year in which the season starts.
4. A change to the racing program is to be published on the Venue website and a notice provided in accordance with (2) above within four weeks before the changed meeting is to occur.
5. Notice of a Special Event approved by the CEO is to be given in accordance with the conditions of the approval.

15 Complaint procedure

1. A designated telephone number will be manned during racing activities for the receipt of noise complaints.
2. A complaint received will be recorded on the noise complaint form (Attachment 3), including the source of the complaint (excessive vehicle noise, PA system noise, etc).
3. All complaints will be treated with due consideration and investigated and responded to as appropriate.
4. The Venue Manager will as far as practicable provide advice to the complainant within 48 hours as to the outcomes of the investigation and where appropriate, any proposed modifications to operations.
5. The results of complaint investigations, details of measures taken or considered to reduce noise emissions under Sections 8, 9, 10, 11 and 12 and an outline of the responses given to the complainant shall be recorded on the noise complaint form (Attachment 3).
6. Completed noise complaint forms will be retained at the Venue for the period of the approval and made available to the CEO of CoA on request.
7. Noise complaint details are to be provided to the CoA on the next business day following receipt of the complaint.

16 Monitoring and validation

AMV is to retain the services of a suitably qualified person to develop and undertake a noise monitoring program to measure noise levels of noise associated with the loudest motorsport events at AMP. Monitoring is to take place on at least three occasions per 12 month period at the four closest noise sensitive premises at times corresponding to the worst case meteorological conditions for sound propagation to that premises.

17 Responsibilities

Responsibilities	
Occupier / Venue Manager	<ul style="list-style-type: none"> Implementation of this Albany Motorsport Park - Noise Management Plan Implementation of Albany Motorsport Park - Code of Conduct Implementation of Albany Motorsport Park - Safety and Emergency Procedures Control of public address system Development of program for scheduled use of the Venue
Club Committees	<ul style="list-style-type: none"> Appointment of Accredited Event Scrutineer Development of program for scheduled race meetings Appointment of an experienced Sound Control Officer Designation of Accredited event marshals and stewards
Event Scrutineer	Scrutiny of racing vehicles in accordance with the relevant governing agency
Sound Control Officer:	Measure and management of sound emission from racing vehicles

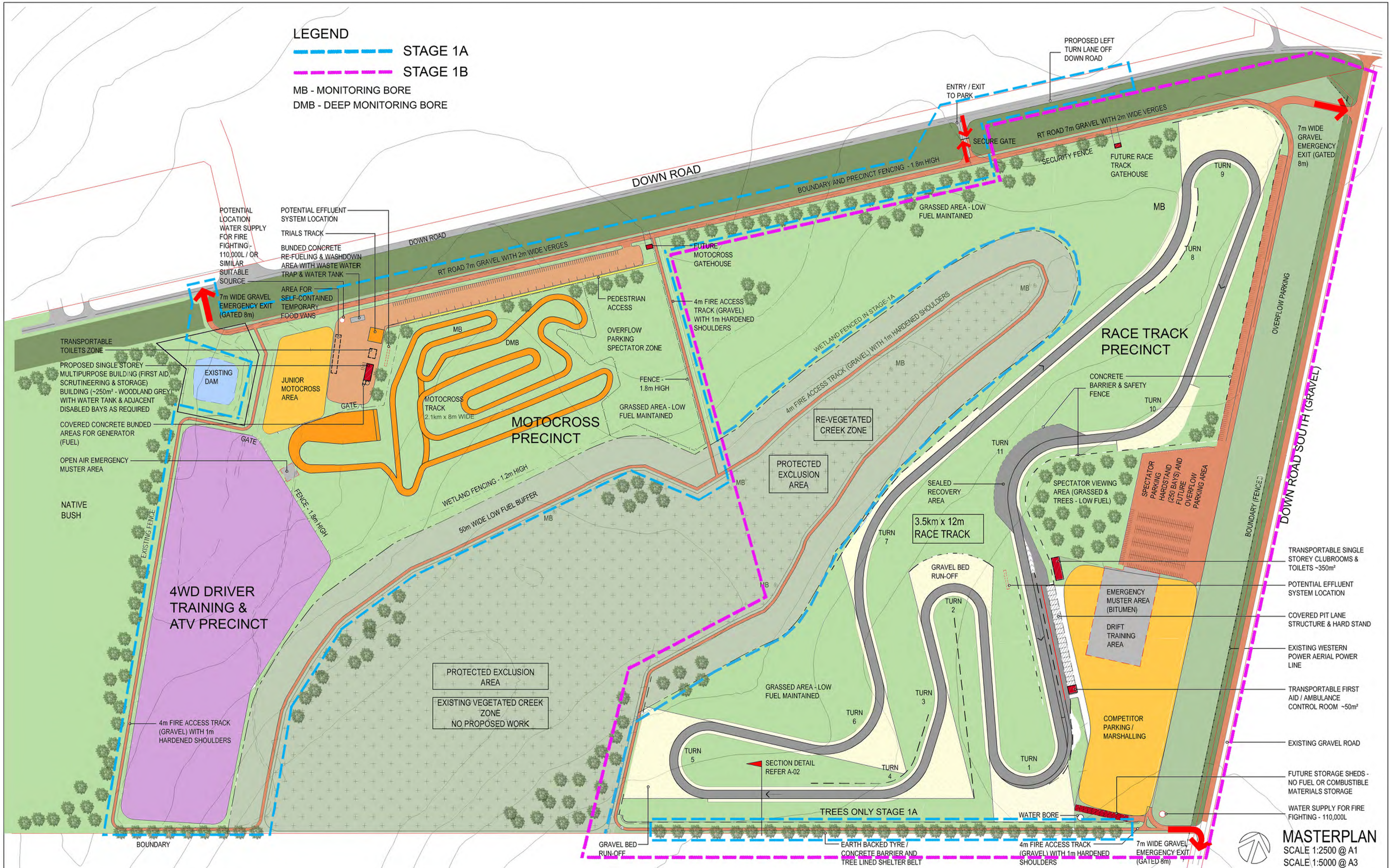
Attachment 1

Map of venue showing facilities

Master Plan

LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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E	05-07-2021	ISSUED FOR DA

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project
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 client
 City of Albany

Masterplan - Stage 1

cad file
 drawn CB project number 21-002

scale 1:2500 @A1
 date JULY 2021
 dwg no. **A-01** rev. **E**

Attachment 2

***Appendix C: Sound Emission and Fuel of
the Motorcycling Australia Manual of
Motorcycle Sport***

	Road Race	Historic Road Racing	Motocross & Supercross	Classic MX & Classic Dirt Track	Enduro	ATV (MX, SX & Enduro)	Speedway	Dirt Track & Track	Supermoto	Trial	Minskhana	Record Attempts
Sound Emissions LIMIT dB(A)	95	95	112	95	112	115	115	115	112	112	112	No Limit
Sound Emissions Allowance dB(A)	NA	NA	2 Pre-Race 1 Post-Race	NA	2 Pre-Race 3 Post-Race	3	3	3	4	4	4	NA
Sound Emissions Method for Testing	A	A	B	A	B	B	B	B	B	B	B	NA
Fuel All Machines	A	C	A	D	A	A	A	A	A	A	A	-
Fuel Exceptions	A / C ¹	B ¹	D	NA	D	D	B ¹	B ¹ / D	NA	C ¹	NA	-
	Road Race notes: 1. 125cc & 250GP 2-stroke machines only	Historic RR notes: 1. Excludes Period 5 and Period 6 Solo machines				Speedway notes: 1. Senior, Classic and 250cc/350cc Junior classes only		Dirt Track & Track notes: 1. Senior and Classic classes only		Trial notes: 1. Classic classes only		

1 SOUND EMISSIONS: METHOD FOR TESTING

A	30 Metre Ride-By Test The sound levels will be measured with the sound meter/microphone fixed on a tripod, in the horizontal position, 30 metres from the edge of the track at a high speed point.
B	2 Metre Max Method Refer to Appendix C: 1.4 Use of Sound Level Meters: 2 Metre Max Method

1.1 Sound Testing: General

- 1.1.1 Sound testing must be carried out at all permitted events however it is not mandatory to test all machines
- 1.1.2 Where government regulations or planning orders exist in relation to lower sound emissions or where a venue has lower sound emission requirements as part of the hire contract, the sound emission required will prevail over Appendix C.

1.2 Sound Control during Competition

- 1.2.1 The Sound Control Officer (SCO) must arrive in sufficient time for discussions with the Clerk of the Course and other Technical Officials in order that a suitable test site and testing policy can be agreed.
- 1.2.2 Machines can be tested before, or after competing in an event, chosen by ballot, or as required by a Steward, Clerk of Course or SCO.
- 1.2.3 Sound testing apparatus must:
- Comply with International standard IEC 651, Type 1 or Type 2.
 - Include a compatible calibrator, which must be used immediately before testing begins and always just prior to a re-test if a disciplinary sanction may be imposed.
- 1.2.4 Sound testing apparatus must be set to:
- 'Fast response',
 - 'A' weighted,
 - Select range High 80~130 dB,
 - Activate the function MAX MIN - set on MAX.

1.3 Machine Testing

- 1.3.1 No person may compete in any event on a machine whose sound emissions exceed the prescribed levels.
- 1.3.2 If a machine fails, it can be represented for

re-testing.

1.3.3 A machine which does not comply with the sound limits can be presented several times.

1.3.4 Provided sound emission levels are not exceeded, exhaust systems may operate without silencers

1.3.5 Tests shall not take place in the rain

1.4 Use of Sound Level Meters: 2 Metre Max Method

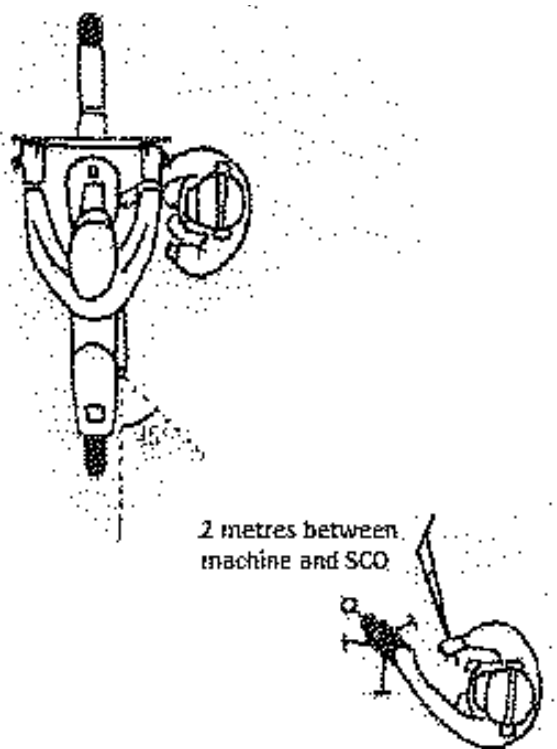
1.4.1 Set up of the sound meter and the motorcycle:

- The sound levels will be measured with the sound meter/microphone fixed on a tripod, in the horizontal position, at the rear of the motorcycle.
- For the place and position of the motorcycle, ensure that there are no solid obstacles within a 10 metre radius of the microphone.
- The sound meter will be positioned at a distance of two metres behind the motorcycle, with an angle of 45° away from the centerline, on the exhaust side and at a height of 1.35 metres above the ground, with the sound meter level.
- The two metre distance is measured from the point where the centre of rear tyre touches the ground.
- It is preferred that the tests are conducted on soft ground, to prevent reverberation, for example, grass or fine gravel.
- In other than moderate wind, machines should face forward in to the wind direction.
- The ambient sound level must remain lower than 100 dB/A.

1.4.2 Positioning of the motorcycle:

The reference points:

- For a motorcycle: the contact point of the rear wheel on the ground.
- For motorcycles fitted with two exhaust outputs, the measurement will be made on the side of the air intake. If a central positioned air intake is used, both sides will be tested.
- For Sidecars: the contact point of the



side wheel on the ground.

1.4.3 Testing method:

- a) The measurement can be made with the motorcycle on its wheels or on a stand, with a hot engine.
- b) During a sound test, machines not equipped with a gear box neutral must be placed on a stand.
- c) The SCO should stand beside the motorcycles, opposite the microphone and not screen or stand between the bike and the microphone. An assistant, placed on the left side of the motorcycle, shall disengage the clutch.
- d) The SCO shall open the throttle as fast as possible until full open throttle (instantly, within 0.3 seconds) and keep at max engine 'rpm' for at least one second. *To end, the SCO will release the throttle quickly.*
- e) If the result exceeds the limit, including 'after fire', the Inspector shall test the motorcycle a maximum of two more times.
- f) For motorcycles equipped with an engine rpm limiter, opening the throttle will be made - instantly, within 0.3 seconds - and kept open until at least one second has evolved and/or when there is an audible sign of over revving the engine.
- g) For motorcycles without an engine 'rpm' limiter, the opening of the throttle will have to be lower than two seconds and/or when there is an audible sign of over-revving the engine.
- h) If the engine tends to suffocate, close the throttle slightly and re-open the throttle.
- i) If detonations appear, the measurement must be started again.
- j) The numbers obtained from the test shall not be rounded down.
- k) For the sound level measurement, the handling of the throttle is limited only to the SCO, who shall open the throttle themselves in order to minimize the influence by another operator (for that, it is helpful to have the microphone equipped with an extension cable to the sound meter).
- l) The motorcycle may be tested in gear.
- m) Exhaust system damage during the race: silencers fitted with removable end cap/adapters/inserts to reduce sound must be securely mounted. If removable end cap/adapters/inserts become separated from the silencer during practice, qualifying or race and the machine exceeds posted sound limits, the silencer will be deemed modified and a penalty will apply. Motorcycle exhaust systems sustaining damage during the race must meet post-race sound limits.
- n) Any competitor whose machine is tested post-race and found to exceed the maximum allowed post-race sound limit will be relegated three finishing positions for the previous race. Post-qualifying, the riders' best lap will be removed from the results.
- o) Machines found to be using lower RPM limits for the static sound test than what is used on track will be immediately excluded from the previous race. This may be verified by the use of a tachometer. For machines fitted with map select switches, all switch positions may be tested.
- p) Motorcycles that do not comply with sound test limits pre-race will not be permitted to enter the course.

- 1.4.4 Post-race testing protocol:
- Immediately after each race, motorcycles selected for sound testing must proceed directly to the sound testing area.
 - Only two crew members per machine including the rider are permitted in the sound testing area at any one time.
 - Where a competitor's machine does not proceed directly to the sound testing area, the competitor will be subject to a three position relegation.
 - Machines selected for post-race sound testing must not be adjusted or interfered with until sound test is completed. A three position relegation will apply for non-compliance.

2 FUEL

A	Must be Unleaded, fuel available on demand from a bowser at five separate service stations in any five Australian states or territories and
	<ol style="list-style-type: none"> No more than 100 RON, Contain no additives other than those added at the point of manufacture except for lubricating oils for 2 - stroke machines Be readily available in Australia and, Comply with the "Fuel Quality Standards Act 2000"
	Be a brand of fuel homologated by MA-
B	Level A Fuel, or
	Pure Methanol
C	Level A Fuel, or
	Homologated substitute for Leaded Fuel can be found on the MA Website.
D	Level A Fuel
	Pure Methanol, or
	Homologated substitute for Leaded Fuel (Substitute Fuels can be found on the MA Website).

3 FUEL EXCEPTIONS

A	Moto2 and Moto3 GP machines may use fuel in accordance with the FIM Technical Regulations
B	May use Pure Methanol
C	May use homologated substitute for Leaded Fuel (Substitute Fuels can be found on the MA Website).
D	May use upper Cylinder lubricant in 4-Stroke engines

4 FUEL: GENERAL

4.1 Fuel Warning

- 4.1.1 Fuels and lubricants are highly specialised substances and participants must be aware they may contain substances that are extremely dangerous to human health if misused, inhaled or allowed to contact skin.
- 4.1.2 Some of the components of fuel and lubricants are suspected of having the potential to cause cancer in rare circumstances.
- 4.1.3 The use of petrol as a general cleaning and washing agent is a common misuse of a potentially dangerous substance.
- 4.1.4 Fuels should be used and stored with extreme care and in accordance with the manufacturer's instructions.

4.2 Fuel Testing

- 4.2.1 For any event, **meeting or series** the Relevant Controlling Body may direct that no fuels other than fuels of prescribed specifications and from a prescribed source may be used.
- Tests to ensure that only prescribed fuels are used in an event, meeting or series may be administered at any time and place during the course of the same,
 - The Clerk of Course, Race Director or Chief Scrutineer may direct the administration of fuel tests.
- 4.2.2 Fuel tests must comply with the following procedures:
- All containers for holding samples must be clean and constructed of robust non-reactive impermeable material, must be sealable, and must have provision for identification,
 - Equipment used for the extraction of fuel from machines must be clean and constructed of fuel non-reactive material,
 - Fuel testing must be conducted by an MA approved fuel screening company using an infrared fuel analysis spectrometer. All samples must be divided into two lots (Sample A and Sample B) of not less than 5ml each, which must be placed in separate containers,**
 - ~~Once samples are placed in~~

~~containers, the containers must immediately be sealed and identified by reference to the machine from which the sample was taken. This information must be entered on a fuel sample certificate which must certify the date, place and time of taking the sample, the identity of the machine from which the sample was taken and the identity of the rider,~~

- ~~e) Both samples must remain in the control of the official who administered the test.~~
- ~~f) The rider or the representative must sign the fuel sample certificate acknowledging samples have been taken and are sealed,~~
- ~~g) All samples held by the official must be delivered as soon as practicable after the competition to the relevant controlling body which must deliver the Sample A as soon as practicable to a laboratory approved by MA where they must be tested for content and quality in accordance with standard scientific procedures,~~
- ~~h) The relevant controlling body must as soon as practicable after receipt of the results notify the rider or rider's team representative and MA,~~
- ~~i) If the rider is dissatisfied with the test result of sample A, they may request sample B be tested at an MA approved laboratory in their presence.~~

4.2.3 Where onsite fuel testing is provided by the promoter or RCB and is conducted at any MA permitted event by an MA approved fuel screening company using an infrared fuel analysis spectrometer the following will apply;

- a) Competitors motorcycle being tested in this manner must remain in Parc Ferme/Impound area under the control of technical officials until the result of the test is known,
- b) Where a sample has been taken from a competitors motorcycle and the sample of fuel is outside the prescribed specifications as contained within the GCRs or SRs this is referred to as a positive result,
- c) Where a positive sample has

been taken from a competitors motorcycle, a second sample must then be taken and tested to confirm the initial positive result,

- d) Penalties and/or sanctions listed in these GCRs can be applied based on a positive result of the second sample taken,
- e) If a competitor wishes to protest a positive result of the onsite test the secondary testing procedure will apply and;
 - i) The machine must not have left the confines of the Parc Ferme/Impound area and still be under control of the technical officials,
 - ii) If the machine is removed from Parc Ferme/Impound area before the secondary testing procedure is implemented, the secondary testing procedure cannot take place and consequently, the results from the original test sample will stand and all penalties will apply.

4.2.4 Where fuel testing is required and an onsite fuel testing service is not provided by the promoter or RCB the secondary testing procedure may be applied.

4.2.5 Secondary testing procedure;

- a) Two samples (Sample A and Sample B) of not less than 250ml each or where the quantity of fuel available in the machine is less than 2 x 250ml, then as much fuel as is available will be taken and divided evenly between the two samples. These samples must be taken whilst the machine is still in Parc Ferme/Impound area and must be placed in separate containers,
- b) Once samples are placed in containers, the containers must immediately be sealed and identified by reference to the motorcycle from which the sample was taken. This information must be entered on a fuel sample certificate which must certify the date, place and time of taking

- the sample, the identity of the motorcycle from which the sample was taken and the identity of the rider,
- c) Both samples must remain in the control of the official who administered the test,
 - d) The rider or the representative must sign the fuel sample certificate acknowledging samples have been taken and are sealed,
 - e) All samples held by the official must be delivered as soon as practicable after the event to the RCB which must deliver the Sample A as soon as practicable to a laboratory approved by MA where they must be tested for content and quality in accordance with standard scientific procedures,
 - f) The RCB must as soon as practicable after receipt of the results notify the rider or rider's team representative and MA,
 - g) If the rider is dissatisfied with the test result of Sample A, they may, at the rider's cost, request Sample B be tested at an MA approved laboratory in their presence.

4.3 Sanctions

- 4.3.1 Where a competitor has been found to have used a fuel which is outside of the prescribed specifications, a **positive result**, contained within the **GCRs rules**, the following sanctions will apply,
- a) The competitor will be excluded from the results of the event where the samples were obtained, and excluded from all events the competitor participated in prior to the sampling at that event,
 - b) All costs associated with an **individual competitors** laboratory testing of fuel samples will be borne by the competitor,
 - c) Fines in addition to any other sanctions may also be applied for this breach of the **GCRs rules**.
- 4.3.2 The laboratory tests are considered to be "judge of fact" and the penalties, as applied, are mandatory and not open to

protest or appeal.

- 4.3.3 If the outcome of the laboratory test returns a negative result, the cost of the secondary testing will be borne by the promoter or RCB.

4.4 Refuelling

- 4.4.1 During refuelling, each machine must be stationary with the engine stopped.
- 4.4.2 Refuelling will be deemed to have commenced when the fuel tank has been opened and completed when the tank is closed.
- 4.4.3 Smoking is strictly prohibited in areas where refuelling is permitted.
- 4.4.4 Riders are liable for exclusion from an event for failing to adhere to GCR 4.4.3, and are responsible for the actions of their mechanics and support team members.

4.5 Homologation of Fuel

- 4.5.1 Unleaded fuel produced by an oil company for sale in the Australian general transport fuel market through retail petrol pumps in at least five States does not have to be homologated. For the avoidance of doubt this means the fuel must be available for sale on demand from a roadside bowser outlet at each of at least five separate service stations in each of at least five Australian States or Territories.
- 4.5.2 Organisations seeking homologation of fuel must provide MA with:
- a) 2 one-litre sealed containers of the fuel for analysis,
 - b) Details of the fuels characteristics,
 - c) The distribution network,
 - d) The price structure,
 - e) A homologation fee of \$2,500 in the first year and \$2,000 per year thereafter.
- 4.5.3 Fuels approved under this GCR will be published at www.ma.org.au.

Ride. Race. Enjoy.

Attachment 3

Noise complaint form

ALBANY MOTORSPORT PARK
NOISE COMPLAINT FORM

To be completed by Operations Manager or delegate

Date:		File no.:	
Event type (race meeting, practice session, other event):			

Complainant details

Name:			
Address:			
Phone (Home):		Phone (Work):	
Phone (Mobile):		Facsimile:	
Email:			

Nature of complaint:

Type of noise, description of noise heard by complainant	
Time of complaint:	
Duration of noise:	

Response (actions taken during race meeting or practice session)

Excessively noisy vehicle removed from track, PA system volume adjusted, complaint filed with no immediate action

Follow up (actions taken following race meeting)

Vehicle noise tested and mitigation prior to allowing to resume racing

Resolution

Noise complaint resolved:	YES / NO		
IF NO, outstanding actions to be taken			
Date:		Time:	
Speedway Manager:			

Appendix C

Albany Motorsport Park – Noise Assessment

Prepared for City of Albany, September 2020



City of Albany Albany Motorsport Park Noise Assessment

September 2020

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Appendices

- Appendix A - Glossary of noise terminology
- Appendix B – Monitoring results
- Appendix C – Example Noise Management Plan

Glossary of acronyms and terms

4WD	Four wheel drive
ADR	Australian Design Rule
AMP	Albany Motorsport Park
AS	Australian Standard
ATV	All-terrain vehicle
BoM	Bureau of Meteorology
CadnaA	Computer Aided Noise Abatement software used for calculating predicted noise emissions
CAMS	Confederation of Australian Motor Sports
CEO	Chief Executive Officer
CONCAWE	Conservation of Clean Air and Water in Europe
DWER	Department of Water and Environmental Regulation
FIA	Fédération Internationalé de l'Automobile
FIM	Fédération Internationalé Motocyclisme
GHD	GHD Pty Ltd
GSMG	Great Southern Motorplex Group Inc.
IF	Influencing Factor
MA	Motorcycling Australia

Note: Refer to Appendix A for an explanation of the noise terminology used throughout this report.

1. Introduction

1.1 Project background

Participation in motorsports is a popular recreational activity for many Australians, including residents in Albany and the Great Southern region. By one estimate, motorsport is the fourth most watched sport in Australia, with over 150,000 participants across the country¹. Anecdotally, motorsport in Albany and the surrounding areas is already known to be popular, with several well organised clubs, a national-level venue for speedway, a state-level venue for go-karts and widely recognised events such as the Albany Classic, Show 'n Shine and Race Wars at Albany Airport. However, some motorsport disciplines lack suitable facilities in the region. In particular, the closure of Albany Motorcycle Club's facility at Roberts Road in 2011 has meant that motocross and enduro motorcycle riders currently lack a permanent formalised facility to pursue their sport in the lower Great Southern region.

By their nature, motorsports are very capital intensive, requiring significant investment in equipment and facilities by participants, clubs and supporting organisations such as local and state governments. Recently, an independent proposal has been advanced by the Great Southern Motorplex Group Inc. (GSMG) to develop a multi-use Albany Motorsport Park (AMP) near the Mirambeena timber processing precinct on Down Road. This proposal aims to:

- Promote and facilitate multiple motorsports on a club and state level in Albany and the Great Southern region.
- Provide a safe environment and venue for multiple motorsports clubs (and other compatible sports, such as cycling).
- Provide a venue to promote and facilitate commercial driver education and training.
- Provide a safe environment for companies to test and tune their vehicles.
- Promote Albany and the Great Southern region by attracting participants and tourists.
- Boost the regional economy through increased visitors, funding and sponsorship for events.



1.2 Project description

The concept design for the Albany Motorsport Park has been developed by the not-for-profit Great Southern Motorplex Group (GSMG) and Roberts Gardiner Architects. The GSMG has undertaken significant research into the requirements for track licensing by the Confederation of Australian Motor Sport (CAMS) and the specifications of:

- Fédération Internationalé de l'Automobile (FIA)
- Fédération Internationalé Motocyclisme (FIM)
- Motorcycling Australia (MA)

The proposed AMP will consist of:

1. Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with CAMS' *Track Operator's Safety Guide*² and MA's *Track Guidelines*³.

¹ CAMS. (2014). *Economic contribution of the Australian motor sport industry*. Malvern East: Confederation of Australian Motor Sport.

² CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

³ MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

– To be licensed by CAMS for FIA Grade 2 and FIM Grade B (i.e. up to second-tier international motor racing).

2. A motocross circuit designed and constructed in association with MA guidelines.
3. An off-road four wheel drive (4WD) and all-terrain vehicle (ATV) training area

At full development, the AMP will also include associated facilities, such as:

- Toilets
- Manager's office
- Medical / first aid station
- Meeting / briefing room
- Kitchen / canteen
- Storage / grounds maintenance workshop
- Vehicle scrutineers' workshop
- Control tower
- Spectators viewing areas
- Grassed spectators' picnic area with shade and BBQs
- Competitors parking
- Spectators parking

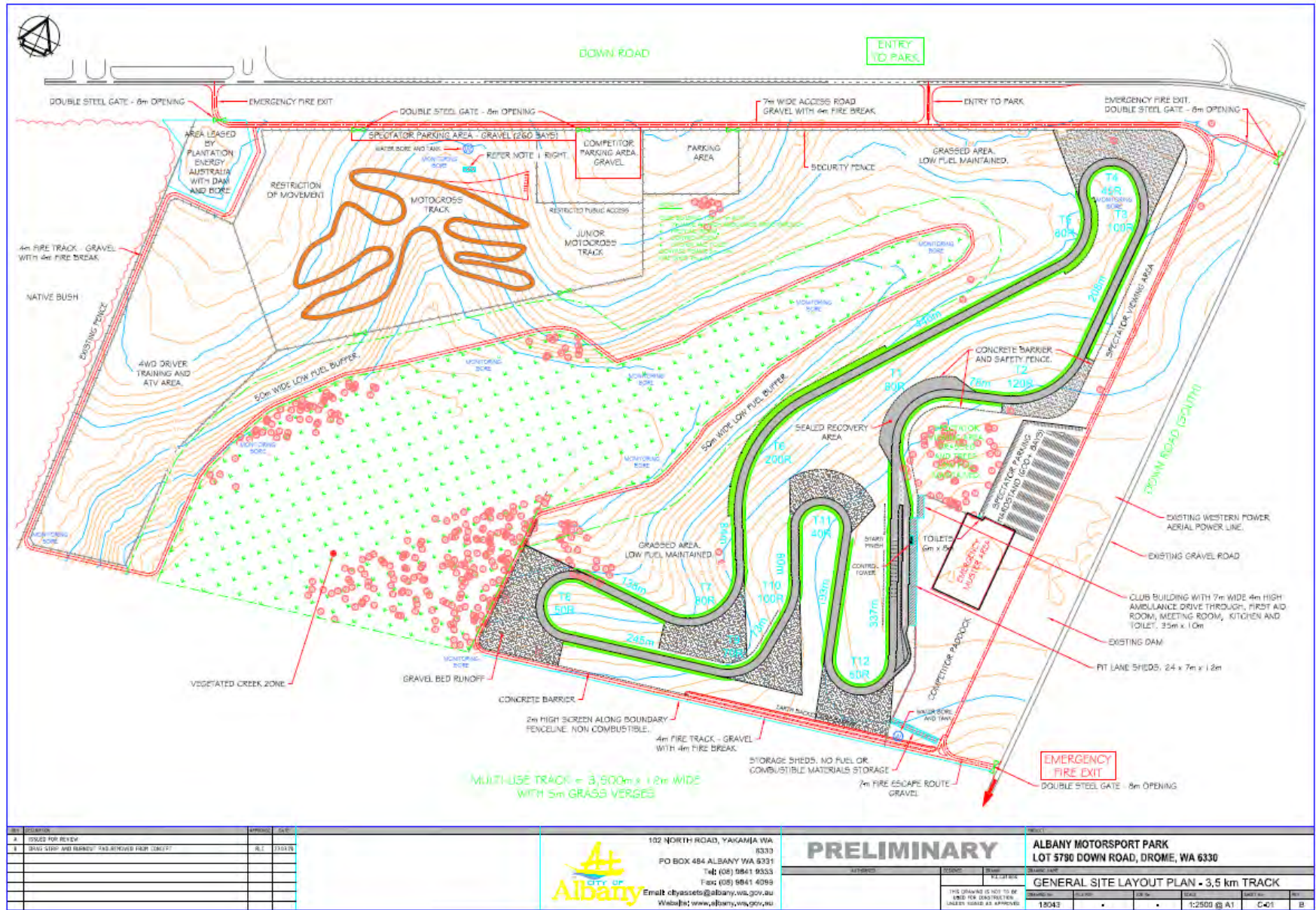


Figure 1-1 Albany Motorsport Park general site layout plan

1.3 Scope of work

GHD Pty Ltd (GHD) was commissioned by City of Albany to prepare planning approvals documentation for the proposed Albany Motorsport Park. As part of this commission, GHD was required to assess the potential acoustic impacts for the construction and operation of AMP.

This report assesses the potential noise and vibration impacts from construction and operation of AMP. The report's scope is to:

- Identify noise sensitive locations potentially impacted by the construction and operation of AMP.
- Describe the existing noise environment at noise sensitive locations potentially impacted by the construction and operation of AMP.
- Identify noise and vibration sources associated with construction and operation of AMP.
- Develop an environmental noise model to predict noise impacts from the operation of AMP using CadnaA noise modelling software, for a variety of proposed motorsport events.
- Assess the potential noise impacts on nearby noise sensitive receptors and compare the impacts with assigned noise levels.
- Identify opportunities for attenuation and management of noise impacts from AMP on noise sensitive areas should predicted noise impacts exceed the assigned noise levels.

1.4 Approach

The approach adopted by GHD for the assessment of noise impacts from the Albany Motorsport Park is summarised in the following points. Each point is described in detail in the subsequent sections of this report.

- Outline of AMP, including proposed events and anticipated operational noise sources (Section 2).
- Identification of the relevant noise criteria and guidelines applicable to AMP assessment (Section 3).
- Investigation of the existing noise environment, including identification of sensitive receptors, noise logging and assessment of noise monitoring to determine background and various time related noise levels (Section 4).
- Desktop assessment of construction noise and vibration (Section 5).
- Noise modelling for the assessment of predicted noise impacts during operation of AMP (Section 6).
- Recommend in-principle noise mitigation measures for construction and operational noise sources (Section 7).
- Conclusions drawn from the above assessment (Section 8, subject to the scope of works (Section 1.3) and Limitations (Section 1.5)).

1.5 Limitations

This report has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and the City of Albany as set out in Section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD accepts no responsibility for the integrity of the software coding of the approved noise model (CadnaA) used.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of insects and other noise sources) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Noise sources

2.1 Events and usage

Outlined in Table 2-1 is the expected usage of the Albany Motorsport Park, as conceptualised by the GSMG. For the purposes of sizing facilities and servicing infrastructure, a typical / frequent site attendance of 500 persons has been assumed (i.e. competitors, officials and spectators). This was determined through discussion with the GSMG on the nature and size of expected typical events.

Table 2-1 Indicative AMP event profile

Use	Level	Frequency	Duration	Entrants	Spectators
Driver training, schools, manufacturer testing		Week days	Day	50	0
Car test and tune day	Club	4 week days / month	Day	30	30
Car speed events	Club	1 weekend / month	Day	100	200 – 500
Car speed events	State	1 weekend / month	Day	100 – 200	200 – 1000
Car speed events	National	1 weekend / year	Day	200 – 300	2000 – 5000
Motorkhana	Club	1 day / month	Day	50	200
Supercars events	National	1 × 3 day weekend / year	Day	200 – 300	10,000 – 20,000
Bike test and tune day	Club	4 week days / month	Day	50	50
Bike speed events	Club	1 weekend / month	Day	100	200 – 500
Bike speed events – Champions Ride Day	State	1 weekend / month	Day	100	200 – 1000
Bike speed events	National	1 weekend / year	Day	200	1000 – 5000
Motocross events	Club	3 days / week training 4 single days / month	Day	100 – 200	200 – 400
Motocross events	State	1 weekend / month	Day	200 – 300	500 – 1000
Drifting day	Club	2 days / month	Day and evening	30	30
Drifting day	State	1 weekend / month	Day and evening	50	200 – 500

Duration of events:

- Typical day operation is 8:00 am to 6:00 pm, Monday to Saturday, 9:00 am to 6:00 pm on Sunday and public holidays. No evening (after 7:00 pm) or night (after 10:00 pm) events will be scheduled.
- No events occurring on the multi-use track and motocross track at the same time.
- The 4WD training area and multi-use track are expected to be in operation year round, taking advantage of Albany's cooler summer climate.
- In addition to driver and 4WD training, it is expected there will be motorsports club training sessions on every weekday. No evening sessions will be scheduled.
- At full development, it is likely there will be a motorsport event almost every weekend of the year. The cost of lighting for the motocross track and multi-use track is too high to contemplate evening events.

2.2 Noise sources

Noise sources from Albany Motorsport Park will be primarily from vehicles competing and preparing for various motorsport events, spectators and the public address system. A summary of each major noise source is presented below, with detailed information on assessment of each noise source provided in Section 6.

- Noise levels at residences due to the operation of the public address (PA) system will depend strongly on the design of the system, including number of speakers, directionality and orientation. With appropriate design, noise from this source should be controllable to less than 40 dBA at residences, and would generally not be audible.
- Driver training, schools and manufacturer testing, to be held during the day on the multi-use track – Vehicles will be road registered and comply with Australia Design Rule (ADR) requirements for vehicle noise emissions.
- Multi-use track events, such as car test and tune days, car speed events, supercars events, bike test and tune days, bike speed events, motorkhana events and drifting days, to be held during the day only. Noise impacts assessed based on vehicles competing in such events meeting the maximum CAMS noise level requirement of 95 dBA at a distance of 30 m.
- Motocross events, to be held during the day only on the motocross track. Noise impacts assessed based on noise levels from senior class motocross bikes.
- 4WD and all-terrain vehicle (ATV) off road training, to be held during the day only. Noise levels based on road registered 4WD vehicles.

It is important to note that no events are proposed to occur during the evening period (7:00 pm to 10:00 pm) and night period (between 10:00 pm to 7:00 am Monday to Saturday and 9:00 am on Sunday and public holidays).

3. Noise criteria

Environmental noise is managed through the *Environmental Protection (Noise) Regulations 1997* (the Regulations). The Regulations specify maximum allowable external noise levels at noise sensitive, commercial and industrial premises.

3.1 Construction noise

The Regulations state that for construction work carried out between 7.00 am and 7.00 pm on any day which is not a Sunday or public holiday:

- Construction work must be carried out in accordance with control of environmental noise practices set out in Section 6 of Australian Standard (AS) 2436-2010 *Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*.
- The equipment used for construction must be the quietest reasonably available.
- The Chief Executive Officer (CEO) (of the Department of Water and Environmental Regulation (DWER)) may request that a noise management plan be submitted for the construction work at any time and complied with during construction activities.

For construction work done outside these hours:

- The construction work must be carried out in accordance with control of environmental noise practices set out in Section 6 of AS 2436-2010.
- The equipment used for construction must be the quietest reasonably available.
- The contractor must advise all nearby sensitive receptors likely to receive noise levels which fail to comply with the assigned levels under Regulation 8 (Table 3-1) of the work to be done at least 24 hours before it commences.
- The contractor must show that it was reasonably necessary for the work to be done out of hours.
- The contractor must submit to the CEO a noise management plan at least seven days prior to the commencement of out of hours work and the plan must be approved by the CEO before work commences. The plan must include details of:
 - Reasons for the construction work needing to be completed out of hours.
 - Details of activities which are likely to result in noise emissions that lead to exceedance of assigned levels.
 - Predictions of the noise emissions on the site.
 - Details of measures used to control noise (including vibration) emissions.
 - Procedures to be adopted for monitoring noise (including vibration) emissions.
 - Complaint response procedures to be adopted.

3.2 Operational noise

The Regulations (Regulation 7) define prescribed standards for noise emissions as follows:

7. (1) Noise emitted from any premises or public place when received at other premises –

(a) Must not cause or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind

(b) Must be free of –

(i) Tonality (e.g. whining or droning)

(ii) Impulsiveness (e.g. sirens)

(iii) Modulation (e.g. banging or thumping)

The assigned levels for noise sensitive premises (Regulation 8) are shown in Table 3-1.

Assigned noise levels (Table 3-1) are set differently for noise sensitive, commercial and industrial and utility premises. For noise sensitive premises an influencing factor (IF) is incorporated into the assigned noise levels. IF depends on land use zonings within circles of 100 m and 450 m radius from the noise receiver, including:

- Proportion of industrial land use zonings
- Proportion of commercial zonings
- Presence of major roads (more than 15,000 vehicles per day) or secondary (6,000 to 15,000 vehicles per day)

For this assessment, it has been assumed that IF will be zero (based on the absence of major and secondary roads). The resultant assigned levels used for this assessment of the AMP are shown in Table 3-3.

As motorsport events are scheduled to occur during the day period (refer Table 2-1), including Sundays after 9:00 am, the LA10 assigned level of 40 dBA day has been used in this assessment.

Table 3-1 Assigned noise levels (dBA)

Type of premise receiving noise	Time of day	Assigned level		
		LA 10	LA 1	LA Max
Noise sensitive ^[4]	7.00 am to 7.00 pm Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	9.00 am to 7.00 pm Sunday and public holidays (Sunday)	40 + IF	50 + IF	65 + IF
	7.00 pm to 10.00 pm all days (Evenings)	40 + IF	50 + IF	55 + IF
	10.00 pm on any day to 7.00 am Monday to Saturday and 9.00 am Sunday and public holidays (Night)	35 + IF	45 + IF	55 + IF
Noise sensitive ^[5]	All hours	60	75	80

IF = influencing factor

Tonality, impulsiveness and modulation are defined in Regulation 9. Noise is to be taken to be free of these characteristics if:

- The characteristics cannot be reasonably and practicably removed by techniques other than attenuating the overall level of noise emission.
- The noise emission complies with the standard after the adjustments of Table 3-2 are made to the noise emission as measured at the point of reception.

⁴ Highly sensitive areas include a building, or a part of a building, on the premises that is used for a noise sensitive purpose and any other part of the premises within 15 metres of that building or that part of the building.

⁵ Any area other than highly sensitive area.

Table 3-2 Adjustment for intrusive or dominant noise characteristics^[6]

Tonality ^[7]	Impulsiveness ^[7]	Modulation ^[7]
+5 dB	+5 dB	+5 dB

Table 3-3 Assigned noise levels (dBA) for AMP

Type of premise receiving noise	Time of day	Assigned level		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive	7.00 am to 7.00 pm Monday to Saturday (Day)	45	55	65
	9.00 am to 7.00 pm Sunday and public holidays (Sunday)	40	50	65
	7.00 pm to 10.00 pm all days (Evenings)	40	50	55
	10.00 pm on any day to 7.00 am Monday to Saturday and 9.00 am Sunday and public holidays (Night)	35	45	55

3.3 Noise sensitive receptors

A number of residential receptors were identified in proximity to the AMP, as listed in Table 3-4 and shown in Figure 3-1.

Table 3-4 Receptor locations

ID	Location (MGA 94)		Distance from nearest AMP boundary (m)	Worst case wind direction (°)
	Easting (m)	Northing (m)		
SR01	569713	6133385	1150	310
SR02	567355	6132573	1120	10
SR03	564483	6133265	1930	80
SR04	565029	6134675	1920	100

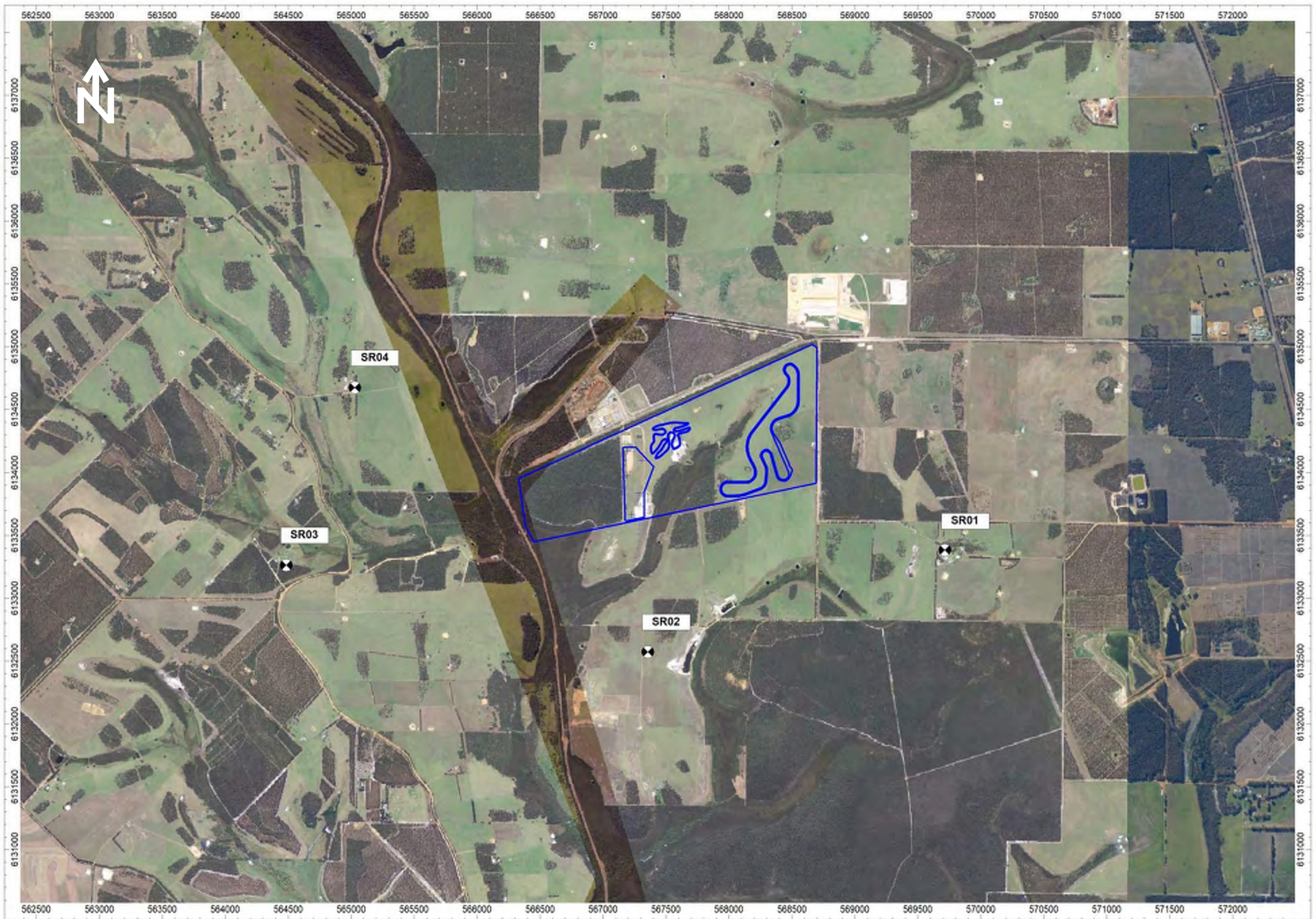
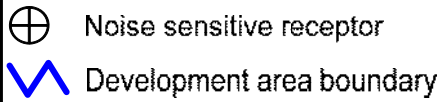
⁶ Adjustment applies where noise emission is not music.

⁷ Adjustments are cumulative to a maximum of 15 dB.

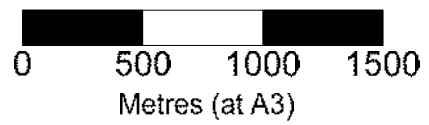
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

NOISE SENSITIVE RECEPTOR LOCATIONS

FIGURE 3-1

Noise Assessment



4. Noise monitoring



4.1 Noise monitoring locations

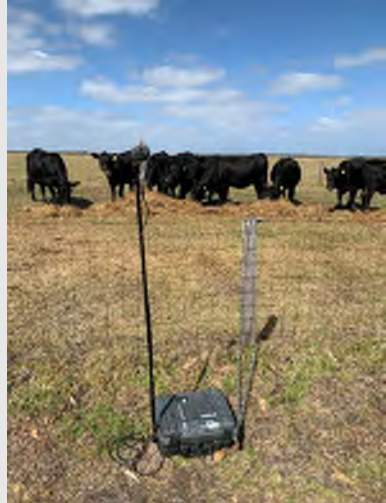
Noise monitoring was used to measure existing noise levels experienced by receptors located within the project area. Unattended noise monitoring was undertaken at three sites within the vicinity of the proposed Albany Motorsport Park.

Monitoring locations were chosen so as to be located at existing residential locations which are considered will be most affected by the Project. The monitoring locations were also identified as being safe and secure for unattended equipment, minimising the risk of theft or vandalism. In each case, the loggers were located as close as possible to the most effected facade, and were located to not be influenced by pumps, air conditioner compressors etc.

A summary of relevant information such as site coordinates, distance to the nearest boundary of the site and a photo of noise logger setup is provided in Table 4-1. The three monitoring locations are shown in Figure 4-1.

Table 4-1 Noise monitoring location summary

Site ID	Address	Easting (m)	Northing (m)	Distance of logger to AMP (m)	Noise logger setup
Site A (SR 01)	35552 Albany Hwy, DROME WA 6330	569713	6133385	1150	
Site B (SR 02)	114 Down Rd South, DROME WA 6330	567355	6132573	1120	

Site ID	Address	Easting (m)	Northing (m)	Distance of logger to AMP (m)	Noise logger setup
Site C (SR 04)	727 Marbelup North Rd, MARBELUP WA 6330	565029	6134675	1920	

4.2 Unattended noise monitoring methodology

Unattended noise logging for Sites A, B, and C was conducted from 5 to 14 March 2019. The instruments were programmed to accumulate environmental noise data (L_{Aeq} , L_{Amin} and L_{Amax}) continuously over sampling periods of 15-minutes for the entire monitoring period. Details of the noise logger setup are as follows:

- Model – Svan 955
- Type – Type 1
- Time interval – 15 minutes
- Frequency weighting – A weighted

Prior to deployment and at monitoring completion, the loggers were calibrated with a sound pressure level of 94 dB at 1 kHz using a Larson Davis CAL200 sound level calibrator. The data collected by the loggers was downloaded and analysed and any invalid data removed.

All noise sampling activities were undertaken with consideration to the specifications outlined in *AS 1055-1997 - Description and Measurement of Environmental Noise*.

4.3 Noise monitoring results

Sampled noise levels for the monitoring period are provided graphically in Appendix B along with the corresponding meteorological conditions obtained from the nearest Bureau of Meteorology automatic weather station at Albany Airport, including precipitation and wind speed and direction for each site. Data excluded during filtering for sample periods of rainfall of > 0.2 mm and/or wind speed > 18 km/h at the noise logger have been highlighted in Appendix B.

Review of the noise monitoring data plots (Appendix B) demonstrates time periods where monitoring locations appear to be influenced by unknown noise, and hence required filtering to remove such anomalous results:

- Site B
 - Saturday 9 March 2019 23:00 to Sunday 10 March 07:15
 - Sunday 10 March 2019 14:00 to 16:00
- Site C
 - Monday 11 March 2019 10:30 to 10:45



– Tuesday 12 March 2019 12:00 to 17:00

Daily noise monitoring results for each site are shown in Table 4-2, with entries significantly affected by meteorological conditions and anomalous results in the time periods above, removed.

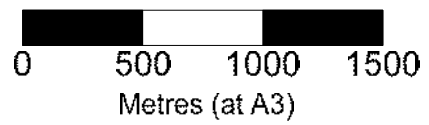
PREDICTED NOISE LEVELS

-  35 dBA
-  40 dBA
-  45 dBA
-  50 dBA
-  55 dBA
-  60 dBA
-  65 dBA
-  70 dBA
-  75 dBA
-  80 dBA
-  85 dBA
-  90 dBA

LEGEND

-  Noise sensitive receptor
-  Development area boundary

SCALE



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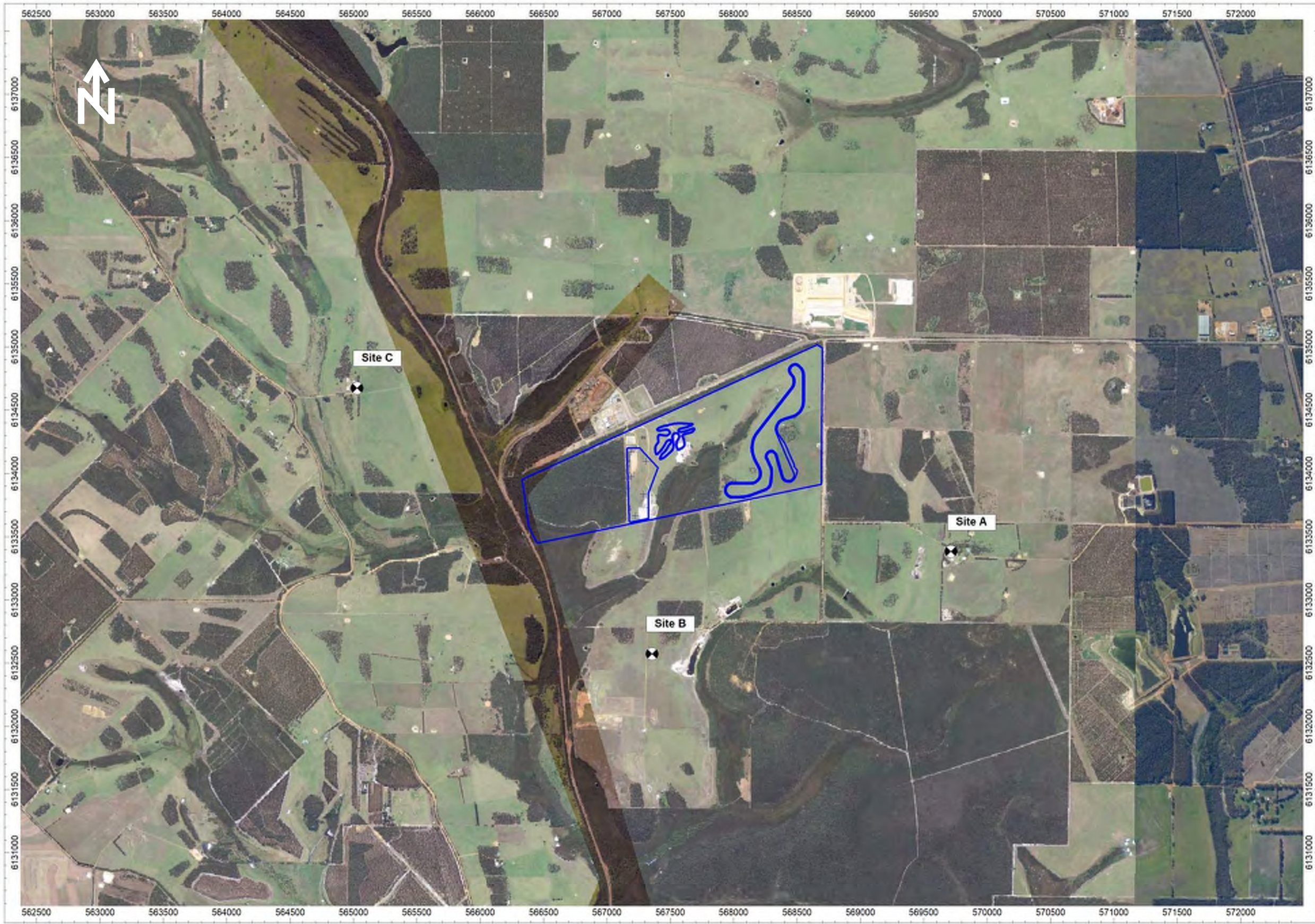
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ALBANY MOTORSPORT PARK

NOISE MONITORING LOCATIONS

FIGURE 4-1

Noise Assessment



Table 4-2 Daily L_{A90} noise levels, dBA

Site ID	Site A (SR01)			Site B (SR02)			Site C (SR04)		
Date	L _{A90} day	L _{A90} evening	L _{A90} night	L _{A90} day	L _{A90} evening	L _{A90} night	L _{A90} day	L _{A90} evening	L _{A90} night
Tuesday 5 March 2019	37.7	28.5	28.8	33.2	18.8	26.9	44.7	23.8	27.3
Wednesday 6 March 2019	39.8	31.8	27.2	32.4	25.9	20.0	42.2	30.9	22.2
Thursday 7 March 2019	32.5	27.2	28.8	28.8	17.1	19.1	36.3	23.0	28.6
Friday 8 March 2019	36.9	28.5	28.0	47.8	18.7	18.0	39.1	26.3	24.9
Saturday 9 March 2019	33.9	28.1	28.5	[8]	[8]	24.5	32.1	29.2	23.0
Sunday 10 March 2019	34.0	28.1	28.6	34.5	18.4	18.5	31.0	20.7	21.1
Monday 11 March 2019	33.9	27.4	29.5	40.5	15.1	23.4	32.7	24.5	28.9
Tuesday 12 March 2019	33.3	27.2	27.2	27.7	18.7	17.6	39.4	31.0	28.4
Wednesday 13 March 2019	32.0	-	-	25.7					
<i>Average</i>	<i>35.7</i>	<i>28.6</i>	<i>28.4</i>	<i>39.5</i>	<i>19.8</i>	<i>22.3</i>	<i>39.6</i>	<i>27.6</i>	<i>26.5</i>

L_{A90} values were not recorded during noise monitoring due to incorrect monitor setup. L_{Amin} values were recorded and have been adjusted to provide L_{A90} values. DWER have advised, based on a previous ambient measurements in a rural area, L_{Amin} values would be less than or equal to the L_{A90} levels and on average, the L_{A90} levels (15-minute duration) were less than 1 dB above the L_{Amin} for the logged period for night time and less than 3 dB above the L_{Amin} for the logged period for day time. These adjustments have been applied to the L_{Amin} values recorded.

⁸ Filtering to remove anomalous noise monitoring results in no valid data

Table 4-3 provides the rating background level (RBL) for each location. The RBL is defined as:

The overall single figure background level representing each assessment period (day/evening/night) over the whole monitoring period, defined as the median value of:

- *All the day assessment background levels over the monitoring period for the day (7.00 am to 7.00 pm).*
- *All the evening assessment background levels over the monitoring period for the evening (7.00 pm to 10.00 pm).*
- *All the night assessment background levels over the monitoring period for the night (10.00 pm to 7.00 am).*

Table 4-3 Overall L_{A90} noise levels, dBA

Site ID	L _{A90} day	L _{A90} evening	L _{A90} night
Site A (SR01)	33.9	28.1	28.6
Site B (SR02)	32.4	18.6	19.5
Site C (SR04)	37.7	25.4	26.1

Noise monitoring and observations indicate a noise environment for each location as follows:

- **Site A: 35552 Albany Hwy, DROME WA 6330** – A rural environment with the main sources of noise occasional vehicle traffic on farm roads, livestock (in the distance) and sounds of nature (birds, insects and wind in trees). The APEC wood chip mill was in operation during the noise monitoring but was not audible. The Plantation Energy pellet facility was not in operation during the noise monitoring.
- **Site B: 114 Down Rd South, DROME WA 6330** – A rural environment with the main sources of noise occasional vehicle traffic on farm roads, livestock and sounds of nature (birds, insects and wind in trees). Elevated noise levels during the day and night period are most likely due to vehicle traffic on farm roads, such as tractors and quad bikes, and livestock. The APEC wood chip mill was in operation during the noise monitoring but was not audible. The Plantation Energy pellet facility was not in operation during the noise monitoring.
- **Site C: 727 Marbelup North Rd, MARBELUP WA 6330** – A rural environment with the main sources of noise occasional vehicle traffic on farm roads, livestock and sounds of nature (birds, insects and wind in trees). Elevated noise levels during all periods is most likely due to vehicle traffic on farm roads, such as tractors and quad bikes, and livestock, which was located close to the noise logger location. The APEC wood chip mill was in operation during the noise monitoring but was not audible. The Plantation Energy pellet facility was not in operation during the noise monitoring.

Noise monitoring at sensitive receptors in the vicinity of the Albany Motorsport Park indicates there were no existing noise sources, operating at the time of the noise monitoring, which need to be considered as ‘significantly contributing’. On this basis, the assessment has been completed for noise impacts from the Albany Motorsport Park in isolation.

5. Construction noise and vibration assessment

5.1 Construction noise

Construction noise impacts associated with the Albany Motorsport Park were estimated using the following distance attenuation relationship:

$$SPL = SWL - 20 \log(d) + 10 \log(Q) - 11$$

where: d = Distance between the source and receptor (m)
 Q = Directivity index (2 for a flat surface)
 SPL = Sound pressure level at the distance from the source (dB)
 SWL = Sound power level of the source (dB)

Typical noise levels produced by construction plant anticipated to be used on-site were sourced from *AS 2436 – 2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*.

Propagation calculations take into account sound intensity losses due to spherical spreading, with additional minor losses such as atmospheric absorption, directivity and ground absorption ignored in the calculations. As a result, predicted received noise levels are expected to slightly overstate actual received levels and thus provide a measure of conservatism.

Received noise produced by anticipated activities during the construction of the AMP are shown in Table 5-1 for a variety of distances, with no noise barriers or acoustic shielding in place and with each plant item operating at full power. The sound pressure levels shown are maximum levels produced when machinery is operated under full load.

The magnitude of off-site noise impact associated with construction will be dependent upon a number of factors:

- The intensity and location of construction activities
- The type of equipment used
- Existing local noise sources
- Intervening terrain
- The prevailing weather conditions

Construction machinery will move about the AMP site area, altering the directivity of the noise source with respect to individual receptors. During any given period the machinery items used in the AMP area will operate at maximum sound power levels for only brief times. At other times the machinery may produce lower sound levels while carrying out activities not requiring full power. It is unlikely that all construction equipment would be operating at their maximum sound power levels at any one time. Finally, certain types of construction machinery will be present in the AMP area for only brief periods during construction.

Table 5-1 Predicted plant activity noise levels (dBA)

Plant	Estimated SWL (dBA)	Estimated SPL (dBA) at distance (m)						
		50	250	500	750	1000	2000	3000
Backhoe	104	62	48	42	39	36	30	26
Backhoe (with auger)	106	64	50	44	41	38	32	28
Bulldozer	108	66	52	46	43	40	34	30
Compactor	113	71	57	51	48	45	39	35
Compressor (silenced)	101	59	45	39	36	33	27	23
Concrete agitator truck	109	67	53	47	44	41	35	31
Concrete pump truck	108	66	52	46	43	40	34	30
Concrete saw	117	75	61	55	52	49	43	39
Concrete vibratory screed	115	73	59	53	50	47	41	37
Crane (mobile)	104	62	48	42	39	36	30	26
Excavator	107	65	51	45	42	39	33	29
Front end loader	113	71	57	51	48	45	39	35
Generator (diesel)	104	57	43	37	34	31	25	21
Grader	110	68	54	48	45	42	36	32
Hand tools (electric)	102	60	46	40	37	34	28	24
Hand tools (pneumatic)	116	74	60	54	51	48	42	38
Jack hammers	121	79	65	59	56	53	47	43
Rock breaker	118	76	62	56	53	50	44	40
Roller (vibratory)	108	66	52	46	43	40	34	30
Scraper	116	74	60	54	51	48	42	38
Truck (>20 tonnes)	107	65	51	45	42	39	33	29
Truck (dump)	117	75	61	55	52	49	43	39
Truck (water cart)	107	65	51	45	42	39	33	29
Vehicle (commercial, 4WD)	106	64	50	44	41	38	32	28
Welder	105	63	49	43	40	37	31	27

The closest noise sensitive receptor to any potential noise source during construction of the plant is located approximately 1120 m from the AMP. From Table 5-1, noise levels exceeding the day L_{A10} assigned level of 45 dBA are not expected to impact on the closest noise sensitive receptors, with the exception of noisy equipment with a sound power level (SWL) higher than 115 dBA.

In line with the Regulations, construction will be carried out in accordance with control of environmental noise practices set out in Section 6 of Australian Standard (AS) 2436-2010 *Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites* and equipment used will be the quietest reasonably available (basis for numbers in Table 5-1).

5.2 Construction vibration

Vibration impacts discussed essentially focus on potential structural damage to properties in close proximity of the AMP area and/or potentially affected by construction activities. The separation distance between construction activities and the potentially most impacted sensitive receptors is 1120 m.

The nature and levels of vibration from the site will vary with the activities being carried out on site. Table 5-2 outlines typical vibration levels for different plant activities that may be generated on the site, sourced from the NSW Roads and Traffic Authority (RTA) *Environmental Noise Management Manual*⁹.

⁹ Roads and Traffic Authority (RTA), 2001. *Environmental Noise Management Manual*. Sydney, December 2001.

Table 5-2 Typical vibration levels for construction equipment

Plant item	Peak particle velocity at 10 m (mm/s)
Backhoe	1.0
Bulldozer	2.5-4.0
Compactor (7 tonne)	5.0-7.0
Front end loader	6.0-8.0
Jack hammer	0.5
Roller (15 tonne)	7.0-8.0

Construction activity may result in varying degrees of ground vibration depending on the equipment used and methods employed. Operation of construction equipment causes ground vibration which spreads through the ground and diminishes in strength with distance. Buildings founded on the soil in the vicinity of the construction site respond to these vibrations with varying outcomes.

From Table 5-2, equipment proposed for site preparation and construction of the AMP will generate low levels of vibration which are unlikely to result in any vibration risks to structures. The lower limit for vibrations resulting in building damage (5 mm/s) is normally not exceeded by general construction activities at distances greater than 20 m from the nearest sensitive receptor.

Given the distances involved between site works and the nearest receptors, vibrations affecting human comfort and building integrity are not expected to be an issue.

6. Operational noise assessment

6.1 Noise model objective

The objective of noise modelling is to determine the noise impact at the nearest noise sensitive receptors resulting from Albany Motorsport Park during events and practice, under both neutral and adverse weather conditions.

Noise modelling was undertaken using Computer Aided Noise Abatement (CadnaA) to predict the effects of noise generated by motorsport events.

6.2 Noise modelling software package

CadnaA, by Datakustik, is a computer program for the calculation, assessment and prognosis of noise exposure. CadnaA calculates environmental noise propagation according to the CONCAWE algorithm.

CONCAWE is a mathematical model developed to predict community noise levels from petrochemical and industrial plant for a range of meteorological conditions. A full description of the mathematical model is provided in the report prepared for the Conservation of Clean Air and Water in Europe (CONCAWE)^[10] The CONCAWE prediction method is widely used in a range of environmental scenarios for predicting noise impacts of industrial facilities.

CadnaA considers local characteristics, site sources and the location of the receptor areas to predicted noise levels. The method specified consists of octave band algorithms (with nominal mid band frequencies from 31.5 Hz to 8 kHz) for calculating the attenuation of sound. The algorithms used in this model account for the following physical features:

- Geometrical divergence,
- Atmospheric absorption,
- Ground effect,
- Reflection from surfaces, and
- Screening by obstacles.

In assessing meteorological conditions, the CONCAWE method has been applied instead of ISO 9613-2 weather correction. Modelling results are based on available information provided and should only be used as a guide for comparative purposes.

6.3 Noise model configuration

6.3.1 Proposed plant layout

The noise model developed for this assessment was based on the project layout of the AMP as provided (see Figure 1-1).

6.3.2 Topography and ground absorption effects

In line with the proposed location of the AMP, the site and surrounding ground topography was included in the modelled using 1 m ground contours.

Ground absorption was taken into account in the calculations. A general ground absorption coefficient of 0.7 was used throughout the model to represent the surrounding ground type

¹⁰ Manning, 1991. *CONCAWE Report No. 4/81 – The propagation of noise from petroleum and petrochemical complexes to neighbouring communities.*

mainly comprising of mixed vegetation and soil. A ground absorption coefficient of 0 was used for paved areas such as the multi-use track and associated hardstand areas.

6.3.3 Meteorological conditions

The meteorological conditions selected for the model can have a significant effect on the result. As such, EPA requires compliance with the assigned noise levels to be demonstrated for 98% of the time, during day and night periods, for the month of the year in which the worst case weather conditions prevail¹¹. EPA specifies the use of the meteorological conditions outlined in Table 6-1.

Table 6-1 Meteorological conditions for noise modelling

Meteorology	Calm	Worst case	
	Day and night	Day	Evening / Night
Wind speed	0 m/s	4 m/s	3 m/s
Stability	D-class	E-class	F-class
Temperature	20°C	20°C	15°C
Relative humidity	70%	50%	50%

As sensitive receptors are located in several directions from the AMP, assessment under worst case wind direction for each receptor has been undertaken.

6.3.4 Model output conversion

CadnaA calculates L_{Aeq} predicted noise levels at discrete sensitive receptors and across the modelling grid. Predicted noise levels are converted to L_{A10} predicted noise levels, for the purpose of assessing against the assigned noise levels, by applying a correction of +3 dBA to the predicted L_{Aeq} values.

6.4 Noise sources

A summary of expected motorsport events is provided in Section 2. Corresponding noise levels for various event types are outlined in Table 6-2. Sound power levels for the various vehicle types are provided in Table 6-3.

Table 6-2 Event type and vehicle sound power levels

Event type	Worst case sound power level	Operating time
Driving training, school and manufacturer testing	109 dBA	Day
Multi-use track events – Car and bike events	133 dBA	Day
Motocross events	133 dBA	Day
4WD off road training	109 dBA	Day

Table 6-3 Sound power levels (dBA)

Vehicle type	Sound power level (dBA)								dBA
	63	125	250	500	1000	2000	4000	8000	
Road registered car or motorbike	73	77	84	98	104	105	98	88	109
Multi-use track – CAMS approved vehicles	102	126	126	121	127	123	119	119	133

¹¹ EPA (Environmental Protection Authority), 2007. *Guidance for the Assessment of Environmental Factors – No. 8 - Environmental Noise – Draft*, Perth, May 2007.

Vehicle type	Sound power level (dBA)								
	63	125	250	500	1000	2000	4000	8000	dBA
Motocross bike (senior class)	100	116	127	112	122	129	125	116	133
4WD off road	73	77	84	98	104	105	98	88	109

6.4.1 Driving training school and manufacturer testing

Noise modelling has been conducted for driver training, driver school and manufacturer testing, with 20 cars or motorbikes operating simultaneously with noise sources spaced around the multi-use track.

Noise levels from road registered cars and motorbikes are assumed to comply with Australia Design Rule (ADR) requirements for vehicle noise emissions and have been assigned a sound power level of 109 dBA^[12].

The duration of noise generation from driver training, school and manufacturer testing is unlikely to be continuous, with an assumed duration of no longer than 30 minutes in any hour. Noise impacts from this source have been assessed against LA₁₀ assigned levels.

6.4.2 Multi-use track events – Car and bike events, including drifting and motorkhana events

Noise modelling has been conducted for multi-use track events for cars or motorbikes, with 20 cars or motorbikes operating simultaneously with noise sources spaced around the multi-use track.

Noise levels which meet CAMS requirements have been assumed, equating to a sound power level of 132.5 dBA.

The duration of noise generation these events is unlikely to be continuous, with an assumed duration of no longer than 30 minutes in any hour. Noise impacts from this source have been assessed against LA₁₀ assigned levels.

6.4.3 Motocross events

Noise modelling has been conducted for a Senior Open race event, with 16 motocross bikes operating simultaneously with noise sources spaced around the motocross track and modelled heights of either 0.5 m, 2.5 m and 5.0 m to represent course terrain and jumps.

Noise levels from senior class motocross bikes have been assumed as a sound power level of 132.7 dBA.

The duration of noise generation these events is unlikely to be continuous, with an assumed duration of no longer than 30 minutes in any hour. Noise impacts from this source have been assessed against LA₁₀ assigned levels. As noise from motocross bikes typically exhibits tonal characteristics where audible, a 5 dB penalty has been applied to motocross events during this assessment.

6.4.4 4WD off road training

Noise modelling has been conducted for 4WD off road driver training, with five 4WD vehicles operating simultaneously with noise sources spaced around the 4WD training area. Noise levels from road registered 4WD vehicles have been assumed as a sound power level of 109 dBA.

¹² ADR83/00 requirement of complying with 83 dBA at 7.5 m, equivalent to sound power level of 109 dBA.

The duration of noise generation from 4WD off road training is unlikely to be continuous, with an assumed duration of no longer than 30 minutes in any hour. Noise impacts from this source have been assessed against L_{A10} assigned levels.

6.5 Noise modelling results

The calculated noise levels at the nearest noise sensitive premises were assessed to determine if predicted noise emissions complied with the appropriate day L_{A10} assigned noise level.

There are four residences within close proximity to Albany Motorsport Park. For the purpose of this assessment, it has been assumed that if compliance is achieved at the nearest residences, compliance would be achieved further away.

6.5.1 Neutral meteorological conditions

Predicted day noise levels from various motorsport events under neutral meteorological conditions are presented in Table 6-4. Table 6-4 shows predicted exceedance of the day assigned noise level as red text.

Table 6-4 Predicted day L_{A10} noise levels – Neutral meteorological conditions, dBA

Event	Assigned noise level	SR01	SR02	SR03	SR04
Background noise level, L_{A90} ^[13]		32	26	31 ^[14]	31
Driver training school, manufacturer testing (DT)	40	27	21	10	16
Multi-use track events (MUT)	40	54	51	42	46
Motocross events (MX) ^[15]	40	49	57	40	46
4WD training (4WD)	40	15	28	14	17

From Table 6-4:

- Driver training school, manufacturer testing and 4WD training events are predicted to comply with the assigned levels and to not be audible over background noise levels at all sensitive receptors.
- Multi-use track events are predicted to exceed assigned levels and to be audible over background noise levels at all sensitive receptors for multi-use track events.
- Motocross events, inclusive of 5 dB penalty for tonality, are predicted to comply with assigned levels at SR03 and exceed assigned levels at SR01, SR02 and SR04. Noise levels are predicted to be audible over background noise levels at all sensitive receptors for motocross events.

Predicted day noise level contours for each single event type are presented in Figure 6-1 to Figure 6-4.

¹³ Background noise level conservatively taken as lowest measured background noise level during monitoring

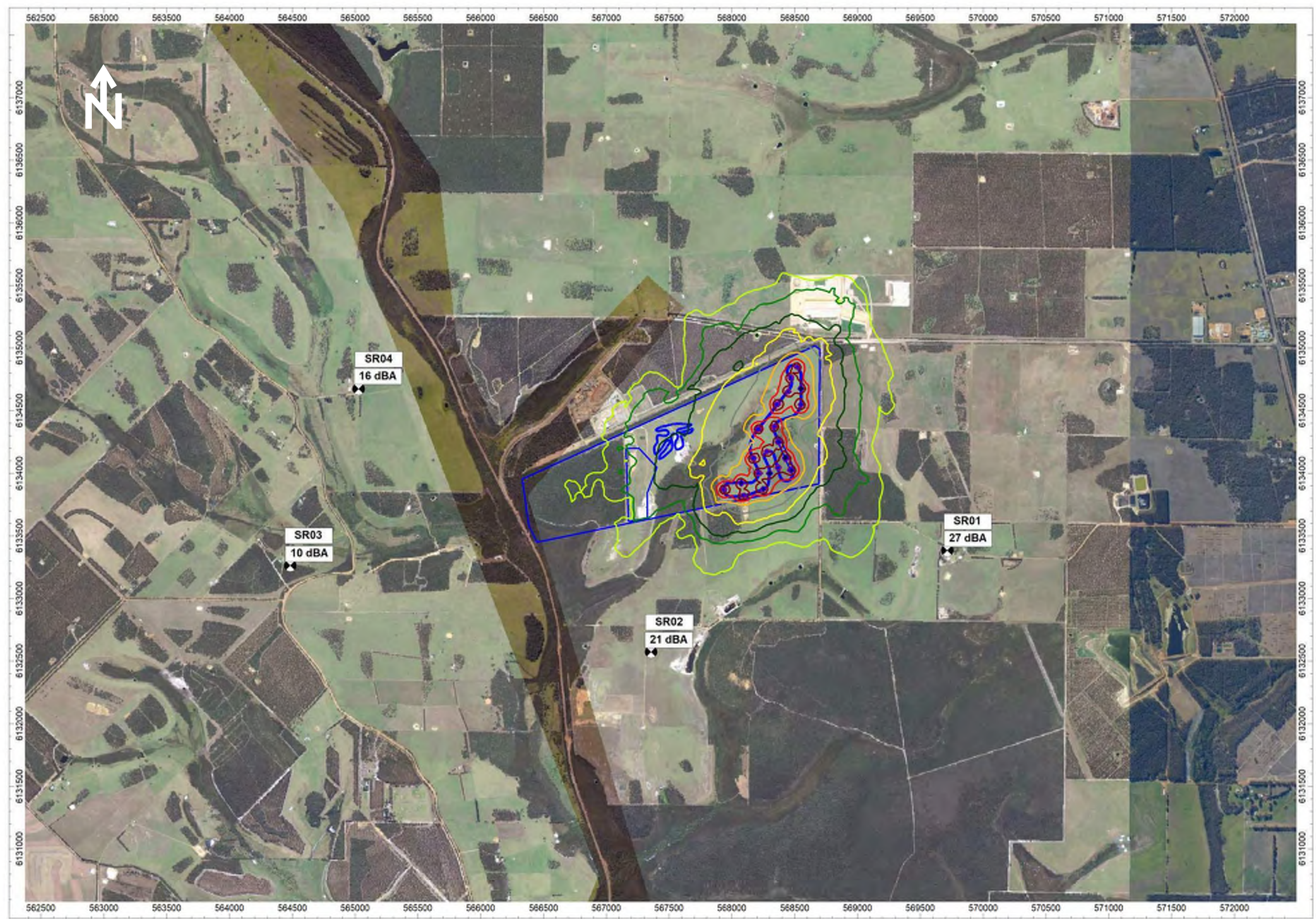
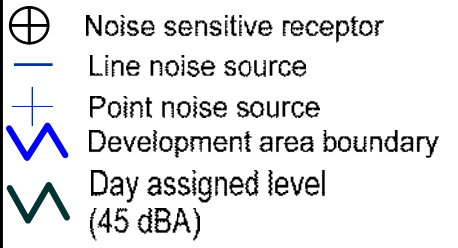
¹⁴ Noise monitoring not completed at SR03, background noise assumed to be same as SR04

¹⁵ Inclusive of 5 dB penalty for tonality

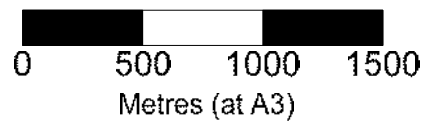
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ALBANY MOTORSPORT PARK

Noise Assessment

**PREDICTED DAY NOISE LEVELS
DRIVER TRAINING**

Noise contours: L_{A10}
Grid height: 1.4 m
Neutral meteorological conditions

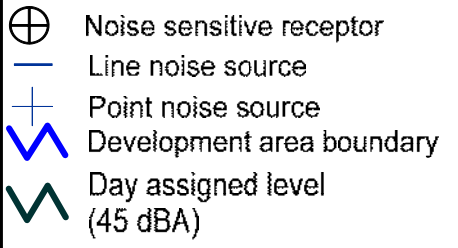
FIGURE 6-1



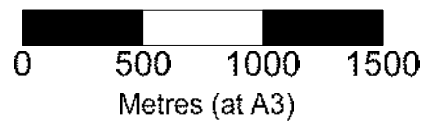
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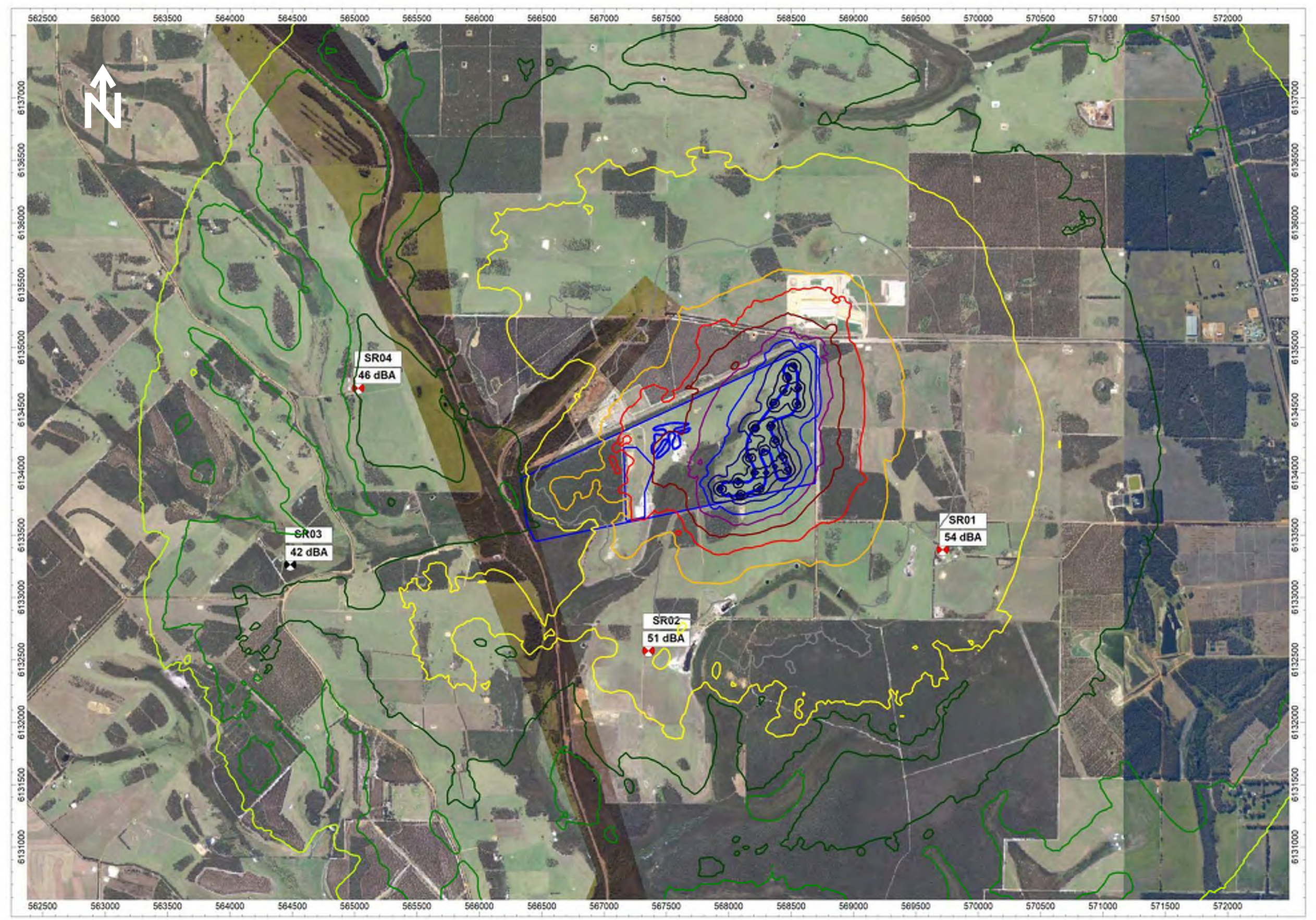
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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
MULTI-USE TRACK EVENT**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Neutral meteorological conditions

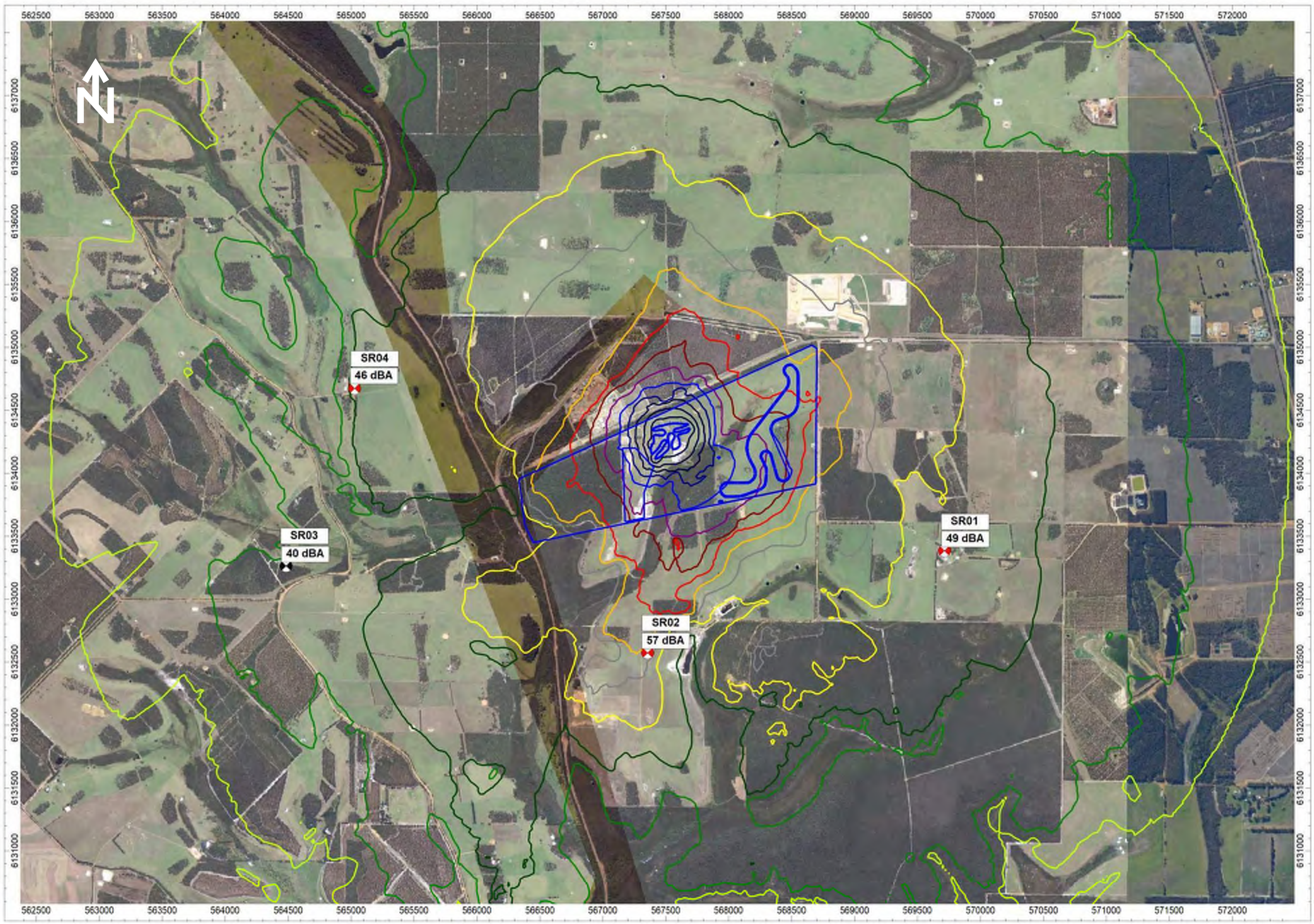
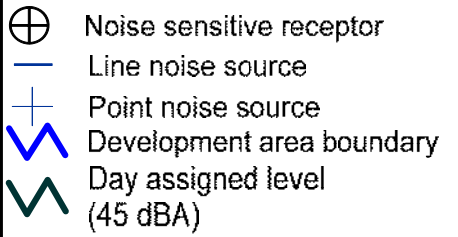
FIGURE 6-2



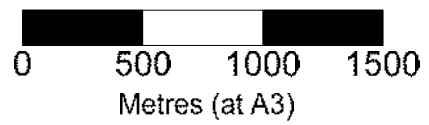
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
MOTOCROSS EVENT**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Neutral meteorological conditions

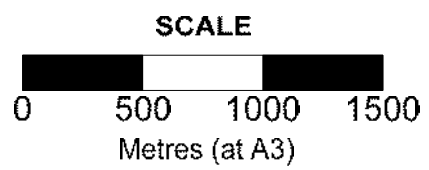
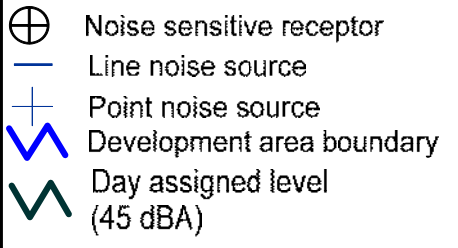
FIGURE 6-3



PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK
PREDICTED DAY NOISE LEVELS
4WD TRAINING
 Noise contours: L_{A10}
 Grid height: 1.4 m
 Neutral meteorological conditions

FIGURE 6-4



6.5.2 Worst case meteorological conditions

Predicted day noise levels from various motorsport events under worst case meteorological conditions are presented in Table 6-5. Table 6-5 shows predicted exceedance of the day assigned noise level as red text.

Table 6-5 Predicted day L_{A10} noise levels – Worst case meteorological conditions, dBA

Event	Assigned noise level	SR01	SR02	SR03	SR04
Worst case wind direction (°)		310	10	80	100
Background noise level, L_{A90} ^[13]		32	26	31 ^[14]	31
Driver training, school, manufacturer testing (DT)	40	33	28	18	23
Multi-use track events (MUT)	40	59	56	47	51
Motocross events (MX) ^[15]	40	55	62	46	52
4WD training (4WD)	40	22	34	21	24

From Table 6-5:

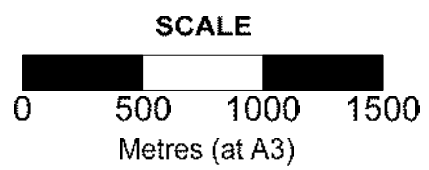
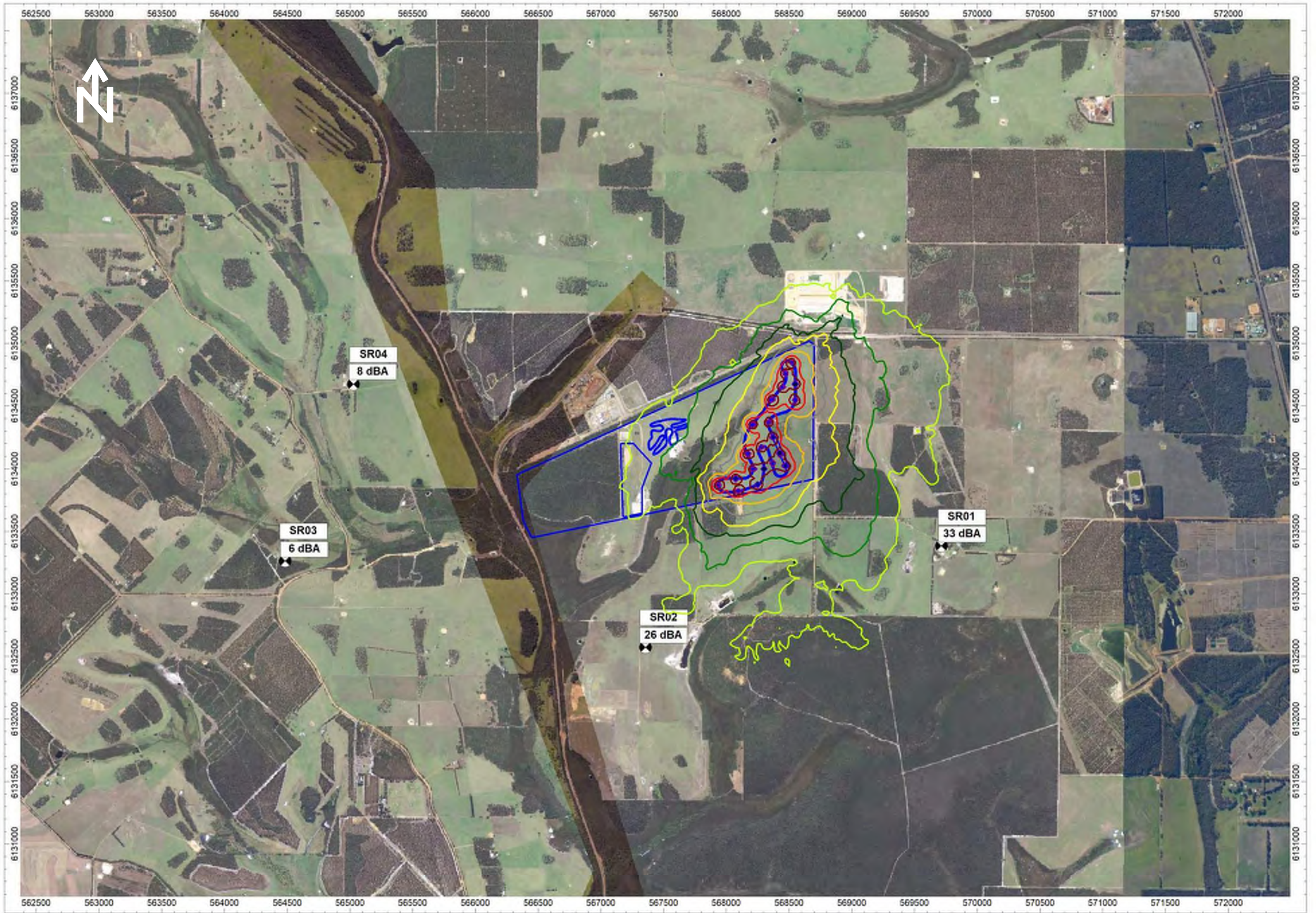
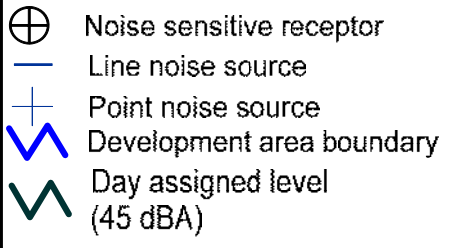
- Driver training school, manufacturer testing and 4WD training events are predicted to comply with the assigned levels and to not be audible over background noise levels at all sensitive receptors.
- Multi-use track events are predicted to exceed assigned levels and to be audible over background noise levels at all sensitive receptors.
- Motocross events are predicted exceed assigned levels and to be audible over background noise levels at all sensitive receptors.

Predicted day noise level contours for each event type are presented in Figure 6-5 to Figure 6-8. In each figure, worst case wind direction is presented for the most impacted receptor.

PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
 DRIVER TRAINING**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

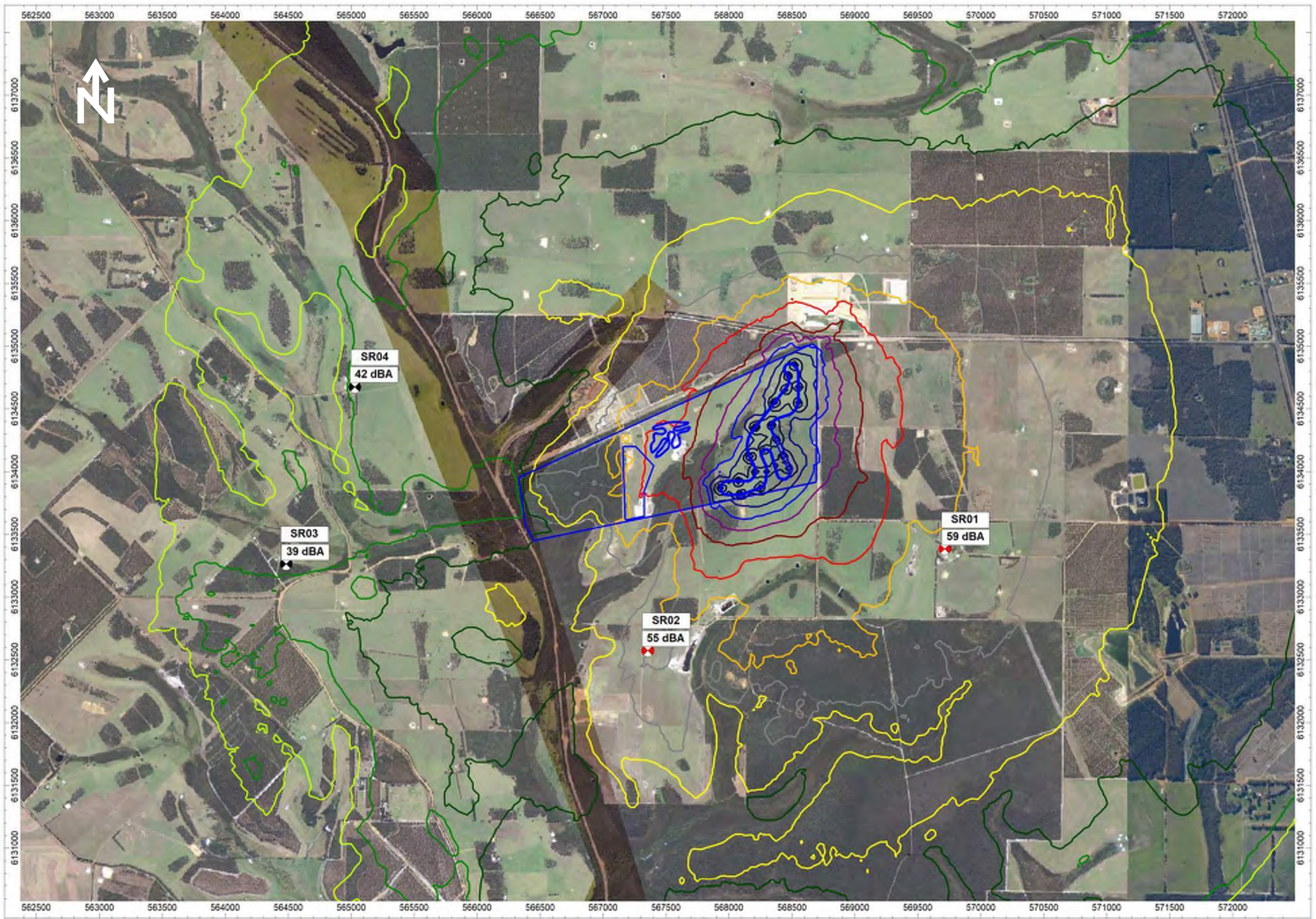
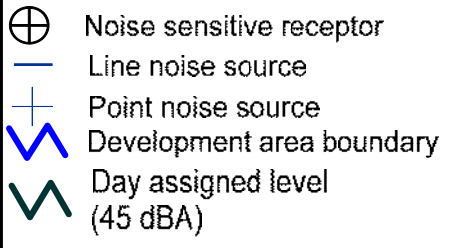
FIGURE 6-5



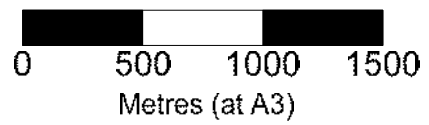
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
MULTI-USE TRACK EVENTS**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

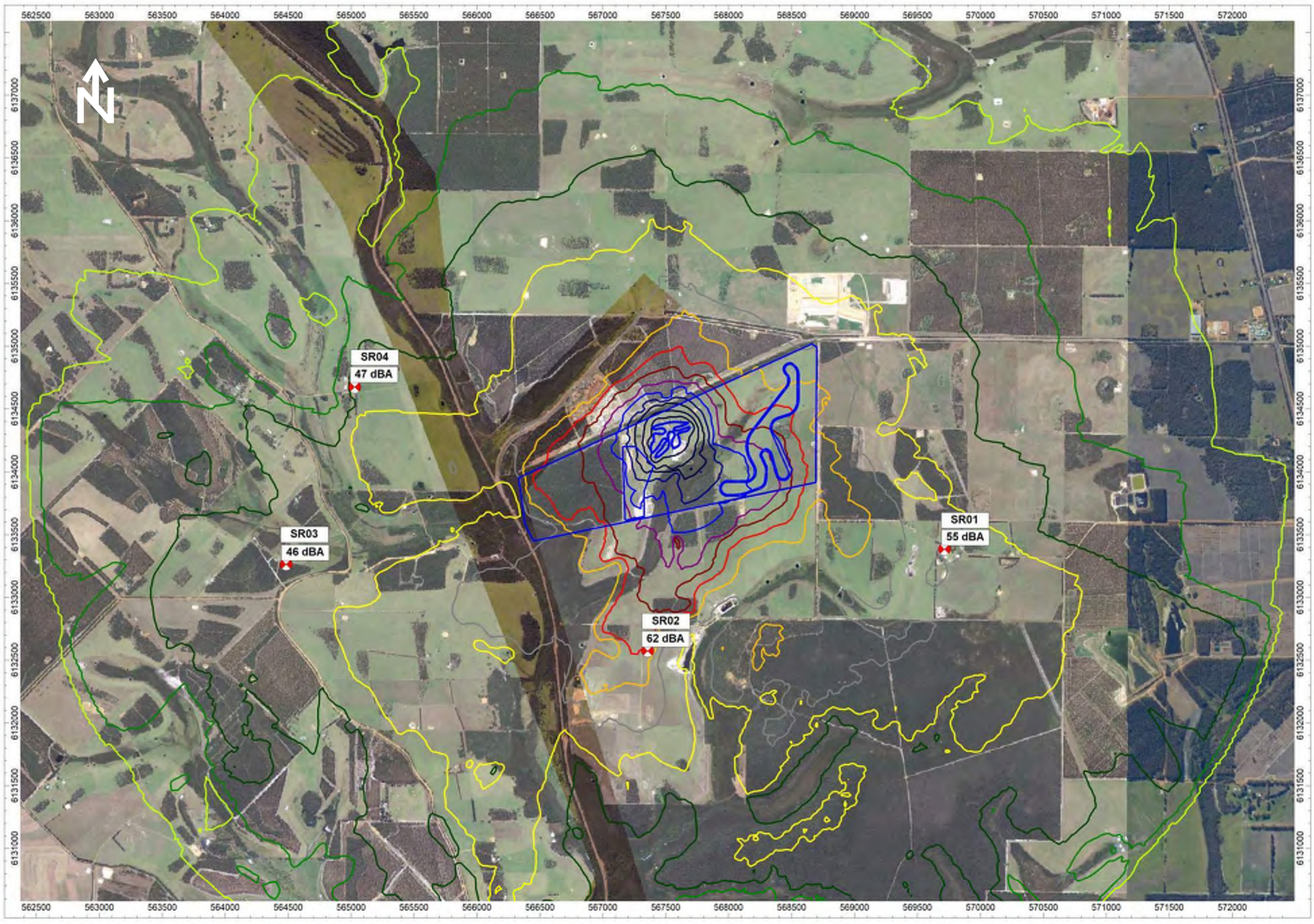
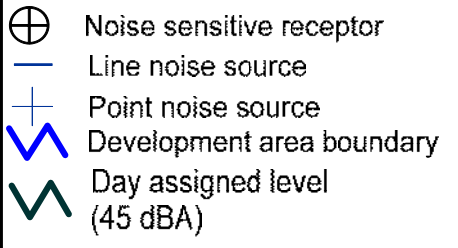
FIGURE 6-6



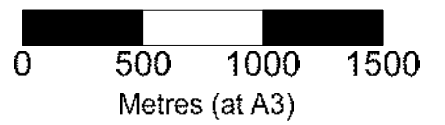
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
 MOTOCROSS EVENT**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

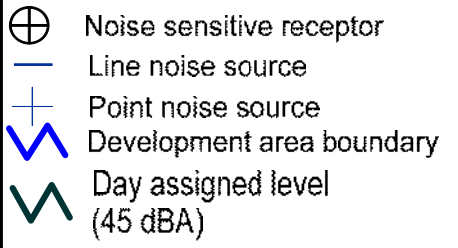
FIGURE 6-7



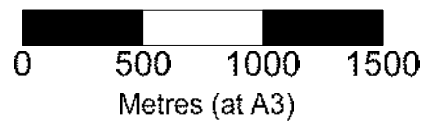
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
4WD TRAINING**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

FIGURE 6-8



6.5.3 Summary and discussion

A summary of predicted noise levels assessed against assigned noise levels for both neutral and worst case meteorological conditions is presented in Table 6-6, with negative noise levels indicating compliance with assigned noise levels and positive indicating exceedance.

Table 6-6 Exceedance of assigned L_{A10} noise levels - Neutral/worst case meteorological conditions, dBA

Receptor	SR01	SR02	SR03	SR04
Driver training, school, manufacturer testing (DT)	-13/-7	-19/-12	-30/-22	-24/-17
Multi-use track events (MUT)	+14/+19	+11/+16	+2/+7	+6/+11
Motocross events (MX) ^[15]	+9/+15	+17/+22	0/+6	+6/+12
4WD training (4WD)	-25/-18	-12/-6	-26/-19	-23/-16

The results presented in Table 6-6 demonstrate that for multi-use track and motocross events, there are occasions when the predicted noise levels from Albany Motorsport Park exceed the assigned noise levels.

As events are only planned during the day time period, predicted noise levels will not lead to sleep disturbance, and therefore will be less intrusive. As day time only events are scheduled, worst case conditions are only likely to occur due to wind direction, with no effect due to stability class (Table 6-1). Figure 6-9 presents the seasonal and annual day time wind roses for Albany for the period from 2001 to 2019.

Review of the wind roses provides an indication of how often worst case noise levels may occur at each receptor, with wind speeds up to 4 m/s (yellow and light green categories on the wind roses) representing worst case wind speed during the day period. The prevalence of worst case wind conditions at each sensitive receptor is as follows:

- SR01 – Worst case wind direction is a north-westerly, which is likely to occur approximately five percent of day time hours (between 7:00 am and 7:00 pm) (219 hours per year).
- SR02 – Worst case wind direction is a northerly, which is likely to occur approximately three percent of day time hours (132 hours per year).
- SR03 – Worst case wind direction is an easterly, which is likely to occur approximately two percent of day time hours (88 hours per year).
- SR04 – Worst case wind direction is a south-easterly, which is likely to occur approximately two percent of day time hours (88 hours per year).

For each sensitive receptor, worst case wind conditions are most likely to occur during autumn and winter, rather than spring and summer. Events will conclude earlier in autumn and winter as it is darker earlier, and lighting is not available, therefore being less intrusive than events which potentially conclude later during spring and summer.

Comparison of predicted noise levels against monitored background noise levels is presented in Table 6-7, showing the emergence above background for neutral and worst case meteorological conditions.

Table 6-7 Emergence above background noise L_{A90} noise levels - Neutral/worst case meteorological conditions, dBA

Receptor	SR01	SR02	SR03	SR04
	32	26	31	30, 31
Driver training, school, manufacturer testing (DT)	-5/+1	-5/+2	-21/-13	-15/-8
Multi-use track events (MUT)	+22/+27	+25/+30	+11/+16	+15/+20
Motocross events (MX) ^[15]	+17/+23	+31/+36	+9/+15	+15/+18
4WD training (4WD)	-16/-10	+2/+8	-17/-10	-14/-7

Table 6-7 indicates that noise levels from multi-use track and motocross events are predicted to be clearly audible at all sensitive receptors.

Based on the above analysis of wind conditions, during the day time period for the majority of events, predicted noise levels are likely to be as per neutral conditions, rather than worst case conditions, typically up to 6 dB quieter than for worst case conditions.

Nevertheless, appropriate mitigation measures have been recommended in Section 7 in order to reduce the impact on existing and future sensitive receptors due to the motorsport facility.

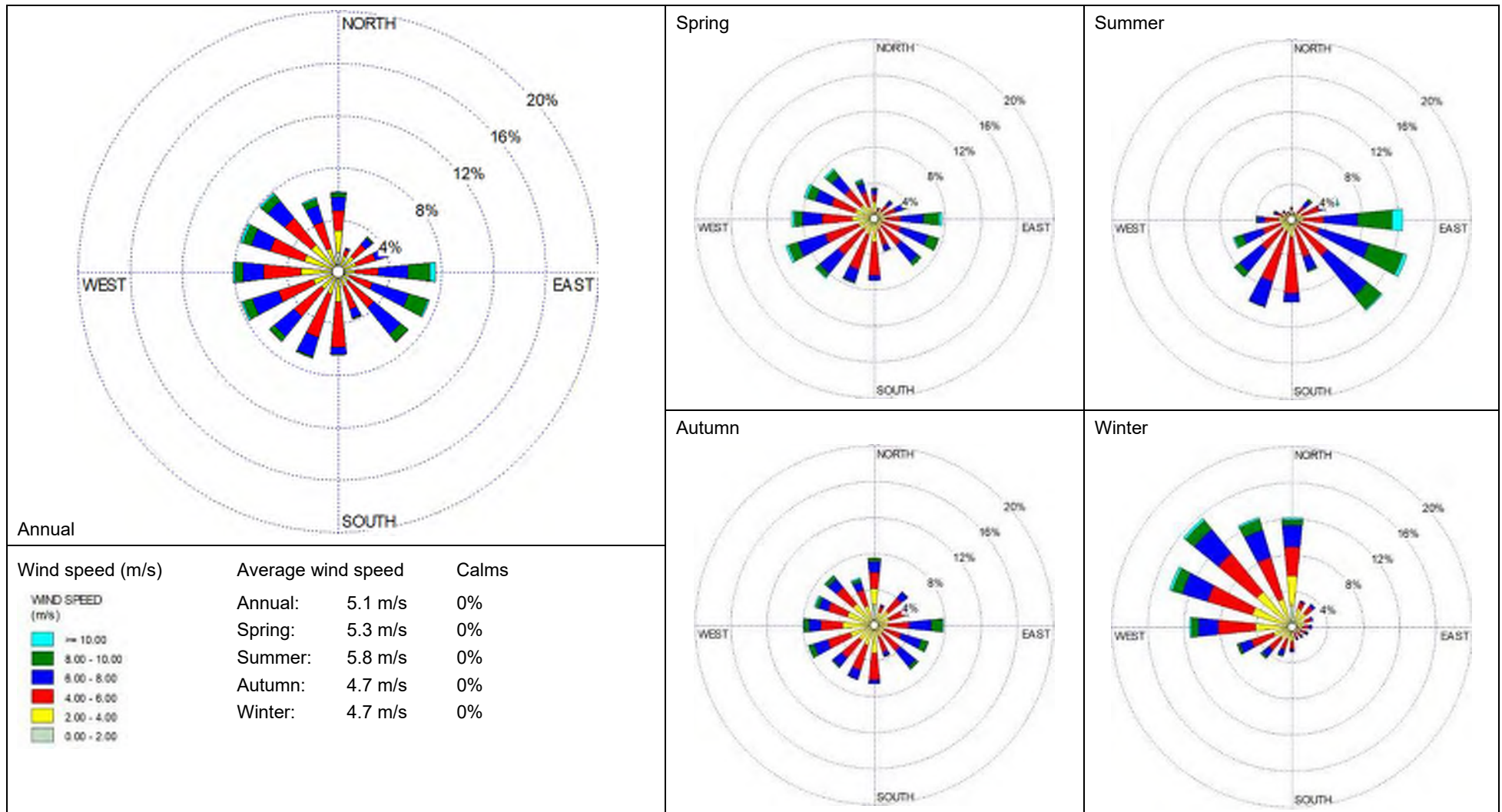


Figure 6-9 Annual and seasonal day time wind roses for observed meteorological data at Albany Airport

7. Managing noise impacts

The results presented in Section 6 for neutral and worst case meteorological conditions demonstrate that for some events, namely multi-use track and motocross events, there will be occasions when the predicted noise levels from Albany Motorsport Park exceed the day assigned noise levels at the nearest sensitive receptors.

As such, it is recommended that appropriate management and mitigation measures are implemented for the project.

7.1 Regulation – Approved noise management plan

The *Environmental Protection (Noise) Regulations 1997* set assigned (allowable) noise levels for various types of premises that receive noise from other premises. There are many activities that occur in the community that cannot, however, reasonably and practicably meet those assigned levels, but retain a degree of acceptance, either because of the temporary nature of the activity or the perceived community benefit.

In the case of a motor sport venue, good land use planning may be able to avoid noise problems in the first place – this may involve selection of a site for a new venue that is well away from sensitive receivers, or preventing encroachment by new residences into the noise-affected area around the venue.

Where a motor sport venue cannot practicably comply with the assigned noise levels, Division 3 of the Regulations allows the venue occupier to apply for a special approval. Under this approval the noise emissions from the venue are permitted to exceed the assigned levels in the Regulations provided the venue operates in accordance with an approved noise management plan (NMP) for the venue.

Regulation 16 of the *Environmental Protection (Noise) Regulations 1997* allows the Chief Executive Officer (CEO) of DWER (or delegated power such as local government CEO) to request preparation and submission of a NMP for a motor sport venue (that belongs to a recognised motor sports organisation¹⁶).

Regulation 16 includes the following:

- CEO to approve or refuse the NMP, but before approving it must seek comment from the affected residents within a kilometre of the venue and other local governments likely to be affected.
- NMP must contain certain elements:
 - A map of the venue and area
 - Description of the types of races
 - Maximum number of race meetings and practice sessions and times of the day
 - Measures to control noise emissions
 - How the community is to be informed of the race meeting program
 - Who is responsible for implementing the NMP
 - Complaints response procedure
- The CEO is be able to require the noise certification of race vehicles (if appropriate for that venue).

¹⁶ *Guide to Management of Noise from Motor Sport Venues - Environmental Protection (Noise) Regulations 1997*, Department of Environment Regulation, 168 St Georges Terrace, Perth, Western Australia, July 2014.

- The CEO is able to charge fees to cover the cost of assessing the application and for noise monitoring and also to waive or reduce the fees payable.
- The CEO is able to amend or revoke the NMP, after consultation.

The status of the NMP would be that the normal assigned levels do not apply to the noise emissions as long as the venue operates as per the NMP. If the emissions were outside the NMP, for example a meeting went outside the nominated hours, the noise emissions have to comply with Regulation 7 and the normal enforcement measures under the *Environmental Protection Act 1986* would apply.

Whilst the introduction of a formal NMP may not reduce noise levels from Albany Motorsport Park, such measures will prevent noise impacts increasing due to increased number of events etc. without consultation with affected residents.

An example Noise Management Plan, prepared in line with requirements outlined in *Guide to Management of Noise from Motor Sport Venues*, has been provided in Appendix B.

7.2 Mitigation measures

As previously outlined, model predicted noise levels from operation of Albany Motorsport Park exceed assigned levels within the surrounding area.

As discussed above, introduction of a requirement for Albany Motorsport Park to operate according to a noise management plan provides a mechanism to prevent further increase of events without consulting residents, but may not reduce noise levels from proposed operations.

On-site mitigation measures to reduce noise levels at source from Albany Motorsport Park are limited and include:

- Scheduling of events and practice to minimise noise impacts on the existing residents. Future events scheduling at Albany Motorsport Park will take into consideration predicted noise impacts. Typical day operation is 8:00 am to 6:00 pm, Monday to Saturday, 9:00 am to 6:00 pm on Sunday and public holidays. No evening (after 7:00 pm) or night (after 10:00 pm) events will be scheduled.
- Construction of a barrier(s) (earth bund, noise walls or similar) along the boundaries of the AMP venue (primarily southern and eastern boundaries) to reduce noise levels at local residents. Based on the distance between the facility and the nearby sensitive receptors, noise barriers are only likely to lead to slight reductions in noise levels, by up to 3-5 dBA, depending on location and height. In this regard, other mitigation measures have been outlined.

Further mitigation measures are able to be implemented at existing properties and during any future residential development in the area. Mitigation measures in place or available for consideration include:

- Provision of at property treatments to maintain suitable acoustic amenity at existing noise sensitive receptors in the vicinity of AMP. Such requirements for outdoor area screening and provision of insulation packages (see below) will be assessed by completion of at property inspections, in order to provide recommended acoustic treatments. In addition, as events are only planned during the day time period, predicted noise levels will not lead to sleep disturbance, and therefore will be less intrusive.
- The existing Mirambeena Strategic Industrial Area buffer (Figure 7-1) in the vicinity to the proposed Albany Motorsport Park prevents the construction of any habitable dwellings on properties immediately adjacent, reducing the likelihood of sensitive receptors being developed in an area impacted by noise from motorsport activities in the future.

- Additional planning controls to establish a *Special Use* zone, with an associated *Special Control Area* to prevent further residential development, unless specific planning and building controls are implemented. Such planning controls would usually entail:
 - Reducing outdoor levels by implementing ‘quiet house’ design measures outlined in SPP 5.4¹⁷ relating to screening of outdoor areas with the residence itself (building orientation considerations) or screen walls. Refer to Section 7.2.1.
 - Reducing internal noise levels by implementing ‘deemed to comply packages’ outlined in SPP 5.4 relating to improving noise insulation of residences. Refer to Section 7.2.1.
 - Providing information to new residents within the development of the potential noise impacts from motorsport events (notifications on titles). Refer to Section 7.2.2.

7.2.1 Reducing outdoor and indoor noise levels through building design

Noise levels resulting from Albany Motorsport Park are predicted to exceed assigned noise levels at existing residences or new residential areas within the vicinity. Noise mitigation measures outlined in SPP 5.4 pertain to reducing transport noise resulting from major roads and railways. In determining the required level of mitigation to maintain outdoor and indoor amenity, assessment has been made against outdoor and indoor criteria established by SPP 5.4, outlined in Table 7-1. Assessment has been made against predicted L_{A10} noise levels, as L_{A10} noise levels are considered to most closely represent L_{Aeq} criteria specified in SPP 5.4.

This approach has been reviewed and agreed to by DWER Noise Branch during previous assessments for motorsport facilities.

Table 7-1 Outdoor and indoor noise criteria, dBA

Time of day	Outdoor noise criteria	Indoor noise criteria
Day (6:00 am to 10:00 pm)	55	40
Night (10:00 pm to 6:00 am)	50	35

Reducing outdoor noise levels by screening outdoor areas

Outdoor noise levels are reduced by 5-10 dBA by screening outdoor areas such that the building forms a barrier between the noise from motorsport events. Such screening is achieved by either:

- Locating outdoor living areas so as to maximise the screening effects of buildings and any barrier walls.
- Designing walls to screen part or all of the affected property.

To ensure an appropriately sized outdoor area is adequately screened may require designated building envelopes to be specified for each lot.

Evening and night time outdoor levels are not predicted to be affected as events conclude by 7:00 pm.

Reducing indoor noise levels by improving noise insulation of buildings

With regard to indoor noise levels, a typical residence would see indoor levels approximately 15 dBA lower than outdoor levels (a predicted outdoor level of 65 dBA will result in indoor noise level approximately 50 dBA).

¹⁷ Department of Planning, 2014, *Implementation Guidelines for State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning*, December 2014.

Indoor noise levels are reduced by increasing insulation to reduce noise levels within a residence. SPP 5.4 outlines two 'deemed to comply' packages for residential development, Package A and Package B, as outlined in Table 7-2. A reduction of approximately 5 dBA is typically achieved by implementing design Package A and approximately 10 dBA reduction for implementing design Package B.

Table 7-2 Package A and B noise insulation measures outlined in SPP 5.4

Area type	Orientation	Package A measures
Bedrooms	Facing venue	6 mm laminated glazing Casement or awning windows No external doors Closed eaves No vents to outside walls/eaves Mechanical ventilation/air conditioning
	Side on to venue	6 mm laminated glazing Closed eaves Mechanical ventilation/air conditioning
Living and work areas	Facing venue	6 mm laminated glazing Casement or awning windows 35 mm (minimum) solid core external doors with acoustic seals Sliding doors must be fitted with acoustic seals Closed eaves No vents to outside walls/eaves Mechanical ventilation/air conditioning
	Side on to venue	6 mm glazing Closed eaves Mechanical ventilation/air conditioning
Area type	Orientation	Package B measures
Bedrooms	Facing venue	10 mm laminated glazing Casement or awning windows No external doors Closed eaves No vents to outside walls/eaves Mechanical ventilation/air conditioning
	Side on to venue	6 mm laminated glazing Casement or awning windows Closed eaves Mechanical ventilation/air conditioning
Living and work areas	Facing venue	10 mm laminated glazing Casement or awning windows 40 mm (minimum) solid core external doors with acoustic seals Sliding doors must be fitted with acoustic seals Closed eaves No vents to outside walls/eaves Mechanical ventilation/air conditioning
	Side on to venue	6 mm laminated glazing Casement or awning windows Closed eaves Mechanical ventilation/air conditioning

Noise levels under worst case meteorological conditions are predicted to exceed day assigned levels by up to 19 dBA at SR01, up to 22 dBA at SR02, up to 7 dBA at SR03 and up to 12 dBA at SR04.

Suitable screening of outdoor areas may be required at SR01, SR02 and SR04, in order to provide one outdoor area of suitable acoustic amenity.

Package A insulation measures may be required at SR01, SR02 and SR04, with Package B requirements at SR03.

Such requirements for outdoor area screening and provision of insulation packages will be assessed by completion of an at property inspection, in order to provide recommended acoustic treatments.

7.2.2 Special Control Area

A *Special Control Area* provides for a noise buffer to protect Albany Motorsport Park from incompatible residential encroachment, with development approval only provided when minimum house design treatments to mitigate noise are implemented.

The Local Planning Scheme could be amended to include a new *Special Control Area*, through rezoning the Albany Motorsport Park site from 'Priority Agriculture' to 'Special Use'. The new *Special Control Area* for Albany Motorsport Park would then be added to existing *Special Control Areas*, established in Part 5 of the Local Planning Scheme.

Further updates to the Scheme would be made to establish the purpose of the *Albany Motorsport Park Noise Special Control Area* and requirements of proposed residential development:

- a. Allow for the ongoing operations of the Albany Motorsport Park and require the operators to incorporate additional noise attenuation measures (e.g. earthen bunds, noise walls) to reduce noise egress into adjoining sensitive premises; including operating under an approved Noise Management Plan.
- b. Ensure that new noise sensitive developments within the *Special Control Area* incorporate design criteria in accordance with the *AS/NZS 2107:2000 Acoustics – Recommended design sound levels and reverberation times for building interiors*, to reduce noise impacts from the Albany Motorsport Park.
- c. No dwelling or other noise-sensitive development within the *Special Control Area* shall be approved until such time as Local Government is satisfied that the design complies with the Package A or B (as appropriate) house insulation measures specified in the Implementation Guidelines for State Planning Policy 5.4.
- d. The Local Government may grant approval for noise sensitive premises and impose conditions on the approval to require the applicant to incorporate design and construction methods/materials to reduce noise impacts into the dwelling.
- e. The Local Government shall request the Commission impose a condition on the approval for the creation of any new lots created as a result of subdivision within the *Albany Motorsport Park Noise Special Control Area* be required to have a memorial placed on the Certificate of Title stating that the land may be subject to temporary high noise levels from activities conducted at the Albany Motorsport Park.

Special Control Area extent

The extent of the Special Control Area has been guided by the completion of noise modelling for a typical event to be held at AMP, with a race meeting consisting of a multi-use track event considered a typical event.

Outdoor noise levels are reduced by 5-10 dBA by screening outdoor areas such that the building forms a barrier between noise from motorsport events.

Based on the daytime outdoor noise criterion outlined in Table 7-1 and the reduction of up to 10 dBA achieved through building screening:

- Development areas with predicted L_{A10} noise levels below 55 dBA will require no additional mitigation. Only notifications on the title advising of possible noise impacts from a nearby motorsport venue would be required.
- Development areas with predicted L_{A10} noise levels between 55 dBA and 65 dBA would require building screening (building envelopes) or fencing in order to meet an outdoor noise level of 55 dBA.
- Development areas predicted to exceed L_{A10} noise levels of 65 dBA will remain development free.

With regard to indoor noise levels, a typical residence would see indoor levels approximately 15 dBA lower than outdoor levels. Indoor noise levels are reduced by increasing insulation. SPP 5.4 outlines two 'deemed to comply' packages for residential development, Package A and Package B (refer to Table 7-2).

Based on daytime indoor noise criterion outlined in Table 7-1 and the reduction achieved by implementing design Package A (approximately 5 dBA) and Package B (approximately 10 dBA):

- Development areas with predicted daytime L_{A10} noise levels below 55 dBA will require no additional noise insulation. Only notifications on the title advising of possible noise impacts from a nearby motorsport venue would be required.
- Development areas with predicted daytime L_{A10} noise levels between 55 dBA and 60 dBA will require Package A noise insulation.
- Development areas with predicted daytime L_{A10} noise levels between 60 dBA and 65 dBA will require Package B noise insulation, in order to meet an internal noise level of 40 dBA.
- Development areas predicted to exceed L_{A10} noise levels of 65 dBA will remain development free.

Based on the above, the special control area would extend from the 65 dBA contour (red contour shown on Figure 7-1) to the 50 dBA (yellow) contour. From Figure 7-1, the northern quadrant from the western boundary to the eastern boundary of AMP is within the existing Mirambeena Strategic Industrial Area buffers.

Requirements to inform the special control area are as follows:

- Areas between the site boundary and the 65 dBA (red) contour would remain residence free. From Figure 7-1, the proposed residence free area only marginally extends beyond the existing Mirambeena Strategic Industrial Area buffers to the south-east of AMP.
- Areas between the 65 dBA (red) and 60 dBA (orange) contours would have conditions requiring Package B noise insulation and building screening (building envelopes) or fencing in order to meet outdoor noise levels.

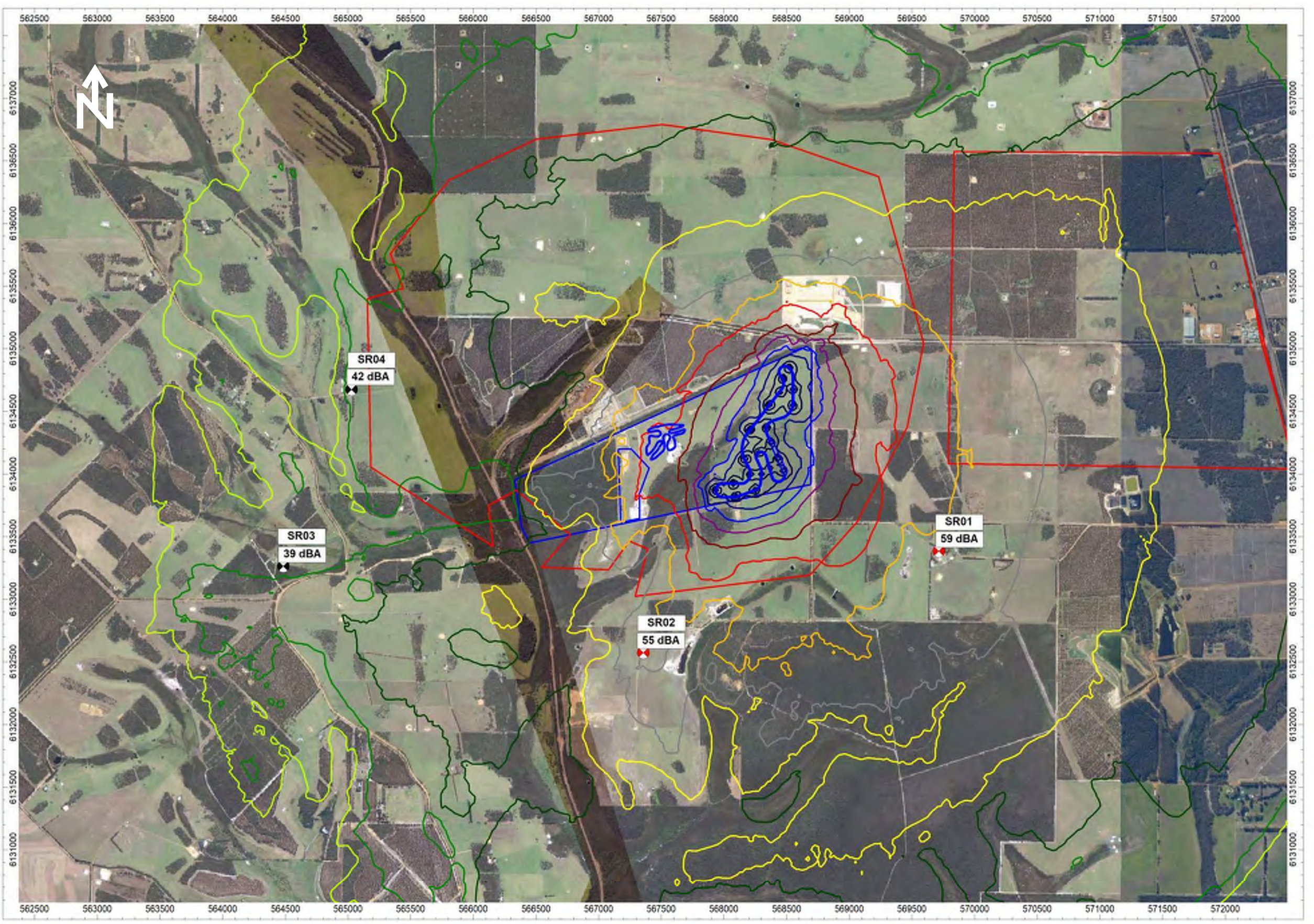
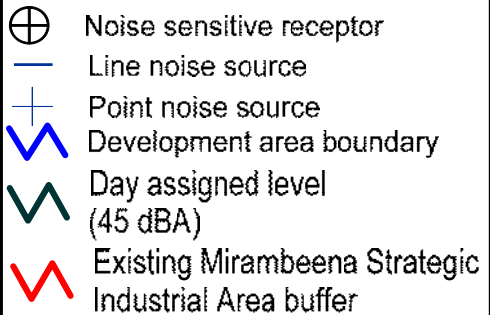
- Areas between the 60 dBA (orange) and 55 dBA (grey) contours would have conditions requiring Package A noise insulation and building screening (building envelopes) or fencing in order to meet outdoor noise levels.
- Areas between the 55 dBA (grey) and 50 dBA (yellow) contours would have no screening or insulation requirements, just a requirement for notifications on the title advising of possible noise impacts from a nearby motorsport venue.

In each case, closest cadastral boundaries should be used to define the Special Control Area, informed by the noise modelling results presented in Figure 7-1.

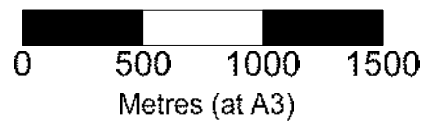
PREDICTED NOISE LEVELS



LEGEND



SCALE



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MAP PROJECTION: Universal Transverse Mercator
 HORIZONTAL DATUM: Geocentric Datum of Australia (GDA)
 GRID: Map Grid of Australia 1994, Zone 50

DATE 10.08.2020	FILE LOCATION N:\AU\Albany WA\Projects\61137331\Technical\Noise
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REVISION 2	DRAWING NO.
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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
MULTI-USE TRACK EVENT**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

FIGURE 7-1



8. Conclusions

The results presented in this assessment demonstrate that for some events, namely multi-use track and motocross events, there will be occasions when the predicted noise levels from Albany Motorsport Park exceed the assigned noise levels at the nearest sensitive receptors.

As such, it is recommended that appropriate management and mitigation measures are implemented for the project.

Noise from the Albany Motorsport Park is able to be reduced at source by including noise bunds or similar to screen noise from the closest existing sensitive receptors. Based on the distance between the facility and the nearby sensitive receptors, noise barriers are only likely to lead to slight reductions in noise levels, by up to 3-5 dBA, depending on location and height. In this regard, other mitigation measures have been outlined.

Provision of at property treatments to maintain suitable acoustic amenity at existing noise sensitive receptors in the vicinity of AMP. Such requirements for outdoor area screening and provision of insulation packages will be assessed by completion of at property inspections, in order to provide recommended acoustic treatments. In addition, as events are only planned during the day time period, predicted noise levels will not lead to sleep disturbance, and therefore will be less intrusive.

The existing industrial buffer in the vicinity to the proposed Albany Motorsport Park prevents the construction of any habitable dwellings, reducing the likelihood of sensitive receptors being developed in an area impacted by noise from motorsport activities in the future.

Additional planning controls to establish a *Special Use Zone* with an associated *Special Control Area* should be implemented to prevent further residential development, unless specific planning and building controls are implemented.

This assessment predicts exceedance of the assigned noise levels during certain event types is likely. As such consideration will be made to the preparation of a Noise Management Plan, prepared in line with requirements outlined in this report, as the project progresses.

Appendices

Appendix A - Glossary of noise terminology

Term	Definition
Ambient noise	Level of noise from all sources, including background noise from near and far and the source of interest
A-weighted	A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. A-weighted sound level is described as LA dB.
Background noise	Noise level from sources other than the source of concern.
dB	Decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.
Hz	Units for frequency are known as Hertz.
Impulsive noise	An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness is: “A variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax, slow}$ is more than 15 dB when determined for a single representative event”.
L_{Aslow}	This is the noise level in decibels, obtained using A-weighting and S time weighting as specified in AS1259.1-1990. Unless assessing modulation, all measurements use the slow time weighting characteristic.
L_{Afast}	This is the noise level in decibels, obtained using A-weighting and F time weighting as specified in AS1259.1-1990. This is used when assessing the presence of modulation only.
L_{Apeak}	This is the maximum reading in decibels using A-weighting and P time weighting as specified in S1259.1-1990.
L_{Amax}	L_{Amax} level is the maximum A-weighted noise level during a particular measurement.
L_{A1}	L_{A1} level is the A-weighted noise level which is exceeded for 1% of the measurement period and is considered to represent the average of the maximum noise levels measured.
L_{A10}	L_{A10} level is the A-weighted noise level which is exceeded for 10% of the measurement period and is considered to represent the intrusive noise level.
L_{A90}	L_{A90} level is the A-weighted noise level which is exceeded for 90% of the measurement period and is considered to represent the background noise level.
L_{Aeq}	The equivalent steady state A-weighted sound level ('equal energy') in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the average noise level.
L_{Amax} assigned level	Means an assigned level which, measured as a L_{Aslow} value, is not to be exceeded at any time.
L_{A1} assigned level	Means an assigned level which, measured as a L_{Aslow} value, is not to be exceeded for more than 1% of the representative assessment period.
L_{A10} assigned level	Means an assigned level which, measured as a L_{Aslow} value, is not to be exceeded for more than 10% of the representative assessment period.
Linear	Sound levels measured without any weightings are referred to as 'linear' and the units are expressed as dB(lin).
L linear, peak	Maximum reading in decibels obtained using P-time-weighting characteristic as specified in AS 1259.1-1990.
Maximum design sound level	The level of noise above which most people occupying the space start to become dissatisfied with the level of noise.
Modulating noise	A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is: Is more than 3 dB L_{Afast} or is more than 3 dB L_{Afast} in any one-third octave band Is present for at least 10% of the representative assessment period Is regular, cyclic and audible

Term	Definition
One-third octave band	Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20,000 Hz inclusive.
Representative assessment period	Means a period of time not less than 15 minutes and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.
Reverberation time	Of an enclosure, for a sound of a given frequency or frequency band, the time that would be required for the reverberantly decaying sound pressure level in the enclosure to decrease by 60 decibels.
RMS	Root mean square level; used to represent the average level of a wave form such as vibration.
Satisfactory design sound level	The level of noise that has been found to be acceptable by most people for the environment in question and also to be not intrusive.
Sound pressure level (SPL)	The sound pressure level of a noise source is dependent upon its surroundings (influenced by distance, ground absorption, topography, meteorological conditions etc.) and is what the human ear actually hears. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.
Sound power level (SWL)	Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure levels at known distances. Noise modelling incorporates source sound power levels as part of the input data.
Specific noise	Relates to the component of the ambient noise that is of interest. This can be referred to as the noise of concern or the noise of interest
Tonal noise	A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is: The presence in the noise emission of tonal characteristics where the difference between - The A-weighted sound pressure level in any one-third octave band The arithmetic average of the A-weighted sound pressure levels in the two adjacent one-third octave bands is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{Aslow} levels. This is relatively common in most noise sources.

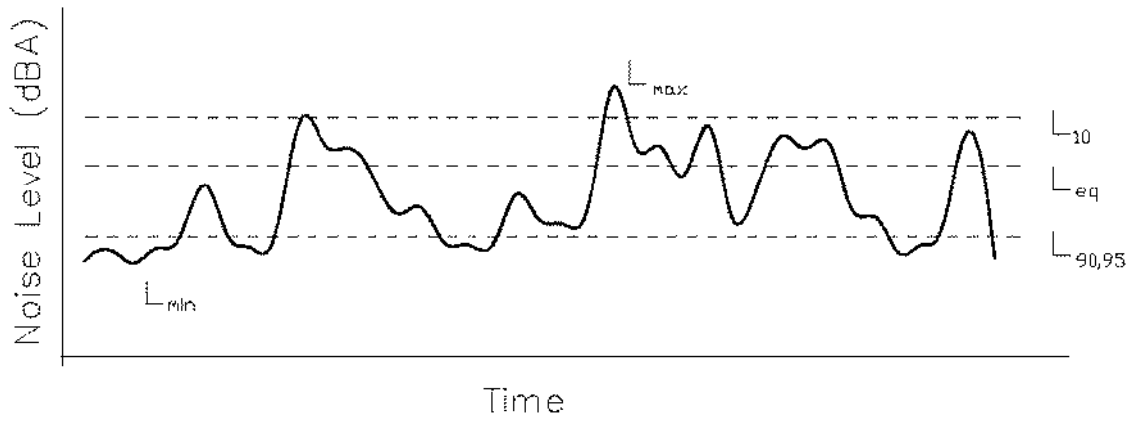
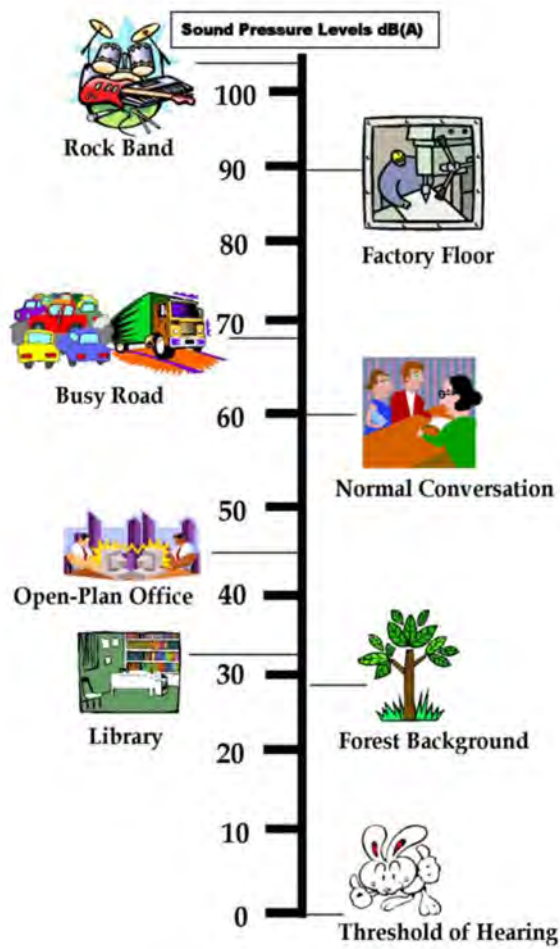


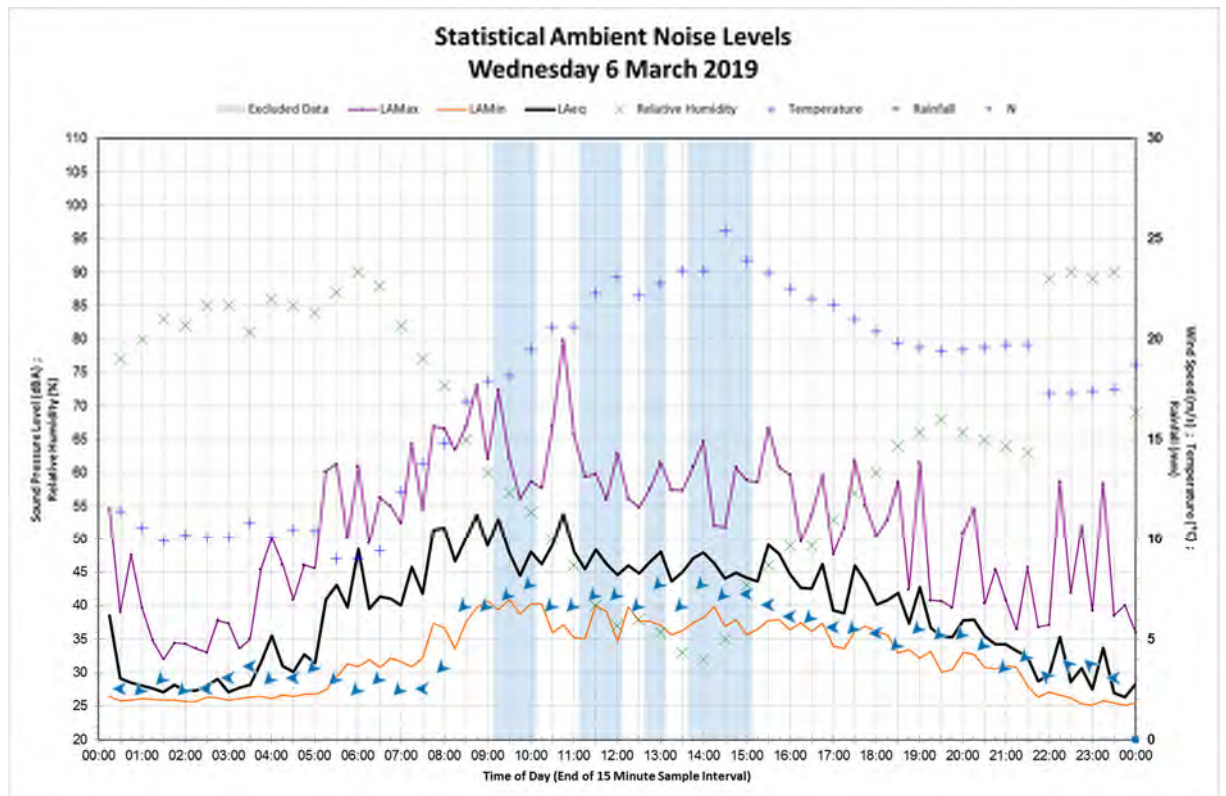
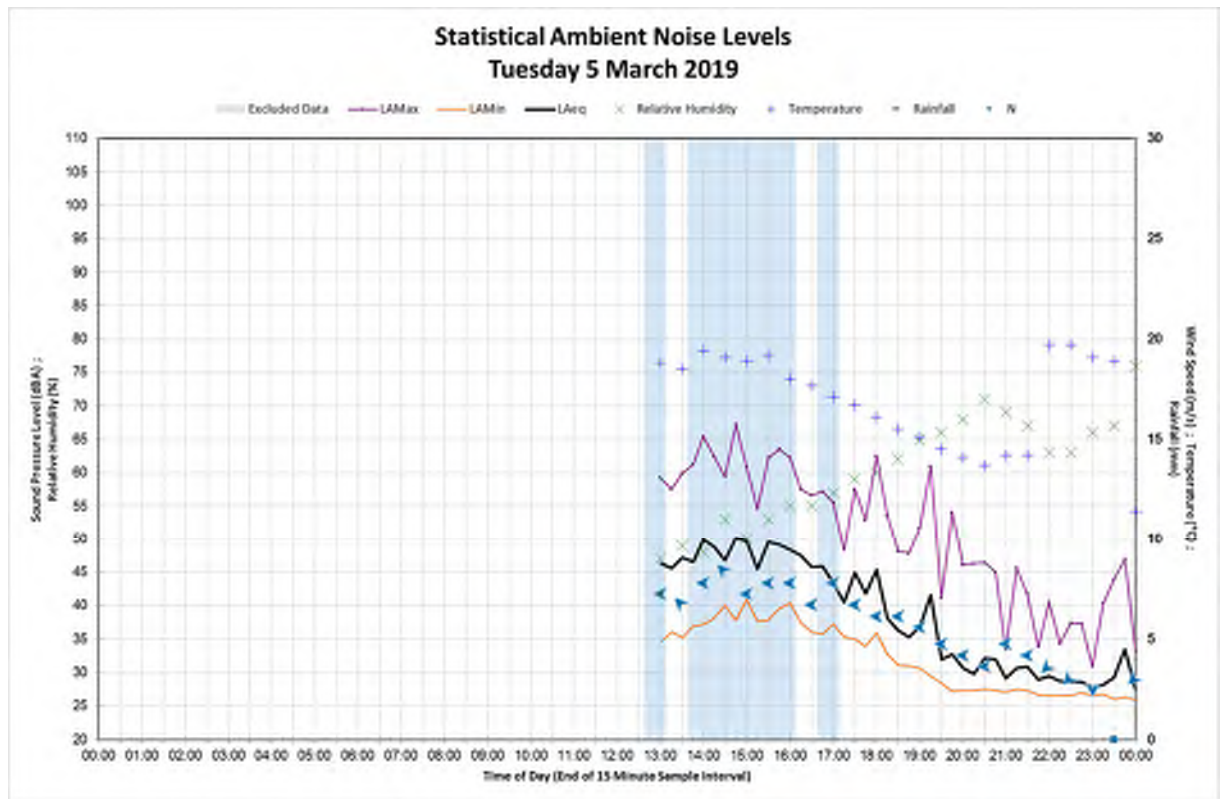
Chart of Noise Level Descriptors



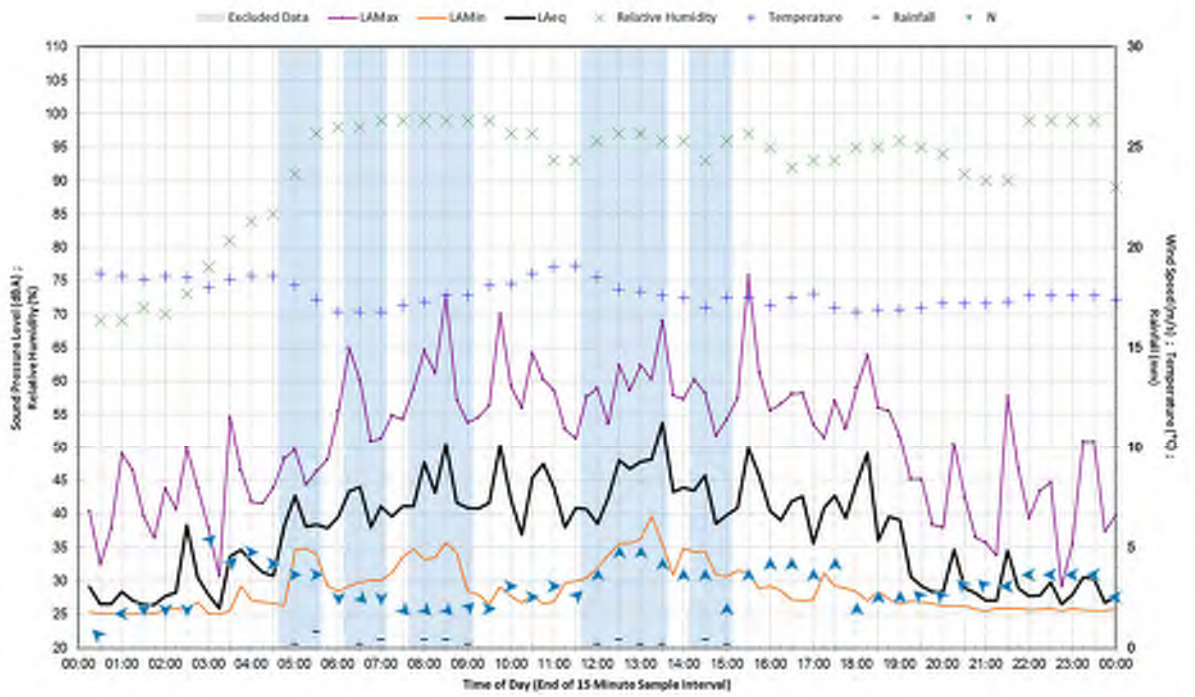
Typical Noise Levels

Appendix B – Monitoring results

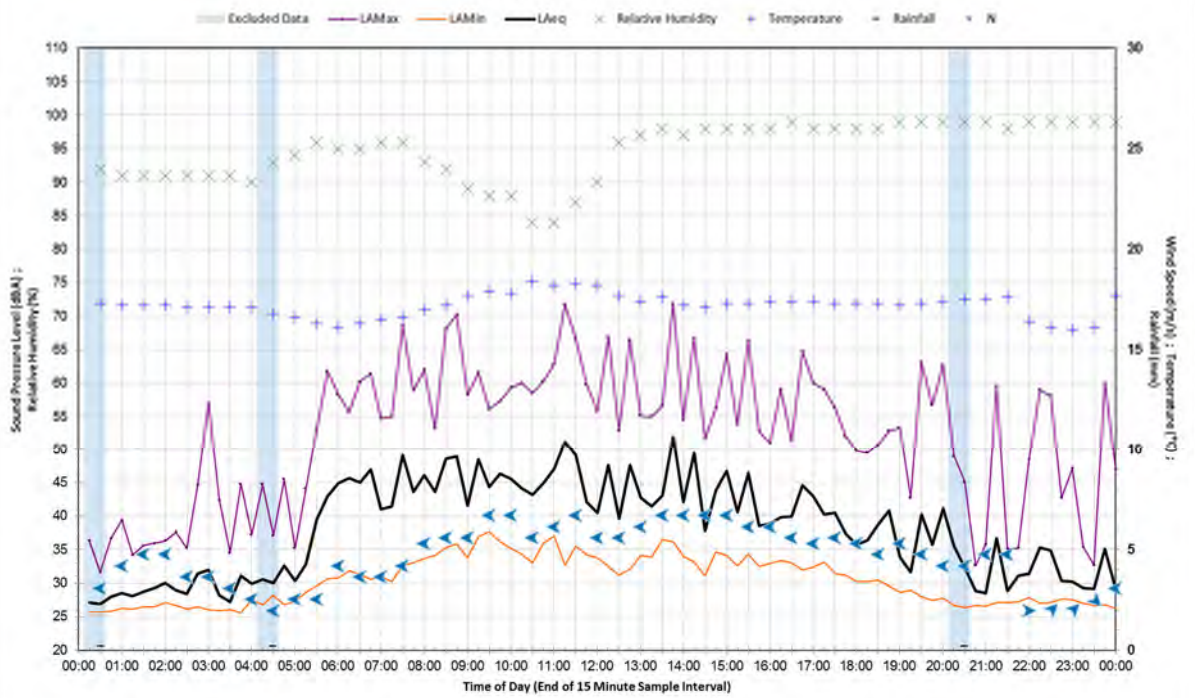
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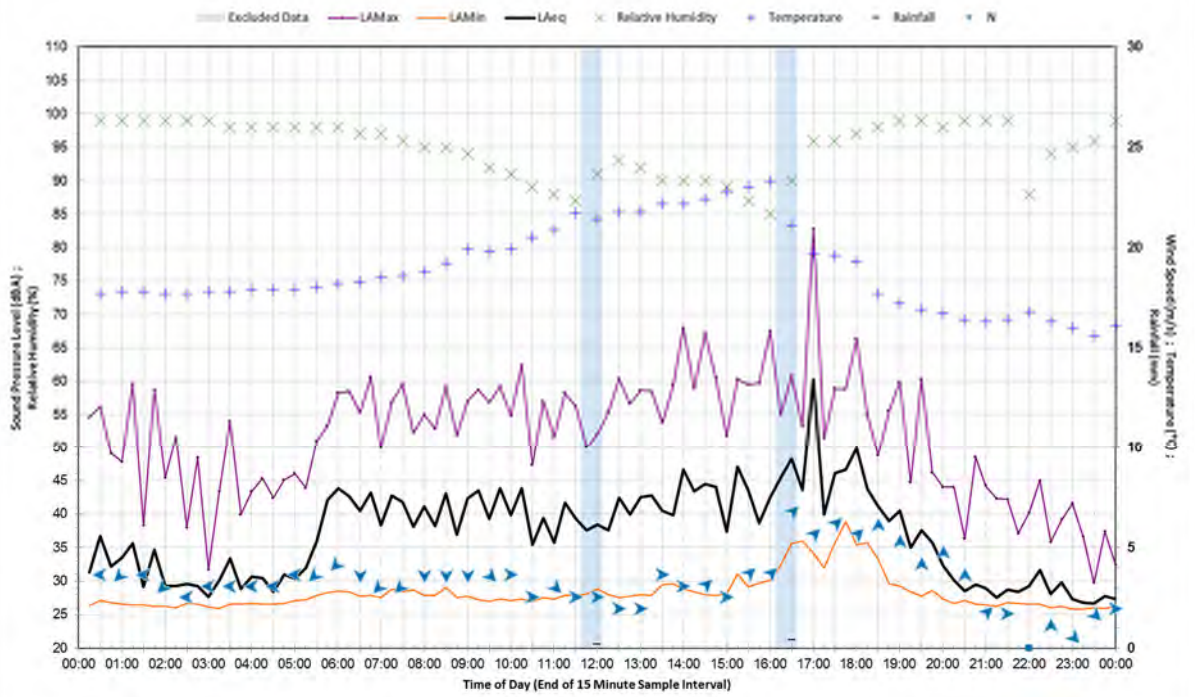
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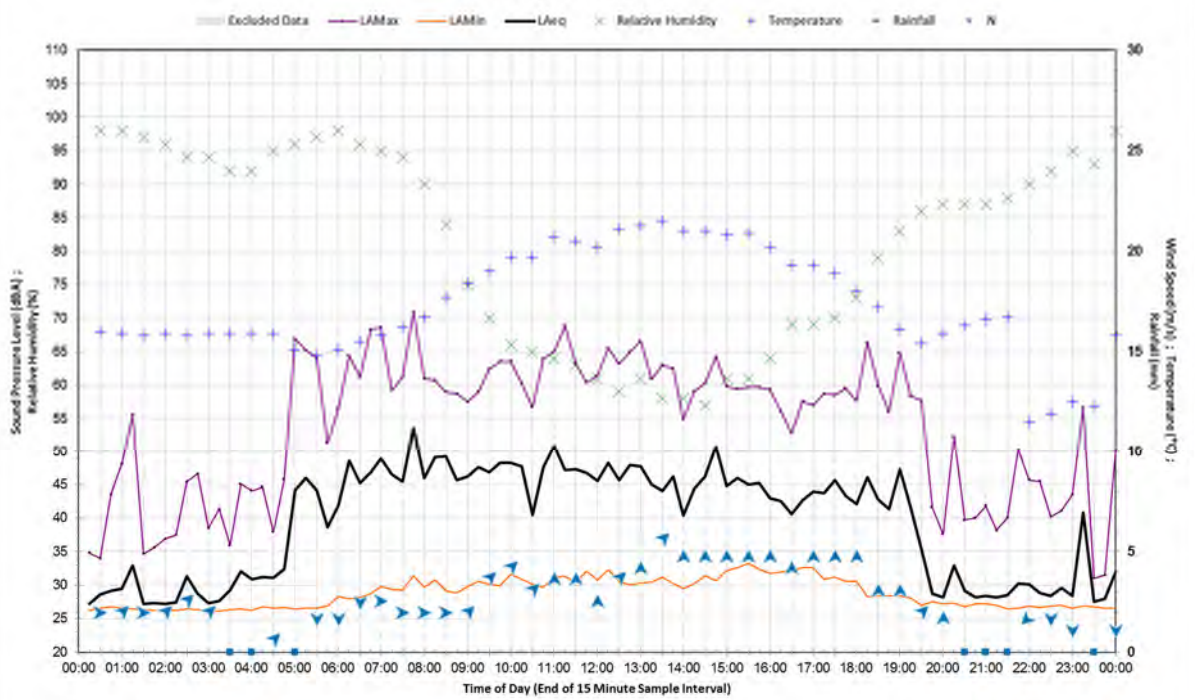
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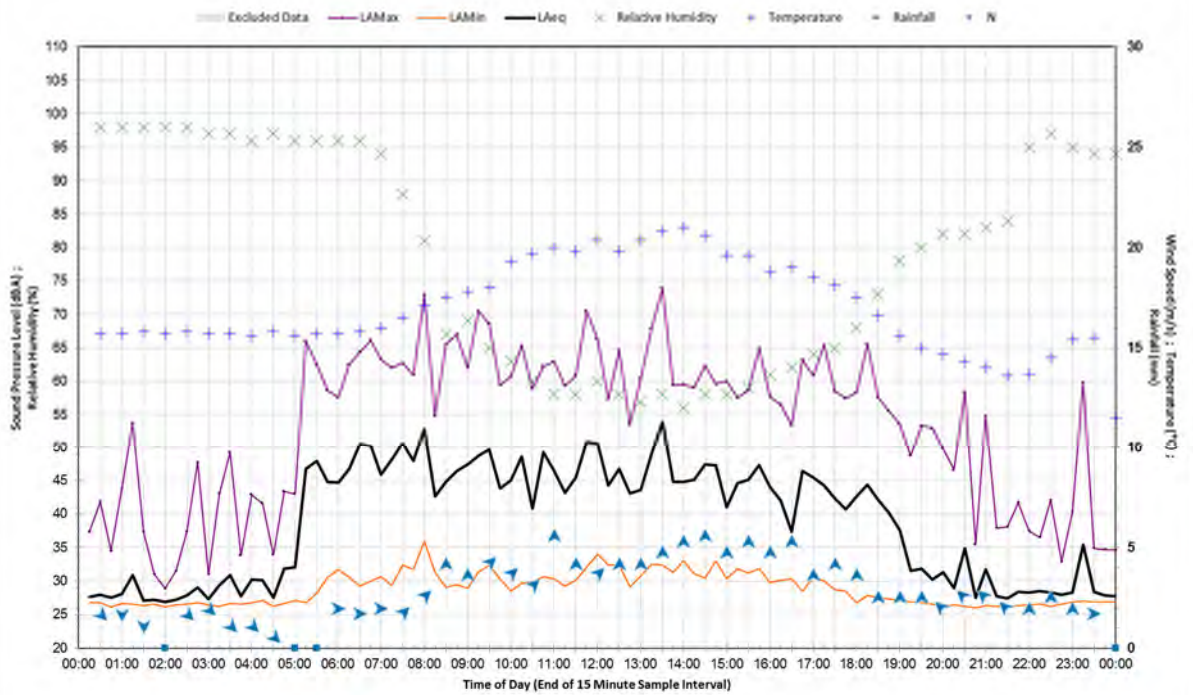
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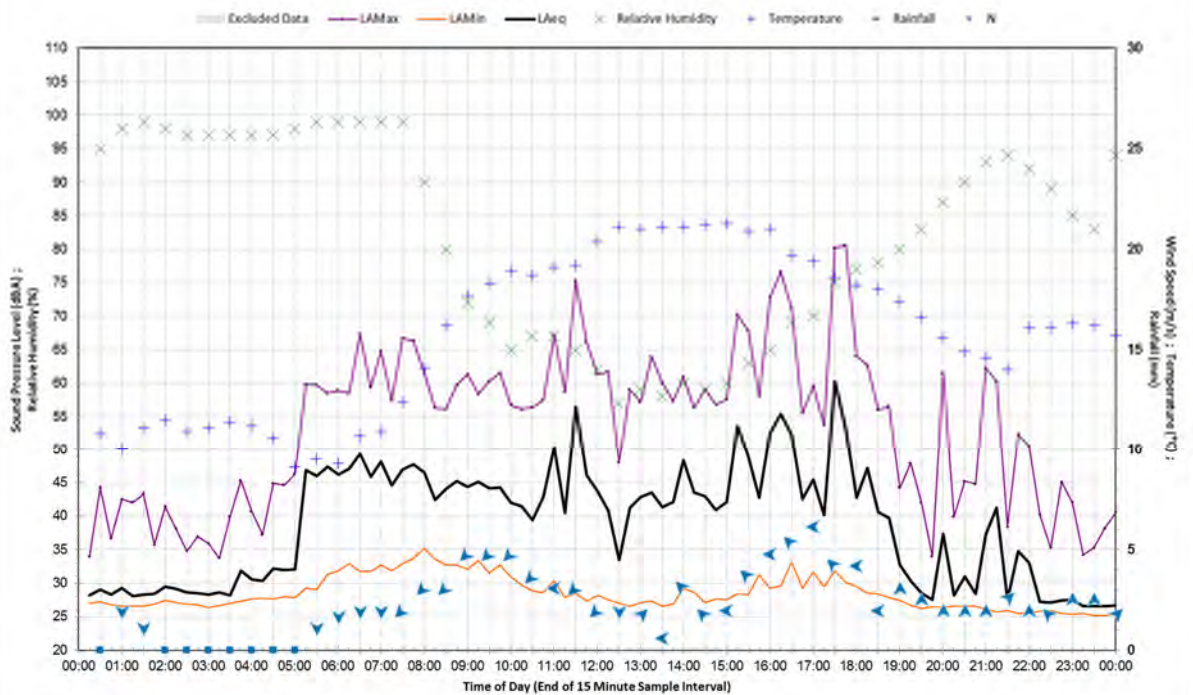
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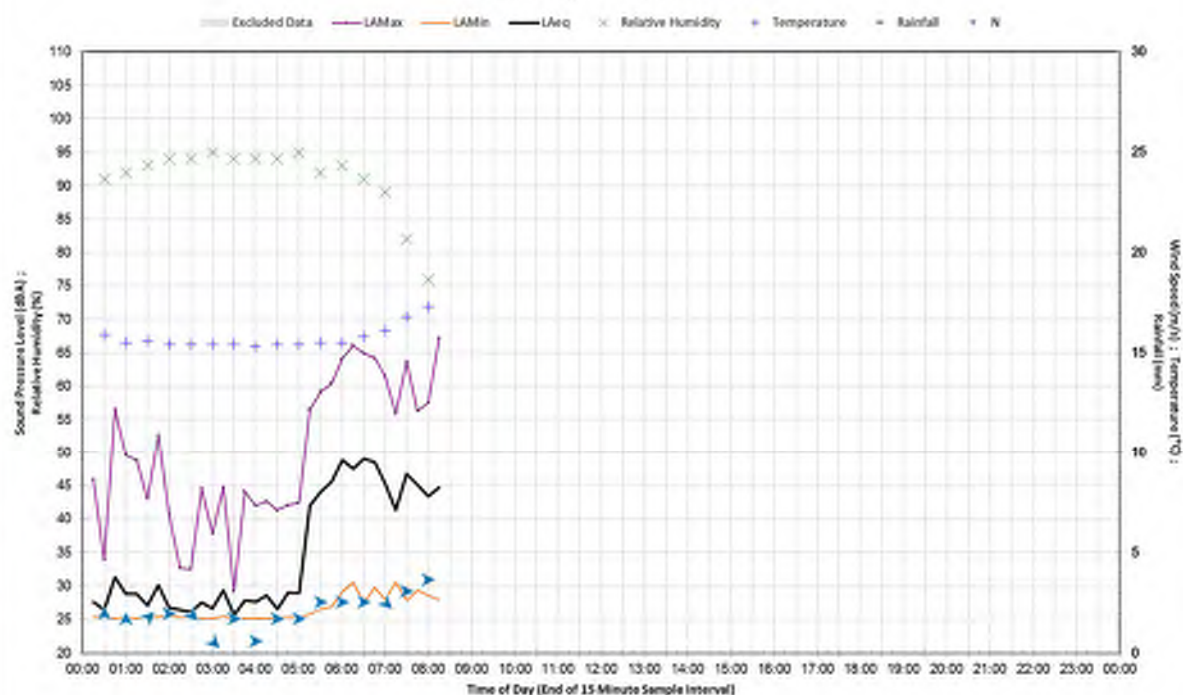
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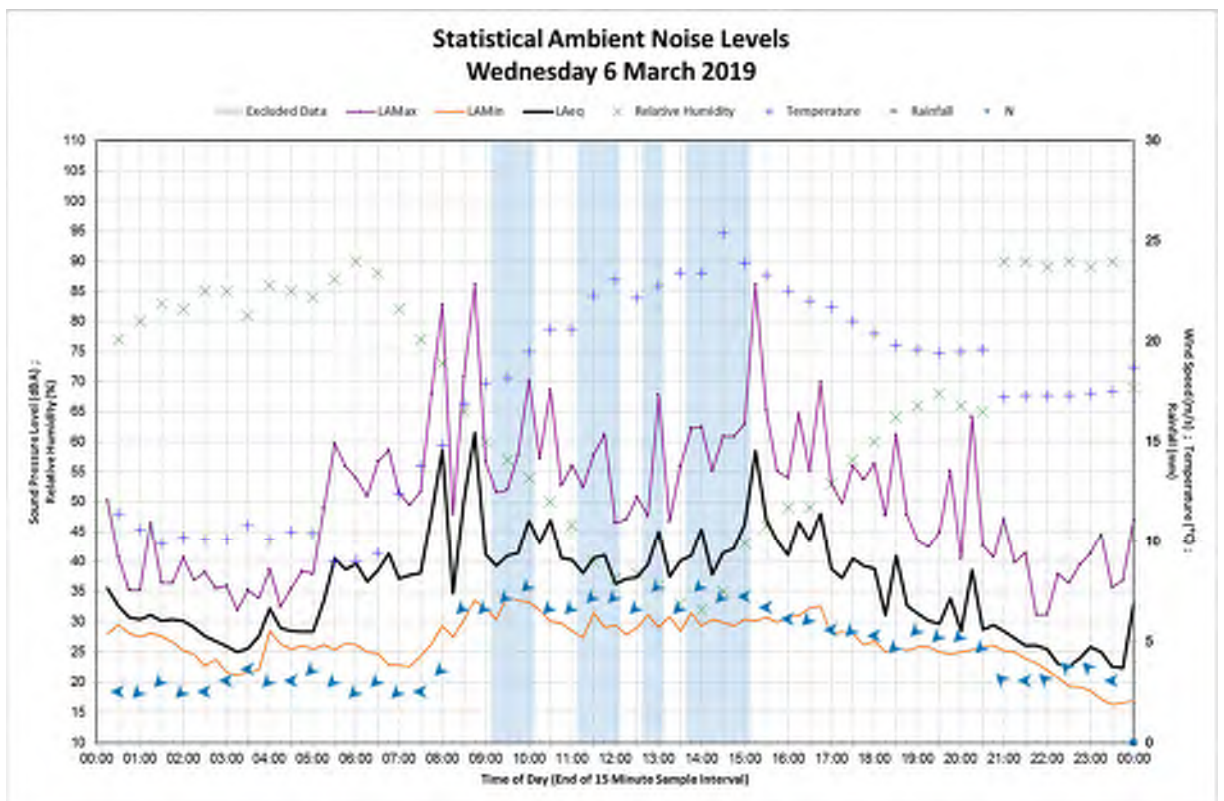
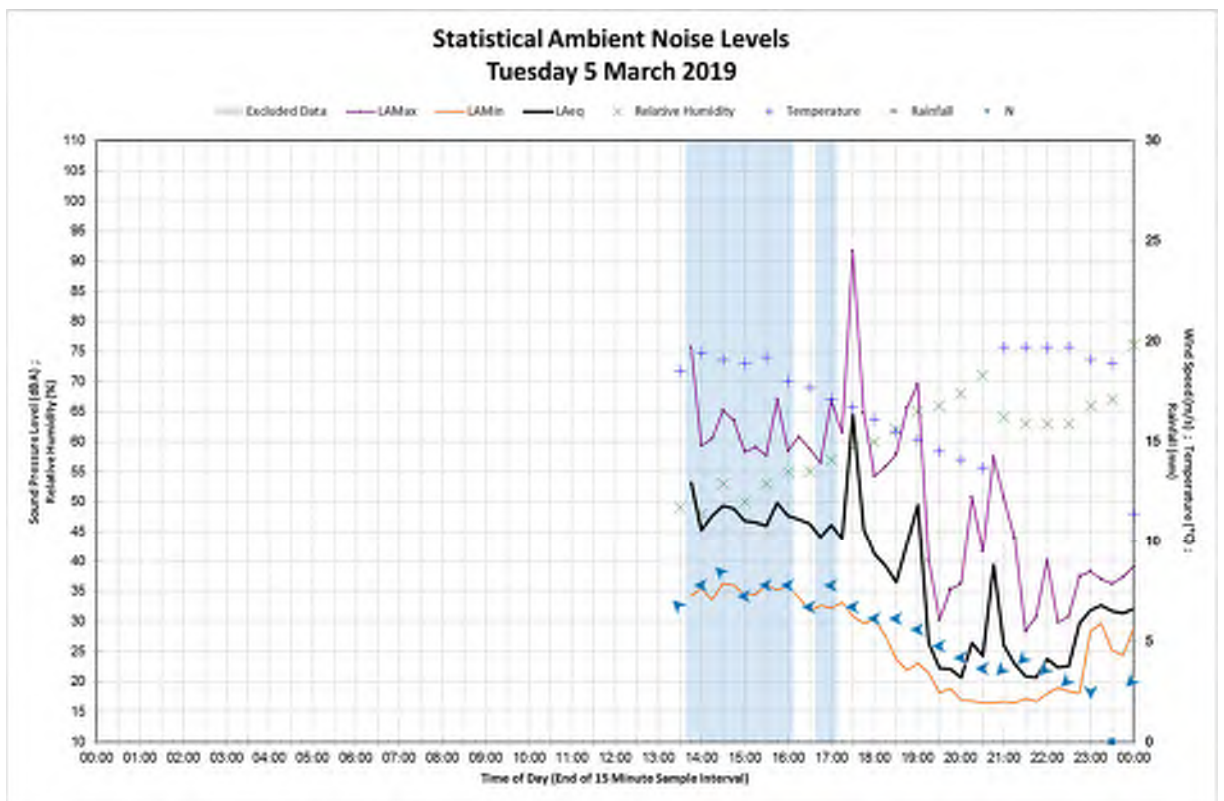
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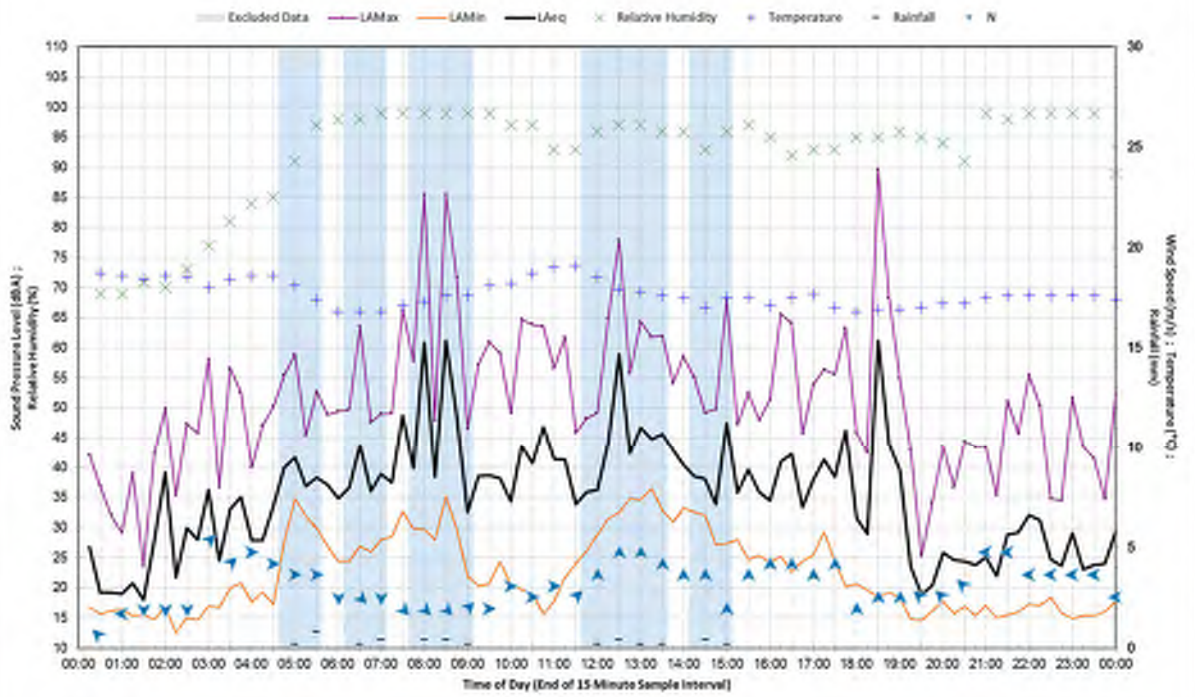
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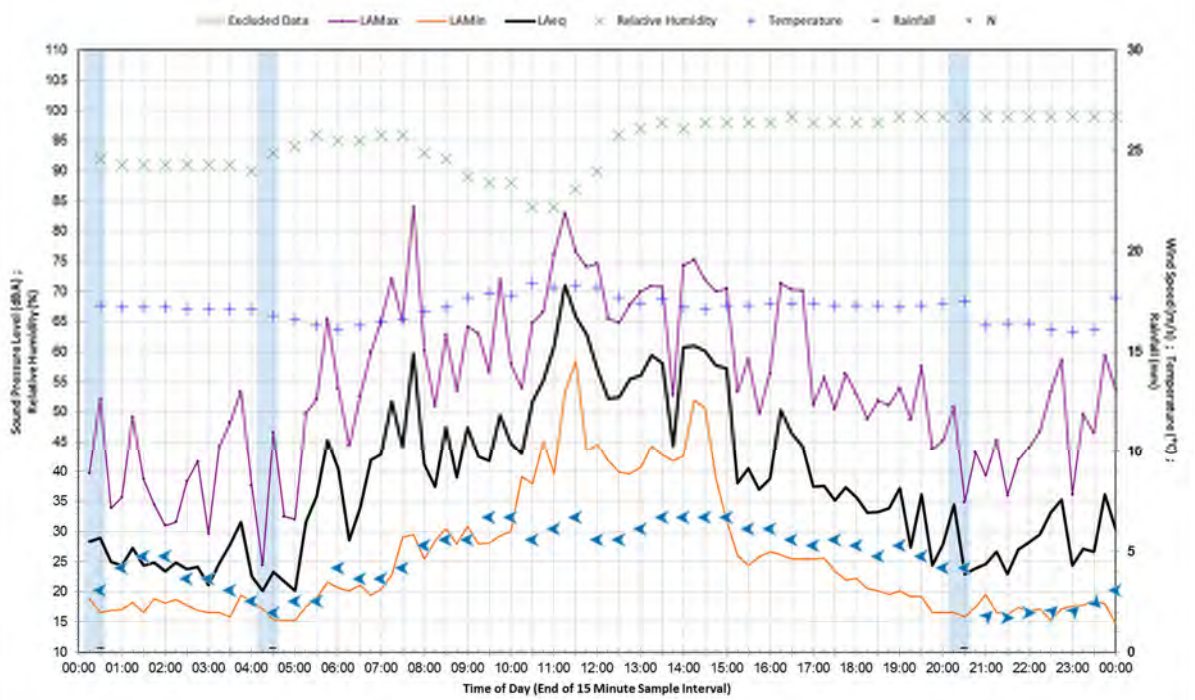
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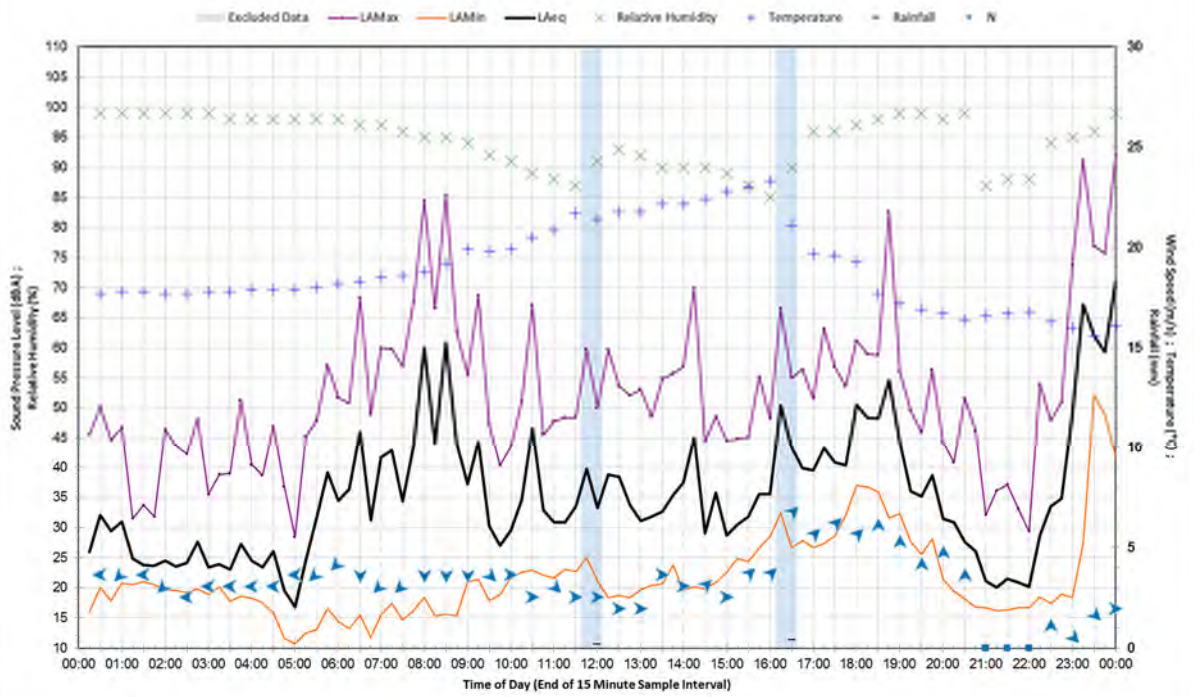
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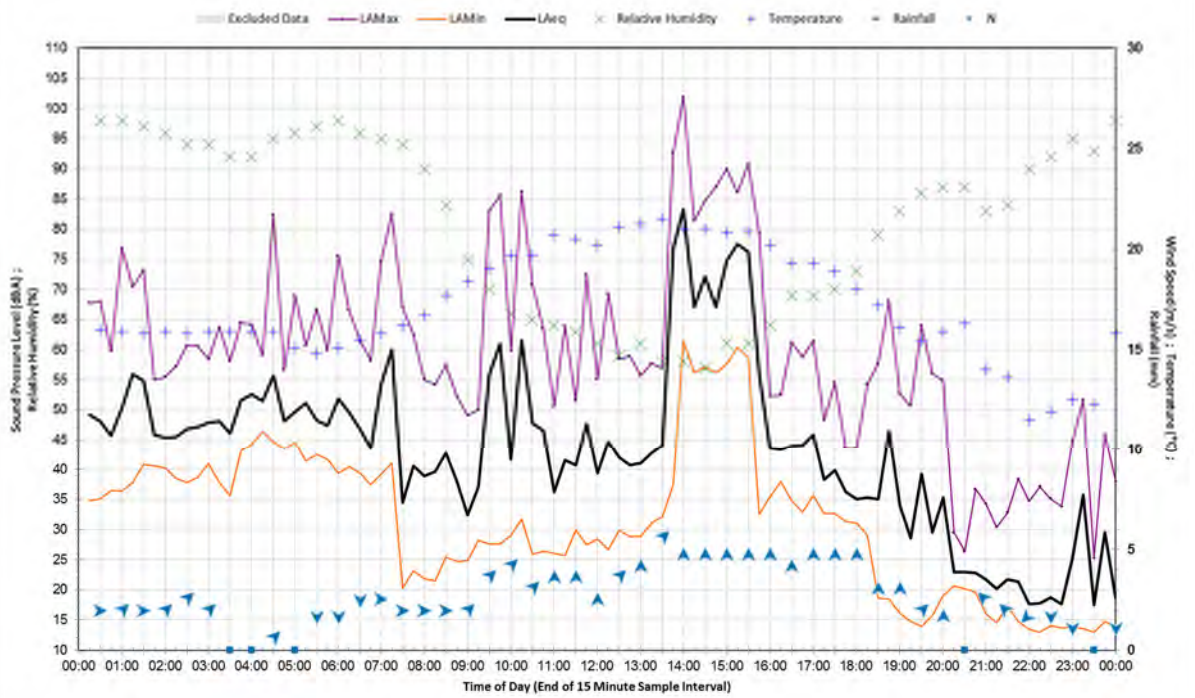
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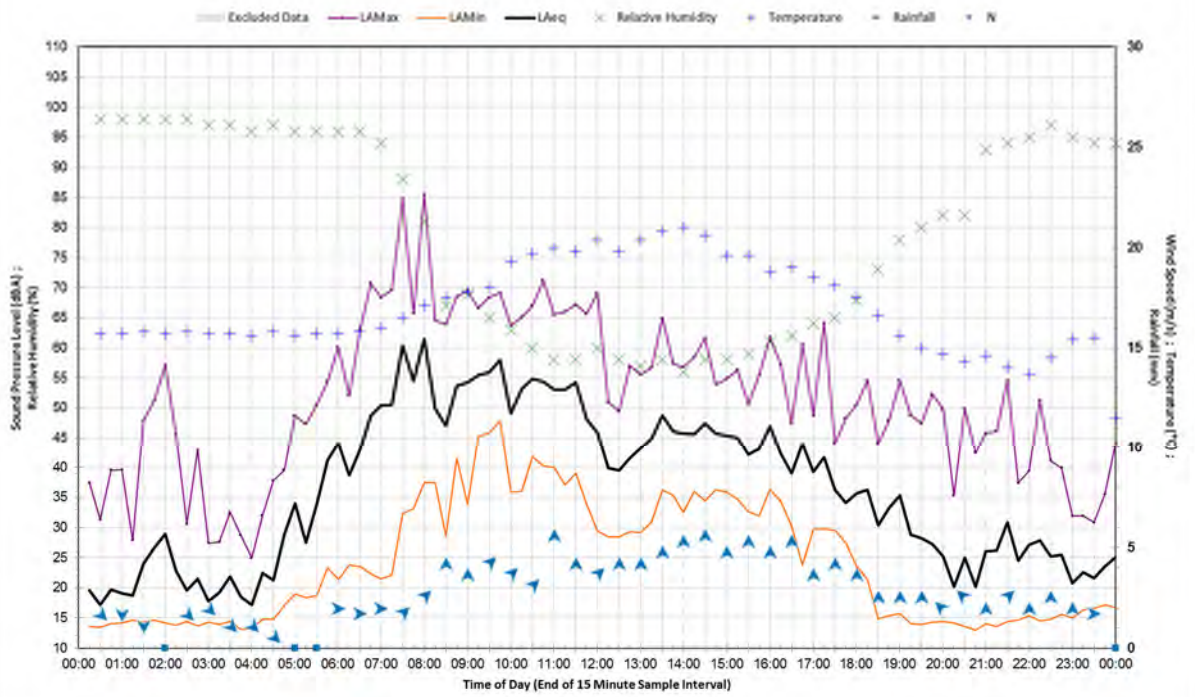
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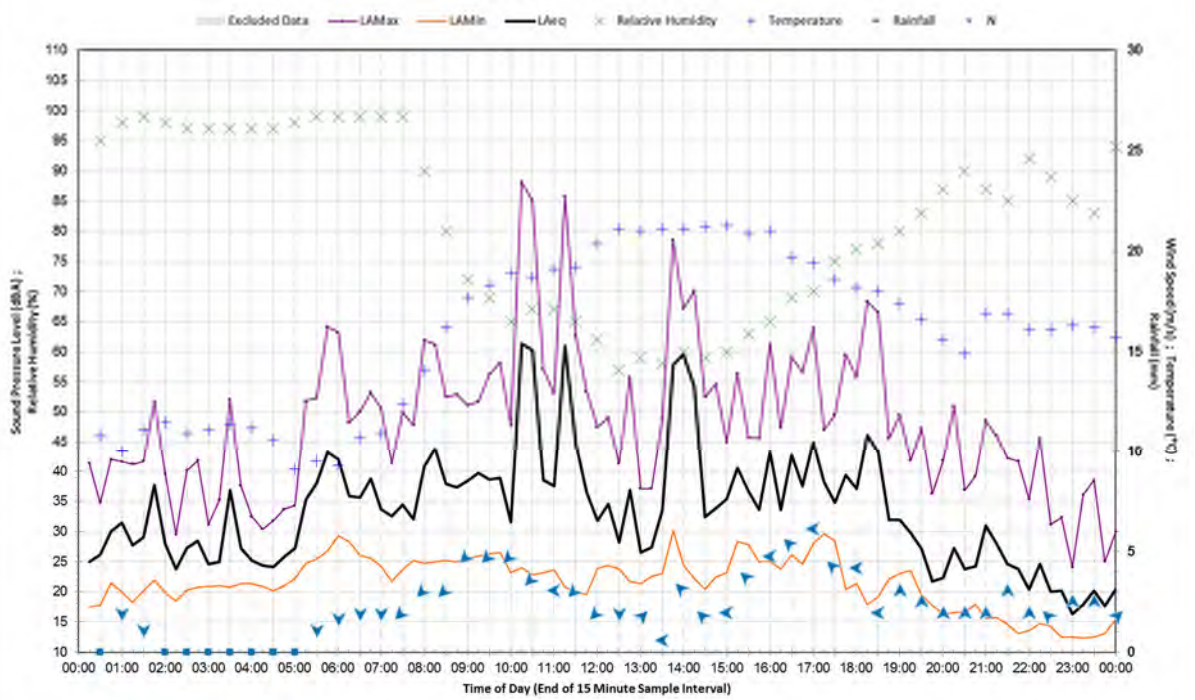
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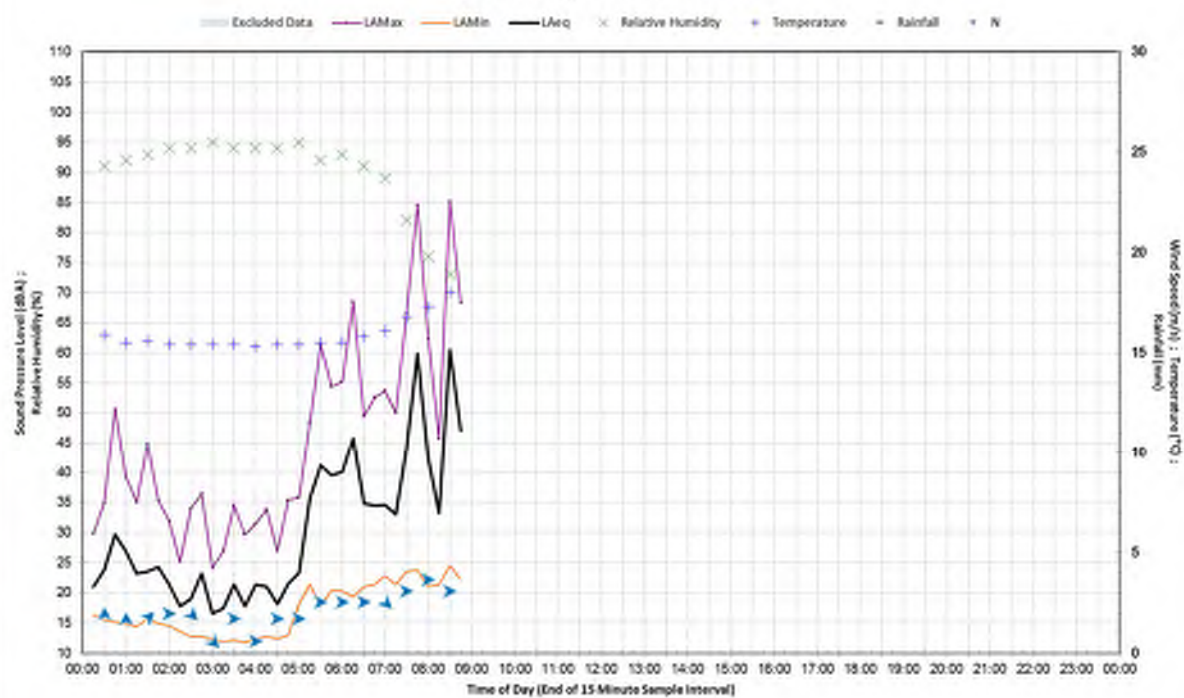
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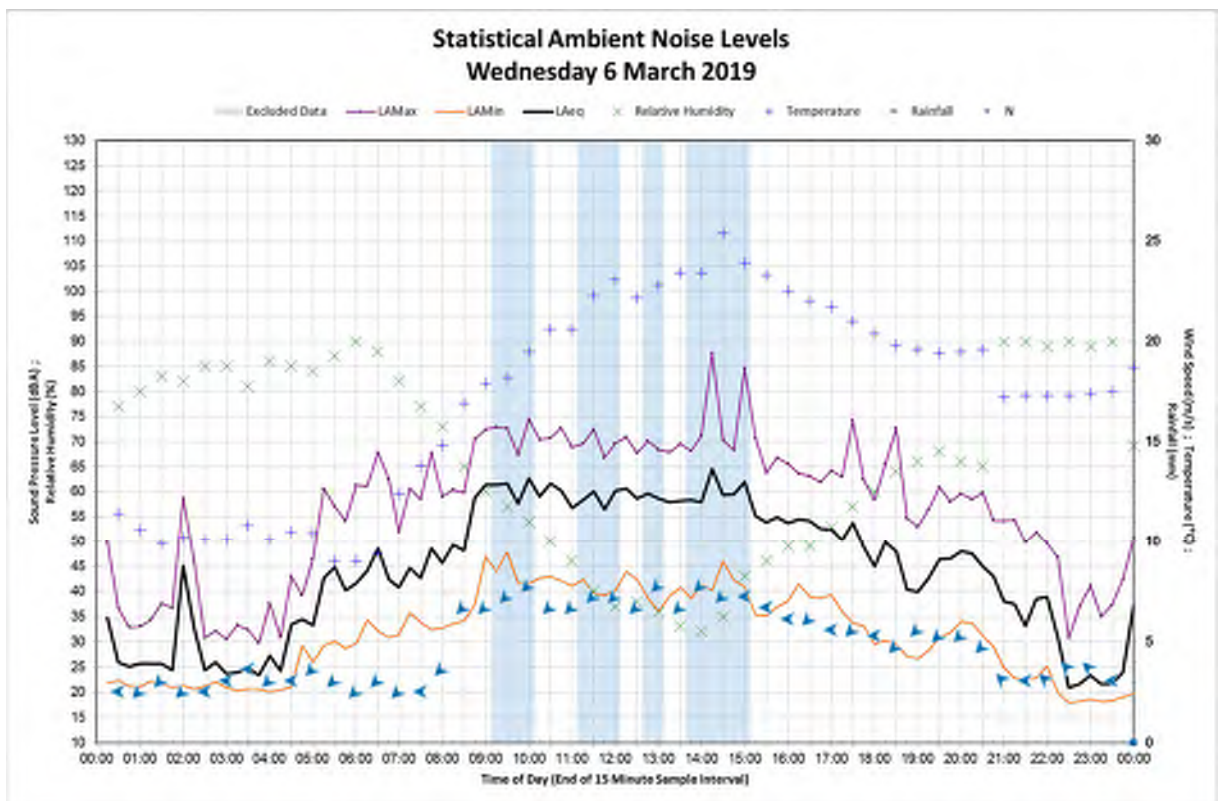
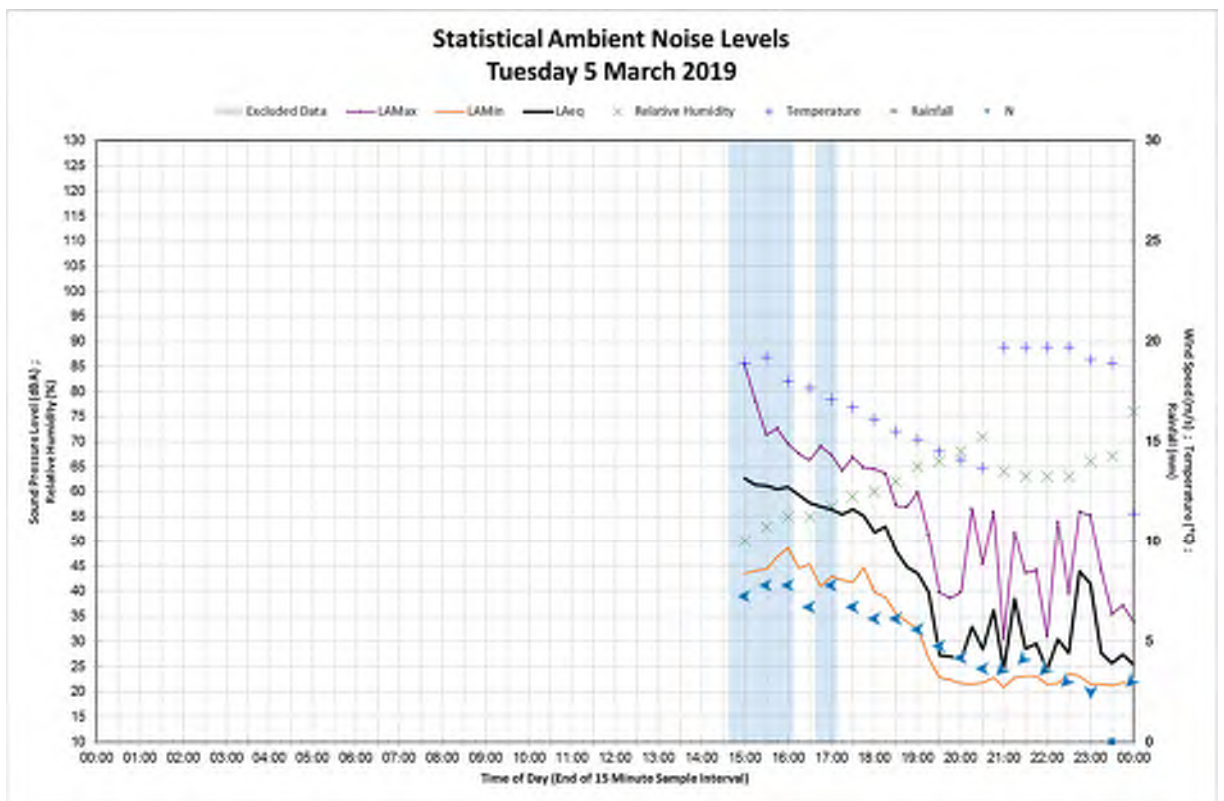
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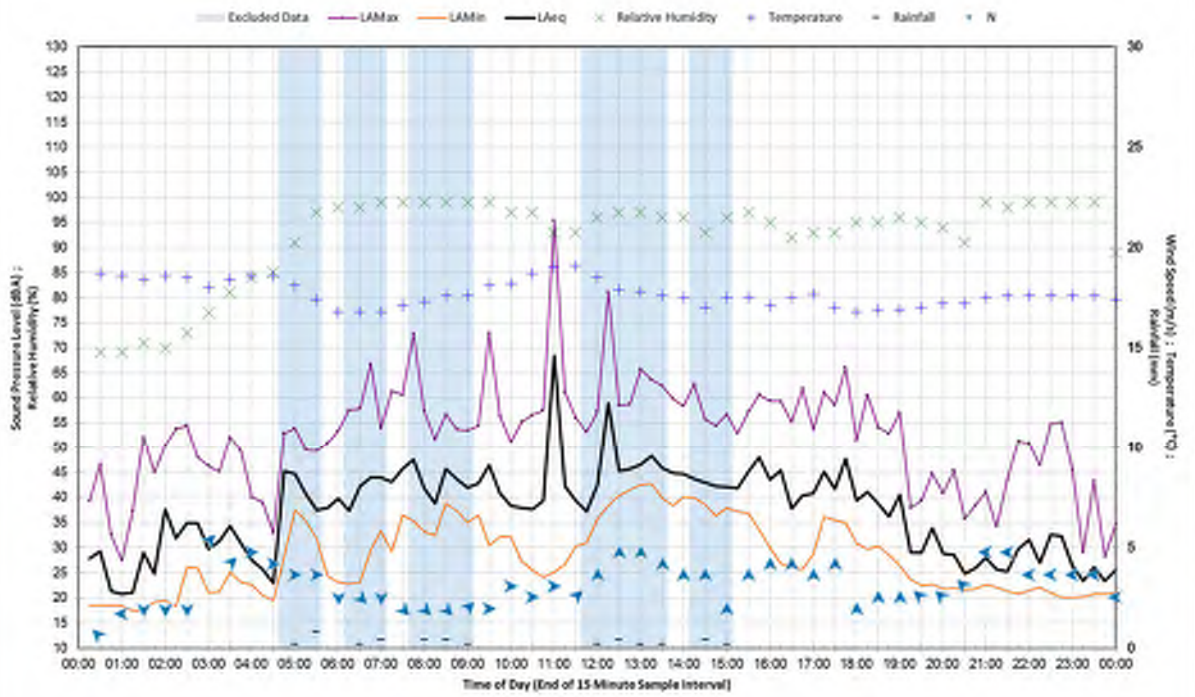
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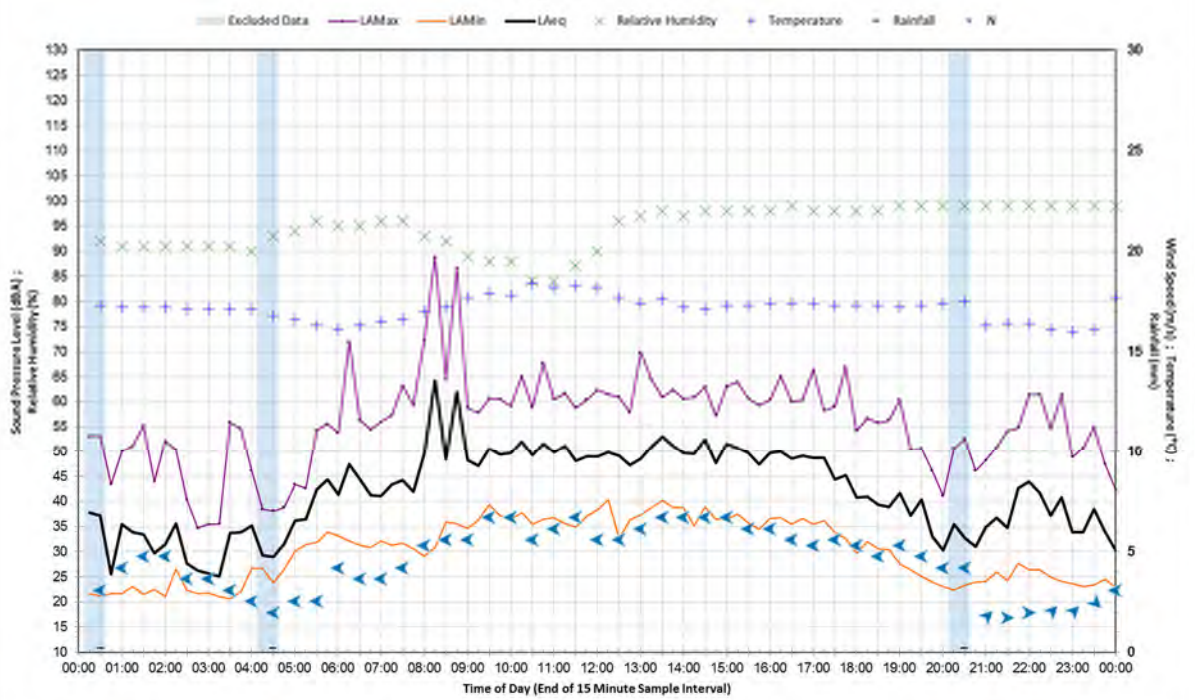
Site C - 727 Marbelup North Road MARBELUP WA 6330



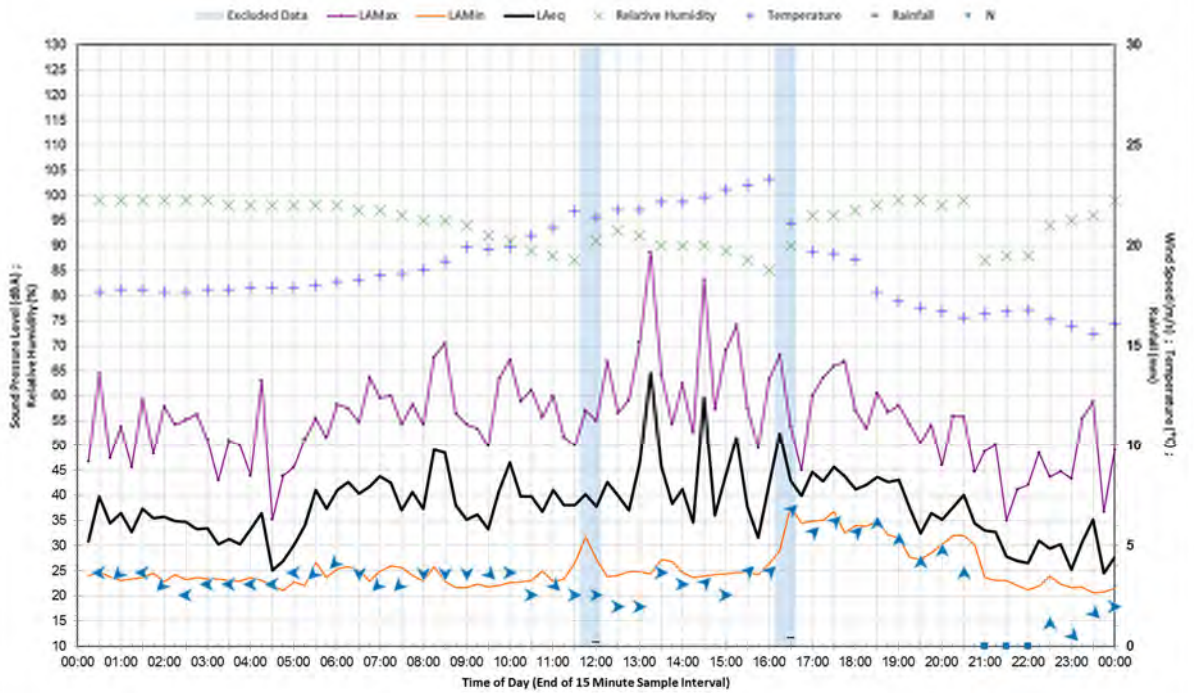
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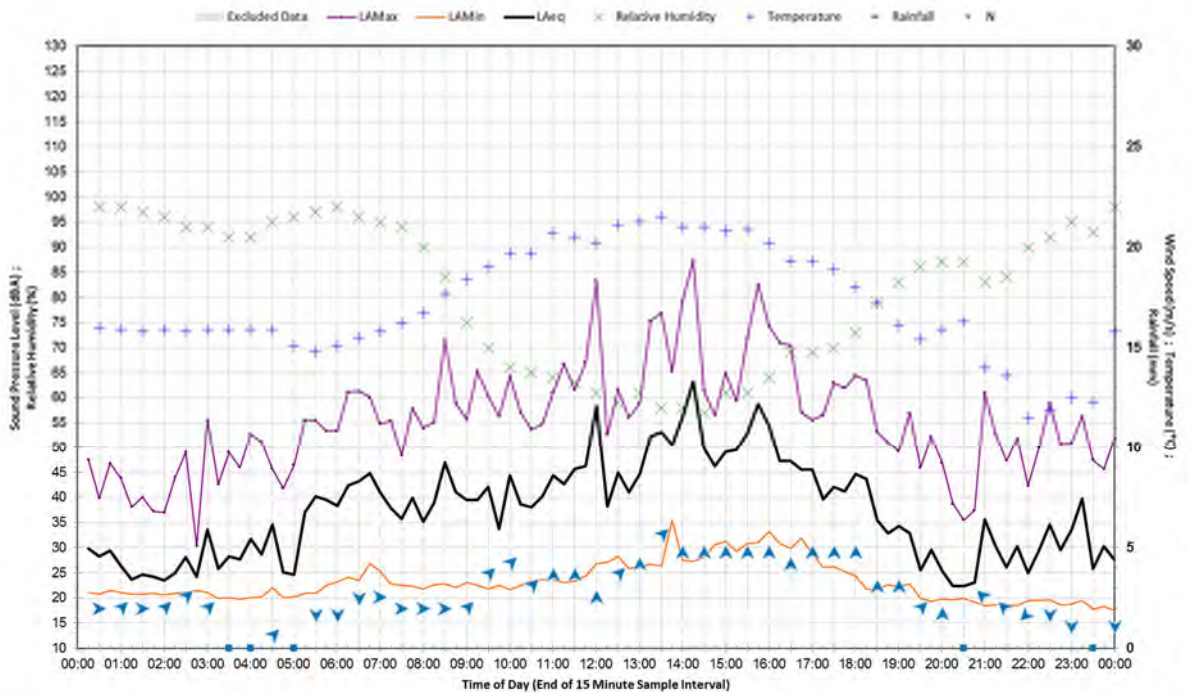
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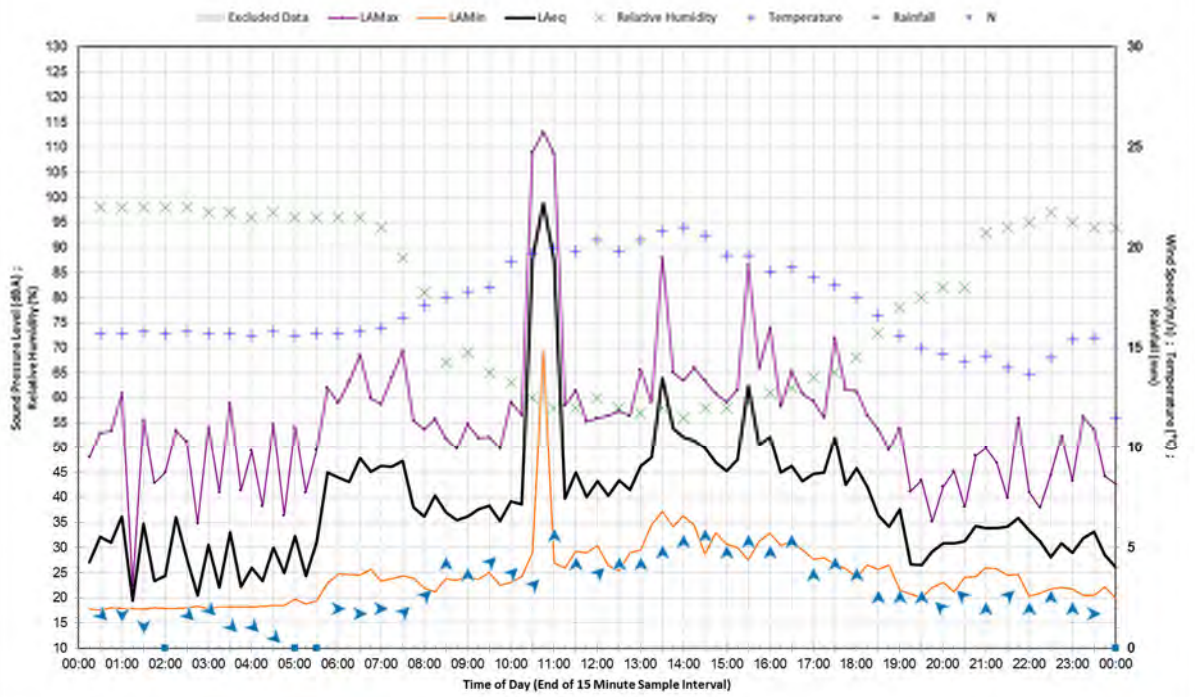
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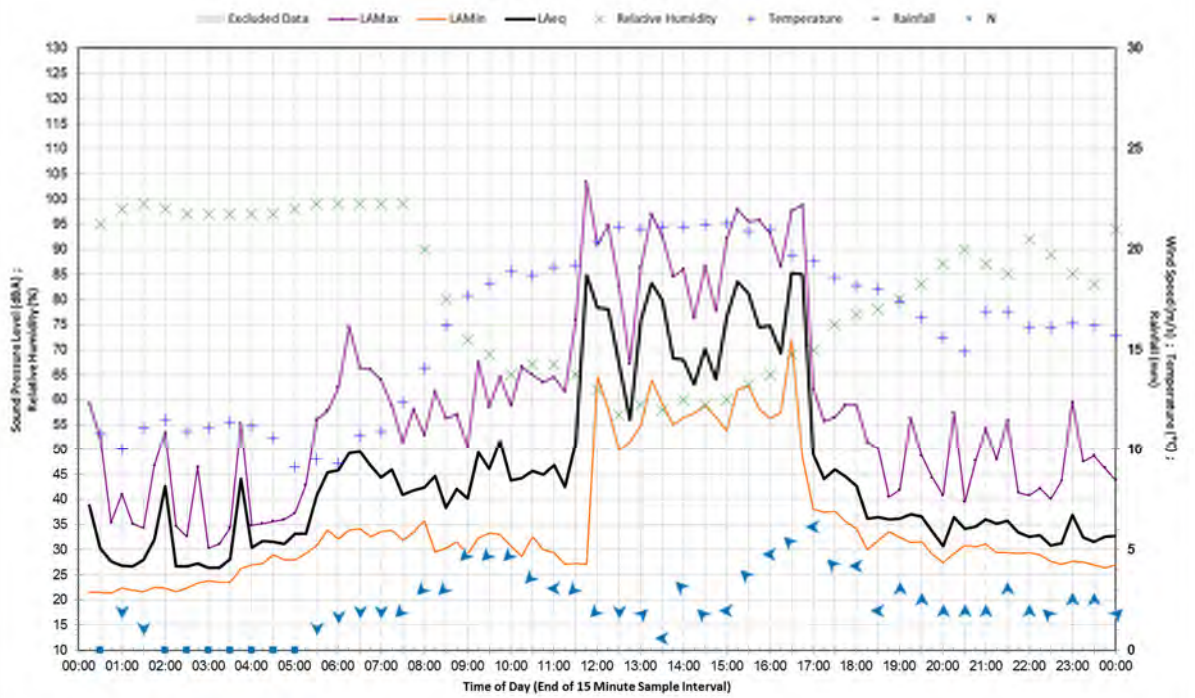
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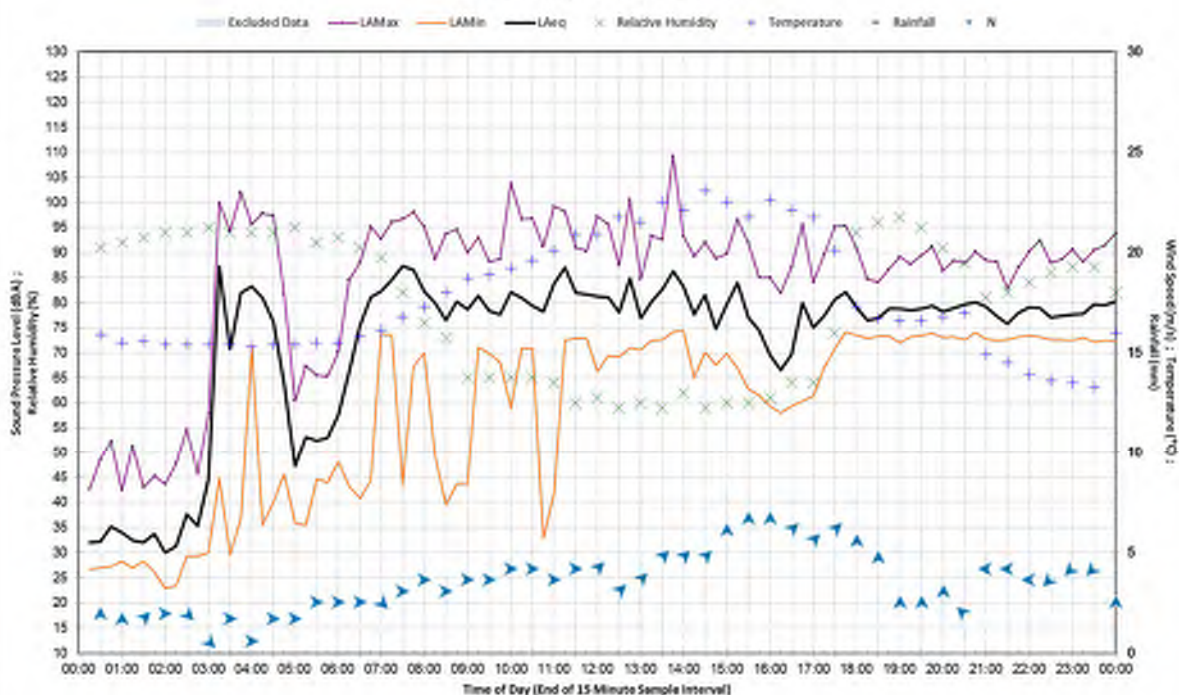
Statistical Ambient Noise Levels Monday 11 March 2019



Statistical Ambient Noise Levels Tuesday 12 March 2019



Statistical Ambient Noise Levels Wednesday 13 March 2019



Appendix C – Example Noise Management Plan

GREAT SOUTHERN MOTORPLEX GROUP

NOISE MANAGEMENT PLAN – ALBANY MOTORSPORT PARK

This noise management plan ('the NMP') has been approved by the Chief Executive Officer (CEO) of the City of Albany ('the CEO') for the purposes of Division 3 of the *Environmental Protection (Noise) Regulations 1997*.

1. VENUE DETAILS

Name of venue	Albany Motorsport Park ('the venue')
Location of venue	Down Road DROME WA
Occupier of venue	Great Southern Motorplex Group ('the occupier')
Affiliations	Confederation of Australian Motor Sports (CAMS) Fédération Internationalé de l'Automobile (FIA) Fédération Internationalé Motocyclisme (FIM) Motorcycling Australia (MA)
Venue maps	Attachment 1 – Map of venue showing facilities

2. APPLICATION

The NMP applies:

1. While the occupier is the leaseholder of the venue
2. To racing activities at the venue organised by the occupier.
3. To the emission of noise during a racing activity at the venue.
4. From the date of approval by the CEO until the expiration of the approval.

Regulation 7 of the *Environmental Protection (Noise) Regulations 1997* does not apply to noise emitted from the venue during a racing activity if the activity is conducted in accordance with the NMP.

The occupier must ensure that the conditions and ancillary measures designated as such in the CEO's approval notice are implemented.

3. TYPES OF RACING ACTIVITIES AND CLASSES OF VEHICLES

3.1 Types of racing activities covered by the NMP

- Car test and tune days
- Car speed events (Club, State and National)
- Supercars event (National)
- Bike test and tune days
- Bike speed events (Club, State and National)
- Motocross training

- Motocross events (Club and State)
- Drifting days (Club and State)
- Motorkhana events (Club)
- Special events

3.2 Classes of vehicles

The following classes of vehicles may compete in events at this venue:

- Various classes of cars including street cars, Formula Vee, Formula Classic, Formula Ford, HQ Holden sedans, saloon cars, sports sedans, production sports cars and marque sports cars, historic touring cars, improved production cars, Formula 1000 and Excel Cup.
- Various drift cars
- Various classes of motorcycles including historic, 125 cc, 250 cc, 500 cc, Grand Prix, Superbikes, solo and sidecar bikes
- Various classes of motocross bikes including junior, senior, 65 cc, 85 cc, 125 cc
- Special exhibition vehicles
- Various other vehicles of smaller engine capacity, including road registered vehicles

4. LIMITATIONS ON RACING ACTIVITIES

4.1 Scheduled race meetings and practice sessions

The following limits apply to scheduled race meetings and practice sessions at the venue:

1. Motorsport racing and practice may occur year round, within the limitations established by this noise management plan.
2. Racing can only take place at a race meeting or practice session.
3. Racing vehicles are not to be operated at the venue at any time other than a race meeting, practice session or tuning day.
4. No more than XX race meetings are to be held during a year.
5. In addition to the XX race meetings per season, a preliminary meeting may be held to conduct tests on racing vehicles to establish their compliance with this Noise Management Plan.
6. Races at a race meeting can only take place within a eight hour period on any one day.
7. The eight hour period must be between 8:00 am to 6:00 pm, Monday to Saturday, 9:00 am to 6:00 pm on Sunday and public holidays. No evening (after 7:00 pm) or night (after 10:00 pm) events will be scheduled.

4.2 Special events

Where a special event that is to be open to the public is proposed to be held at the venue, but the event cannot be conducted within the limits for scheduled race meetings and practice sessions, the occupier is to apply to the CEO for approval of the event under Regulation 18.

5. MEASURES TO CONTROL NOISE EMISSIONS

5.1 Access to race track

In order to prevent noise emissions due to unauthorised use of the race track by racing vehicles, the gates to the race track are to remain locked at all times other than:

1. In preparation for and during race meetings, practice sessions and special events approved by the CEO.
2. During maintenance or improvement of venue facilities.

5.2 Certification of racing vehicles

Each <<vehicle type>> that is to race at a race meeting at the venue must have a current certificate indicating that its noise level does not exceed a noise limit of $L_{A\ slow}$ 95 dBA ('noise limit') when tested in accordance with the noise test procedure.

For all other class of vehicle that is to race at a race meeting at the venue must have a current certificate indicating that its noise level does not exceed a noise limit of $L_{A\ slow}$ 90 dBA ('noise limit') when tested in accordance with the noise test procedure.

The noise level for a racing vehicle is to be obtained at or before the first meeting of the season at which that racing vehicle is entered to race.

Vehicles that have been measured in accordance with accepted measurement procedures (Section 5.3) at another racing venue are deemed to have complied with the requirement for certification and testing for noise emissions providing the measurements have been conducted by a competent person.

If the exhaust system or engine of a racing vehicle is modified or replaced after the level of noise emitted by the vehicle had been measured, the occupier is to ensure that the level of noise emitted by the vehicle is measured again and the vehicle complies before the vehicle is raced at an event.

Certification is valid for 12 months only.

Information provided in the certificate shall include:

1. Engine and chassis identification number
2. Exhaust type
3. Owner of vehicle
4. Date and location of testing
5. Individual and average measured sound pressure level

5.3 Noise test procedure

5.3.1 Measuring individual racing vehicles

The level of noise emitted by a racing vehicle (the tested vehicle) is to be measured while the tested vehicle completes three consecutive laps of the venue within a period that is not greater than four times the average lap time record.

Average lap times are to be calculated during the previous racing season for races at the speedway in the class of racing vehicle to which the vehicle belongs.

1. The measurements shall be made at a point that is:

- Inside the inner boundary of the venue track in use by the vehicle racing
 - Not less than 29 metres and not more than 31 metres from the inner boundary
 - On, or as close as practicable to, the shorter axis of the track
2. With the measuring microphone not less than 1.2 m or more than 1.4 m above the ground plane.

5.3.2 Calculation of average noise level

The level of noise emitted by a racing vehicle is taken to be the level obtained by:

1. Adding together the maximum level of noise measured for the vehicle on each of the laps referred to in Section 5.3.1.
2. Dividing the total resulting from that addition by three

5.3.3 Instruments

Instruments used to measure noise emissions shall:

1. Be calibrated in accordance with and otherwise comply with Schedule 4 of the *Environmental Protection (Noise) Regulations 1997*
2. Be operated by a person who is approved by the CEO
3. Preferably be a Type 1, although Type 2 instruments are acceptable provided allowance is made for their measurement tolerances.
4. Copies of the calibration certificates must be provided to the CEO on request.

5.4 Responsibility for noise measurement and certification

The Venue Manager will ensure that only competent persons utilising equipment conforming to the requirements of Section 5.3.3 are engaged as required to assess compliance. Also, that all noise measurements, calculation, certification and testing requirements are met for venue events under the control of occupier to the requirements of the CEO.

5.5 Record of tests

The operator is to record all results from tests carried and retain those results in a form that shows (for each test):

1. Details of the racing vehicle tested, including engine and chassis identification number and exhaust type
2. The racing vehicle's owner
3. The date and location of the test
4. The calculated lap time
5. The actual time for the three laps of the test
6. The point of measurement
7. The measured noise levels
8. The signature of the noise test operator

Records of tests are to be provided to the CEO on request.

5.6 Scrutiny of racing vehicles

1. A Chief Steward shall be designated for the duration of a race meeting and practice session to verify noise certificates and to evaluate noise emissions from race vehicles.
2. The Chief Steward may reject a certificate and require a new test if not satisfied with the noise test on which the certificate is based or if he considers that a racing vehicle has been modified to the extent that the certificate is no longer representative of noise emission from the vehicle.
3. If a racing vehicle at the speedway emits a level of noise that is conspicuously louder than that of the other racing vehicles in the same class at the meeting, the Chief Steward may require that vehicle to immediately cease racing and may prevent that vehicle from further racing at the speedway until that vehicle's noise level has been shown to comply with the noise limit.

5.7 Public address system noise

The public address (PA) system consists of loudspeaker towers placed around the track, facing towards the track and angled down towards the track.

The loudspeakers are not to be moved or adjusted by any person without the approval of the Chief Steward.

Noise emissions from the public address system at the venue are to be under the control of the Chief Steward, who is to designate persons who are authorised to use the system.

The public address system controls are to be set to provide a suitable audience sound level during the preliminary meeting each year, with the assistance of such persons as the Chief Steward requires, ensuring the minimum practicable 'spill' of sound into nearby noise sensitive areas.

The public address cabinet is to be locked for access only by the Chief Steward and his authorised assistants at all other times.

The public address system will only be used during race meetings; it is not to be used during practice sessions or at any other time except in the case of an emergency.

5.8 Review of racing activities in response to noise complaint

If complaints are made during a racing activity the occupier will review racing activities to reduce noise where practicable for the remainder of that event.

5.9 Written instruction to members

The club management committee shall provide all club members with a written instruction explaining the noise issues and the members' responsibility to maintain the noise limitation requirements.

6. NOTICE OF RACING ACTIVITIES

Notice of the program for racing activities for a season is to be published and distributed to members of the public as follows:

1. The notice is to be published in the local newspaper, showing proposed dates of racing activities (where known) for the coming season and the telephone number for noise complaints.
2. In addition to (1), the notice is to be delivered to the address of each noise sensitive premises at locations within 5 km of the venue.
3. The notice is to be published and delivered during the month of the year in which the season starts.
4. A change to the racing program is to be published in the local newspaper and a notice provided in accordance with (2) above within four weeks before the changed meeting is to occur.
5. Notice of a special event approved by the CEO is to be given in accordance with the conditions of the approval.

7. COMPLAINT PROCEDURE

1. A designated telephone line will be manned during racing activities for the receipt of noise complaints.
2. A complaint received will be recorded on the noise complaint form.
3. All complaints will be treated with due consideration and investigated and responded to as appropriate.
4. The occupier will as far as practicable provide advice to the complainant within 48 hours as to the outcomes of the investigation and where appropriate, any proposed modifications to operations.
5. The results of complaint investigations, details of measures taken or considered to reduce noise emissions under Measure 5.5 and an outline of the responses given to the complainant shall be recorded on the noise complaint form.
6. Completed noise complaint forms will be retained at the motorsport park for the period of the approval and made available to the CEO on request.
7. Noise complaint details are to be provided to the City of Albany on the next business day following receipt of the complaint.

8. RECORDS

8.1 Record of vehicle tests

The occupier is to retain records of all tests of race vehicles under Measure 5.2 for a period of two years.

8.2 Record of loud racing vehicles

The occupier is to make a record of all racing vehicles that have been required to cease racing by the steward under Measure 5.4 (Item 3) and retain that record for two years in a form that shows:

1. Details of the racing vehicle required to cease racing.
2. The racing vehicle's owner.
3. The date and time at which the request to cease racing occurred.
4. The action taken by the driver of the racing vehicle following the request.
5. The action taken by the owner of the racing vehicle to remedy the excessive noise emissions.

8.3 Records to be forwarded on request

If requested to do so in writing by the CEO, the occupier is to forward a copy of all or any of the records made under Measure 8.2 within 21 days of the request.

9. RESPONSIBILITIES

Club Committee:	Appointment of Chief Steward Development of program for scheduled race meetings
Chief Steward:	Implementation of this Noise Management Plan Designation and training of stewards Control of public address system
Head Scrutineer:	Scrutiny of racing vehicles

GHD

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		Name	Signature	Name	Signature	Date
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→ **The Power of Commitment**

Appendix H

Dust Management Plan



Albany Motorsport Park - Development Application

Dust Management Plan

City of Albany

27 July 2021

→ The Power of Commitment

GHD Pty Ltd | ABN 39 008 488 373

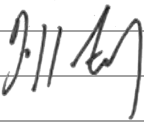
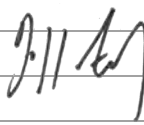
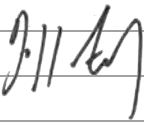
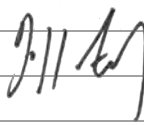
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Executive summary

The City of Albany (CoA) has engaged GHD Pty Ltd (GHD) to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure A.4.1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*¹ and Motorcycling Australia (MA) *Track Guidelines*².
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

The purpose of this Dust Management Plan (DMP) is to ensure that human health and amenity is not unacceptably impacted by dust emissions during site development and operation, by providing a framework for the management of dust associated with the proposed Albany Motorsport Park.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.4 and the assumptions and qualifications contained throughout the report.

¹ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

² MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

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Glossary of acronyms and terms

AMP	Albany Motorsport Park
AMV	Albany Motorsport Venues Inc.
ATV	All-terrain vehicle
CEO	Chief Executive Officer
CoA	City of Albany
DMP	Dust Management Plan
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
FIA	Fédération Internationalé de l'Automobile
FIM	Fédération Internationalé Motocyclisme
GHD	GHD Pty Ltd
GSMG	Great Southern Motorplex Group Inc.
TSP	Total suspended particulates
4WD	Four wheel drive

1. Introduction

1.1 Project description

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Due to the scale and nature of the complex, the works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
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 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

A Master Plan, which illustrates the various aspects of the Site and staging areas, has been developed by the GSMG and CoA to support the Development Application for the AMP (Figure A.4.2, Appendix A).

1.2 Purpose of this report

The purpose of this Dust Management Plan (DMP) is to ensure that human health and amenity is not unacceptably impacted by dust emissions during site development and operation, by providing a framework for the management of dust associated with the proposed Albany Motorsport Park at Lot 5780 Down Road South, Drome (the Site).

1.3 Scope of work

The following scope is considered suitable to meet this objective:

- Perform a risk assessment to determine the risk potential of the site
- Devise suitable dust management actions to minimise the escape of wind borne dust from the site
- Outline a monitoring program for monitoring dust levels at the site

³ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

⁴ MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

The management of dust emissions is governed by the *Environmental Protection Act (1986)*. A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities⁵ provides requirements for the management of dust on development sites.

The scope outlined above shall be undertaken in accordance with this guidance.

1.4 Limitations

This report has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and City of Albany as set out in Section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1.4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

⁵ Department of Environment and Conservation (DEC), 2011. *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*. March 2011.

2. Site characteristics

2.1 Existing site

Lot 5780 Down Road South, Drome is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Two areas within Lot 5780 are excluded from the AMP development and include 49.47 ha at the western end of the Site which is covered with native vegetation and a dam area (1.37 ha) on the northern boundary which is subleased to Plantation Energy.

The site is zoned 'Special Use – SU26' under City of Albany Local Planning Scheme No. 1.

2.2 Surrounding land use

Surrounding land use is shown in Figure A.4.3, Appendix A and summarised below:

- North: The site is bound to the north by Down Road West. The land is zoned 'General industry' directly adjacent to Down Road West, where the Mirambeena Timber Processing Precinct is located. Beyond this the land is within the industrial buffer area (IA4BA) within approximately 1000 m of the site and then zoned 'Priority Agriculture' beyond.
- East: The site is bound to the east by Down Road South, with land within the industrial buffer area within approximately 500 m of the site and then zoned 'Priority Agriculture' beyond.
- South: The site is bound to the south by the land within the industrial buffer area within approximately 500 m of the site and then zoned 'Priority Agriculture' beyond.
- West: The site is bound to the south by the land within the industrial buffer area within approximately 500 m of the site and then zoned 'Priority Agriculture' beyond.

2.3 Sensitive receptors

A number of residential receptors were identified in proximity to the AMP, as listed in Table 2.1 and shown in Figure A.4.4, Appendix A.

Table 2.1 Sensitive receptor locations

ID	Location (MGA94)		Distance from nearest AMP boundary (m)	Worst case wind direction (°)
	Easting	Northing		
SR01	569713	6133385	1150	310
SR02	567355	6132573	1120	10
SR03	564483	6133265	1930	80
SR04	565029	6134675	1920	100

The AMP is also located within the 'General industry' buffer area surrounding the Mirambeena Timber Processing Precinct which lies to the north of the Site (Figure A.4.3, Appendix A).

2.4 Geology

Reference to the 1:50,000 Environmental Geology series map (Albany sheet) and the 1:250,000 Geological Series map (Mt Barker – Albany sheet) indicates the Site is underlain by Cainozoic sand of colluvial origin – “Qc: Colluvium – Sand, silt and clay” on the slopes and within the low lying areas of the Marbelup Brook “QA – Clay, silt, sand and gravel in watercourses”^[6].

The sand is described as pale grey, fine to coarse, angular to sub-rounded quartz that is loose and moderately sorted and contains occasional pebbles of laterite. The thickness of the sand unit is not indicated on the maps, however the 1:250,000 map sheet indicates sand unit generally overlays laterite.

Site investigations were completed by Great Southern Geotechnics across the site in March 2021 to assess soil types and profiles. Eight test pits were completed, with soil types typically in agreement with DPIRD Soil Landscape Mapping. Gravels were identified on the western slope in the vicinity of the 4WD Driver Training and ATV Area, and deep sands present on the valley slopes and duplex soils in the valley floors.

2.5 Topography

The surface elevation of the Site ranges from approximately 41 m AHD to 73 m AHD. The lowest elevation is on the southern boundary and extends through the centre of the Site within a gully (a tributary to Marbelup Brook) that lies in a north-easterly direction. The highest elevation occurs on the eastern boundary of the Site^[7].

2.6 Contamination level

2.6.1 Acid sulphate soils

A review of acid sulphate soils (ASS) risk mapping for the site was undertaken and is presented in Section 2.3.1.4 of the *Albany Motorsport Park – Development Application - Environmental Management Plan*.

As a result of the ASS investigation, the following management recommendations with regards to the proposed redevelopment are presented and have been considered as part of this DMP:

- Topsoil (0-300 mm) appears acceptable to be stripped and stockpiled for reuse without treatment.
- Neutralisation treatment and validation of soils *will be required* for silty sand soil units disturbed in the proximity of the watercourse area if the proposed disturbance of greater than 100 m³ of soil.
- An ASS management plan is required to enable to the effective excavation, treatment and disposal/reuse of the materials during construction works.
- Soil excavations should only occur during the periods of the year where groundwater is at its lowest point (i.e. outside of winter and post-winter periods) to eliminate the need for temporarily lowering the groundwater table (dewatering). If dewatering is determined to be required, then site specific dewatering risk assessment, management strategies and criteria are required to be developed, approved and implemented.

2.6.2 Contaminated sites

A review of the DWER Contaminated Sites Database undertaken in August 2018 indicates there are no sites currently classified under the *Contaminated Sites Act 2003*, within 5 km of the Site (including the Site itself)^[8].

Potentially contaminating activities undertaken within the Site, as observed during the site walkover, include the following:

- A portion of the Site is currently leased by Plantation Energy for the purpose of a retention dam however it is understood that no water is discharged from this dam onto the Site.

⁶ Allen, A., & Sofoulis, J. (1984). 1:250,000 Geological Series Map, Mount Barker – Albany, WA Sheet SI 50-11 and part of Sheet SI 50-15. Perth: Government of Western Australia.

⁷ GoWA. (2021). www.data.wa.gov.au. Retrieved from <http://www.data.wa.gov.au>

⁸ DWER. (2018, July 30). *Contaminated Sites Database*. Retrieved from <https://dow.maps.arcgis.com/apps/webappviewer/index.html?id=c2ecb74291ae4da2ac32c441819c6d47>

- Storage/ dumping of materials was noted during the site visit; this includes used chemical drums and equipment.
- Stockpiling of wood chips
- Dumping of waste materials such as building rubble and possibly a risk of asbestos containing materials in previously excavated areas within the Site.

It is understood that the Site will be cleaned up by City of Albany, prior to development commencing.

2.7 Climate

Albany is located on the south coast of Western Australia and the climate is broadly described as Mediterranean, with warm dry summers and mild wet winters. The nearest Bureau of Meteorology (BoM) official recording station is Albany (Station No. 9500). This station records temperature, rainfall, relative humidity, wind speed and direction and has data available dating back to 1877. Figure 2.1 illustrates recorded average monthly meteorological data for the Albany AWS BoM station for years 1877 to 2020^[9].

Temperatures range from a mean maximum of 22.9 °C in summer and drop to a mean maximum of 15.8 °C in winter. Mean minimum temperatures follow a similar trend, reaching 15.6 °C in summer and 8.2 °C in winter. Rainfall is low throughout the summer months and peaks in July, with a monthly average of 142.6 mm. The mean annual rainfall is 925.2 mm, with approximately 103.1 rain days a year. Relative humidity at Albany reflects the Mediterranean climate, demonstrating drier summers and a comparatively high relative humidity of 82 percent in the morning in winter^[9].

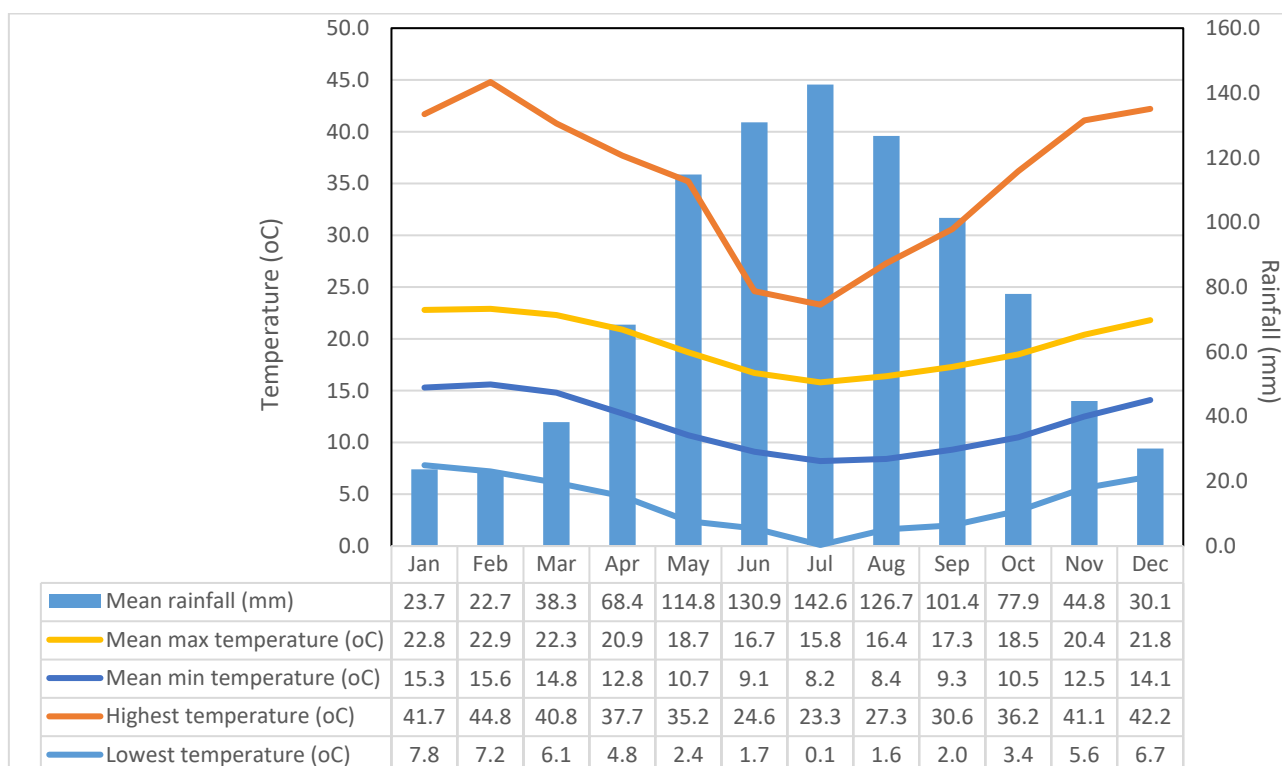


Figure 2.1 Mean rainfall and temperatures in the Albany region (Site No. 9500)

⁹ BoM. (2020). *Climate statistics for Australian locations*. Retrieved from Bureau of Meteorology: http://www.bom.gov.au/climate/averages/tables/cw_009500_All.shtml

3. Proposed works and potential impacts

3.1 Proposed works and dust sources

3.1.1 Proposed works

As the proposed construction works are being determined in parallel with this DMP, it is noted that:

- Works for Stage 1A will commence in late 2021 / early 2022 and will be completed by April 2022.
- Commencement of works for Stage 1B is not determined but will not occur at the same time as Stage 1A. Commencement of Stage 1B would be between October and April to allow for optimum weather conditions for pavement laying.

Operational dust management will be a continuation of construction dust management, with permanent dust mitigation (i.e. access to water carts) in place where required.

3.1.2 Dust sources

Potential dust sources during construction activities are:

- Mechanical dust – dust generated from clearing, transport, stockpiling and levelling activities
- Wind generated dust – dust generated from wind erosion of stockpiles or cleared areas

Mechanical dust is a constant dust source during works at the site, whereas wind generated dust has the potential to range from negligible to high, depending upon weather conditions, the amount of the cleared area and management of the area.

During operation, dust sources are expected to be unsealed areas onsite (such as parking areas) and the motocross circuit.

3.2 Health and amenity impact of dust

Studies have demonstrated a relationship between exposure to particles below a diameter of PM₁₀ and a range of health impacts including respiratory ailments. The majority of dust emissions associated with construction activities are expected to be the larger total suspended particulate (TSP) and are more closely linked to nuisance problems. These include reductions in amenity and decreased visibility for road traffic, which can cause unsafe driving conditions.

3.3 Site risk assessment

The proposed site development underwent a risk assessment process to determine the level of dust management required for a site generating uncontaminated dust. Table 3.1 shows the site risk assessment chart as provided in *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*^[5], with an additional column providing justification for each risk potential ranking.

The overall risk potential of the site is **low risk**.

Table 3.1 Site risk assessment for activities generating uncontaminated dust

Item	Score options				Justification	Allocated score
Part A – Nature of site						
Nuisance potential of soil, when disturbed	Very low	Low	Medium	High	Medium to coarse grained sand	4
Topography and protection provided by undisturbed vegetation	Sheltered and screened	Medium screening	Little screening	Exposed and wind prone	Moderate exposed areas at any one time	12
Area of site disturbed by the works	Less than 1 ha	Between 1 and 5 ha	Between 5 and 10 ha	More than 10 ha	It is assumed that the site will be cleared and prepared in stages	9
Type of work being done	Roads or shallow trenches	Roads, drains and medium depth sewers	Roads, drains, sewers and partial earthworks	Bulk earthworks and deep trenches	Partial earthworks will be required for the motocross, with fill material needed for track construction. Fill material will likely be harvested from other areas of the site.	6
					Total score for Part A	31
Part B – Proximity of site to other land uses						
Distance of other land uses from site	More than 1 km	Between 1 km and 500 m	Between 100 m and 500 m	Less than 100 m	Existing closest sensitive receptors approximately 1100 m to the south and south-east and 1900 m to the west and north-west	1
Effect of prevailing wind direction (at time of construction) on other land uses	Not affected	Isolated land uses affected by one wind direction	Dense land uses affected by one wind direction	Dense/sensitive land uses highly affected by prevailing winds	Conservatively assessed as affected by one wind direction	6
					Total score for Part B	7
					Site classification score (A x B)	217

As outlined in the *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*^[5], the following minimum dust control measures, contingency actions and monitoring requirements are required for this site with a low dust risk potential:

Provisions

- The developer shall supply a contingency plan to the local government, which shall detail the activities to be undertaken should dust impacts occur.

Contingency measures

- Include an allowance for water cart operation, wind fencing and surface stabilisation during the construction period for the purposes of dust suppression.
- All areas of disturbed land should be stabilised to ensure that the disturbed area exposed at any time is kept to a practical minimum.
- The 4WD training area will not be stabilised; a water cart will be available onsite for dust mitigation when required.

Monitoring requirements

- Complaints management system in place (complaints recorded and acted on promptly).
- Notice to be erected at the site, providing contact details of the person to be contacted and a program of works.

Each of the above are detailed further in the following sections.

4. Dust management and monitoring strategy

4.1 Dust management actions

Strategies regarding the management of dust are focused on reducing dust generation and avoiding potential impacts in nearby areas. The actions required to manage dust emissions are summarised in Table 4.1.

Table 4.1 Dust management actions

Action	Responsibility
Construction	
The extent of disturbed surfaces will be kept to the minimum possible by: <ul style="list-style-type: none"> – Only clearing where required for construction operation – Conducting vegetation clearing, levelling and rehabilitation in stages when required – Clearly marking or fencing off any natural vegetation not to be cleared to prevent accidental clearing – Revegetating exposed soil as soon as practicable according to the Landscape Plan 	Foreman / Site Manager
Time the works to minimise dust emissions by: <ul style="list-style-type: none"> – If possible, scheduling major works that produce high levels of dust outside of the dust season (dust season is October to March) – Monitoring wind and weather forecasts and delaying dust generating activities when conditions are unfavourable 	Foreman / Site Manager
Maintaining natural wind and dust barriers by avoiding the removal of tree/vegetation shelter belts alongside boundaries whilst major clearing works are underway at the site	Foreman / Site Manager
Managing earth moving activities by: <ul style="list-style-type: none"> – Not clearing areas unless they are able to be levelled and stabilised immediately – Observing weather conditions and not commencing or continuing works during unsuitable conditions 	Foreman / Site Manager
Managing stockpiles by locating stockpiles in sheltered areas and cover when they are to be left for longer than 24 hours	Foreman / Site Manager
Apply water/dust suppressant to: <ul style="list-style-type: none"> – Exposed areas when strong winds are expected – Areas scheduled for disturbance 	Foreman / Site Manager
Maintaining dust management should be undertaken by: <ul style="list-style-type: none"> – Nominating one person to be responsible for dust management at the site – Educating all site workers on how dust is generated and methods of reducing dust generation 	Foreman / Site Manager
Operational	
Monitoring site dust generation by visual observation, and where required, applying suitable mitigation	Venue Manager
Water cart available to apply water to open areas (4WD training area, car parks, etc.) when strong winds are expected or during periods of high dust generation	Venue Manager
Sprinklers available to apply water to motocross track when strong winds are expected or during periods of high dust generation	Venue Manager

4.2 Dust monitoring

The site risk assessment (Section 3.3) has classified the site as a low risk, indicating that a dust monitoring program is not considered necessary. The following provisions have been outlined for when earthworks are taking place in closer proximity to the existing industrial facilities, to the north of the site.

Dust monitoring is not considered to be required during operation of the AMP. Visual observation for excessive dust should be maintained by site staff and reported to the Venue Manager, as required.

The monitoring program for dust will inform site management such that management actions are sufficient to achieve environmental objectives. Responsibility for construction-phase monitoring will largely be assigned to the Foreman / Site Manager. They will be responsible for the implementation of management actions on a daily basis based on the dust management strategy. However, all staff and sub-contractors will have some responsibility for the management of dust generation onsite.

4.2.1 Onsite dust monitoring

Onsite dust monitoring during construction is intended to indicate where corrective action is required immediately. Monitoring is over a short averaging period such as 15 minutes and when a trigger level is exceeded, work stoppages and corrective dust management is undertaken. This monitoring is intended to identify and prevent any potential offsite dust exceedances caused by the site.

Performance criteria

Measurements taken onsite should be for TSP over a 15-minute averaging period. The site should aim to keep dust emissions to below 500 $\mu\text{g}/\text{m}^3$ TSP when measured at the closest site boundary.

A portable dust monitor (DustTrak™, or similar) will be used to measure dust concentrations. The dust monitor should be placed within the site boundary, downwind of any works that are taking place.

During times where work has stopped due to windy conditions, the monitor should be placed on the downwind boundary of the site to ensure there is no major dust lift off from cleared areas.

4.3 Reporting

Records should be kept of all onsite dust measurements, and a summary of these measurements provided to the relevant regulatory authority at the completion of the project.

Where an exceedance has occurred, the relevant authority should be contacted within 24-hours and a letter explaining the exceedance level, the resulting investigation and actions undertaken to resolve issues should be provided within seven days of the incident.

4.4 Signage and complaints register

4.4.1 Signage

A notice should be placed at the entrance to the site to provide contact details of a suitable site representative to receive complaints or answer queries in regard to activities at the site.

4.4.2 Complaints register

A complaints management system should be in place to record complaints and act promptly in resolving them. All complaints shall be logged, investigated and the outcome of the investigation recorded. All logs should be made to relevant authorities upon request. Appendix B includes the sample complaint form.

4.5 Stakeholder consultation

Residents and businesses occupying locations near to the development site will be notified of the likely timing and potential effects of construction activities taking place onsite. These residents shall also be provided with a contact number in case of issues.

4.6 Dust management contingency

It is possible that dust emissions may be generated from the site in windy conditions. In order to ensure that dust emissions do not cause unacceptable impacts, contingency actions (Table 4.2) will be enacted in the event that monitoring indicates that environmental objectives will not be achieved.

Table 4.2 Dust management contingency actions

Trigger	Action	Responsibility
No trigger required, to be available at all times	Make a water cart available at site in case contingency actions are required.	Foreman / Site Manager
Visible dust plumes are seen moving towards sensitive receptors	– Wind barriers shall be erected or all dust generating works shall cease.	Foreman / Site Manager
Performance criteria exceeded	<ul style="list-style-type: none"> – Work stoppage to identify cause of dust, and if dust is thought to be from the site, take immediate action to eliminate or reduce magnitude of dust generation using dust suppression. – Should these techniques be inadequate, activities will be modified to minimise dust generation. – Review dust management strategy and inform staff/contractors of any changes in procedures to prevent reoccurrence. 	Foreman / Site Manager
Complaints received regarding dust levels	<ul style="list-style-type: none"> – Respond to complainant – Identify cause of complaint – Implement mitigation measures – Review dust management strategy and inform staff/contractors of any changes to prevent reoccurrence – Record complaint, outcomes of investigation and mitigation measures that were applied. 	Foreman / Site Manager

Appendices

Appendix A

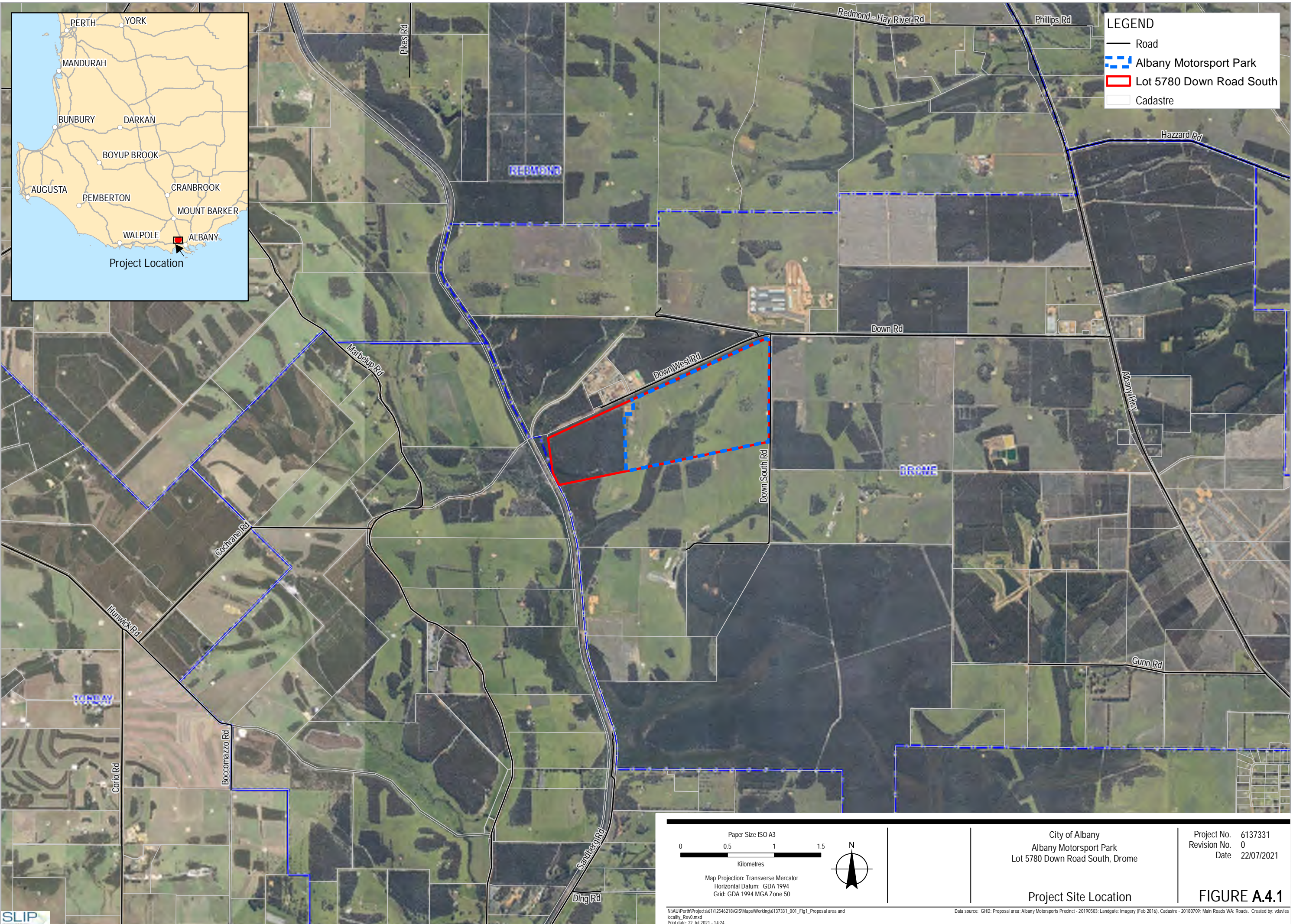
Figures

Figure A.4.1 Project site location

Figure A.4.2 Master plan

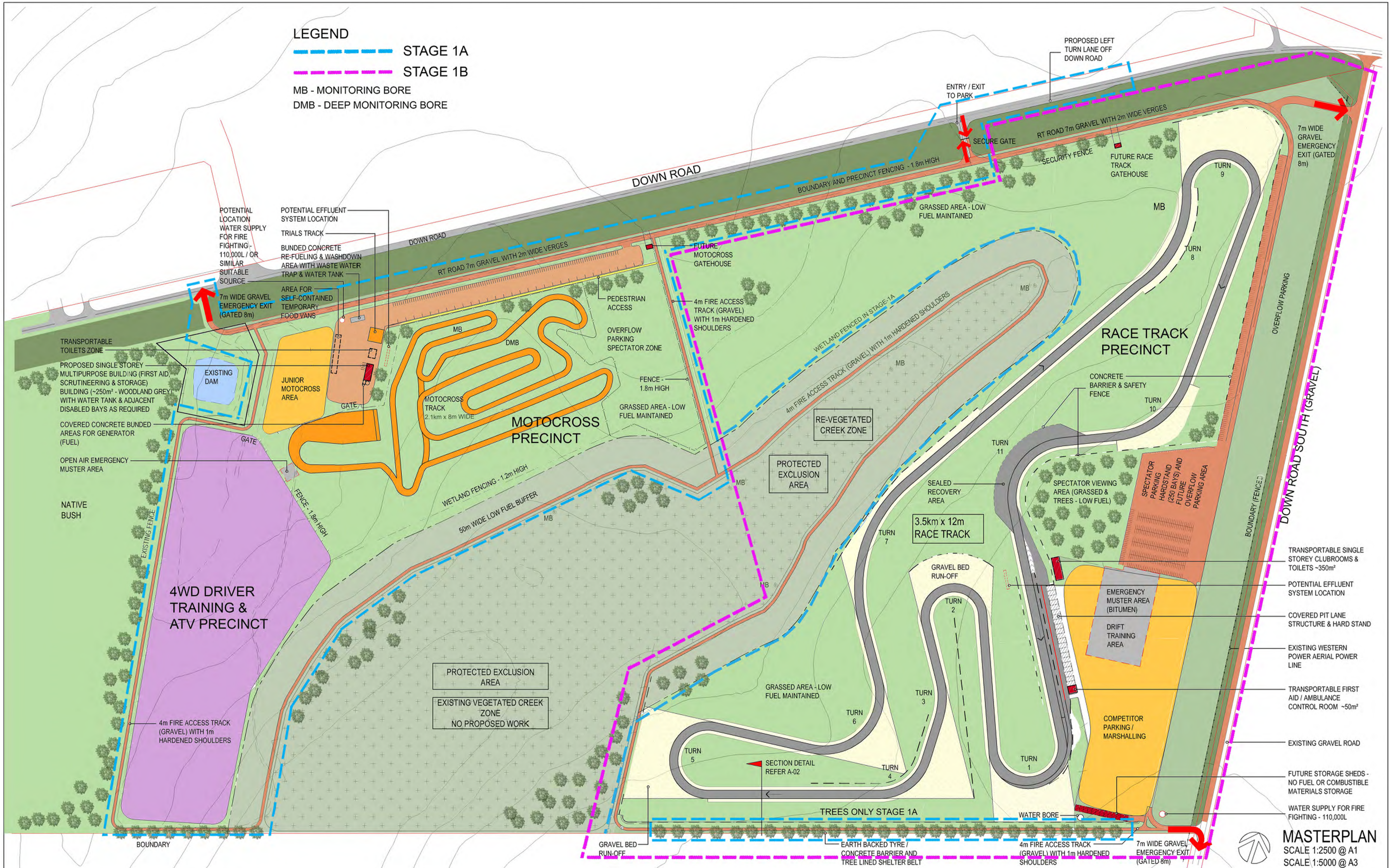
Figure A.4.3 City of Albany Local Planning Scheme

Figure A.4.4 Sensitive receptor locations



LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

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Architects

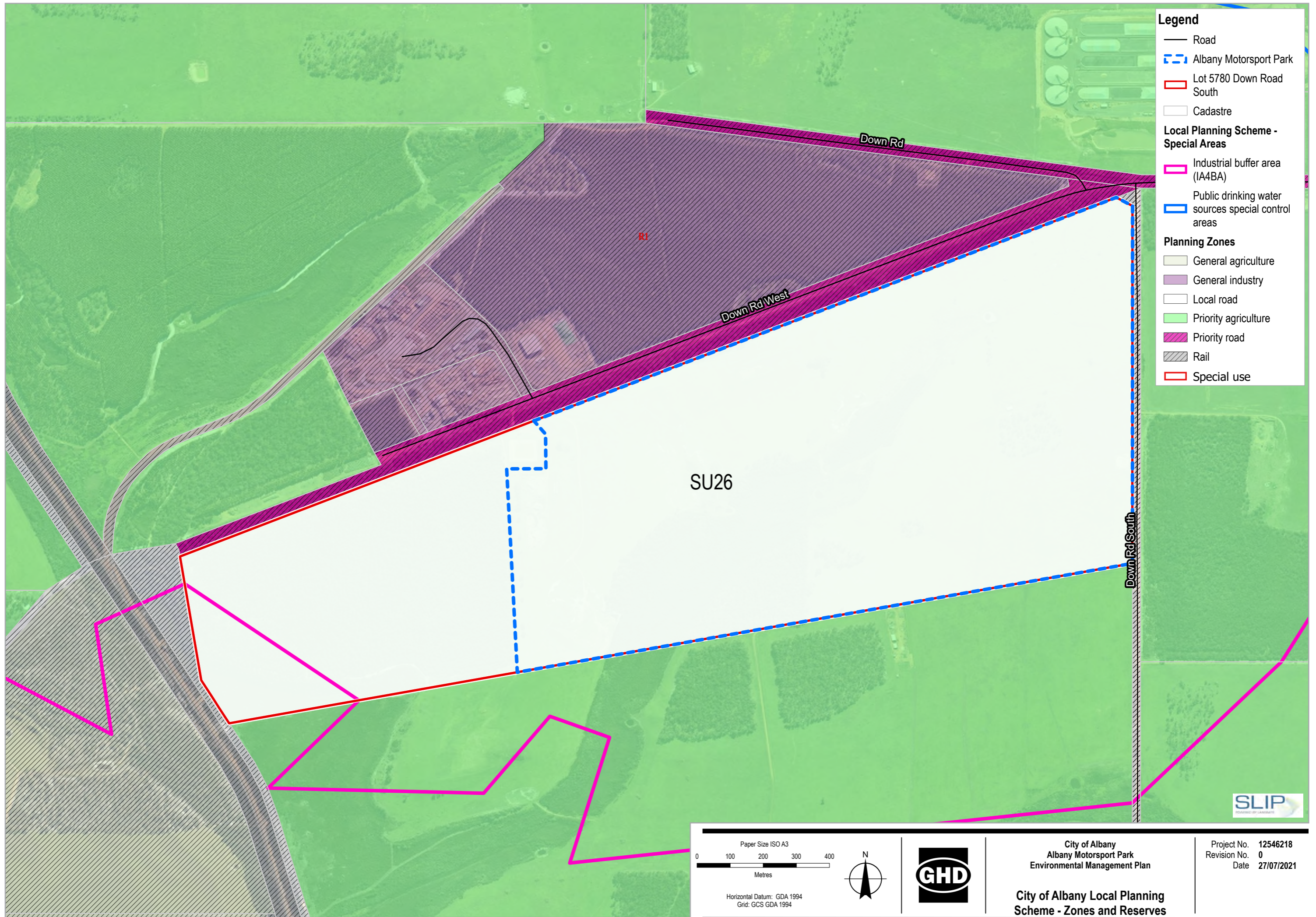
project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file

drawn CB project number 21-002

scale 1:2500 @A1
 date JULY 2021
 dwg no. **A-01** rev. **E**



Legend

- Road
- Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre

Local Planning Scheme - Special Areas

- ▭ Industrial buffer area (IA4BA)
- ▭ Public drinking water sources special control areas

Planning Zones

- ▭ General agriculture
- ▭ General industry
- ▭ Local road
- ▭ Priority agriculture
- ▭ Priority road
- ▭ Rail
- ▭ Special use

SU26

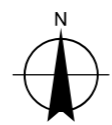
Down Rd

Down Rd West

Down Rd South



Horizontal Datum: GDA 1994
Grid: GCS GDA 1994

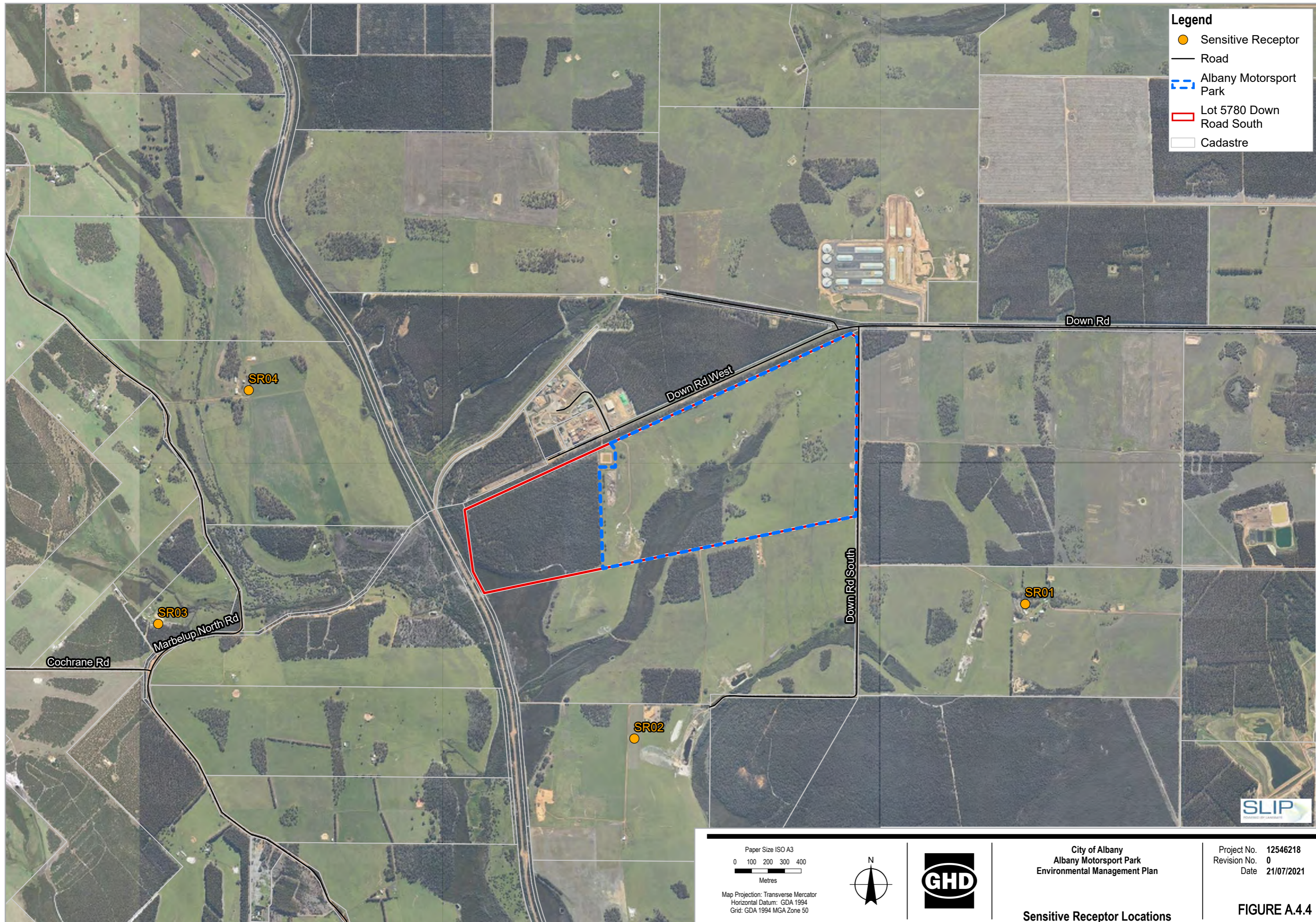


City of Albany
Albany Motorsport Park
Environmental Management Plan

City of Albany Local Planning Scheme - Zones and Reserves

Project No. 12546218
Revision No. 0
Date 27/07/2021





Appendix B

Sample complaint form

<p>Date:</p> <p>Date on which the complaint was received</p>	<p>Time:</p> <p>Time the complaint was received</p>	<p>Received by:</p> <p>Name of the person receiving the complaint</p>
<p>Name:</p> <p>Name of the person making the complaint</p> <p>Address:</p> <p>Address of the person making the complaint</p> <p>Phone:</p> <p>Telephone number of the person making the complaint</p>		
<p>Municipality:</p> <p>Name of the local government where the site is located</p>		
<p>Complaint details (effect/frequency)</p>		
<p>Referred to:</p> <p>Name of local government Environmental Health Officer, DOH or DEC officer if this complaint has been referred.</p> <p>Date:</p> <p>Date of referral to local government officer, DOH or DEC officer</p>		
<p>Possible causes and actions taken:</p> <p>Actions taken to eliminate pollution</p>		
<p>Recorded by:</p> <p>Name of the person completing the form</p> <p>Date:</p> <p>Date on which the form was completed</p>		



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→ **The Power of Commitment**

Appendix I

Decommissioning Plan



Albany Motorsport Park – Development Application

Decommissioning Plan

City of Albany

27 July 2021

→ The Power of Commitment



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			Name	Signature	Name	Signature	Date
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Executive summary

The purpose of this decommissioning plan is to describe the decommissioning and rehabilitation objectives, broad strategies and actions that would be required to ensure the land is left in a condition that is suitable and capable of accommodating agricultural land use, should the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (the Site) (Figure 1, Appendix A) cease operations. The strategies outlined are designed to ensure the Site could return to pre-existing environmental conditions, as near as practical, while minimising potential erosion and dust emissions prior to any future redevelopment.

This Decommissioning Plan is appended to the overarching Environmental Management Plan (EMP) which has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development.

The objectives for decommissioning of the Site would be to:

- Ensure that all infrastructure is removed from Site and the AMP area is rehabilitated to a stable and self-sustaining environment as close to the original landscape, as far as practicable
- Meet all relevant guidelines, approvals and regulatory requirements
- Ensure that, as far as practicable, the needs of stakeholders are met
- The Site will not be the cause of any environmental or public safety liability
- Future land use of the Site is not restricted.

The proponent will relinquish lease of the Site to the City of Albany (owner).

If the Site is not appropriately decommissioned and rehabilitated, or there is insufficient allocation of funds/ resources for decommissioning and rehabilitation, the following potential impacts/ risks may occur:

- Failure to achieve zero-energy status prior to the commencement of demolition activities
- Presence of unknown buried services
- Contamination of surrounding soil, groundwater, and surface water
- On-site waste category segregation to avoid cross-contamination not practised
- Water and wind erosion, and associated impacts on neighbours
- Dust generation during demolition and rehabilitation activities
- Introduction and/ or spread of weeds
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value
- Loss of socio-economic benefits
- Community and stakeholder dissatisfaction.

Overall, decommissioning and rehabilitation objectives and strategies developed for the Site are expected to be adequate to address potential impacts and risks.

This preliminary decommissioning plan is considered a 'live' document and will be reviewed and updated prior to decommissioning and rehabilitation. Therefore, it is possible the rehabilitation strategies may be amended and set out in more detail in the future. These changes would occur to address circumstances at the time of the decommissioning and rehabilitation periods.

If the AMP ceases operations it is the responsibility of the City of Albany and Albany Motorsport Venue Incorporated (AMV Inc) to implement this Decommissioning Plan.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.5 and the assumptions and qualifications contained throughout the Report.

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1. Introduction

1.1 Purpose of this report

The purpose of this decommissioning plan is to describe the decommissioning and rehabilitation objectives, broad strategies and actions that would be required to ensure the land is left in a condition that is suitable and capable of accommodating agricultural land use, should the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (the Site) (Figure 1, Appendix A) cease operations. The strategies outlined are designed to ensure the Site could return to pre-existing environmental conditions, as near as practical, while minimising potential erosion and dust emissions prior to any future redevelopment.

This Decommissioning Plan is appended to the overarching EMP which has been developed for operation and construction works associated with Stage 1A and 1B of the proposed AMP development.

As the Site has recently been re-zoned from 'Priority Agriculture' to 'Special Use' the existing land use is pasture for cattle grazing. The Site is adjacent to land zoned as General Industry (Figure 2, Appendix A). It is anticipated that, if the AMP was to be decommissioned, the final land use for the Site would be suitable for agriculture i.e. pasture paddock.

A detailed decommissioning plan will be developed at least two years prior to closure. The plan will detail how AMP's infrastructure will be decommissioned, resale or repurposing of any infrastructure with value, disposal of hazardous waste, remediation of contaminated sites. High-level requirements to be addressed in detail in the decommissioning plan are discussed below.

Prior to decommissioning and rehabilitation activities occurring on site, all relevant approvals for Site decommissioning and rehabilitation will need to be obtained.

1.2 Objectives

The objectives for decommissioning of the Site would be to:

- Ensure that all infrastructure is removed from Site and the AMP area is rehabilitated to a stable and self-sustaining environment as close to the original landscape, as far as practicable
- Meet all relevant guidelines, approvals and regulatory requirements
- Ensure that, as far as practicable, the needs of stakeholders are met
- The Site will not be the cause of any environmental or public safety liability
- Future land use of the Site is not restricted.

The proponent will relinquish lease of the Site to the City of Albany (owner).

1.3 Legislation and guidelines

Legislation and guidelines associated with decommissioning activities includes, but may not be limited to the following:

- *Contaminated Sites Act 2003*
- *Dangerous Goods Safety Act 2004*
- *Environmental Protection Act 1986*
- *Environmental Protection Regulations 1987.*

1.4 Stakeholder consultation

Stakeholder engagement is considered integral to effective decommissioning and rehabilitation planning and will be undertaken during the life of the AMP. Targeted consultation regarding site decommissioning and rehabilitation will be conducted at key junctures during AMP construction and operation, notably prior to decommissioning and rehabilitation activities commencing within the Site.

The stakeholder consultation program will be required to:

- Make stakeholders aware of relevant information regarding planning, construction and operations
- Identify and record any stakeholder concerns, issues and recommendations
- Address identified issues and incorporate feedback into planning where practicable
- Maintain an open and ongoing dialogue.

Identified relevant stakeholders include, but not limited, to:

- City of Albany
- AMV Inc
- Adjacent land holders
- Department of Water and Environmental Regulation (DWER)
- Department of Planning, Lands and Heritage (DPLH)
- Main Roads WA
- Western Power
- Water Corporation.

As the decommissioning plan matures, stakeholder input will be used to refine and if necessary, revise decommissioning and rehabilitation planning as appropriate.

1.5 Limitations

This report: has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and City of Albany as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Potential environmental impacts

If the Site is not appropriately decommissioned and rehabilitated, or there is insufficient allocation of funds/ resources for decommissioning and rehabilitation, the following potential impacts/ risks may occur:

- Failure to achieve zero-energy status prior to the commencement of demolition activities
- Presence of unknown buried services
- Contamination of surrounding soil, groundwater, and surface water
- On-site waste category segregation to avoid cross-contamination not practised
- Water and wind erosion, and associated impacts on neighbours
- Dust generation during demolition and rehabilitation activities
- Introduction and/or spread of weeds
- Reduction in biodiversity value due to inability to replace lost habitat and communities
- Poor visual amenity and landscape value
- Loss of socio-economic benefits
- Community and stakeholder dissatisfaction.

Overall, decommissioning and rehabilitation objectives and strategies developed for the Site are expected to be adequate to address potential impacts and risks.

This preliminary decommissioning plan is considered a 'live' document and will be reviewed and updated prior to decommissioning and rehabilitation. Therefore, it is possible the rehabilitation strategies may be amended and set out in more detail in the future. These changes would occur to address circumstances at the time of the decommissioning and rehabilitation periods.

3. Management strategies, actions and timeframes

3.1 Decommissioning and demolition sequencing

An infrastructure inventory will be prepared to identify and list all assets including building, tracks (sealed and unsealed) and other associated AMP infrastructure. The infrastructure inventory will include the quantities of all AMP infrastructure. Location plans will be developed to identify the assets and work scopes will be developed for decommissioning and demolition activities with associated cost estimates.

An initial review of major laydown areas for material and equipment storage will be conducted to assess the requirements for material sorting, processing and disposal. The proposed approach to decommissioning and demolition for all buildings and infrastructure will follow a specific sequence of events. This will involve the deployment of specialised teams equipped with appropriate demolition and processing equipment to isolate, confirm a zero-energy state, structurally demolish, remove foundations, process waste streams and grade the site to a self-draining condition for future revegetation. Consideration must also be given to site services that will be impacted during the decommissioning and demolition. Specific tasks will include:

- Delineation of specific work areas (e.g. fencing) to provide a working environment delineated from the other site activities
- Removal of dangerous goods and flammable liquids (fuels, greases and oils) which may be used for other purposes, resold back to the provider or disposed at licensed waste facilities
- Removal of salvageable materials
- Removal of other contents that could be reused or sold
- Ensuring each area is in a zero-energy condition through positioning equipment in a zero potential energy state, electrical service isolation and air-gapping of in-feed conductors at transformers, switch gear and/or pull boxes outboard of the work scope
- Cutting and capping of water services and onsite wastewater storage tanks
- Isolation of stormwater management infrastructure around the project/work scope
- Removal/ isolation of communications networks
- Removal of inert interior contents from buildings prior to demolition without damaging or disturbing potential asbestos containing materials (if applicable) or other designated substances identified
- Removal of all hazardous materials once inert materials have been removed
- Executing structural demolition of buildings and structures using cranes or excavators
- Removal/ demolition of slabs, foundations, tracks (sealed and unsealed) to a depth of 500 mm to allow for backfilling and grading of the site to a self-draining condition to minimise the risk of long-term ponding and compaction post-closure.
- Final clean-up by removal of any debris before revegetation commences
- Amelioration of dust generation during demolition and rehabilitation activities.

3.2 Decommissioning

In the event that the Site is not required for the intended AMP purposes, decommissioning activities will commence. If the AMP ceases operations it is the responsibility of the City of Albany and Albany Motorsport Venue Incorporated (AMV Inc) to implement this Decommissioning Plan.

3.2.1 Waste Management, disposal and transport

A waste management, disposal and transport strategy will be prepared to account for the waste resulting from the demolition of infrastructure associated with the AMP closure. Waste streams will be segregated at the site of each demolition to facilitate management and/or disposal. All waste categories that have been deemed not feasible to recycle shall be disposed of as non-recyclable wastes.

It is anticipated that all categories of waste are likely to be generated throughout the demolition of the AMP. It is also anticipated that waste transportation and segregation shall occur throughout this work and that stockpiling of waste will be temporary and minimised. The sequencing of the demolition activities and handling of resultant waste materials will be carefully planned to maximise productivity and minimise overall costs.

3.2.2 Hazardous materials assessment

A hazardous materials (HAZMAT) assessment will be conducted at decommissioning to determine if there are any hazardous materials such as lead paint, poly-chlorinated biphenyls, ozone depleting substances, radioactive components within smoke alarms, used transformers and asbestos. If required a HAZMAT register will be prepared to confirm location and volumes of hazardous materials to confirm suitability of proposed demolition methodologies and waste strategies.

3.2.3 Contaminated areas

It is anticipated that construction and operation of the AMP will present a low risk of contamination. Possible contamination of land can result from handling, storage and transfer of oil, fuel and chemicals during construction and operation of the AMP. Following removal of infrastructure and materials from Site, experienced and qualified personnel will evaluate the area for the potential risk of contamination within the area.

Where contamination or potential contamination of land is thought to have occurred, a site contamination assessment of the land will be conducted following DWER guidelines to identify, characterise and delineate contamination in soil and groundwater associated with areas of environmental concern. The assessment will determine the risk to human health and the environment, detailing remediation requirements. Results of the assessment will be detailed in a report and distributed to relevant stakeholders prior to further rehabilitation activities occurring on the Site.

3.2.4 Demolition

Connections to services such as water, power and wastewater shall be disconnected by appropriately qualified and experienced personnel prior to removal of infrastructure occurring.

All buildings, servicing infrastructure, roads, concrete and fences will be removed from Site by competent personnel. The decommissioning approach is to follow the waste hierarchy, with a priority to deconstruct and reuse as much of the AMP infrastructure and materials as possible and recycle the remainder.

To prevent the introduction and spread of weed species throughout the Site and surrounding environment, all earthmoving machinery entering and leaving Site will be inspected by a competent person to ensure no visible signs of soil and vegetation.

3.3 Rehabilitation

Site rehabilitation aims to restore all disturbed areas caused through the construction and operation of the AMP, leaving a safe, stable and self-sustaining environment that reflects the surrounding landscape. This section of the plan outlines the rehabilitation methodology to be implemented.

3.3.1 Environmental setting

Non-native vegetation species present a risk to the surrounding areas of native vegetation and agricultural properties, therefore all non-native species, with the exclusion of turf, shall be removed from Site. Weed species will be removed and disposed of at a licensed waste facility. Native vegetation remaining with the Site shall not be disturbed.

Any fill/ soil transported to the Site during construction and operation of the AMP is either reused in the process of re-shaping the final, agreed upon, landforms or removed from site. Underground voids or excavations are required to be backfilled with appropriate material to surface level. Fill material will be appropriately compacted to prevent slumping in the future. Any fill material brought to the Site during the decommissioning and rehabilitation phases will be free of weeds, including seeds.

Dust emissions may occur at any point where soil, fill, earthen material or similar are removed, disturbed, traversed or exposed to windy conditions. Every reasonable effort will be made to mitigate the impact of dust emission during decommissioning and rehabilitation activities. Such measures may include dust suppression with water trucks or similar equipment.

The AMP drainage network will remain in place. There should be no requirement for ongoing maintenance and management of the drainage network system following site rehabilitation.

3.3.2 Re-shaping

Any areas of land within the Site that have been significantly altered from the existing topography will be reshaped to appropriately designed and approved landforms. Once infrastructure is removed from Site, strategic surface water management strategies must be implemented to ensure erosion is minimised and the landscape is stable. Works will include re-contouring of the land to facilitate water movement throughout the Site, allowing the area to be free draining of stormwater, minimise erosion scouring and prevent ponding. Drainage will continue to be directed off site as per existing contours.

3.3.3 Ripping

Deep ripping will alleviate soil compaction, providing loose soil surfaces for the establishment of plant germination and growth. Ripping will also allow for aeration of soil and reduce runoff and the risk of erosion. Deep ripping, approximately 1 m in depth, is required on soils that have been compacted during construction and operation of the AMP.

The remaining areas onsite will be shallow ripped prior to application of soil stabilisation product and topsoil. Shallow rip to a depth of 30 to 50 cm shall be applied throughout the area. Rip lines will follow natural contours to reduce peak water flow while maintaining soil structure and preventing potential erosion.

3.3.4 Soil stabilisation

Appropriate erosion and dust control measures should be employed to protect exposed soils and minimise erosion. A suitable soil stabilisation product is required at a depth suitable to improve stabilisation, permeability and strength of soils.

The type and amount of soil stabilisation product to be applied to the Site will be determined prior to decommissioning and rehabilitation and included in the updated decommissioning plan.

3.3.5 Topsoil, weed control and seeding

Retain areas of existing native vegetation in the Protected Exclusion Area and western portion of Lot 5780.

Grassed (pasture) vegetation cover shall be re-established, through the use of seeding, as soon as possible after site preparation activities to ensure successful rehabilitation.

Any stockpiled topsoil, previously stripped from the AMP Site, shall be re-spread over the Site to an approximate depth of 100 mm. Any areas of land within the Site that have had topsoil removed shall have a layer of topsoil applied. Where topsoil is in deficit, alternative material may be used.

Some topsoil can be detrimental to rehabilitation due to the presence of weeds. A visual assessment by a competent person will be undertaken prior to topsoil application. Topsoil containing weeds are to undergo appropriate weed management practices such as mechanical removal and/or the application of approved herbicides. A further assessment post weed management practices will determine the effectiveness of weed control and whether to use the topsoil for rehabilitation purposes.

Following completion of rehabilitation, areas will be adequately signed and isolated from vehicle access until pasture grass has established.

4. Monitoring

Monitoring of the Site will assist in deciding whether the rehabilitation strategies are working and if the decommissioning plan objectives have been met. Land rehabilitation performance will be monitored on an annual basis, to ensure vegetation is establishing to an acceptable level and the landform is in a stable condition, to the satisfaction of the City of Albany. The monitoring frequency will depend on the developmental progress of the rehabilitation and will likely become less frequent following establishment of ground cover and safe and stable landforms.

Monitoring will be based on the Site's characteristics and the adjacent landscapes. Annual monitoring will determine the need for any maintenance and or contingency measures. The maintenance of rehabilitation will include:

- Early rectification of any erosion occurrences
- Application of weed control when required.

In disturbed areas which become dominated by weed species not previously evident in the surrounding area, weed control will be undertaken but should ensure that soil stability is maintained.

Annual rehabilitation monitoring reports will present results and interpretation of site rehabilitation performance. The reports will be made available to relevant stakeholders annually.

The Site will be relinquished to the City of Albany once the Site has been rehabilitated to their satisfaction.

5. Review

This preliminary Decommissioning Plan will be reviewed and updated prior to decommissioning and rehabilitation activities and/ or in the case of significant changes within the Site. The review will include an assessment of the effectiveness of rehabilitation strategies and performance against the plan's objectives.

Reviewing and/or updating the plan prior to decommissioning and rehabilitation activities will include the following tasks:

- Consultation to confirm post-closure land use objectives
- Establish responsibilities and timing for the decommissioning and rehabilitation phases
- Revise all parts of the Site decommissioning plan and update, incorporating stakeholder feedback, to develop final rehabilitation and decommissioning plan.

Circulate updated decommissioning plan to all relevant stakeholders and authorities.

Appendix A

Figures

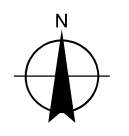
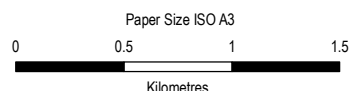
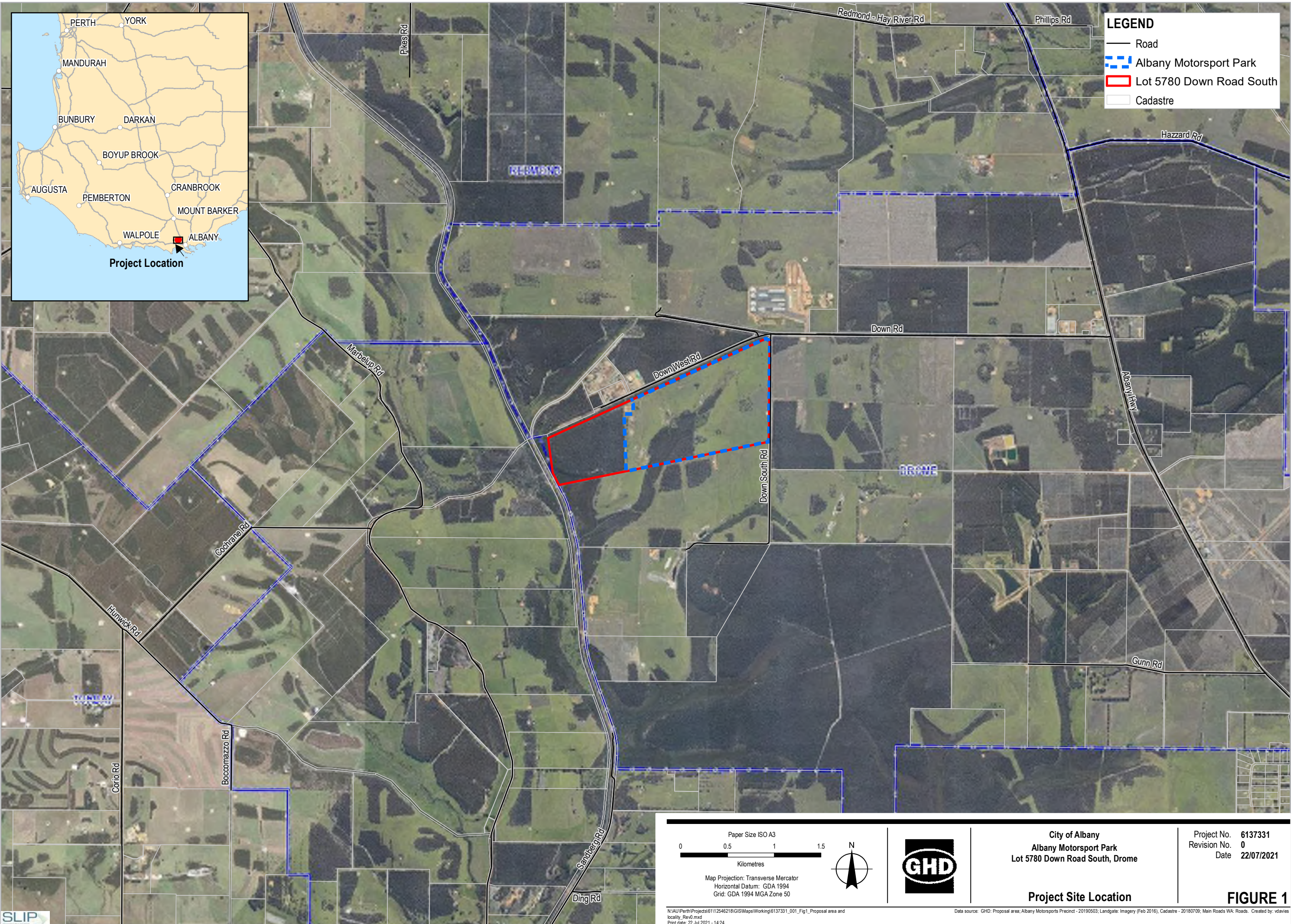
Figure 1 *Project site location*

Figure 2 *City of Albany Local Planning Scheme*



LEGEND

- Road
- ▬▬▬ Albany Motorsport Park
- ▭ Lot 5780 Down Road South
- ▭ Cadastre



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50

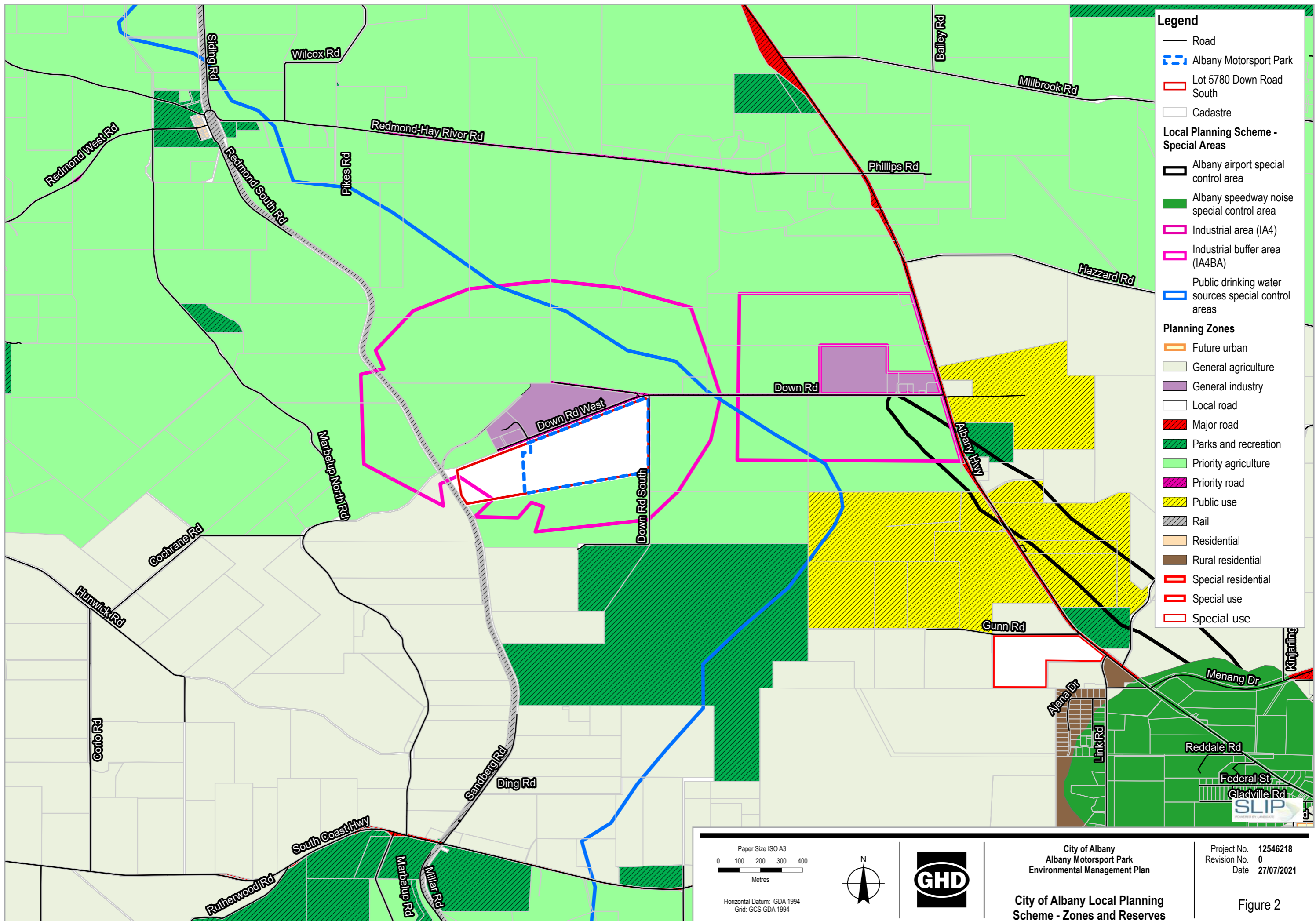
City of Albany
 Albany Motorsport Park
 Lot 5780 Down Road South, Drome

Project No. 6137331
 Revision No. 0
 Date 22/07/2021

Project Site Location

FIGURE 1





- Legend**
- Road
 - ▬▬▬ Albany Motorsport Park
 - ▭ Lot 5780 Down Road South
 - ▭ Cadastre
- Local Planning Scheme - Special Areas**
- ▭ Albany airport special control area
 - ▭ Albany speedway noise special control area
 - ▭ Industrial area (IA4)
 - ▭ Industrial buffer area (IA4BA)
 - ▭ Public drinking water sources special control areas
- Planning Zones**
- ▭ Future urban
 - ▭ General agriculture
 - ▭ General industry
 - ▭ Local road
 - ▭ Major road
 - ▭ Parks and recreation
 - ▭ Priority agriculture
 - ▭ Priority road
 - ▭ Public use
 - ▭ Rail
 - ▭ Residential
 - ▭ Rural residential
 - ▭ Special residential
 - ▭ Special use
 - ▭ Special use

Paper Size ISO A3 0 100 200 300 400 Metres			City of Albany Albany Motorsport Park Environmental Management Plan	Project No. 12546218 Revision No. 0 Date 27/07/2021
Horizontal Datum: GDA 1994 Grid: GCS GDA 1994			City of Albany Local Planning Scheme - Zones and Reserves	Figure 2

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 Print date: 27 Jul 2021 - 14:56
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→ **The Power of Commitment**

Appendix J

Construction Management Plan



Albany Motorsport Park – Development Application

Construction Management Plan

City of Albany

27 July 2021

→ The Power of Commitment

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
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Executive summary

The purpose of this Construction Management Plan is to outline objectives, broad strategies and actions required to minimise environmental impacts associated with construction of the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (Figure 1, Appendix A).

This Construction Management Plan is appended to the overarching Environmental Management Plan (EMP) which has been developed for construction works associated with Stage 1A and 1B of the proposed AMP development.

This Construction Management Plan applies to the City of Albany (CoA), Great Southern Motorplex Group (GSMG) and all appointed contractors during the construction of the AMP.

It is recommended that a site-specific Construction Environmental Management Plan (CEMP) is developed by the appointed contractor. The CEMP will expand on the outlined management measures and identify measures for the works to comply with environmental laws and regulations.

The main objectives of this construction management plan, for Stage 1A and 1B of the AMP, include the following:

- Comply with all environmental legislation, statutory and development approval obligations
- Minimise environmental impact on ecological values within the Protected Exclusion Area
- Minimise offsite environmental and social impacts as a result of construction of the AMP.

Construction of the AMP has the potential to result in the following:

- Impacts on native vegetation communities and flora due to changes in surface hydrology, hydrogeological changes, erosion or sedimentation
- Impacts on native vegetation communities and flora due to “dust smothering” leading to decreased photosynthetic capacity
- Impact of native vegetation communities due to spread of *Phytophthora* dieback and weeds
- Disturbance of fauna from construction related noise, dust and uncontrolled fires
- Loss of fauna due to vehicle strike
- Impact on surface water quality including the Conservation Category Wetland (CCW) Marbelup Flats (which ultimately leads to the Marbelup Brook) located within the Protected Exclusion Area
- Impact on groundwater quality in a Priority 2 Public Drinking Water Source Area (PDWSA) – Marbelup Brook Catchment Area
- Visual impact.

It is the responsibility of CoA to implement this Construction Management Plan during construction of the AMP.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

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1. Introduction

1.1 Purpose of this report

The purpose of this Construction Management Plan is to outline objectives, broad strategies and actions required to minimise environmental impacts associated with construction of the Albany Motorsport Park (AMP) at Lot 5780 Down Road South, Drome (Figure 1, Appendix A).

This Construction Management Plan applies to the CoA, GSMG and all appointed contractors during the construction of the AMP.

It is recommended that a site-specific Construction Environmental Management Plan (CEMP) is developed by the appointed contractor. The CEMP will expand on the outlined management measures and identify measures for the works to comply with environmental laws and regulations. The CEMP will provide site specific information for works undertaken during construction such as laydown areas for materials, erosion control infrastructure including soil stabilisation spray and silt fences etc.

Construction works are due to commence as soon as all relevant approvals and permits are obtained and are expected to occur over an 18 to 24 month period.

Construction activities expected to be undertaken include earthworks, road and racetrack construction, building construction, waste removal and materials transfer.

1.2 Objectives

The main objectives of this construction management plan, for Stage 1A and 1B of the AMP, include the following:

- Comply with all environmental legislation, statutory and development approval obligations
- Minimise environmental impact on ecological values within the Protected Exclusion Area
- Minimise offsite environmental and social impacts as a result of construction of the AMP.

1.3 Legislation and guidelines

Legislation and guidelines associated with construction activities include, but may not be limited to the following:

- *Aboriginal Heritage Act 1972*
- *AS 1940:2004 – The Storage and Handling of Combustible Liquids*
- *AS 2436-2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites (AS 2436-2010)*
- *Biosecurity and Agriculture Management Act 2007*
- *Biodiversity Conservation Act 2016*
- *Environmental Protection Act 1986*
- *Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)*
- *Environmental Protection and Biodiversity Conservation Regulations 2000 (Commonwealth)*
- *Environmental Protection (Noise) Regulations 1997*
- *Environmental Protection Regulations 1987*
- *Contaminated Sites Act 2003*
- *Dangerous Goods Safety Act 2004*
- *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*
- *Heritage of Western Australia Act 1990*
- *Rights in Water and Irrigation Act 1914*
- *Waste Reduction and Recycling Act 2011*
- *Waste Avoidance and Resource Recovery Act 2007*

- Water Quality Protection Note (WQPN) 100: Motor sport facilities near sensitive waters (DoW, 2007)
- *Wildlife Conservation Act 1950.*

1.4 Limitations

This report: has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and City of Albany as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Potential environmental impacts

Construction of the AMP has the potential to result in the following:

- Impacts on native vegetation communities and flora due to changes in surface hydrology, hydrogeological changes, erosion or sedimentation
- Impacts on native vegetation communities and flora due to “dust smothering” leading to decreased photosynthetic capacity
- Impact of native vegetation communities due to spread of *Phytophthora* dieback and weeds
- Disturbance of fauna from construction related noise, dust and uncontrolled fires
- Loss of fauna due to vehicle strike
- Impact on surface water quality including the Conservation Category Wetland (CCW) Marbelup Flats (which ultimately leads to the Marbelup Brook) located within the Protected Exclusion Area
- Impact on groundwater quality in a Priority 2 Public Drinking Water Source Area (PDWSA) – Marbelup Brook Catchment Area
- Visual impact.

3. Management strategies, actions, timeframes and responsibilities

Broad management strategies have been developed to minimise potential impacts associated with construction of Stage 1A and 1B of the AMP. The management strategies, timing and responsibilities are outlined in Table 1.

Table 1 Construction management strategies, actions, timeframes and responsibilities

Management Strategies	Actions	Timeframes	Responsibility
Site induction	All site workers will undertake an induction, which includes information about this CMP and the CEMP including environmental management requirements, for construction of the AMP.	On site entry	CoA/ GSMG/ contractors
Minimise impact on native vegetation	Demarcate approved clearing area to restrict clearing of native vegetation to the approved clearing area only. Any clearing outside the approved area to be recorded in the AMP Incident Register and reported to DWER as required.	Construction period	CoA/ GSMG/ contractors
	Surface water drains and discharge locations to be positioned so that they have minimal impact on native vegetation.	Detailed design phase	CoA/ GSMG/ contractors
	Implement hygiene management measures to minimise risk of spread of dieback.	Construction period	CoA/ GSMG/ contractors
	Ensure weeds do not establish on stockpiles or are moved around site, particularly when in seed.	Construction period	CoA/ GSMG/ contractors
Minimise impact on native fauna	Demarcate approved clearing area to restrict clearing of native vegetation to the approved clearing area only.	Construction period	CoA/ GSMG/ contractors
	Undertake a fauna clearance survey, by a suitably qualified person, to check for fauna prior to clearing vegetation. If animals are located within the construction area, stop works and allow them to move on before recommencing works. Any native fauna injured as a result of the AMP construction will be taken to a designated veterinary clinic or a DBCA nominated wildlife carer. All native fauna injuries and deaths to be recorded in the AMP Incident Register and reported as required.		
	Wherever practical clearing should be undertaken on one front only to provide an opportunity for fauna to move out of the construction area		
	Clearing to be timed to minimise impacts on native fauna, particularly Black Cockatoos (i.e. clearing will be avoided during spring).		
	If native fauna is disturbed during clearing it should be allowed to make its own way to adjacent vegetation.		
	Should trenches be constructed, which native fauna are unable to escape from, they will be inspected by a “fauna spotter” on a regular basis (dawn, midday and prior to sunset). If trenches are left open overnight, ramps will be established to permit native fauna to escape.		
	No pets, such as dogs or cats, permitted on site.		
	All putrescible waste bins to be lidded so as to avoid encouraging vermin.		
	Install and maintain fencing around Development Exclusion Buffer.		

Management Strategies	Actions	Timeframes	Responsibility
Minimise risk of contamination from waste to the surrounding environment and detrimental impacts on human health	Apply the waste management hierarchy (avoidance, recovery, disposal) to manage waste streams.	Construction period	CoA/ GSMG/ contractors
	All putrescible waste bins to be lidded so as to avoid windblown waste. Regular checks within and off site for windblown waste and removal as required.		
	Refuelling or servicing of plant and equipment on site will be undertaken on a designated bunded area. All minor spills shall be remediated immediately by using a Spill Kit and disposing of contaminated material to an appropriately licensed facility. In the event of a serious/ major spill, it will be contained using appropriate Spill Kit and relevant specialists contacted regarding soil and ground water testing/ determine if further remediation is required.		
	Where waste cannot be reused or recycled it will be removed offsite and disposed of to an appropriately licensed facility.		
	Chemical, hydrocarbon and other hazardous waste will be collected in an appropriate manner to minimise risk of contamination and disposed of to an appropriately licensed facility.		
Minimise disturbance of ASS	No dewatering or disposal of dewatering effluent onsite due to draw down of groundwater and ASS “moderate to low” risk area in the Protected Exclusion Area. Construction will be undertaken during a period when water table will not be intercepted i.e. summer months. An ASS management plan will be required if greater than 100 m ³ of soil is disturbed and/ or dewatering is required.	Construction period	CoA/ GSMG/ contractors
Manage dust emissions such that they result in the lowest practicable impact to sensitive receptors	The extent of disturbed surfaces will be kept to the minimum possible by: <ul style="list-style-type: none"> – Only clearing where required for construction operation – Conducting vegetation clearing, levelling and rehabilitation in stages when required – Clearly marking or fencing off any natural vegetation not to be cleared to prevent accidental clearing – Revegetating exposed soil as soon as practicable 	Construction period	CoA/ GSMG/ contractors
	Time the works to minimise dust emissions by: <ul style="list-style-type: none"> – If possible, scheduling major works that produce high levels of dust outside of the dust season (dust season is October to March) – If this is not possible dust monitoring may be required as per the requirements of the Dust Management Plan (Appendix G) – Monitoring wind and weather forecasts and delaying dust generating activities when conditions are unfavourable 		
	Maintaining natural wind and dust barriers by avoiding the removal of tree/vegetation shelter belts alongside boundaries whilst major clearing works are underway at the site.		
	Managing earth moving activities by: <ul style="list-style-type: none"> – Not clearing areas unless they are able to be levelled and stabilised immediately – Observing weather conditions and not commencing or continuing works during unsuitable conditions 		
	Managing stockpiles by locating stockpiles in sheltered areas and cover when they are to be left for longer than 24 hours		

Management Strategies	Actions	Timeframes	Responsibility
	<p>Apply water/dust suppressant to:</p> <ul style="list-style-type: none"> – Exposed areas when strong winds are expected – Areas scheduled for disturbance 		
	Hydromulch or chemically stabilise any cleared areas or stockpiles which may be left for a substantial period of time	Construction period	CoA/ GSMG/ contractors
	<p>Maintaining dust management should be undertaken by:</p> <ul style="list-style-type: none"> – Nominating one person to be responsible for dust management at the site – Educating all site workers on how dust is generated and methods of reducing dust generation 		
Manage noise emissions such that they result in the lowest practicable impact to sensitive receptors	Construction activities will occur during normal construction hours (7.00 am and 7.00 pm Monday to Saturday). Work outside these times would only occur if required for special tasks or to recover lost time due to project delays. Where possible, activities that could result in elevated noise levels will be scheduled during normal construction hours.	Construction period	CoA/ GSMG/ contractors
	Selection of alternate equipment or process – Where a particular item of equipment or activity is found to generate noise levels that exceed the assigned noise levels, it may be possible to select alternate equipment or approaches to reduce noise levels. For example, smaller, quieter front-end loaders will be used onsite rather than larger equipment, where operationally practicable. Wherever practicable, oscillating rollers will be used in preference to vibrating rollers as these cause significantly less vibration to surrounding sensitive receptors.		
	Acoustic barriers – Barriers or screens may be effective in reducing noise levels from work sites, when located at either the source or receptors. Barriers at the source generally only reduce noise levels from static equipment. The extent of noise reduction achieved is dependent on the degree to which the line of sight is blocked. If receptor is totally shielded, noise reduction of up to 15 dBA is possible, whereas partial obstruction may only achieve noise reduction of 7 to 10 dBA.		
	<p>Silencing – Where processes or equipment are noisy, the use of additional silencing may be possible, pending availability. This can be in the form of engine shrouding or residential grade exhaust silencers.</p> <p>Due to the distance to the nearest sensitive receptors, this measure is considered unlikely to be required.</p>		
	<p>Establishment of site practices involves formulation of work practices to reduce noise exposure to nearby sensitive receptors. The following management and mitigation measures are available to ameliorate noise impacts as far as practicable:</p> <ul style="list-style-type: none"> – All plant and equipment should be selected to minimise noise emissions, maintained in good repair and operated in accordance with the manufacturer’s instructions. All engine covers should be kept closed while equipment is operating. – All combustion engine plant, such as generators, compressors and welders should be checked to ensure they produce minimal noise with particular attention to residential grade exhaust silencers. – Fixed equipment (i.e. pumps, generators and air compressors) should be located as far as practicable from noise sensitive receptors and locations of equipment rotated to provide respite to receptors. 		

Management Strategies	Actions	Timeframes	Responsibility
	<ul style="list-style-type: none"> - Where practical, machines will be operated at low speed or power and will be switched off when not being used rather than left idling for prolonged periods. - Machines found to produce excessive noise compared to industry best practice will be removed from the site or stood down until repairs or modifications can be made. - Where practical, impact wrenches will be used sparingly within close proximity to sensitive receptors, with hand tools or quiet hydraulic torque units preferred. Metal to metal contact on material should be avoided where practical. - Whenever possible, loading and unloading areas should be located as far as practicable from the noise sensitive receptors. - Materials dropped from heights into or out of trucks should be minimised. Care will be taken when loading or unloading to avoid noise resulting from material being dropped or thrown into the tray of trucks. - Vehicles will be kept properly serviced and fitted with appropriate mufflers. The use of exhaust brakes will be eliminated, where practicable. - Minimise reversing. The preference will be for broadband (croaker) reversing alarms to be installed onsite equipment, subject to meeting occupational health and safety requirements. - Where practical, vehicular movements to and from the construction site should be undertaken during normal working hours. Information to be provided to truck drivers outlining designated vehicle routes, parking locations and delivery hours. - Vehicle routes to and from site will be selected to minimise impact to neighbours, by following major roads where possible. Truck drivers will also be advised of using good techniques when driving through residential areas, in particular to limit engine braking. 	Construction period	CoA/ GSMG/ contractors
Minimise detrimental impacts of surface water runoff	<p>Areas of high-risk erosion to be identified prior to construction works and the following measures, or similar, implemented as required:</p> <ul style="list-style-type: none"> - Measures such as temporary bunds, coir logs and silt fences, to be put in place to prevent erosion and sedimentation down slope of areas under construction to prevent erosion and silt runoff into the drainage system. - Temporary silt fences to be to place around the Development Exclusion Zone, at likely sedimentation points, to trap sediment prior to entering the Protected Exclusion Area. - Silt fences to be inspected and cleaned out regularly and after large rainfall events to ensure they are working adequately. - Hay/ straw bales are not recommended for use as silt traps due to risk of spreading weeds to the Protected Exclusion Area. - If soil is stockpiled ensure areas downslope are protected from potential run off and sedimentation. <p>Litter and waste storage bins to prevent litter to be blown by wind or washed by rainfall.</p> <p>Establishing a washing-down area behind the bund or silt fence.</p> <p>Provide a stabilised entry and exit point to prevent vehicle tracking of soil from the building site onto roads.</p>	Construction period	CoA/ GSMG/ contractors

Management Strategies	Actions	Timeframes	Responsibility
	Position stockpiles of sand and soil stockpiles to prevent material being tracked, washed, or blown into roads, and then into existing surface drainage or constructed stormwater systems.		
Minimise risk of bushfire	<p>Maintain 50 m wide, low fuel Development Exclusion Buffer around the Protected Exclusion Area (Figure 2, Appendix A).</p> <p>Undertake maintenance activities within the AMP and implement recommendations for Stage 1A and 1B:</p> <ul style="list-style-type: none"> – Albany Motorsport Park, Lot 5780 Down Road, Drome, Bushfire Management Plan, Addendum Report (Bio Diverse Solutions, 2021) 	Construction period	CoA/ GSMG/ contractors
Undertake strategies for construction traffic management as per the Works on Roads Traffic Management Plan (Shawmac, 2021)	Implement and adhere to the Works on Roads Traffic Management Plan (Shawmac, 2021) prepared for construction works during development of the AMP included in Appendix B.	Construction period	CoA/ GSMG/ contractors

4. Monitoring

Monitoring of the Site will be undertaken during the construction phase, by the appointed contractor, so as to meet the following performance criteria:

- All non-hazardous, recyclable, hazardous and liquid wastes removed offsite to appropriately approved disposal locations on an as required basis
- Presence of litter and windblown waste around the Site cleaned up on a weekly basis
- No impact on ecological values within the Protected Exclusion Area – implement a vegetation and flora and weed monitoring program to identify any decline or loss of native vegetation and spread of weeds and *Phytophthora dieback*
- No clearing to occur outside approved clearing areas
- No native fauna deaths
- No impact on surface water and groundwater levels and quality compared to baseline monitoring levels
- No erosion within the AMP area and sediment run-off to the Protected Exclusion Area
- No dewatering or disposal of dewatering effluent onsite due to drawn down of groundwater in the Protected Exclusion Area/ ASS moderate risk area
- No uncontrolled bushfires caused by the appointed contractors
- No complaints received regarding construction activities.

All environmental incidents are to be reported in the construction contractor Incident Register held at the site offices and suitable corrective actions undertaken, and recorded, as required. All incidents and corrective actions will be reported to the CoA representative.

5. Management plan aspects

The following environmental management plan aspects which apply to this Construction Management Plan have been included in the overarching Environmental Management Plan for the Site:

- Roles and responsibilities
- Environmental incidents, non-conformances and complaints
- Environmental training
- Reporting and control of environmental records.

6. Review

This Construction Management Plan will be reviewed and updated no later than annually, until construction of Stage 1A and 1B is complete. A review may occur sooner if there is a material change in risk, legal requirements or an incident relevant to construction management. Management strategies will be reviewed for effectiveness and any corrective actions will be implemented.

7. References

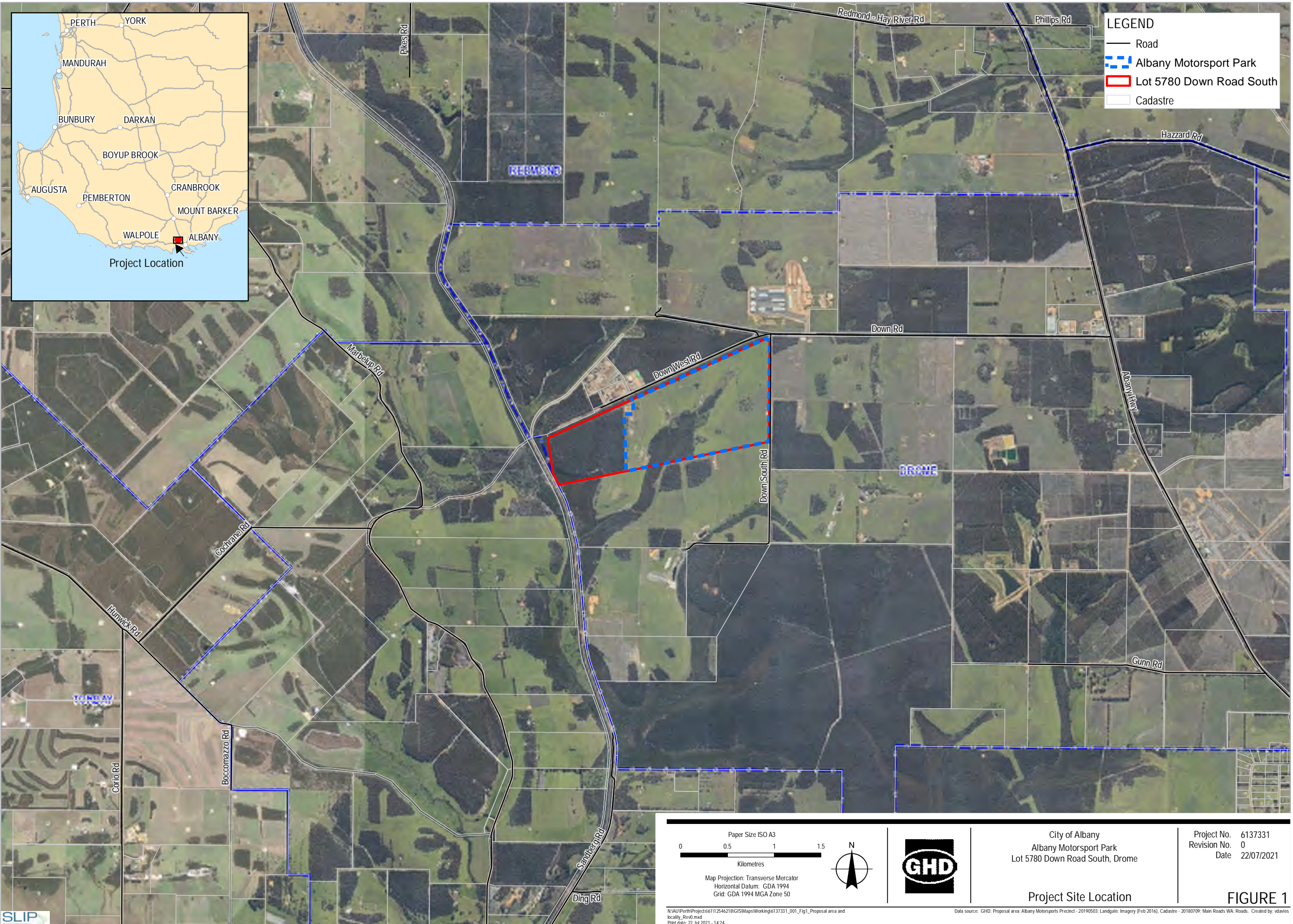
- Bio Diverse Solutions. (2021). *Albany Motorsport Park, Lot 5780 Down Road, Drome, Bushfire Management Plan, Addendum Report*. Unpublished report prepared for GHD.
- DoW. (2007). *Water Quality Protection Note 100: Motor sport facilities near sensitive water*. Perth: Department of Water.
- Roberts Gardiner Architects . (2021). *Albany Motorsport Park Masterplan - Stage 1*. Unpublished masterplan for City of Albany.
- Shawmac. (2021). *Albany Motorsport Park Development Works on Roads Traffic Management Plan*. Unpublished report prepared for GHD.

Appendix A

Figures

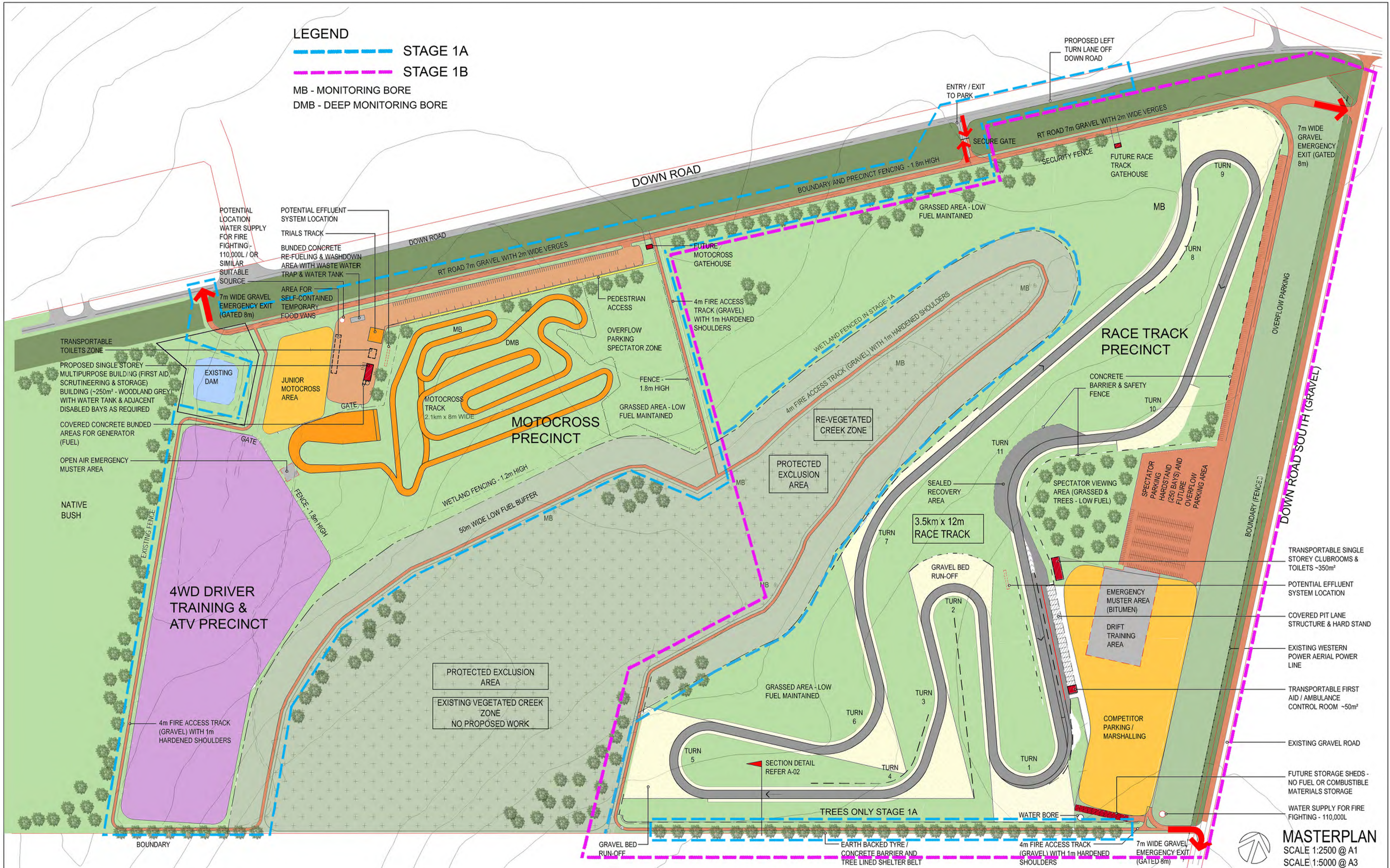
Figure 1 *Project site location*

Figure 2 *Master plan*



LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

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project
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 client
 City of Albany

Masterplan - Stage 1

cad file
 drawn CB project number 21-002

scale 1:2500 @A1
 date JULY 2021
 dwg no. **A-01** rev. **E**

Appendix B

**Works on Roads Traffic Management Plan
(Shawmac, 2021)**



WORKS ON ROADS TRAFFIC MANAGEMENT PLAN

ALBANY MOTORSPORT PARK DEVELOPMENT
PREPARED FOR

GHD



I, YUYANG KE (AUS AWTM-19-6370-02), that I have designed this Traffic Management Plan following a site inspection on 18/03/2021 The Traffic Management Plan has been prepared, subject to the variations approved, in accordance with the Main Roads Traffic Management for Works on Roads Code of Practice, Austroads Guide to Temporary Traffic Management and AS 1742.3 2019.

	Name/Company	Accreditation Details	Date	Signature
TMP designed by:	ANTHONY ANASTAS Shawmac Consulting Civil and Traffic Engineers	AUS AWTM-20-4573-02	14/04/2021	
TMP Reviewed by:	YUYANG KE Shawmac Consulting Civil and Traffic Engineers	AUS AWTM-19-6370-02	14/04/2021	
RTM Reviewed and Endorsed by:				
Compliance Audit to be undertaken by:				
Road Authority Review by:				
Road Authority Authorisation:	Road authority authorisation of the implementation of traffic signs and devices is given for Traffic Management Plan No. 2103019			
	Signed By:		Date:	
	Signature:		Position:	

TMP No.	2103019	Revision No.	1	Date	14/04/2021
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Glossary

Table 1: Glossary

Acronym	Definition
AGTMM	Austroroads Guide to Temporary Traffic Management
AS	Australian Standard
AS/NZS	Australian and New Zealand Standard
AWTM	Advanced Worksite Traffic Management / Manager
CoP	Traffic Management for Works on Roads Code of Practice (MRWA)
MRWA	Main Roads Western Australia
OS&H	Occupational Safety and Health
RTM	Roadworks Traffic Manager (accredited by MRWA)
SRSA	Senior Road Safety Auditor
TGS	Traffic Guidance Schemes
TMP	Traffic Management Plan
TCP	Traffic Control Plan



1. Introduction

1.1. Purpose and Scope

This Traffic Management Plan (TMP) outlines the traffic control and traffic management procedures to be implemented by the Project Manager and Project Contractors to manage potential hazards associated with the traffic environment during the project.

The proposed project is for the development of a multipurpose motorsport park in Albany on Lot 5780 Down Road, Drome.

1.2. Objectives and Strategies

The objectives of the Traffic Management Plan is to ensure:

- The safety of the road workers.
- All road users, including vulnerable road users, are safely guided around, through or past the work site.
- The performance of the road network is not unduly impacted and the disruption and inconvenience to all road users are minimised for the duration of the works.
- Impacts on users of the road reserve and adjacent properties and facilities are minimised.

In an effort to meet these objectives the Traffic Management Plan will incorporate the following strategies:

- Providing a sufficient number of traffic lanes to accommodate vehicle volumes.
- Ensuring delays are minimised.
- Ensuring all road users are managed including motorists, pedestrians, cyclists, people with disabilities and people using public transport.
- Ensuring work activities are carried out sequentially to minimise adverse impacts.
- Provision will be made for works personnel to enter the work area in a safe manner in accordance with safety procedures.
- All entry and exit movements to and from traffic streams shall be in accordance with the requirements of safe working practices.

2. Project Overview

2.1. Project Location

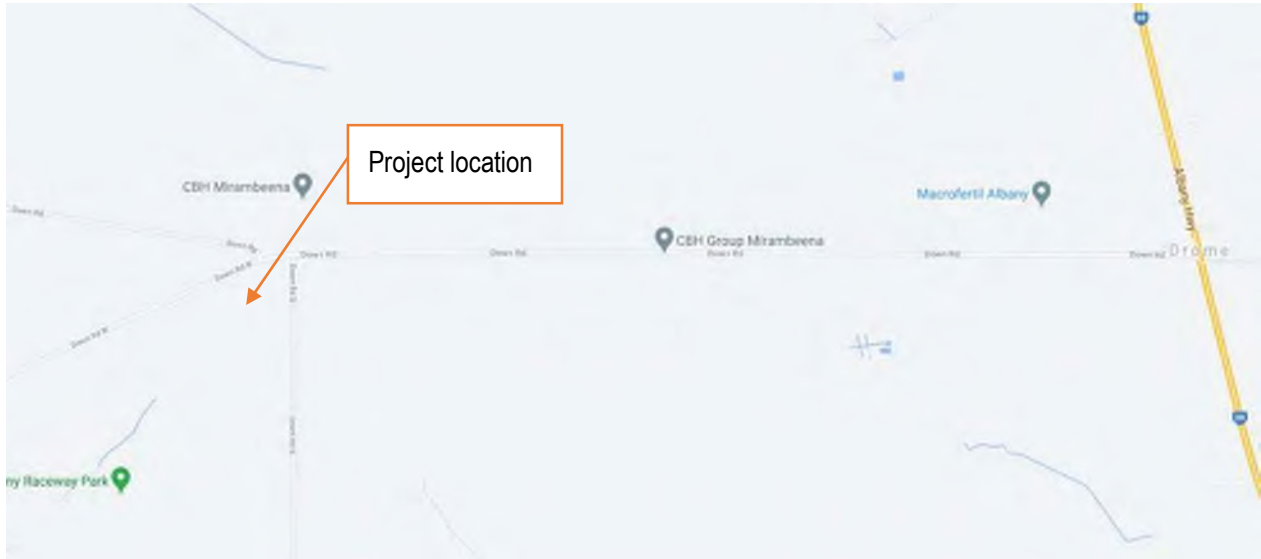


Figure 1: Location of Works

2.2. Project Details and Site Constraints/Impacts

Table 2: Project Details and Site Constraints/Impacts

Item	Description
Project Title:	Albany Motorsport Park Development
Location:	Lot 5780 Down Road, Drome, WA 6330
Road Classification & Existing Speed Limit:	Down Road – Access Road: 110km/h Down Road South - local access road (Gravel):
Road Authority:	City of Albany
Local Government:	City of Albany
Prime Contractor:	GHD
Scope of Works:	Construction of Albany Motorsport Park including earth works, car park construction, utilities installation and pavement construction.
Staging of Works:	Stage 1: western development construction Stage 2: eastern development construction
Project Date:	TBA
Hours/Days of Work:	9am to 7pm / 7 days a week
Duration of Works	8 months
Other Constraints:	Ongoing events during the construction of stage 2
Concurrent/Adjacent Works	N/A



or Projects	
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2.3. Existing Traffic and Road Environment

Item	Description
Traffic Volume and Composition	Down Road: 844 vpd(2017) Down Road South: no data
Existing Road Configuration	Down Road: single carriageway with one lane in each direction approximately 9m wide. Down Road South: Gravel approximately 5m wide.
Existing Pedestrian / Cyclists Facilities	N/A

2.4. Overview of Proposed Temporary Traffic Management

Item	Description
Temporary Traffic Management Descriptions:	Verge works with various speed reductions depending on the clearance between edge of traffic and work site is required.
Speed Zone Dates and Times	40km/h to 80km/h speed reduction during work shift and 80km/h for after care Dates: TBC
Lane Closures Dates and Times	N/A
Road Closures Dates and Times	N/A
Signal Modifications Description	N/A
Proposed Lane Widths	Minimum 3.2m lane width is required.
Road Safety Barrier	N/A

2.5. Project Representatives

Table 3: Project Representatives

Position	Name	Contact Details
Road Authority Representative	City of Albany	Phone: (08) 6820 3000 Email: staff@albany.wa.gov.au Post: PO Box 484, ALBANY, WA 6331
Local Government	City of Albany	Phone: (08) 6820 3000 Email: staff@albany.wa.gov.au Post: PO Box 484, ALBANY, WA 6331
Project Manager / Prime Contractor	TBC	
Site Supervisor/Manager	TBC	



TMP Design	Yuyang Ke Shawmac Pty Ltd	Email: yyke@shawmac.com.au mob: 0421591428
TMP Implementation	TBC	

GHD have engaged Shawmac Pty Ltd to prepare this Traffic Management Plan and associated controls for the works.

The TMP will be implemented by TBC.



3. Risk Management

The following details the preliminary assessment of site hazards likely to be encountered, the level of risk associated with each and the control proposed. Note that the risk level is the level of assessed risk without the controls in place. The controls listed have been determined as being appropriate in reducing the risk to a level that is acceptable. The hierarchy of control has been utilised to ensure that the highest practicable level of protection and safety is selected:

- Elimination
- Substitution
- Isolation
- Engineering
- Administration
- Personal Protection Equipment

In evaluating the options, a key consideration is whether the option takes traffic around, through or past the worksite.

3.1. Risk Classification Tables

3.1.1. QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Table 4: Risk Classification Damage/Impact

Level	Consequence	Description
1	Insignificant	<ul style="list-style-type: none"> • Mid-block hourly traffic flow per lane is equal to or less than the allowable lane capacity detailed in AGTTM. No impact to the performance of the network. • Affected intersection leg operates at a Level of Service (LoS) of A or B. • No property damage.
2	Minor	<ul style="list-style-type: none"> • Mid-block hourly traffic flow per lane is greater than the allowable road capacity and less than 110% of the allowable road capacity as detailed in AGTTM. Minor impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of C. • Minor property damage.
3	Moderate	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 110% and less than 135% of allowable road capacity as detailed in AGTTM. Moderate impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of D. • Moderate property damage.
4	Major	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 135% and less than 170% of allowable road capacity as detailed in AGTTM. Major impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of E. • Major property damage.
5	Catastrophic	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 170% of allowable road capacity as detailed in AGTTM. Unacceptable impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of F. • Total property damage

3.1.2. OSH QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Table 5: Risk Classification Damage OSH



Level	Consequence	Description
1	Insignificant	No treatment required.
2	Minor	First aid treatment required.
3	Moderate	Medical treatment required or Lost Time Injury.
4	Major	Single fatality or major injuries or severe permanent disablement.
5	Catastrophic	Multiple fatalities.

3.1.3. QUALITATIVE MEASURES OF LIKELIHOOD

Table 6: Risk Classification Rarity

Level	Likelihood	Description
A	Almost certain	The event or hazard: <ul style="list-style-type: none"> is expected to occur in most circumstances, will probably occur with a frequency more than 10 times per year.
B	Likely	The event or hazard: <ul style="list-style-type: none"> will probably occur in most circumstances, will probably occur with a frequency of between 1 and 10 times per year.
C	Possible	The event or hazard: <ul style="list-style-type: none"> might occur at some time, will probably occur with a frequency of 0.1 to 1 times per year (i.e. once in 1 to 10 years).
D	Unlikely	The event or hazard: <ul style="list-style-type: none"> could occur at some time, will probably occur with a frequency of 0.02 to 0.1 times per year (i.e. once in 10 to 50 years).
E	Rare	The event or hazard: <ul style="list-style-type: none"> may occur only in exceptional circumstances, will probably occur with a frequency of less than 0.02 times per year (i.e. less than once in 50 years).

IMPORTANT NOTE: The likelihood of an event or hazard occurring shall first be assessed over the duration of the activity (i.e. “period of exposure”). For risk assessment purposes the assessed likelihood shall then be proportioned for a “period of exposure” of one year.

Example: An activity has a duration of 6 weeks (i.e. “period of exposure” = 6 weeks). The event or hazard being considered is assessed as likely to occur once every 20 times the activity occurs (i.e. likelihood or frequency = 1 event/20 times activity occurs = 0.05 times per activity). Assessed annual likelihood or frequency = 0.05 times per activity x 52 weeks/6 weeks = 0.4 times per year. Assessed likelihood = Possible.

3.1.4. QUALITATIVE RISK ANALYSIS MATRIX – RISK RATING

Table 7: Risk Classification Severity

Likelihood	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A (almost certain.)	Low 5	High 10	High 15	Very High 20	Very High 25



B (Likely)	Low 4	Medium 8	High 12	Very High 16	Very High 20
C (Possible)	Low 3	Low 6	Medium 9	High 12	High 15
D (Unlikely)	Low 2	Low 4	Low 6	Medium 8	High 10
E (Rare)	Low 1	Low 2	Low 3	Low 4	Medium 7

3.1.5. MANAGEMENT APPROACH FOR RESIDUAL RISK RATING

Table: 8: Residual Risk Rating

Residual Risk Rating	Required Treatment
Very High	Unacceptable risk. HOLD POINT. Work cannot proceed until risk has been reduced.
High	High priority, OSH MR and Roadworks Traffic Manager (RTM) must review the risk assessment and approve the treatment and endorse the TGS prior to its implementation.
Medium	Medium Risk, standard traffic control and work practices subject to review by accredited AWTM personnel prior to implementation.
Low	Managed in accordance with the approved management procedures and traffic control practices.



3.2. Risk Register

Table 9: Risk Register

Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
3.2.1 Environmental									
3.2.1.1	Sun glare causing decreased visibility of traffic control delineation and signage for motorists resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk from glare. Where traffic control is adversely affected by glare at sunset and sunrise, traffic controllers may need to assist in maintaining low traffic speeds. All changes are to be noted in the daily diary.	D	4	M8
3.2.1.2	Headlight glare from night works causing decreased visibility of traffic control delineation and signage for motorists resulting in serious injury or fatality.	Serious injury or fatality.	C	3	M9	Traffic control personnel and site supervisor to conduct site drive assessments of temporarily installed signage and delineation to ensure devices are visible for all motorists. Where traffic control is adversely affected by head light glare from night works, traffic controllers may move or angle devices. All changes are to be noted in the daily diary.	D	3	L6
3.2.1.3	Reduced motorist's visibility of worksite due to night works causing an increase of interactions between workers and live traffic resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Traffic control and workers to wear High Visibility Retroreflective Vests at all time and to use night work batons. All traffic controller signs to be Class 1 Retro-reflective material. Temporary speed zones to be implemented where required for advanced warning of the worksite. Contractor to install temporary lighting towers through poorly illuminated sections of worksite if required.	D	4	M8
3.2.1.4	Inclement weather causing hazardous environments through the worksite or	Serious injury or fatality.	C	4	H12	Where adverse weather conditions are encountered during the works, the following may	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	reduced visibility of implemented traffic control resulting in serious injury or fatality.					be implemented: 1. Signage and tapers extended by 25%. 2. 'Slippery When Wet' signs may be implemented. 3. Where the road becomes impassable work may cease and traffic control implemented. Any adjustments to the plan shall be risk assessed and approved by someone holding a WTM or AWTM accreditation.			
3.2.1.5	Crests and curves causing reduced visibility of the worksite and implemented traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Sign locations can be staggered to assist driver's visibility, in accordance with Australian Standards and under the supervision of an accredited AWTM. All signs shall be regularly inspected and re-positioned as required to reduce the effects of shadows. All changes shall be recorded in the daily diary.	D	4	M8
3.2.1.6	Vegetation causing reduced visibility of the worksite and implemented traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Where vegetation impacts on the effectiveness of the traffic management, signage may be extended by 25% or reduced by 10% in order to increase visibility. Vegetation may be pruned to increase visibility as required and approved by LGA. All signage adjustments will be recorded within the daily diary.	D	4	M8
3.2.1.7	Temporary lighting installed adjacent to residential properties causing adverse environmental impacts for locals resulting in adverse public reaction.	Adverse public reaction.	C	3	M9	Lights to be positioned where illumination doesn't adversely affect residents. Temporary lights to be used only as required to light the worksite and temporary delineation.	D	3	L6
3.2.2 Temporary Speed Zones									
3.2.2.1	Traffic speed on affected routes in traffic lanes adjacent to the worksite creating hazardous worksites and unsafe worksite access.	Potential injury or fatality to road users, project personnel or sub-contractors.	C	4	H12	Introduction of temporary speed zones will be implemented where required to reduce risk to motorists, workers and plant. Temporary speed zones and adequate delineation will be implemented as per the Traffic Guidance	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						Schemes and in accordance with AS 1742.3 and MRWA CoP.			
3.2.2.2	Traffic not adhering to proposed temporary speed zones causing an increase potential for conflicts between workers and motorists resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Repeater signage and VMS boards to be implemented through the worksite as required. Speed zones should follow the minimum and maximum lengths provided in AS1742.3 and MRWA CoP.	D	4	M8
3.2.3 Excavations									
3.2.3.1	Excavations associated with the works being inadequately protected causing an increase of property damage resulting in adverse public reaction and serious injury.	Serious injury and adverse public reaction.	B	3	H12	Delineation and devices to be provided as per the Traffic Guidance Schemes and in accordance with AGTTM and MRWA CoP. Where standard delineation cannot adequately protect the work site, close delineation or safety barrier may be required. Edge clearances and protection to be installed as per Table 6.1, Page 101 of AGTTM – Part 3.	C	3	M9
3.2.4 Traffic Control/Construction Plant & Workers/Traffic Management Design									
3.2.4.1	Incorrect implementation of temporary signage and linemarkings causing an increase of interactions between traffic control and live traffic resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Before work commences, signs and devices at approaches to the work area shall be erected in accordance with the adopted TGS, in the following order: <ol style="list-style-type: none"> 1. Advanced warning signs. 2. All intermediate advanced warning and regulatory signs and devices required in advance of the taper or start of the work area. 3. All delineating devices required to form a taper including flashing arrow signs or temporary hazard markers where required. 4. Delineation past the work area or into a side track. 5. Other warning signs or regulatory signs. Delineation devices such as cones and bollards	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						should be placed in the same sequence, i.e. those furthest in advance of the work placed first.			
3.2.4.2	Incorrect design of temporary signage and linemarkings causing an increase of speed and errant vehicles through the worksite resulting in serious injury or fatality.	Serious injury and fatality.	C	4	H12	Traffic Management Plan and associated Traffic Guidance Schemes to be designed and endorsed by suitably accredited AWTM and RTM as required for the proposed works. Plans to be reviewed and approved by relevant LGA and road authorities prior to the implementation of the works.	D	4	M8
3.2.4.3	The interaction of work personnel with through traffic may causing an increase of conflicts resulting in serious injury or fatality.	Serious injury or fatality	C	4	H12	Traffic control and delineation to be installed as per the Traffic Guidance Schemes in accordance with AS 1742.3 and MRWA CoP. Edge clearance spacing to be provided between live traffic and workers per the posted or implemented speed zones. Temporary speed zones, lane closures, road closures or reversible flow may be provided to maintain edge clearances. A TMA may be provided for where workers are within 1.2m of live traffic to protect them from oncoming vehicles. TMA's to be installed 20m prior to the work area and 40m where site entrances are required. Workers to be within 100m of TMA for protection to be affective. Daily toolbox meetings to ensure that workers are educated on the dangers of working around live traffic.	D	4	M8
3.2.4.4	Construction traffic entering and leaving the construction site causing an increase of rear end crashes through the worksite resulting in serious injury.	Serious injury.	B	3	H12	Site entry and exit points will be provided for construction traffic at strategic locations. Vehicles shall: <ol style="list-style-type: none"> 1. Decelerate slowly and signal their intention by indicator to leave the traffic stream; 2. Activate the vehicle's rotating yellow lamp, where fitted, once a speed of 20 km/h. has been reached and at least 50m prior to the 	C	3	M9



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						exit location. 3. Switch on the vehicle hazard lights once the vehicle is stationary. 4. Where risks associated with unassisted exit or entry to or from the traffic stream are high, Traffic Controllers should be used to assist entry and exit movements. Spotters may be used to assist drivers enter the traffic stream. Restrictions may be put in place to restrict truck movements entering traffic flows during periods of high traffic flows from site			
3.2.4.5	Parking of construction plant causing an increase of crashes through the worksite resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Work practices will be developed to outline provisions for: 1. Short term parking of work plant. 2. Long term parking of work plant. 3. Short term parking for workers and LV's. Construction access have been shown on the Traffic Guidance Schemes.	D	4	M8
3.2.4.6	Workmen may be hit by vehicles during the setting out of traffic management control devices resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	No work shall commence until the approved traffic management has been implemented. Traffic management to be setup prior to arrival of workers to site and taken down after they leave to avoid excessive congestion.	D	4	M8
3.2.5 Lane Closures (N/A)									
3.2.6 Reversible Flow/Stop Control/Contra-flow N/A									
3.2.7 Temporary/Existing Barrier									
3.2.8 Temporary Linemarking/Ultimate Design/Existing Road Environment									
3.2.8.1	A road user may misread the proposed temporary alignment causing through	Serious injury or fatality.	C	4	H12	Traffic planning requires traffic controls to be installed to direct traffic around the work site and	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	vehicles colliding with work personnel or work vehicles resulting in serious injury or fatality.					a reduction in the speed zone of the carriageways approaching and passing the works. Temporary alignments to be installed as per the TGS and in accordance with AS 1742.3 and MRWA CoP. Temporary controls, advanced warning and directional signage to be installed as per the TGS and in accordance with the requirements of AS 1742.3 and MRWA CoP. All lane closures to use a Flashing Arrow Boards at end of taper as per TGSs. Traffic control personnel shall conduct a drive through assessment of devices to evaluate the effectiveness following initial opening, any changes to be recorded in the daily diary. Temporary alignment to be designed to meet speed requirements.			
3.2.9 Temporary/Existing Signage and Structures									
3.2.9.1	Existing signage and structures causing reduced visibility of the worksite and temporary traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	All existing signage that is contradictory to the temporary signage implemented in the TGS's are to be covered with opaque material for the duration of the works. Regular drive throughs should ensure the integrity of the worksite and all traffic management. Where signs cannot be covered and conflict with the temporary signage, it will be removed. Temporary devices may be extended 25% to accommodate for road side structures, all changes to the signage will be recorded in the daily diary.	D	4	M8
3.2.9.2	Defective temporary signage causing inadequate advanced warning of proposed works resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Regular site inspections of signs to be conducted by Traffic Controllers and site supervisor to ensure integrity of proposed signage. All signs to be made of retroreflective material to ensure signs can be seen during night works.	D	4	M8
3.2.10 Road Closures									



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
3.2.11 Heavy Vehicles Network									
3.2.11.1	Restrictions placed on traffic lane widths and corner geometries by temporary traffic management impacting heavy haulage traffic routes resulting in adverse public reaction and property damage.	Property damage and adverse public reaction.	C	3	M9	Details and impacts to the heavy haulage route to be communicated to MRWA HVO prior to the implementation of any works. Where corner geometry or lane widths cannot accommodate heavy vehicles, detours or provisions to escort trucks through site may be provided. Where large or oversized vehicles are moving through the worksite, traffic controllers shall be used to ensure sufficient carriageway width is provided and any workers adjacent to the traffic lanes or within a hazardous area are instructed to move clear of the traffic. Temporary alignment swept paths to be checks. Existing RAV network to be accommodated where possible.	D	3	L6
3.2.12 Public Transport Authority (N/A)									
3.2.13 Emergency Services/Emergency Arrangements and Contingencies									
3.2.13.1	Restrictions and delays associated with the traffic control causing a failure to respond for emergency services resulting in an increase severity in emergency situations.	Failure to respond to emergency situations.	C	4	H12	Pre-communication to be given to all emergency services prior to the implementation of any works in the form of the Notification of Roadworks. Details to be provided for any proposed detours, predicted increases in congestion and any works that may increase delays to the emergency network. Where safe, workers and Traffic Control to respond to emergency services to facilitate an unhindered passage through or around the worksite.	D	4	M8
3.2.13.2	Dangerous goods, damage to services or failure of services causing restricted access through the worksite resulting in adverse	Adverse public reaction.	B	3	H12	Should any incident arise involving vehicles transporting dangerous goods, damage or failure of services; all work shall cease immediately, machinery and vehicles turned off	C	3	M9



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	public reaction.					and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. All site personnel shall be briefed on evacuation and control procedures.			
3.2.14 Public Interactions and Impacts									
3.2.14.1	Temporary traffic management devices restricting access to local properties and commercial premises resulting in an adverse public reaction.	Adverse public reaction	C	3	M9	Local and commercial access to be maintained where possible. Pre-communication to be provided where adverse impacts may restrict access with the associated works. Provisions including; temporary tracks, temporary closures and local access may be provided to maintain access.	D	3	L6
3.2.15 Pedestrians and Cyclists									
3.2.16 Variations to the Standards									



4. Traffic Management Planning and Assessment

4.1. Traffic Assessment and Analysis

4.1.1. Traffic and Speed data

4.1.1.1 Summarised Traffic Counts

A summary of recent traffic data is provided below:

Table 10: Summarised Traffic Volumes

Location	Average weekday (vpd)	Trucks	Average weekend (vpd)	Trucks
Down Road	844 vpd (2017)	34%	419 vpd (2017)	40%
Albany Highway	4,950 vpd (2017)	20%	3,520 vpd (2017)	16%

Volumes used in the above summary can be found in *Appendix D – Volumes*.

4.1.2. Traffic Flow Analysis

General Comments

Volumes used in this report are based on average traffic figures derived from historical counts. AGTTM - Part 2, Section 3.2.3 (refer to Table 3.1) indicates that the mid-block capacity of multi-lane roadways is 1,000 vehicles per lane per hour (vpl/ph) and 500 vehicles per hour within 200m of an intersection for each lane. These design lane capacities have been used when analysing the effects of associated with the works. Where a departure from the AGTTM regarding lane capacities is required for the works to proceed a variation form will be filled out and attached to the close of this document.

Due to expected traffic volumes (see above) it is anticipated there will only be minor delays provided the Traffic Management setup follows the instructions set out in this document.

Traffic flow should be maintained wherever possible. Traffic volumes and movements will be analysed against the requirements detailed in AGTTM - Part 2, Section 3.2.3 (refer to Table 3.1) and Section 3.3.4 (refer to table 3.4).and MRWA CoP risk tables (see section 6) to ensure levels of service are acceptable to the Road Authority. The works are expected to have very minor impacts on the impacted roads.

4.1.2.1 Traffic Impacts and Assessment:

The impact will be minor as all of the works will be completed within the verge with various speed reduction and reduced lane width on Down Road.

4.1.3. Temporary Speed Zones

A worksite speed limit of 40km/h, 60km/h and 80km/h will be implemented at Down Road due to for the property access construction.



After work hours the posted speed will be 80km/h and the road will be left clean and free of debris.

4.1.4. Existing Traffic Signals

N/A

4.1.5. Impact to Adjoining Network

There is no impact to adjoining network during the construction.

4.1.5.1 Road Closure Traffic Distribution

N/A

4.1.6. End of Queue Treatment

N/A

4.1.7. Temporary Traffic Signals

N/A

4.2. Road Users

4.2.1. Pedestrians

There are no pedestrian facilities.

4.2.2. Cyclists

There are no cyclists' facilities.

4.2.3. Public Transport

There are no public transport facilities.

4.2.4. Heavy and Oversized Vehicles

There are no impacts to the heavy and oversized vehicles.

4.2.5. Existing Parking Facilities

There are no impacts to existing parking facilities.

4.2.6. Access to Adjoining Properties/Business

There are no impacts to adjoining properties.

4.2.7. Rail Crossings

There are no impacts to railway crossings.

4.2.8. School Crossings

There are no school crossings.



4.2.9. Special Events and Other Works

There are no special event and other works.

4.2.10. Emergency Vehicle Access

Emergency vehicle access will be maintained for the duration of the works.

4.2.11. Night Work Provisions

There is no provision for night shift works.

4.2.12. Road Safety Barriers

N/A

4.3. Consultation and Communication / Notification

Contractor to liaise with stakeholders for public consultation and communication for the duration of the work shift.

4.3.1. Other Agencies

All relevant authorities to be notified prior to the commencement of any works via; email, phone or Notification of Roadworks. This includes: City of Albany, Main Roads Western Australia (MRWA), MRWA Traffic Operations Centre, MRWA Heavy Vehicle Services, Public Transport Authority.

Emergency services to be notified prior to the commencement of any works via the Notification of Roadworks.

4.3.2. Public

The public shall be notified of the works and traffic management arrangements which will affect journey times via:

- Notice to motorists in the weekend West Australian placed two weeks in advanced, one week in advance and at the commencement of works;
- Letter drop to all residents and businesses within the traffic control zone one week ahead of the scheduled works;
- VMS boards during the works; and
- Significant works may require radio advertising.



5. Site Assessment

5.1. Provision to Address Environmental Conditions

5.1.1. Adverse Weather

Weather is not expected to adversely impact on the effectiveness of the traffic control detailed on the attached TGS's. Notwithstanding this, should adverse weather conditions be encountered during the works, the following contingency plans should be activated. Note: any adjustments to the plan shall be risk assessed and approved by someone holding a WTM or AWTM accreditation. Major changes will require road authority approval.

5.1.1.1 Rain

In the event of rain, an on-site assessment shall be made and sign spacing and tapers may be extended by 25% to account for increased stopping distances. Slippery (T3-3) signs may be placed as required and all changes shall be recorded in the daily diary.

If rain occurs, Traffic Management Personnel shall inspect the site and where signage and / or devices are not clearly visible, signage may need to be adjusted to improve visibility or if necessary, provide additional signage and delineation. Where stopping distances are adversely affected by wet surfaces, spacing between signs may need to be adjusted to provide increased reaction time for drives. In cases where it is determined that the rain is so heavy that the risk is considered unacceptable, all work shall cease until rain has cleared. All changes shall be noted in the daily diary.

5.1.1.2 Floods

Should works be affected by flooding to the extent that the worksite becomes impassable or risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site and direct traffic around the flooded area (under the direction of the project manager or traffic manager). Emergency services and the Road Authority shall be notified immediately and Traffic Controllers shall remain onsite until emergency services and the Road Authority personnel arrive and take control of the site.

5.1.1.3 Other Adverse Weather (strong winds, thunder storms etc.)

Should strong winds or thunder storms occur, all signs are to be weighted down to prevent blowing over or debris entering the roadway causing hazards for motorists. Periodically site inspections to be conducted during storms to ensure integrity of all Traffic Management devices.

5.1.2. Sun Glare

Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk from glare. Additionally, in the event that traffic control is adversely affected by glare at sunset and sunrise,



traffic controllers may need to assist in maintaining low traffic speeds.

All changes are to be noted in the daily diary.

5.1.3. Fog/Dust/Smoke

Where fog, dust or smoke is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk. All changes are to be noted in the daily diary.

Should works be affected by fog, dust or smoke to the extent that risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site.

5.1.4. Road Geometry, Terrain, Vegetation and Structures

5.1.4.1 Road Geometry

There is a curve on the approaching to the project site on Down Road towards Down Road south and straight after Down Road south.

Sign locations can be staggered to assist driver's visibility, in accordance with Australian Standards and under the supervision of an accredited AWTM. All signs shall be regularly inspected and re-positioned as required to reduce the effects of shadows. All changes shall be recorded in the daily diary.

5.1.4.2 Terrain

The vertical geometry through the site is flat.

Sign locations can be staggered to assist driver's visibility, in accordance with Australian Standards and under the supervision of an accredited AWTM. All signs shall be regularly inspected and re-positioned as required to reduce the effects of shadows. All changes shall be recorded in the daily diary.

5.1.4.3 Vegetation

Where vegetation impacts on the effectiveness of the traffic management, signage may be extended by 25% or reduced by 10% in order to increase visibility. Where this occurs, it should be recorded within the daily diary.

5.1.4.4 Structures

Where structures impede on the temporary signage it should be moved to accommodate under the supervision of an accredited AWTM and recorded in the daily diary.

5.2. Existing Traffic and Adverting Signs

All existing signage that is contradictory to the temporary signage implemented in the TGS's are to be covered with opaque material for the duration of the works. Regular drive throughs should ensure the integrity of the worksite and all traffic management. Where signs cannot be covered and conflict with the temporary signage, it



is to be removed.



6. Safety Plan

6.1. Occupational Safety and Health

All persons and organisations undertaking these works or using the roadwork site have a duty of care under statute and common law to themselves, their employees and all site users, lawfully using the site, to take all reasonable measures to prevent accident or injury.

This TMP forms part of the overall project Safety Management Plan, and provides details on how all road users considered likely to pass through, past, or around the worksite will be safely and efficiently managed for the full duration of the site occupancy and works.

6.2. Roles and Responsibilities

6.2.1. Responsibilities

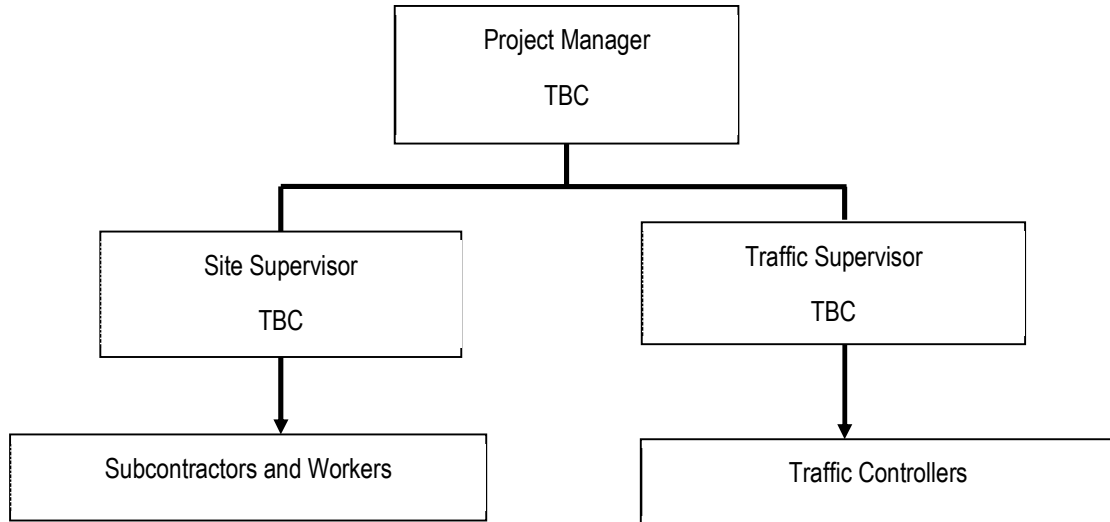
The Project Manager has the ultimate responsibility to ensure the TMP is implemented for the prevention of injury and property damage to employees, contractors, sub-contractors, road users and all members of the public. The Project Manager will ensure all site personnel are fully aware of their responsibilities, and that Traffic Controllers are appropriately trained and accredited and that sufficient controllers are available to ensure appropriate breaks are taken.

All personnel engaged in the field activities will follow the correct work practices as required by the CoP, AGTTM and AS1742.3. All personnel will not commence or continue work until all signs, devices and barricades are in place and operational in accordance with the requirements of the TMP.

All personnel responsible for temporary traffic management shall ensure that the number, type and location of signs, devices and barricades are to a standard not less than Appendix F of this plan, CoP, AGTTM and AS1742.3 (except where specifically detailed in this TMP with reasons for the variations). Should a situation arise that is not covered by this TMP, CoP, AGTTM or AS1742.3, the Road Authority Representative shall be notified.

6.2.2. Roles

The following diagram outlines the responsibility hierarchy of this contact.



6.2.2.1 Project Manager

The project manager shall:

- Ensure all traffic control measures of this TMP are placed and maintained in accordance with this plan and the relevant Acts, Codes, Standards and Guidelines
- Ensure suitable communication and consultation with the affected stakeholders is maintained at all times
- Ensure inspections of the temporary traffic management are undertaken in accordance with the TMP, and results recorded. Any variations shall be detailed together with reasons
- Review feedback from field inspections, worksite personnel and members of the public, and take action to amend the traffic control measures as appropriate following approval from the Road Authority's Representative
- Arrange and/or undertake any necessary audits and incident investigations

6.2.2.2 Site Supervisor

The site supervisor is responsible for overseeing the day-to-day activities, and is therefore responsible for the practical application of the TMP, and shall:

- Instruct workers on the relevant safety standards, including the correct wearing of high visibility safety vests
- Ensure traffic control measures are implemented and maintained in accordance with the TMP
- Undertake and submit the required inspection and evaluation reports to management
- Render assistance to road users and stakeholders when incidences arising out of the works affect the network performance or the safety of road users and workers
- Take appropriate action to correct unsafe conditions, including any necessary modifications to the TMP.

6.2.2.3 Traffic Management Personnel

- At least one person on site shall be accredited in Basic Worksite Traffic Management, and shall have the responsibility of ensuring the traffic management devices are set out in accordance with the TMP



- At least one person accredited in Advanced Worksite Traffic Management shall be available to attend the site at short notice at all times to manage variations, contingencies and emergencies, and to take overall responsibility for traffic management.

6.2.2.4 Traffic Controllers

Traffic Controllers shall be used to control road users to avoid conflict with plant, workers, traffic and pedestrians, and to stop and direct traffic in emergency situations.

Traffic Controllers shall:

- Operate in accordance with AGTTM Part 7: Traffic Controllers
- Be accredited in Basic Worksite Traffic Management
- Hold a current Traffic Controller's accreditation
- Be relieved from their duty after not more than 2 hours for a period of rest or "other duties" of at least 15 minutes as required by AGTTM and/or OS&H Regulations.
- Shall be site specific inducted (If Required)

6.2.2.5 Workers and Subcontractors

Workers and Subcontractors shall

- Correctly wear high visibility vests, in addition to other protective equipment required (e.g. footwear, eye protection, helmet sun protection etc.), at all times whilst on the worksite
- Comply with the requirements of the TMP and ensure no activity is undertaken that will endanger the safety of other workers or the general public
- Enter and leave the site by approved routes and in accordance with safe work practices

6.3. Personal Protective Equipment (PPE)

All personnel entering the work site shall correctly wear high visibility vests to AS/NZS 4602, in addition to other protective equipment required on a site-by-site basis (e.g. protective footwear, eye protection, helmet, sun protection, respiratory devices etc.) at all times whilst on the worksite.

6.4. Plant and Equipment

All plant and equipment at the workplace shall meet statutory requirements and have the required registration, licences or certification where required. All mobile equipment shall be fitted with suitable reversing alarms. All mobile plant and vehicles shall be fitted with a pair of rotating flashing yellow lamps in accordance with AS1742.3 clause 4.14. All workers will be made aware of the safe work practice at the time of the site induction.

6.5. Trip Hazards

The worksite and its immediate surroundings shall be suitably protected and free of hazards, which could result in tripping by cyclists or pedestrians. Hazards, which cannot be removed, shall be suitably protected to prevent injury to road users, including those with sight impairment. Where level differences are significant, suitable barriers, which preclude pedestrian access shall be used.



Where works extend beyond daylight hours and adjacent lighting is insufficient to illuminate hazards to cyclists or pedestrians, appropriate temporary lighting shall be installed.

The worksite shall be kept tidy to reduce the risk to workers.



7. Implementation

7.1. Traffic Guidance Schemes

The Traffic Guidance Scheme (TGS) outlined in Appendix “F” and listed below have been provided for the following stages to demonstrate the type of controls that will be implemented throughout the term of the contract. All sign and device requirements are shown on each TGS. Should the use of additional (not shown on the TGS or listing of devices) or reduced number of devices be required due to unforeseen needs, they shall be recorded within the Daily Diary as a variation to the TMP, following prior approval.

Table 11: Traffic Guidance Scheme Register

Staging	TGS Number & Revision	Details	Construction Works
Stage 1	2103019-TGS-01	Verge works at 40km/h	Main entry construction
	2103019-TGS-02	Verge works at 40km/h	Main entry construction
	2103019-TGS-03	Verge works at 60km/h	Main entry construction
	2103019-TGS-04	Verge works at 60km/h	Main entry construction
	2103019-TGS-05	Verge works after care at 60km/h	Main entry construction
	2103019-TGS-06	Verge works after care at 60km/h	Main entry construction
	2103019-TGS-07	Verge works at 80km/h	Main entry construction
	2103019-TGS-08	Verge works at 80km/h	Main entry construction
	2103019-TGS-09	Verge works after care at 80km/h	Main entry construction
	2103019-TGS-10	Verge works after care at 80km/h	Stage 1 exit construction
	2103019-TGS-11	Verge works at 40km/h	Stage 1 exit construction
	2103019-TGS-12	Verge works at 40km/h	Stage 1 exit construction
	2103019-TGS-17	Stage 1 internal works	Stage 1 internal works
Stage 2	2103019-TGS-13	Verge works	Down Road south exit construction
	2103019-TGS-14	Verge works temporary holding traffic with traffic controllers	Down Road south exit construction
	2103019-TGS-15	Verge works after care	Down Road south exit construction
	2103019-TGS-16	Stage 2 internal works	Stage 2 internal works

7.2. Sequence and Staging

The sequence of temporary traffic management installation, work activities and temporary traffic management removal are detailed below:

Table 12: Sequence and Staging

Step	Details
Pre-start	Contact 138 111 and advise of works.
Stage 1	Implement advanced warning signage.
Stage 2	Proceed construction works



Stage 3	Finish construction works and clear roadway.
Stage 4	Install after care signs
Stage 5	Pack up of TTM

7.3. Traffic Control Devices

7.3.1. Sign Requirements

All signs used shall conform to the designs and dimensions as shown in Australian Standard AS 1742.3, AGTTM and the CoP.

Prior to installation, all signs and devices shall be checked by the Site Supervisor or a suitably qualified person to ensure that they are in good condition and meet the following requirements:

- Mechanical condition - Items that are bent, broken or have surface damage shall not be used.
- Cleanliness - Items should be free from accumulated dirt, road grime or other contamination.
- Colour of fluorescent signs - Fluorescent signs whose colour has faded to a point where they have lost their daylight impact shall be replaced.
- Retroreflectivity. - Signs for night-time use whose retroreflectivity is degraded either from long use or surface damage and does not meet the requirements of AS 1906 shall be replaced.
- Battery operated devices - shall be checked for lamp operation and battery condition.

Where signs do not conform either to the requirements of AS 1742.3, AGTTM and the CoP, or would fail to pass any of the above checks, they shall be replaced on notice.

Signs and devices shall be positioned and erected in accordance with the locations and spacing's shown on the drawings. All signs shall be positioned and erected such that:

- They are properly displayed and securely mounted;
- They are within the driver's line of sight;
- They cannot be obscured from view;
- They do not obscure other devices from the driver's line of sight;
- They do not become a possible hazard to workers or vehicles; and
- They do not deflect traffic into an undesirable path.

Signs and devices that are erected before they are required shall be covered by a suitable opaque material. The cover shall be removed immediately prior to the commencement of work.

Where there is a potential for conflict of information between existing signage and temporary signage erected for the purpose of traffic control, the existing signs shall be covered. The material covering the sign shall ensure that the sign cannot be seen under all conditions i.e. day, night and wet weather. Care will be taken to ensure existing signs are not damaged by the covering material or by adhesive tape.

7.3.2. Tolerances on Positioning of Signs and Devices

Where a specific distance for the longitudinal positioning of signs or devices with respect to other items or features is stated, for the spacing of delineating devices or for the length of tapers or markings, the following tolerances



may be applied: -

(a) Positioning of signs, length of tapers or markings:

- (i) Minimum, 10% less than the distances or lengths given.
- (ii) Maximum, 25% more than the distances or lengths given.

(b) Spacing of delineating devices:

- (i) Maximum, 10% more than the spacing shown.
- (ii) No minimum.

These tolerances shall not apply where a distance, length or spacing is already stated as a maximum, a minimum or a range.

7.3.3. Flashing Arrow Signs

Where flashing arrow signs are required to better delineate lane tapers, these signs will comprise a matrix of lamps or light emitting elements in the form of an arrow that is flashed in a cyclical manner to provide advance warning. The sign shall have a minimum dimension of 2400 mm. x 1200 mm. and conform to the requirements of AS/NZS 4192. The Project Site Supervisor shall ensure that all equipment used meets the Australian Standard.

7.3.4. Delineation

7.3.4.1 General

Cones shall be used for delineation unless other treatment is specified in the Traffic Management Plan or on the Traffic Guidance Schemes. All cones shall be at least 700 millimetres in height and constructed from fluorescent orange or red material that is resilient to impact and will not damage vehicles when hit at low speed. Cones will be fitted with suitable white retro-reflective tape placed in accordance with AS 1742.3, AS 1742.3, AGTTM and the CoP.

Cones shall be designed to be stable under reasonably expected wind conditions and air turbulence from passing traffic.

The base of the cones will be secured so that they are not dislodged by traffic. Cones will be inspected at intervals necessary to ensure any mis-alignment or displacement is identified and corrected prior to this causing disruption to traffic.

Where specified, temporary frangible or otherwise non-hazardous delineator posts or bollards may be used for edge protection and taper delineation. Posts or bollards shall have a maximum dimension of 60 millimetres when measured along the longest side of a square or rectangular section or across the diameter of a circular section. Base design shall permit easy fixing to either sealed or unsealed surfaces and not intrude into traffic lanes greater than 50 millimetres from the face of the post or bollard.

All posts or bollards shall be erected in accordance with the Traffic Guidance Schemes. Posts and bollards shall



be a minimum of 1000 mm. high, capable of being fixed to the road pavement by a suitable road adhesive or by fastening bolts or spikes. Fixing shall be in accordance with manufacturer's recommendations.

Posts and bollards shall be fitted with suitable white retro-reflective tape placed in accordance with AS 1742.3, AGTTM and the CoP.

All posts or bollards will be inspected daily and where displaced or missing made good immediately. All delineator posts are to be completely removed at the completion of all stages of construction and prior to the placement of asphalt surfacing. If adhesive is used to affix the posts this shall be completely removed from the road surface so that a flush surface is obtained.

7.3.4.2 Delineation Spacing

All cones and post type delineators shall be spaced according to Table 4.7 of AS 1742.3-2019 and the Traffic Guidance Schemes.

7.4. Site Access for Work Vehicles

Construction and/or traffic management vehicles entering and exiting the traffic stream shall be mindful of the conditions that may affect the safety of these movements.

Access points shall be noted on the TGS and traffic controllers, work personnel and suppliers notified. Traffic Controllers may assist work vehicles enter and exit the work area.

All entry and exit movements will be in accordance with the Road Traffic Code and shall be undertaken in the following manner:

Vehicles shall:

- Decelerate slowly and signal their intention by indicator to leave the traffic stream;
- Activate the vehicle's rotating yellow lamp, where fitted, once a speed of 20 km/h. has been reached and at least 50m prior to the exit location.
- Switch on the vehicle hazard lights once the vehicle is stationary.
- Where risks associated with unassisted exit or entry to or from the traffic stream are high, Traffic Controllers should be used to assist entry and exit movements.

Vehicles fitted with rotating amber lamps shall have the vehicle's rotating lamp activated prior to entering the traffic stream and shall undertake the following.

- Switch off the vehicle hazard lights;
- Indicate intention to enter the traffic stream using direction indicators;
- Ensure there is a suitable gap from oncoming traffic to allow for a safe entry manoeuvre; and,
- Turn off the rotating yellow lamp(s) once a speed of 40 km/h is reached.

Entry and exit manoeuvres shall be avoided in close proximity to intersections. Work personnel shall not cross traffic streams on foot unless absolutely necessary.

Construction or traffic management vehicles shall only be parked where indicated on the Traffic Guidance



Scheme. Vehicles shall not obstruct paths and be parked an adequate distance from intersections or driveways to ensure clear sight lines remain for all road users.

7.5. Communication TMP Requirements

Contractor to liaise with stakeholders and submit notification to City of Albany for each of the work stages.



8. Emergency Arrangements and Contingencies

8.1. Traffic Incident Procedures

In the event of an incident or accident, whether or not involving traffic or road users, all work shall cease and traffic shall be stopped as necessary to avoid further deterioration of the situation. First Aid shall be administered as necessary, and medical assistance shall be called for if required.

Road plant within the work area that may impact on any services requiring access to a crash site will be cleared from the area quickly as necessary.

8.1.1. Serious Injury or Fatality

In the case of serious injury or fatality occurring within the traffic management site all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

An Ambulance and Police shall be called on telephone number 000 where life threatening injuries are apparent.

All road workers and traffic management personnel shall preserve the scene leaving everything in situ, until direction is given by Police or WorkSafe.

A site-specific detour route and/or road closure point will be determined, signed and controlled by traffic management personnel and advised to Police, who will take charge of the site upon arrival. Detour routes will be determined so as to cater for all types of vehicles required to use them. An example of how to manage an emergency can be found in AGTTM – Part 10, Section 5.

All site personnel shall be briefed on control procedures covering incidents and crashes that result in serious injury or fatalities.

8.1.2. Minor Incident or Vehicle Break Down within Site

Broken down vehicles and vehicles involved in minor non-injury crashes shall be temporarily moved to the verge as soon as possible after details of the crash locations have been gathered and noted. Where necessary to maintain traffic flow, vehicles shall be temporarily moved into the closed section of the work area behind the cones, providing there is no risk to vehicles and their occupants or workers. Suitable recovery systems shall be used to facilitate prompt removal of broken down or crashed vehicles. Assistance shall be rendered to ensure the impact of the incident on the network is minimised.

Any traffic crash resulting in non-life threatening injury shall be reported to the WA Police Service on 131 444.

Details of all incidents and accidents shall be reported to the Site Supervisor and Project Manager using the incident report form at Appendix "C" (or similar).



8.2. Emergency Services

Emergency services shall be notified of the proposed works nature, location, date and times as well as contact details for the site supervisor.

On-site traffic controllers will be equipped with mobile communications to advise and/or liaise with emergency services to ensure a prompt response should the need arise.

8.3. Dangerous Goods

Should any incident arise involving vehicles transporting dangerous goods, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

Emergency services shall be notified of the proposed works nature, location, date and times as well as contact details for the site supervisor. All site personnel shall be briefed on evacuation and control procedures.

8.4. Damage to Services

In the event that gas services are damaged, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. The Police Service and relevant supply authority shall be called immediately. Damage to any other services shall be treated in a similar manner except machinery may remain operational and access may be maintained where it is safe to do so.

All site personnel shall be briefed on evacuation and control procedures.

8.5. Failure of Services

8.5.1. Failure of Traffic Signal

In the event that traffic signal infrastructure near the worksite is damaged or fails to operate correctly, all work shall cease immediately and Main Roads WA Road Network Operation Centre (RNOC) shall be notified immediately (phone 138 111).

8.5.2. Failure of Street Lighting

In the event that street lighting is damaged and fails to operate or operates incorrectly, Traffic Controllers (and other personnel if necessary with appropriate temporary lighting) shall be deployed immediately if the lighting failure adversely affects road user safety to control traffic movements as required. Western Power shall be notified immediately.

8.5.3. Failure of Power

In the event that power infrastructure is damaged and poses a risk through live current, Traffic Controllers (and



other personnel if necessary) shall be deployed immediately to secure the site and prevent entry to the area affected by live power. Western Power shall be notified immediately (phone 13 13 51).

8.6. Emergency Contacts

In the event of an emergency the following relevant authorities must be contacted and advised of the nature of works, location, type of emergency and contact details for the site supervisor.

Emergency Service	E-mail/Website	Phone (Emergency)
WA Police Service	State.Traffic.Intelligence.Planning.&.Co-ordination.Unit@police.wa.gov.au	000
St John Ambulance	ambulanceoperations@stjohnambulance.com.au	000
DFES	dfes@dfes.wa.gov.au	000
Power	http://www.westernpower.com.au/customerservice/contactus/	13 13 51
Gas	enquiries@atcoqas.com.au	13 13 52



9. Monitoring and Measurement

9.1. Daily Inspections

Prior to works commencing the Site Supervisor shall undertake to communicate the Traffic Management Plan to all key stakeholders and affected parties.

On completion of setting out the traffic control measures, the site is to be monitored for a suitable period of time. If traffic speeds on the approaches to the work site are assessed as being above the temporary posted speed zone for the work site, the Site Supervisor is to initiate action to modify the approach signage and tapers in accordance with the requirements of AS1742.3. All such actions are to be recorded in the Daily Diary. Should road users be observed to continue to travel in excess of the posted speed limit, the police may be requested to attend the site to enforce the temporary posted speed limit.

The Advanced Worksite Traffic Management accredited supervisory person at the worksite may conditionally approve changes made to a complex traffic management plan subject to review and endorsement of the change by an RTM as soon as practicably possible.

The Traffic Management Contractor shall ensure that all temporary signs, devices and controls are maintained at all times. To achieve this, procedures in line with the requirements outlined in AGTTM Part 6 will be instituted.

The monitoring program shall incorporate inspections:

- Before the start of work activities on site,
- During the hours of work,
- Closing down at the end of the shift period, and
- After hours.

A daily record of the inspections shall be kept indicating

- When traffic controls were erected,
- When changes to controls occurred and why the changes were undertaken,
- Any significant incidents or observations associated with the traffic controls and their impacts on road users or adjacent properties.

The Traffic Management Contractor shall ensure that personnel are assigned to monitor the traffic control scheme. Inspections shall at least satisfy the following requirements.

9.1.1. Before Works Start

- Confirm TMP and TGS are suitable for the day's activities;
- Inspect all signs and devices to ensure they are undamaged, clean and comply with the requirements depicted on the TGS;
- All lamps should be checked and cleaned as necessary;
- After any adjustments have been made to the signs and devices, conduct a drive through inspection to confirm effectiveness.

9.1.2. During Work Hours



- Designate and ensure that appropriate work personnel drive through the site periodically to inspect all signs and devices and ensure they are undamaged and comply with the requirements depicted on the Traffic Guidance Schemes;
- Attend to minor problems as they occur;
- Conduct on the spot maintenance/repairs as required;
- When traffic controllers are on the job, ensure they remain in place at all times. Relieve controllers as necessary to ensure attentiveness is retained;
- During breaks or changes in work activities remove or cover any signs that do not apply (e.g. PREPARE TO STOP, Workers symbolic);
- Re-position signs and devices as required by work processes throughout the day and keep records of any changes.

9.1.3. Closing Down Each Day

- Conduct a pre-close down inspection, allowing time for any appropriate maintenance works;
- Remove any unnecessary signage (e.g. Prepare to Stop, Symbolic Workers);
- Replace any unnecessary signage with appropriate delineation;
- Install barriers and lights where required;
- Drive through site and confirm all signs and devices are operating correctly with no misleading visual cues;
- Record details of inspection and any changes made to layout.

9.1.4. After Hours

- Appoint personnel to conduct after dark checks. Replace any signs / devices not working, missing or damaged and record in diary.
- Appoint personnel to conduct checks on non-work days (e.g. weekends). Replace any signs / devices not working, missing or damaged and record in diary.
- The frequency of inspections needs to align with the amount of traffic management on site, weather conditions, vehicle types and volumes, road user behaviour and site specific risks.

9.2. TMP Audits and Inspections

One compliance audit (using the 'Compliance Audit Checklist for Traffic Management for Works on Roads' – found on the MRWA website) shall be conducted following setting up of the traffic management and prior to commencement of the works.

Audit findings, recommendations and actions taken shall be documented and copies forwarded to the Project Manager and the Road Authority's Representative

9.3. Records

A daily diary recording all inspections including variations to the approved TMP shall be kept using the Daily Diary.

The Traffic Supervisor is to record all inspections made on a daily basis and at those times prescribed by the Traffic Management Implementation Standards. Upon completion of each day the Traffic Supervisor shall provide copies of the daily diary record to the Project Manager.

The Traffic Supervisor is to record all variations made to the approved Traffic Management Plan on a daily basis



and indicate clearly the nature of the variations and the reason for the variations. Upon completion of each day the Traffic Supervisor shall provide copies of the variation record to the Project Manager.

9.4. Public Feedback

Contractor shall liaise with stakeholders for any public feedback.



10. Management Review and Approvals

10.1. TMP Review and Improvement

The Project Manager will ensure that the Traffic Management Plan is implemented and evaluated for effectiveness. The Supervisor shall inspect and monitor traffic movements around the site in conjunction with the personnel who have erected the control measures.

The Project Manager will implement a procedure that ensures comments and complaints received from the public are registered. The Supervisor shall be responsible for the monitoring of the Register on a daily basis.

TCP to be reviewed and updated every 3-6 months to ensure proposed long term Traffic Management complies with changing site environment.

10.2. Variations

There are no variations.

10.3. Approvals

Before to works commencing it is necessary to seek approval from the following:

- City of Albany;
- Utility Service Providers (e.g. Western Power, Water Corp, etc.)



Appendix A - Notification of Roadworks

To be completed by contractor



NOTIFICATION OF ROADWORKS

Notifications are to be distributed at least one (1) week in advance of works

Where the traffic management is to interfere with traffic signal operation, prior approval is required 3wks in advance via enquiries@mainroads.wa.gov.au.

Where the works will place restrictions on Oversize and/or Restricted Access Vehicles Main Roads HVS requires at least 2 weeks notice.

TMP reference		Communication plan sent to Main Roads	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>		
Anticipated start date:	Anticipated finish date:						
Daily work hours:	Is weekend work applicable?:			Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Location of works (Road/Street, Suburb):							
Description of works:							
Description of traffic management arrangements:	To accommodate the proposed works, traffic control are to install the following stages of work;						
Posted Speed Limit:		Worksite speed limit:		After hours speed limit:			
What is the anticipated effect on traffic flows?:				Will there be restricted width for oversize escorted vehicles?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Are lanes closed at signals?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Are signal loops or hardware affected?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Will signal phases need time changes?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Will signals need to revert automatically?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Date of signal 'black out':				Times of signal 'black out':			
Will Police attendance be required?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>		Dates for Police attendance :			
Are bridges located in area of works, (inc detours)?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>		Will changes to traffic flows/composition occur on bridges?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Are the works located within a School Zone?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>		Will children's crossings be altered during works?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Oversize and/or Restricted Access Vehicle Roadwork Restrictions

Location of works (include – road name, nearest intersection or marked location and SLKs)					
Road Name(s)					
Bridge number if applicable					
Nearest Intersection / marked location / SLKs					
Additional information					
Will there be a width restriction for oversize vehicles exceeding 2.5m in width?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Will there be a height restriction for oversize vehicles exceeding 4.3m in height?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If yes, what width limit is to be imposed on oversize vehicles travelling through the site?					



Will the width restrictions be in place outside the daily work hours?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If yes, what is the minimum height of the structure causing the restriction?	
Can the width restrictions be removed if operators provide prior notice?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If the width restrictions are fixed in place, are operators able to have a wider oversize combination if a 1.2m ground clearance can be achieved? Do not complete if width restrictions can be removed.	Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes, how much notice will be required? (i.e. 24/48 hours' notice).			If yes, how much notice will be required? (i.e. 24/48 hours' notice).	
Please provide the name and phone number of the best contact for further details in relation to these works.	Name: Contact number (mobile):			
Please provide the name and phone number of the contact for prior notification of movements.	Name: Contact number (mobile):			
Will the work result in a road closure that will impact on Restricted Access Vehicles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If yes, have discussions been held with Main Roads Heavy Vehicle Services (HVS) in regards to a suitably approved RAV network detour. If no, please contact HVS Route Assessments on 138 486 for assistance. Note: an assessment request for a proposed detour may take up to a week to be processed.	Yes <input type="checkbox"/> No <input type="checkbox"/>

Road Authority:			
Postal Address:			
Telephone:	Email:	Facsimile:	
Contact:			
Telephone:	Email:	Mobile:	

Construction Contractor:			
Postal Address:			
Telephone:	Email:	Facsimile:	
Contact:			
Telephone:	Email:	Mobile:	
After hours contact:	Telephone:	Mobile:	

Traffic Management Contractor:			
Postal Address:			
Telephone:	Email:	Facsimile:	
Contact:			
Telephone:	Email:	Mobile:	
After hours contact:	Telephone:	Mobile:	

Distribution List	Email/Website
WA Police State Traffic Coordination	State.Traffic.Intelligence.Planning.&Co-ordination.Unit.SMIL@police.wa.gov.au
Children's Crossing Unit	childrenscrossingunitsmail@police.wa.gov.au mailto:student.pedestrian.policy.unit@police.wa.gov.au
Main Roads Customer Information Centre	enquiries@mainroads.wa.gov.au
Main Roads Road Network Operations Centre	RNOC.Control.Room.Information.Desk@mainroads.wa.gov.au
Main Roads Heavy Vehicle Services	hvs@mainroads.wa.gov.au
Main Roads Engineer Bridge Loading	DLSEHeavyLoadsGroup@mainroads.wa.gov.au
St John Ambulance	BusinessSupportServices@stjohnwa.com.au
Fire & Emergency Services	Dfes@dfes.wa.gov.au



Public Transport Authority	transperth.servicedisruptions@pta.wa.gov.au
Arc Infrastructure	thirdparty.notifications@arcinfra.com
Main Roads Digital Communications	communications@mainroads.wa.gov.au
Local Government	

Note: the above distribution list is an example and should be modified as required. See section 4.4 of the Code of Practice



Appendix B - Variation to Standards

NOT APPLICABLE



**APPLICATION FOR APPROVAL TO VARY REQUIREMENTS OF
AS1742.3, AGTTM OR MRWA TRAFFIC MANAGEMENT CODES OF PRACTICE**

Form Instruction

1. **Section A** – Identify the Principal Agency / person commissioning the activity. (Does not include contractors, subcontractors or **traffic** management company/traffic planners etc).
2. **Section B** – Identify activity location, start / finish date and time, type of traffic management, description location of activity.
3. **Section C** – Identify the person that has prepared the Traffic Management Plan, this person shall have AWTM accreditation.
4. **Section D** – For Works undertaken on a State road or on behalf of Main Roads Western Australia the details of the risk assessment process identified in this application form must be documented and endorsed by an accredited Roadworks Traffic Manager¹.
All applications to be addressed to the applicable Main Roads Regional office. For contact information please refer to the online Application kits and guidelines to undertake works. (www.mainroads.wa.gov.au >Technical & Commercial > Working on roads > Third Party Works).
For all other applications the details of the risk assessment process identified in this application form must be documented and endorsed¹ by the person responsible for approving the traffic management plan.
Contact with the appropriate road authority should be made prior to lodgement of this application to determine its suitability and for any additional requirements.
5. **Section E** - Risk implication, identification and assessment process must be undertaken in accordance with Risk Management – Principles and Guidelines AS/NZS ISO 31000. The likelihood and consequences should be rated after the application of any additional counter measures taken utilising Tables from Annexure's 202B and 203B, Main Roads WA - Specification 202 and 203 respectively.
6. **Incomplete or applications not signed** by the RTM¹ will not be processed.

A	Applicant (Principal for the Works)					
	Postal address					
	Suburb		State		Postcode	
	Project Manager				Telephone	
	Email					

B	Anticipated start date				Anticipated finish date				
	Daily work hours; From			Weekend work applicable	Yes <input type="checkbox"/>	Sat <input type="checkbox"/>	Sun <input type="checkbox"/>	No <input type="checkbox"/>	
	Location of works (Road/Street Suburb),								
	Road type (eg undivided, two lane)								
	Description of works								
	Are alterations to permanent traffic signals required?			Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>			
	Posted Speed Limit			Worksite speed limit			After hours speed limit		

C	TMP Designer								
	Accreditation Number								
	Postal address	Level 1 / 908 Albany Highway							
	Suburb	East Victoria Park	State	WA	Postcode	6101			
	Email			Telephone	(08) 9355 1300	Facsimile	N/A		

¹A person with AWTM accreditation is permitted to endorse a variation of less than 135 % of the allowable lane capacity as outlined in table 4.10 of AS 1742.3. See section 4.5 of the Code of Practice.



	Endorsement Signature	Date	Click here to enter a date.
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**APPLICATION FOR APPROVAL TO VARY REQUIREMENTS OF
AS1742.3, AGTTM OR MRWA TRAFFIC MANAGEMENT CODES OF PRACTICE**

D	RTM Endorsing Variation					
	Accreditation Number					
	Postal address					
	Suburb		State		Postcode	
	Email		Telephone		Facsimile	
	Endorsement signature				Date	

For Internal Use Only							
Approving Road Authority							
Approving Officer Position							
Application Approved	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If Not Why Not				
Additional Conditions							
Approved By: Signature		Title		Date		File Num	



E	Description of Variation Requested	Specify Point of Departure from Standard / Code of Practice (List section and page number)	Justification (Why is this necessary)	Additional Counter Measures to be Taken (Identify additional counter measures to be used to negate the lesser treatment)	Residual Risk*		
					L	C	RR



Appendix C - Record Forms

Daily Diary

Location: _____		Client: _____		Date: _____	
TMP No: _____	TGS No: _____	Weather Conditions: _____		Diary Sheet: _____ of _____	
Start Time at Depot: _____	Time Arrive Onsite: _____	Commencement of Site Setup: _____		Site Setup and Operational: _____	
Site Pulled Down at: _____	Time Aftercare signs setup: _____	TGS No: _____	Time left site: _____	Finish time at Depot: _____	
<input type="checkbox"/> Day Works	<input type="checkbox"/> Night Works	<input type="checkbox"/> Emergency Response	Site Setup as per TGS <input type="checkbox"/> Yes <input type="checkbox"/> No (if not comment on next page)		
<input type="checkbox"/> Attendance at Pre-Start Meeting		Did an incident occur (if yes complete incident report form) <input type="checkbox"/> Yes <input type="checkbox"/> No			
I confirm that the above times of 'setup' and 'pulldown' of traffic management signs and devices are a true and correct					
Name (Site Supervisor): _____		Signed: _____			
Drive Through Checks (Checks must be conducted at least every 2 hours)					
Time of check entered. Rule off and leave blank if the check does not apply to the site. Make a note of any issues on the next page.					

Traffic Management Site Checks	1	2	3	4	5	6	7	8	9	10
Time										
Are signs upright, clean, visible, level & stable										
Are taper lengths correct										
Are speed limit signs correct and doubled up										
Are sign spacings correct										
Are cone/bollard alignments straight & spaced correctly										
Are devices operating correctly										
Are pedestrians, cyclists and other vulnerable road users catered for										
Are lane widths adequate										



Are vehicle queue lengths acceptable											
Is road surface condition adequate											
Is the work area clearly defined?											
Are the travel paths for both directions of traffic clearly defined? Is the work area appropriately separated from passing traffic? Check the transition at the interface of the modified alignment.											
Are centre lines/lane lines/edge lines clear and unambiguous?											
Are sight and stopping distances adequate at works, at intersections and driveways?											
Are traffic lanes clearly delineated?											
Are lighting for night-time controls operating correctly?											
Have other risks associated with traffic management at night been catered for, e.g. placement of lighting towers											



No. of TTM Vehicles Onsite: _____

No. of TTM Personnel Onsite: _____

TTM Personnel Names & Accreditations:

Name	Accreditation Details (tick)					Time of Break from Stop/Slow (Traffic controllers must have a 15 minute break every two hours of constant stop/slow operation)							
	TC	BWTM	WTM	AWTM	OTMA	On	Off	On	Off	On	Off	On	Off
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:

Additional Comments

I confirm that the details contained herein are true and correct

Name: (TTM Leader): _____ Signed: _____



Incident Report Form.

Region:
Contract No.:

Incident Report No.:
Contractor:

Safety Incident Report No:

Major Incident Reports must be forwarded to the Superintendent within 48 hours of the incident occurring or becoming apparent.

Contractors shall use this Form for reporting of traffic Incidents on works under Contract and this form supplements the Safety Incident Report Form.

1.0 Details of Incident		Reported to:	<input type="checkbox"/> Supervisor	<input type="checkbox"/> TMR	<input type="checkbox"/> Other
Date of incident		Time of Incident			
Work Being Undertaken					
Location (include direction and lane if applicable)					
Crash Type					
Incident type	Near Miss	Property Damage	Injury	Fatality	
Atmospheric Conditions	Clear	Overcast	Raining	Fog/Smoke/Dust	
Light Conditions	Day Light		Night Time		Dawn/Dusk
Road Surface	Unsealed		Sealed		



Road Condition	Wet	Dry	
Street Lighting	On	Off	Not provided
Police Attended Yes/No		Officer name/number	

Other relevant details, (Last maintenance grade, watering and dust conditions):

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2.0 Details of Traffic Management in place:

TMP/TGS No: _____ Name of individual that prepared the TGS _____

Time last inspected: _____ Accreditation No: _____



Date TGS Approved: _____

Date TMP Approved: _____



3.0 Descriptions of Vehicles:

Detail (make, model/ped/cyclist/VRU)	Registration No	Direction of Travel	Age of Driver
3.1 Vehicle 1			
3.2 Vehicle 2			
3.3 Vehicle 3			

Comments:

4.0 Description of Incident:

Draw the Incident including the direction of travel, traffic control signs, fixed structures and north point.

North



5.0 Attachments: The following copies MUST be submitted with this Incident Report.

Approved TMP Approved TGS Approvals for temporary speed restrictions Daily Diary

6.0 Police Report:

Accident reported to Police: YES NO Report made by Phone Fax Mail or E-mail

Date Report Made Day Month Year Police WA Reference Number

7.0 Details of Person Completing this Incident Form:

Name: _____ Contractor Name: _____

Position: _____

Date: _____ Signature: _____



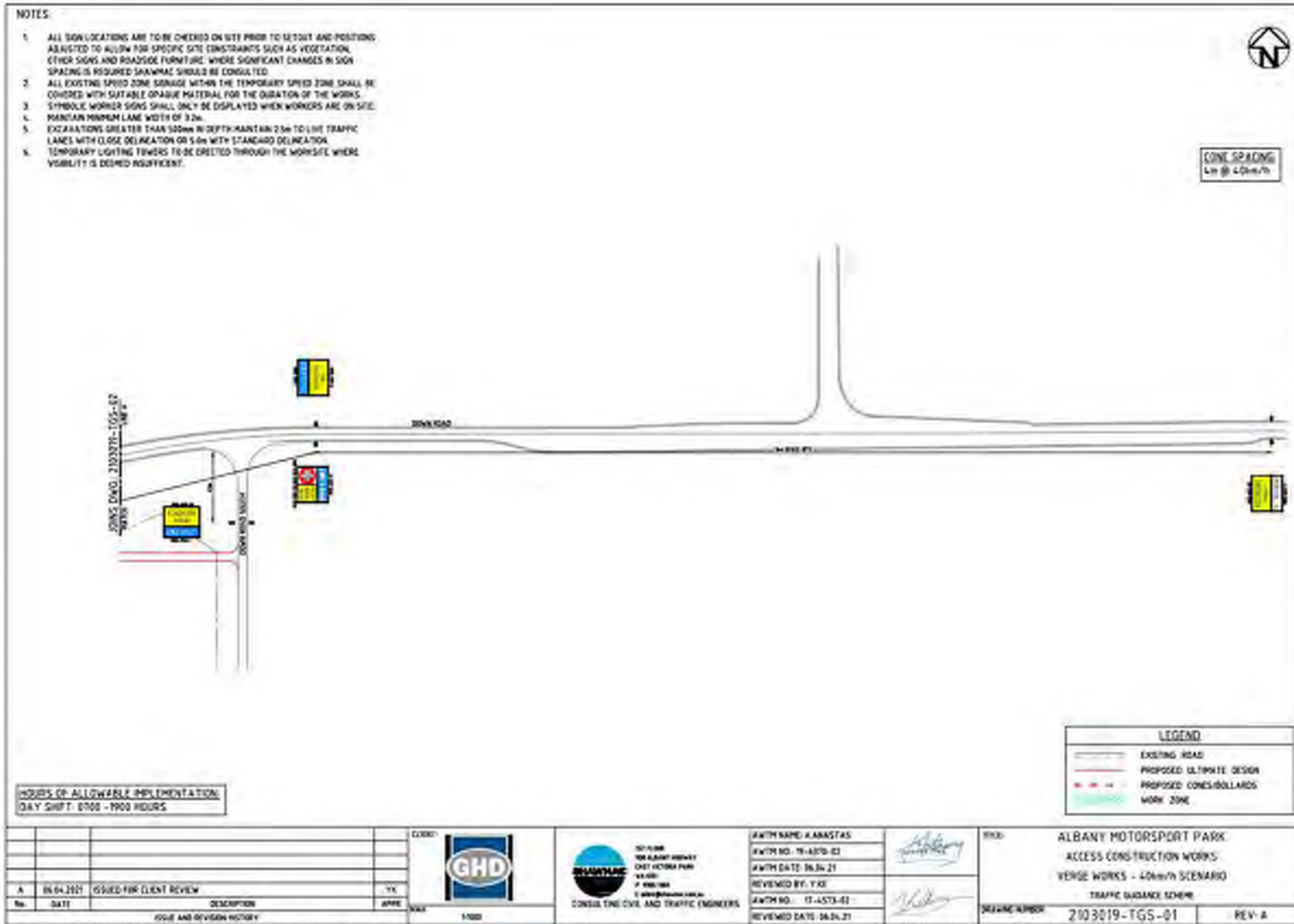
Appendix D - Traffic Analysis and Volume Counts

Volumes

Location	Average weekday (vpd)	Trucks	Average weekend (vpd)	Trucks
Down Road	844 vpd (2017)	34%	419 vpd (2017)	40%
Albany Highway	4,950 vpd (2017)	20%	3,520 vpd (2017)	16%



Appendix E - Roadway Access Authorisation Permit

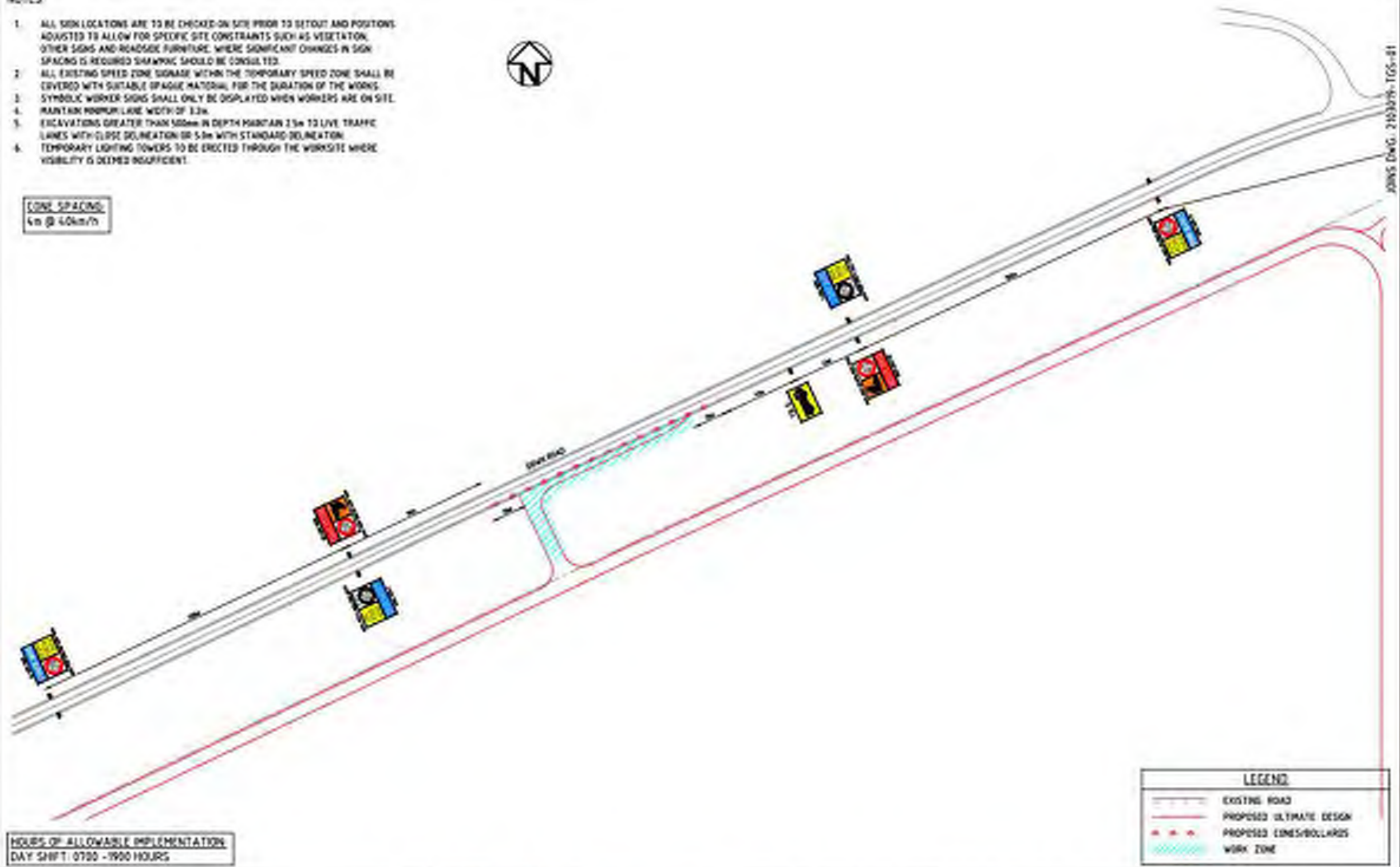


NOTES:

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO DETOUR AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE SPAGUE MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LAKE WIDTH OF 3.3m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LINES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CONE SPACING:
4m @ 40km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

No.	DATE	DESCRIPTION	APPR.
A	04-14-2021	ISSUED FOR CLIENT REVIEW	YR

CLIENT

1000

101 FLEMING ROAD
MELBOURNE VIC 3000
P 03 9594 1000
E shawmac@shawmac.com.au

CONSULTING CIVIL AND TRAFFIC ENGINEERS

AMTRIANE A. ANASTAS	
AMTRNO: TR-4370-02	
AMTR DATE: 04.04.21	
REVIEWED BY: Y.R.Z.	
AMTRNO: TR-4370-02	
REVIEWED DATE: 04.04.21	

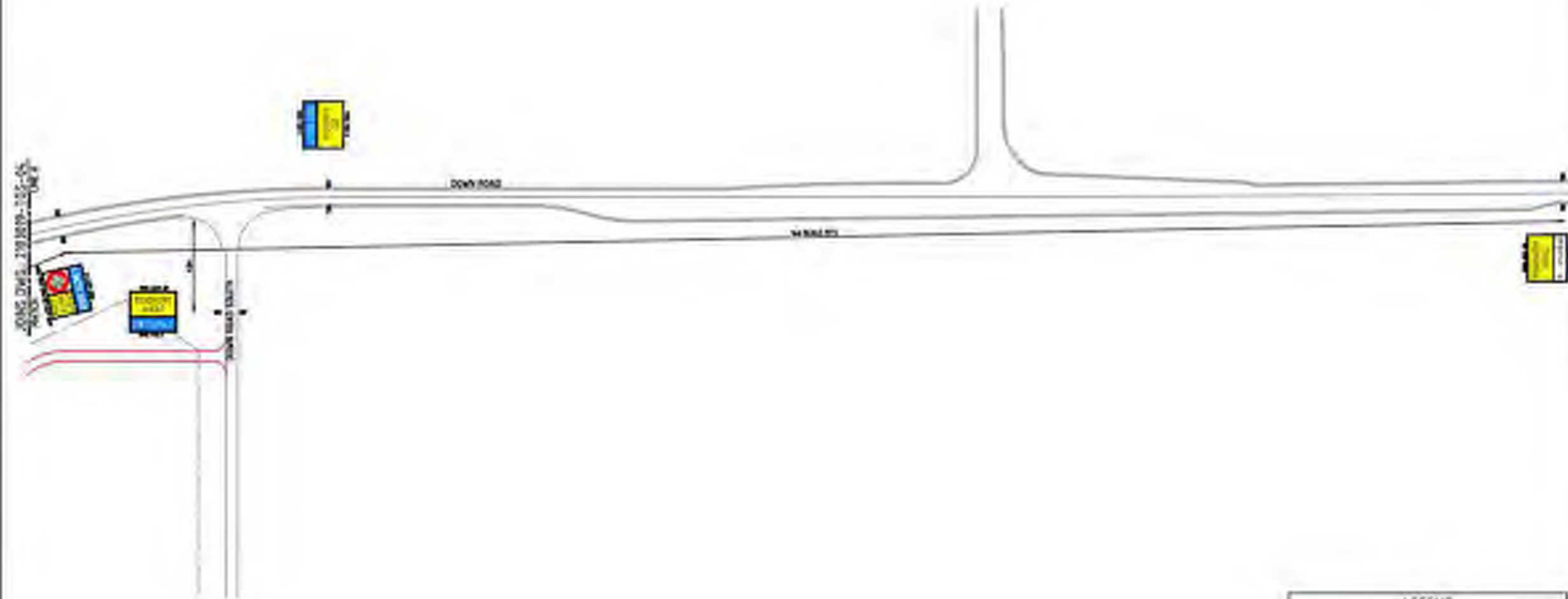
TITLE	ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS - 40km/h SCENARIO TRAFFIC GUIDANCE SCHEME
DRAWING NUMBER	2103019-TGS-02
REV.	REV. A

NOTES

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE SPACED MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.3m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MUST BE 1.5m TO LIVE TRAFFIC LINES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERRECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CON. SPACED
4m @ 60km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFTS: 0730 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

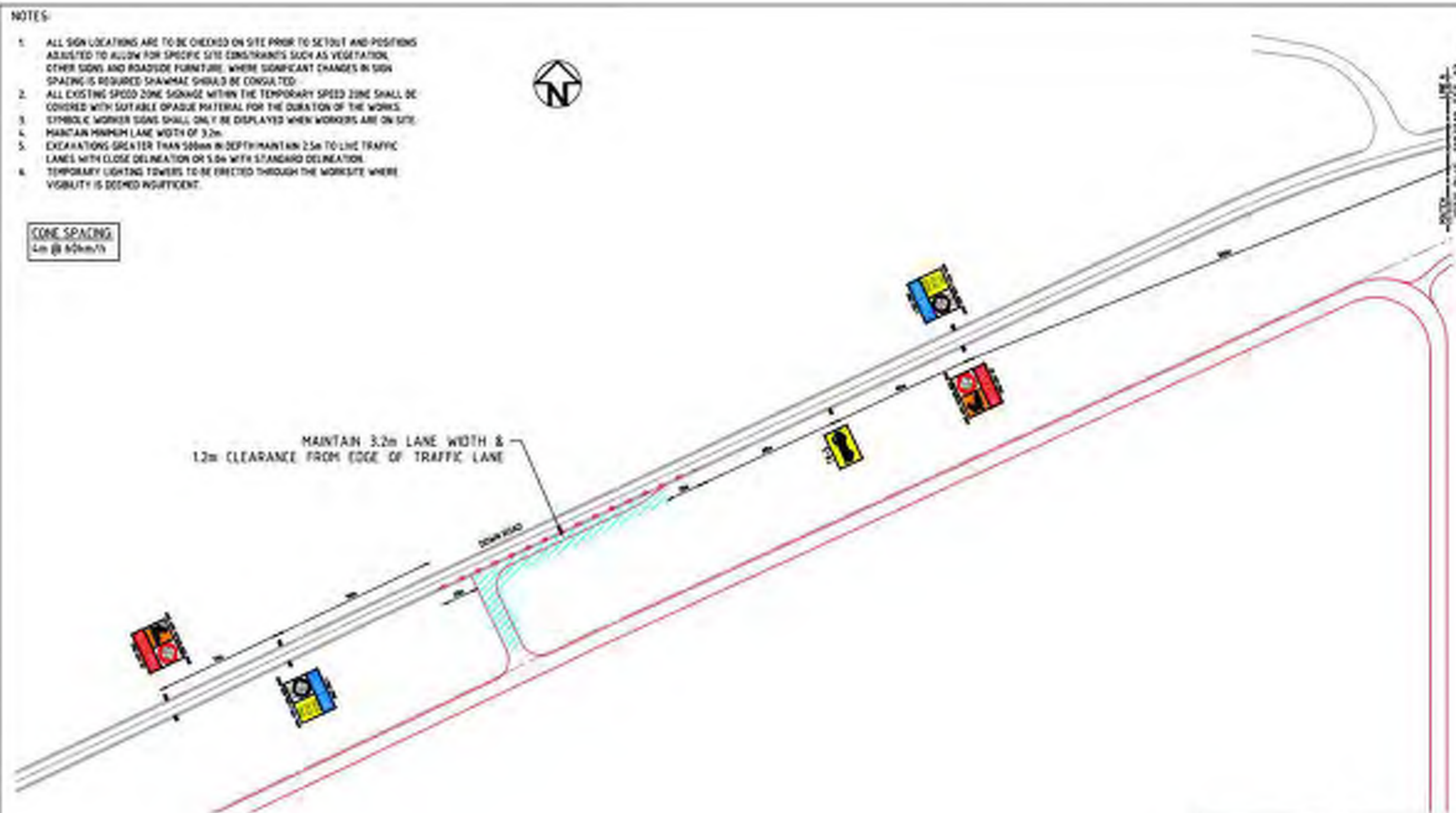
<table border="1"> <thead> <tr> <th>No.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>APPR.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>06.04.2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td>YKE</td> </tr> </tbody> </table>			No.	DATE	DESCRIPTION	APPR.	1	06.04.2021	ISSUED FOR CLIENT REVIEW	YKE	 CLIENT	 CONSULTING CIVIL AND TRAFFIC ENGINEERS	DRAWN BY: A. ANASTAS AMTR NO: 15-4375-00 DATE: 04.04.21 REVIEWED BY: YKE AMTR NO: 15-4375-00 REVIEWED DATE: 06.04.21	TITLE: ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VIRGE WORKS - 60km/h SCENARIO TRAFFIC SIGNAGE SCHEME DRAWN BY: 2103019-TGS-03 REV: A
No.	DATE	DESCRIPTION	APPR.											
1	06.04.2021	ISSUED FOR CLIENT REVIEW	YKE											

NOTES:

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.2m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OR 3.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERRECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DIMMED INSUFFICIENT.



CONE SPACING
4m @ 80km/h



HOURS OF ALLOWABLE IMPLEMENTATION
(DAY SHIFT: 0700 - 1900 HOURS)

No.	DATE	DESCRIPTION	BY	CHKD
A	26/04/2021	ISSUED FOR CLIENT REVIEW	YAE	

CLIENT

107/100B
NEW ALBANY HIGHWAY
CASTLE HILLS NSW
NSW 2158
P: 02 951 1000
E: shawmac@shawmac.com.au
CONSULTING CIVIL AND TRAFFIC ENGINEERS

AWTH NAME: K. ANASTAS
AWTH NO.: 19-6270-02
AWTH DATE: 26/04/21
REVIEWED BY: YAE
AWTH NO.: 11-1513-02
REVIEWED DATE: 26/04/21

[Signature]

[Signature]

TITLE:	ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS - 60km/h SCENARIO TRAFFIC GUIDANCE SCHEME
DRAWING NUMBER:	2103019-TGS-04
REV. A	

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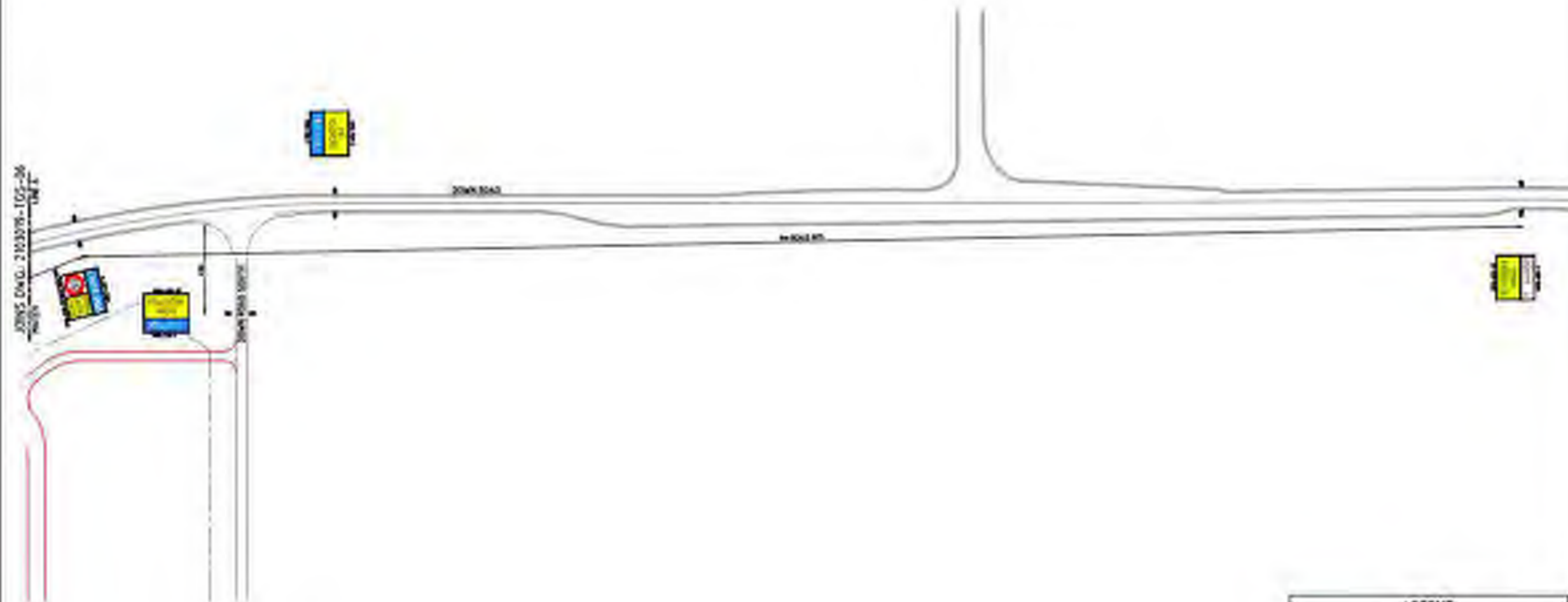
LAST PRINTED BY: YAE DATE: 26 APR 2021 12:01:05

NOTES:

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
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3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.5m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 1.5m TO LIVE TRAFFIC LANES WITH (1) DSE DELINEATION OR 5.5m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERRECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CONE SPACING
4m @ 60km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED LINES/BOLLARDS
	WORK ZONE

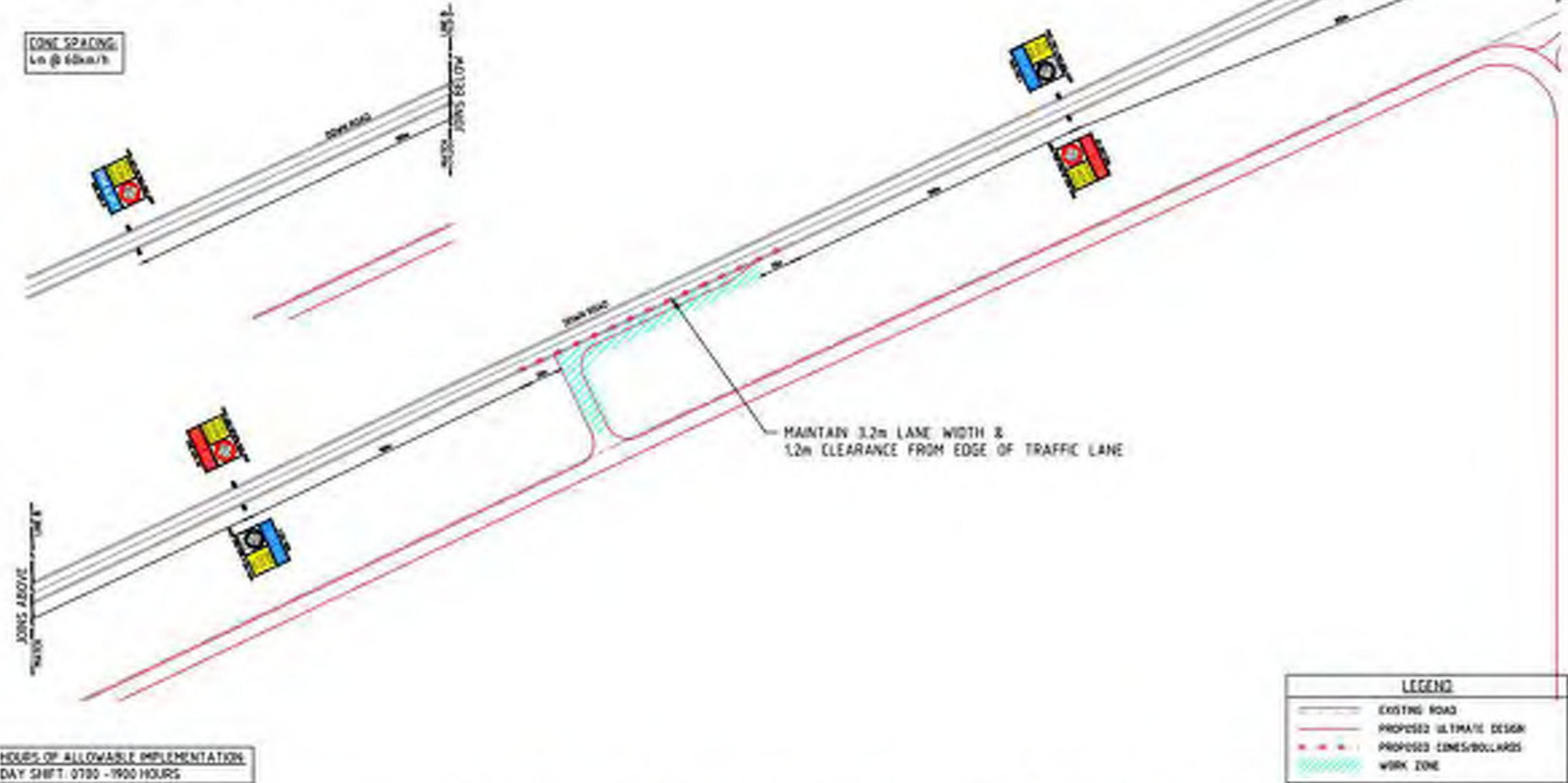
<table border="1"> <tr> <td>#</td> <td>DATE</td> <td>DESCRIPTION</td> <td>TR.</td> <td>APPR.</td> </tr> <tr> <td>1</td> <td>06-04-2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td></td> <td></td> </tr> </table>		#	DATE	DESCRIPTION	TR.	APPR.	1	06-04-2021	ISSUED FOR CLIENT REVIEW			<p>CLIENT</p> <p>1000</p>	<p>BY PLAN FOR ALBANY MOTORSPORT EAST VICTORIA PARK 361 400 P. 1004 000 E. 1004@shawmac.com.au</p> <p>CONSULTING CIVIL AND TRAFFIC ENGINEERS</p>	<p>AUTH NAME: A. ANASTAS</p> <p>AUTH NO.: 10-4370-00</p> <p>AUTH DATE: 04/04/21</p> <p>REVIEWED BY: T.K.E.</p> <p>AUTH NO.: 10-4370-00</p> <p>REVIEWED DATE: 04/04/21</p>	<p>TYPE: ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERSE WORKS AFTER CARE - 60km/h SCENARIO TRAFFIC GUIDANCE SCHEME</p> <p>DRAWING NUMBER: 2103019-TGS-05</p> <p>REV: A</p>
#	DATE	DESCRIPTION	TR.	APPR.											
1	06-04-2021	ISSUED FOR CLIENT REVIEW													

NOTES:

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITION ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.2m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 3.2m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CONE SPACING:
1m @ 60km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

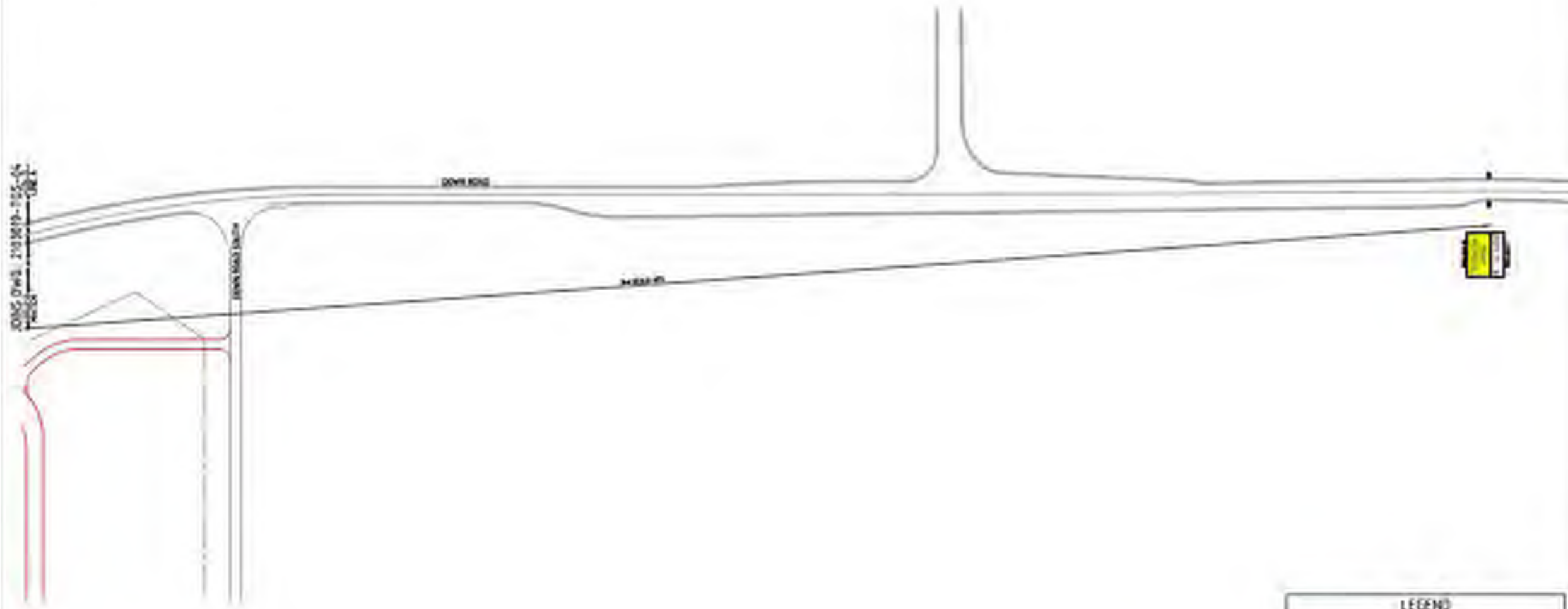
<table border="1"> <tr> <td>No.</td> <td>DATE</td> <td>DESCRIPTION</td> <td>APPR.</td> </tr> <tr> <td>A</td> <td>04-24-2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td>TR</td> </tr> </table>		No.	DATE	DESCRIPTION	APPR.	A	04-24-2021	ISSUED FOR CLIENT REVIEW	TR	<p>CLIENT</p>	<p>BY PLAN FOR ALBANY MOTORSPORT EAST VICTORIA PARK VIC 3100 P 7064 9000 E info@shawmac.com.au</p> <p>SHAWMAC CONSULTING CIVIL AND TRAFFIC ENGINEERS</p>	<p>ANTRINAM A ANASTAS</p> <p>ANTRINAM TR 4330-02</p> <p>ANTR DATE: 06/04/21</p> <p>REVIEWED BY: T.RZ</p> <p>ANTRINAM TR-4330-02</p> <p>REVIEWED DATE: 06/04/21</p>	<p>FILE</p> <p>ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS AFTER CARE - 60km/h SCENARIO TRAFFIC GUIDANCE SCHEME</p> <p>DRAWING NUMBER: 2103019-TGS-06</p> <p>REV: A</p>
No.	DATE	DESCRIPTION	APPR.										
A	04-24-2021	ISSUED FOR CLIENT REVIEW	TR										

NOTES

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LAINE WIDTH OF 3.2m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 1.5m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OF 50m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEPLY INSUFFICIENT.



CONE SPACING:
5m @ 80km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHP 1, 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

No.	DATE	DESCRIPTION	APPR.
1	04/04/2021	ISSUED FOR CLIENT REVIEW	YES
ISSUE AND REVISION HISTORY			

CLIENT

1-888

151 FLOOR
100 COLLEGE STREET
SYDNEY NSW 2000
P 61 2 955 1000
E info@shawmac.com.au

CONSULTING CIVIL AND TRAFFIC ENGINEERS

AUTHOR: A. ARISTAS	
AUTHOR: 15-0319-02	
DATE: 04/04/21	
REVIEWED BY: H. KE	
AUTHOR: 15-0319-02	
REVIEWED DATE: 04/04/21	

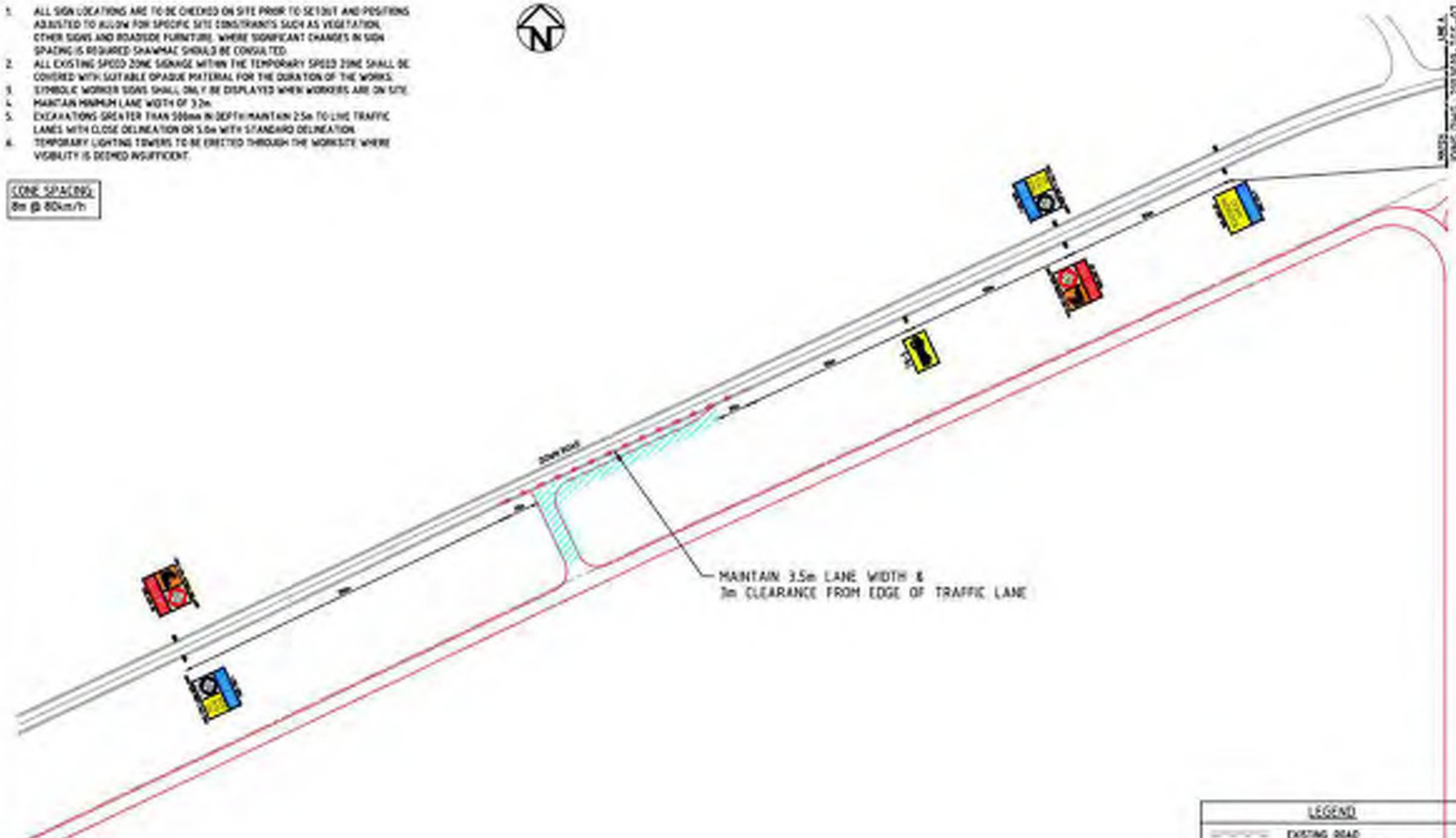
TITLE:	ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS - 80km/h SCENARIO TRAFFIC QUEUING SCHEME
DRAWING NUMBER:	2103019-TGS-07
REV:	A

NOTES:

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETUP AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.5m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 2.5m TO THE TRAFFIC LANES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CONE SPACING
8m @ 80km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONE/BOLLARDS
	WORK ZONE

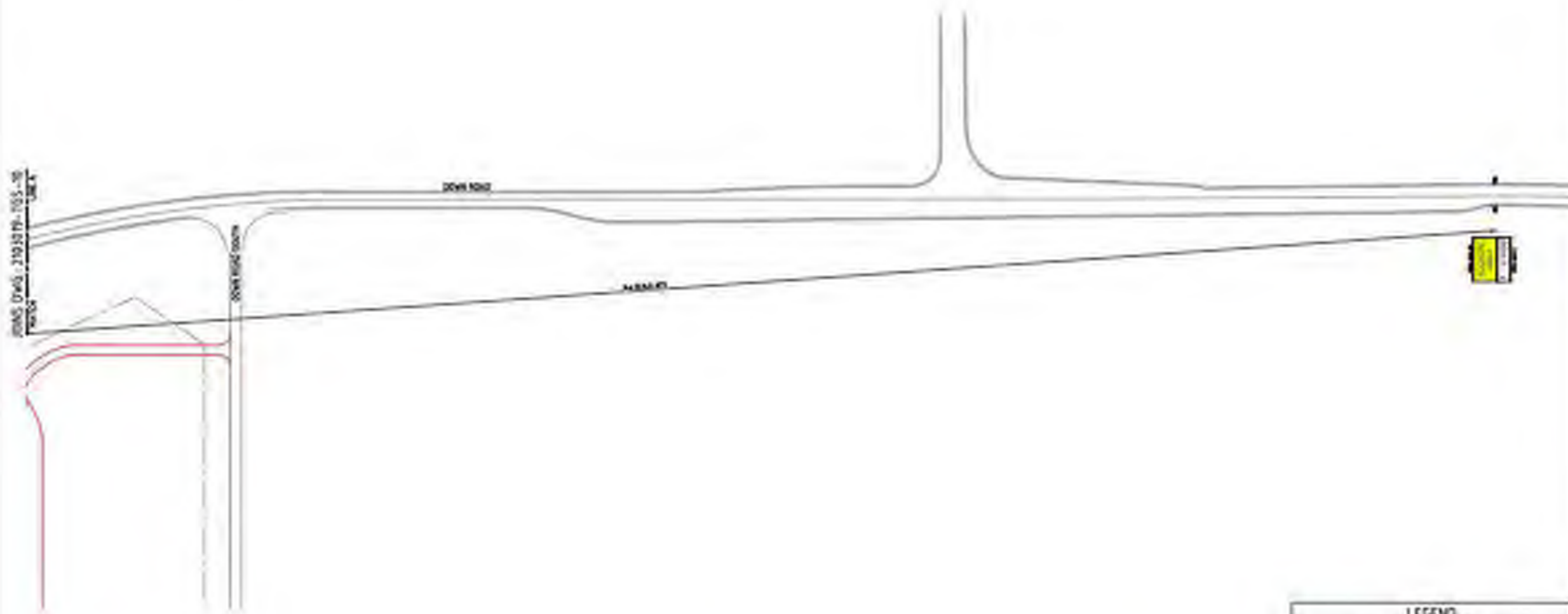
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No	DATE	DESCRIPTION	APPD	CHKD																
A	04/04/2021	ISSUED FOR CLIENT REVIEW	YAK																	
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TITLE: ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS - 80km/h SCENARIO TRAFFIC GUIDANCE SCHEME	DRAWING NUMBER: 2103019-TGS-08	REV: A																		

NOTES

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
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3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.5m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CONE SPACING
3m @ 80km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

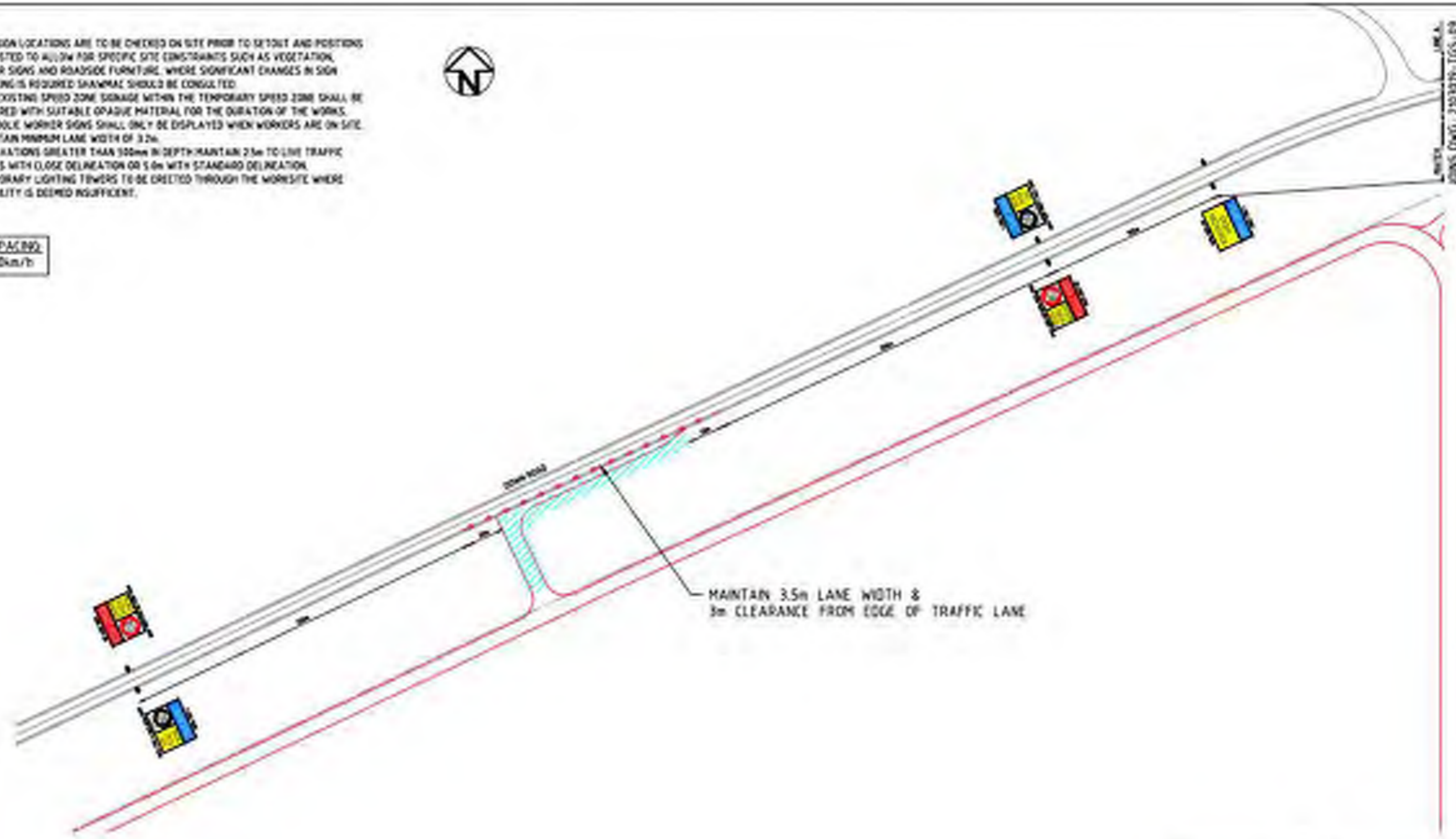
LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED LINES/BOLLARDS
	WORK ZONE

						AWTR NAME: A. ANASTAS AWTR NO: 19-4370-02 AWTR DATE: 06.04.21 REVIEWED BY: T.K. AWTR NO: 19-4370-02 REVIEW DATE: 06.04.21		PROJECT: ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS AFTER CARE - 80km/h SCENARIO TRAFFIC GUIDANCE SCHEME	
No. DATE DESCRIPTION APPR.		ISSUE AND REVISION HISTORY		SCALE: 1:500		CONSULTING CIVIL AND TRAFFIC ENGINEERS		DRAWING NUMBER: 2103019-TGS-09 REV: A	

NOTES

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
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3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON-SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.2m.
5. EXCAVATIONS GREATER THAN 300mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE CREATED THROUGHOUT THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.

CONE SPACING:
8m @ 80km/h



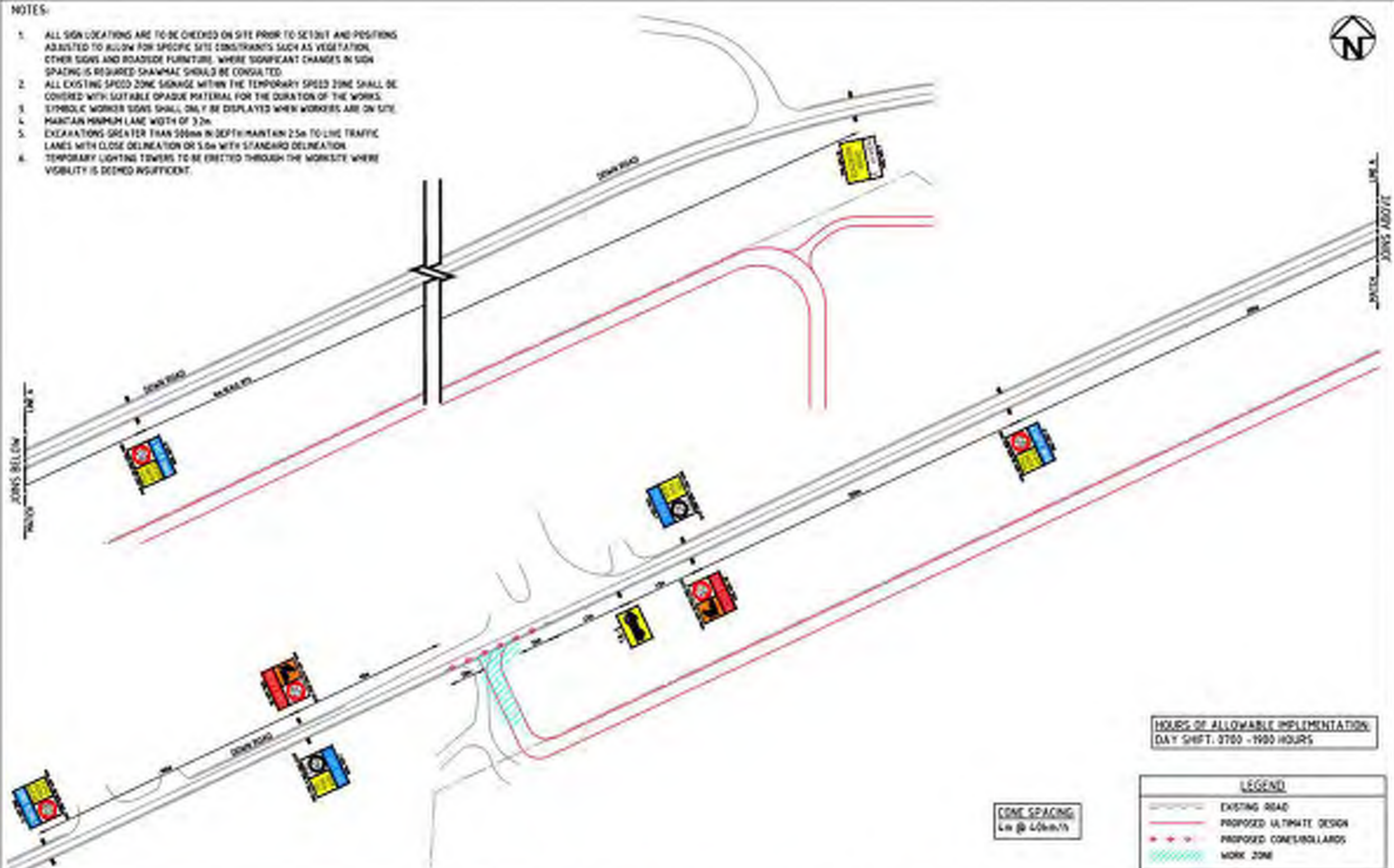
HOURS OF ALLOWABLE IMPLEMENTATION:
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

				DRAWN BY: K. ANASTAS CHECKED BY: T. H. 10/01/21 DATE: 06/04/21 REVIEWED BY: Y. XE DATE: 17/05/21	TITLE: ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS AFTER CARE - 80km/h SCENARIO TRAFFIC GUIDANCE SCHEME DRAWING NUMBER: 2103019-TGS-10 REV: A								
<table border="1"> <thead> <tr> <th>No.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>APPROV.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>06/04/2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td>TK</td> </tr> </tbody> </table>		No.	DATE	DESCRIPTION	APPROV.	A	06/04/2021	ISSUED FOR CLIENT REVIEW	TK	SCALE: 1:500			
No.	DATE	DESCRIPTION	APPROV.										
A	06/04/2021	ISSUED FOR CLIENT REVIEW	TK										

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3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.2m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH: MAINTAIN 2.5m TO LANE TRAFFIC LANES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.

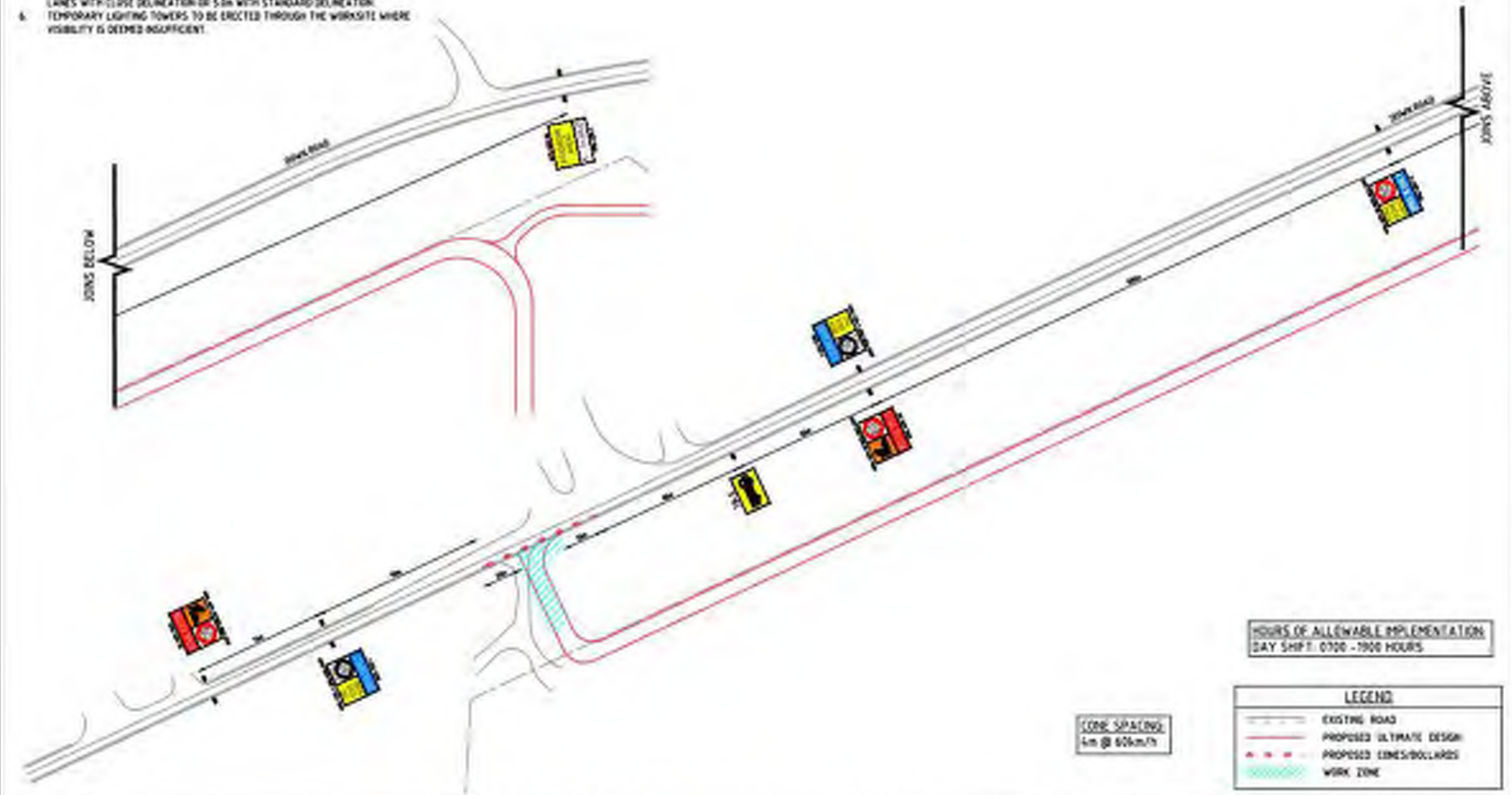


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No	DATE	DESCRIPTION	BY										
A	04.04.2021	ISSUED FOR CLIENT REVIEW	YX										

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 User: j.anastas

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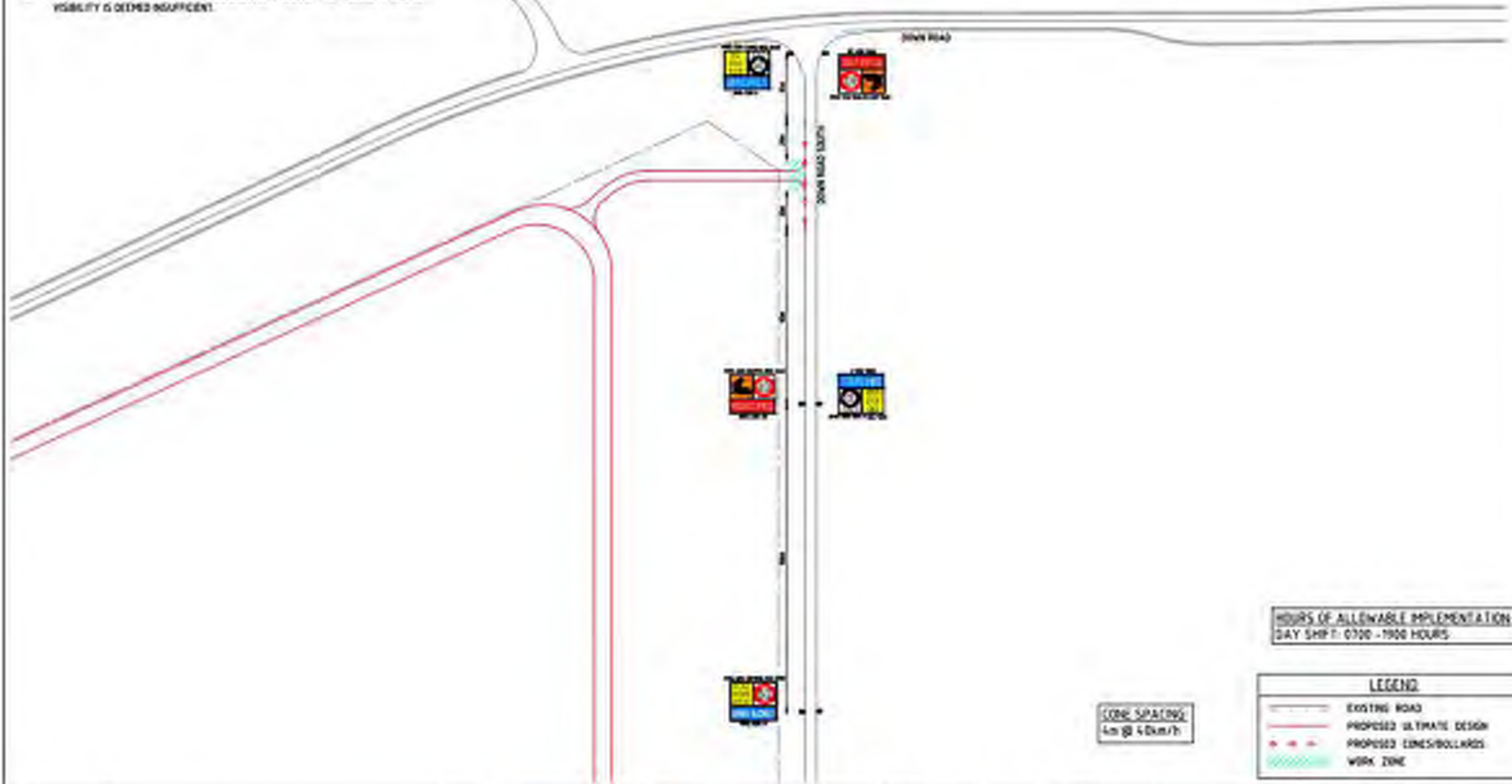
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3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LAKE WIDTH OF 1.5m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 1.5m TO LIVE TRAFFIC LANES WITH (1) SIDE DELINEATION OR 5.5m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERRECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



<table border="1"> <tr> <th>#</th> <th>DATE</th> <th>DESCRIPTION</th> <th>TR.</th> <th>APPR.</th> </tr> <tr> <td>1</td> <td>06-24-2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td></td> <td></td> </tr> </table>		#	DATE	DESCRIPTION	TR.	APPR.	1	06-24-2021	ISSUED FOR CLIENT REVIEW			<p>CLIENT</p>	<p>157 FLOOR 800 ALBANY HIGHWAY EAST VICTORIA PARK VIC 3185 P 0395 900 E info@shawmac.com.au</p> <p>CONSULTING CIVIL AND TRAFFIC ENGINEERS</p>	<p>AUTHOR: NAME: A. ANASTAS AUTHOR NO.: TA-4370-02 AUTHOR DATE: 04/04/21 REVIEWED BY: T.KE AUTHOR NO.: TA-4370-02 REVIEWED DATE: 04/04/21</p>	<p>TYPE: ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS - 60km/h SCENARIO TRAFFIC GUIDANCE SCHEME</p>	<p>DRAWING NUMBER: 2103019-TGS-12 REV: A</p>
#	DATE	DESCRIPTION	TR.	APPR.												
1	06-24-2021	ISSUED FOR CLIENT REVIEW														

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3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.3m.
5. EXCAVATIONS GREATER THAN 100mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LANES WITH (1) USE DELINEATION OR 50m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFTS: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED LINES/BOLLARDS
	WORK ZONE

CODE SPACING
4m @ 40km/h

No.	DATE	DESCRIPTION	APPR.
A.	06-04-2021	ISSUED FOR CLIENT REVIEW	YF
ISSUE AND REVISION HISTORY			

CLIENT

KAL 1000

101 FLANN
888 ALBANY HIGHWAY
EXIT VICTORIA PARK
600 600
P 9084 908
E info@shawmac.com.au

CONSULTING CIVIL AND TRAFFIC ENGINEERS

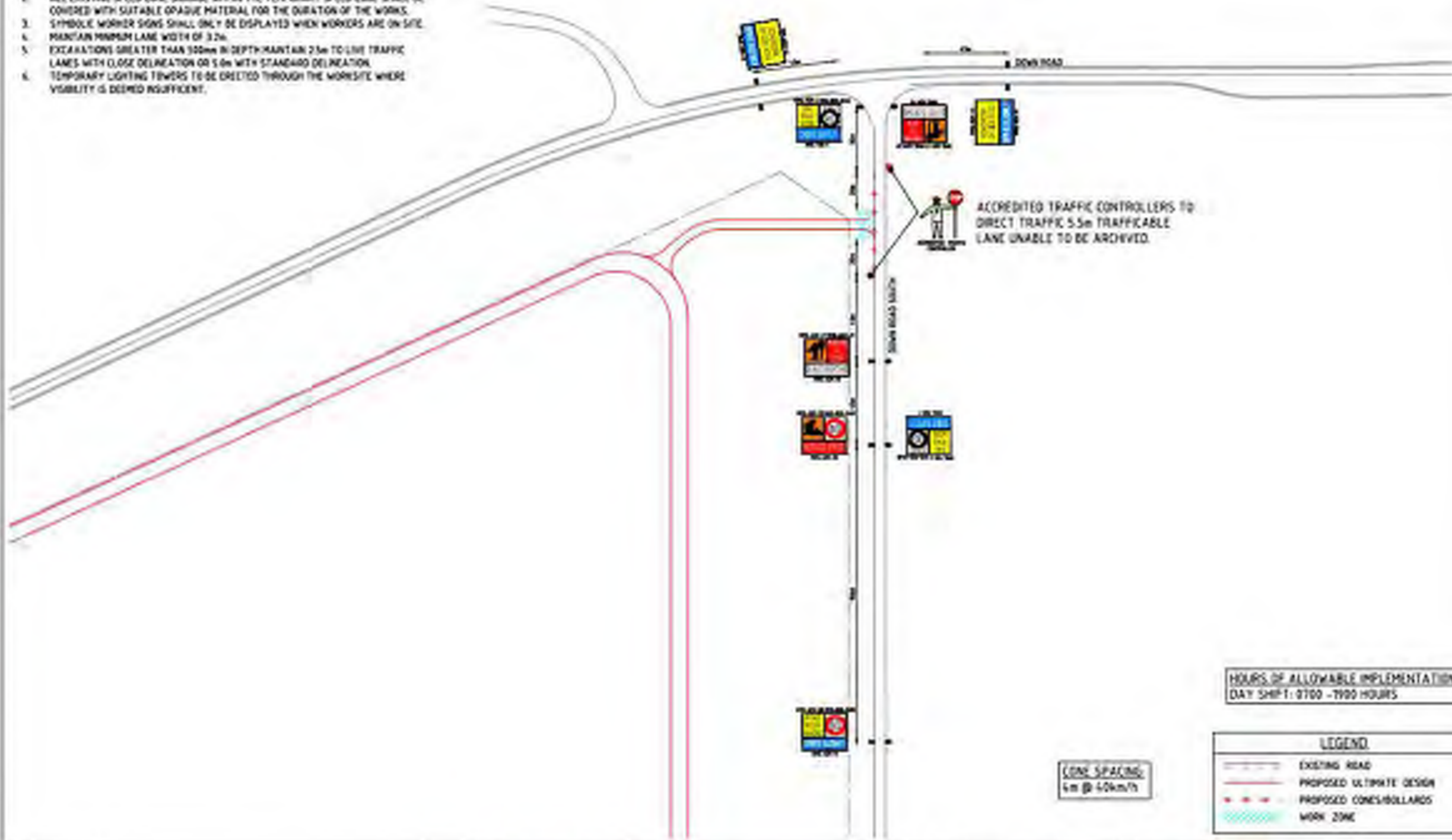
AWTR NAME: A. ANASTAS
AWTR NO.: 75-4570-02
AWTR DATE: 06-04-21
REVIEWED BY: T. KE
AWTR NO.: 01-4570-02
REVIEWED DATE: 06-04-21

[Handwritten signature]

TITLE:	ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERSE WORKS - 40km/h SCENARIO TRAFFIC GUIDANCE SCHEME
DRAWING NUMBER:	2103019-TGS-13
REV:	A

NOTES

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
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3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.2m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE CREATED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

CONC SPACING
5m @ 40km/h

No.	DATE	DESCRIPTION	APPROVED
A	06/04/2021	ISSUED FOR CLIENT REVIEW	TK

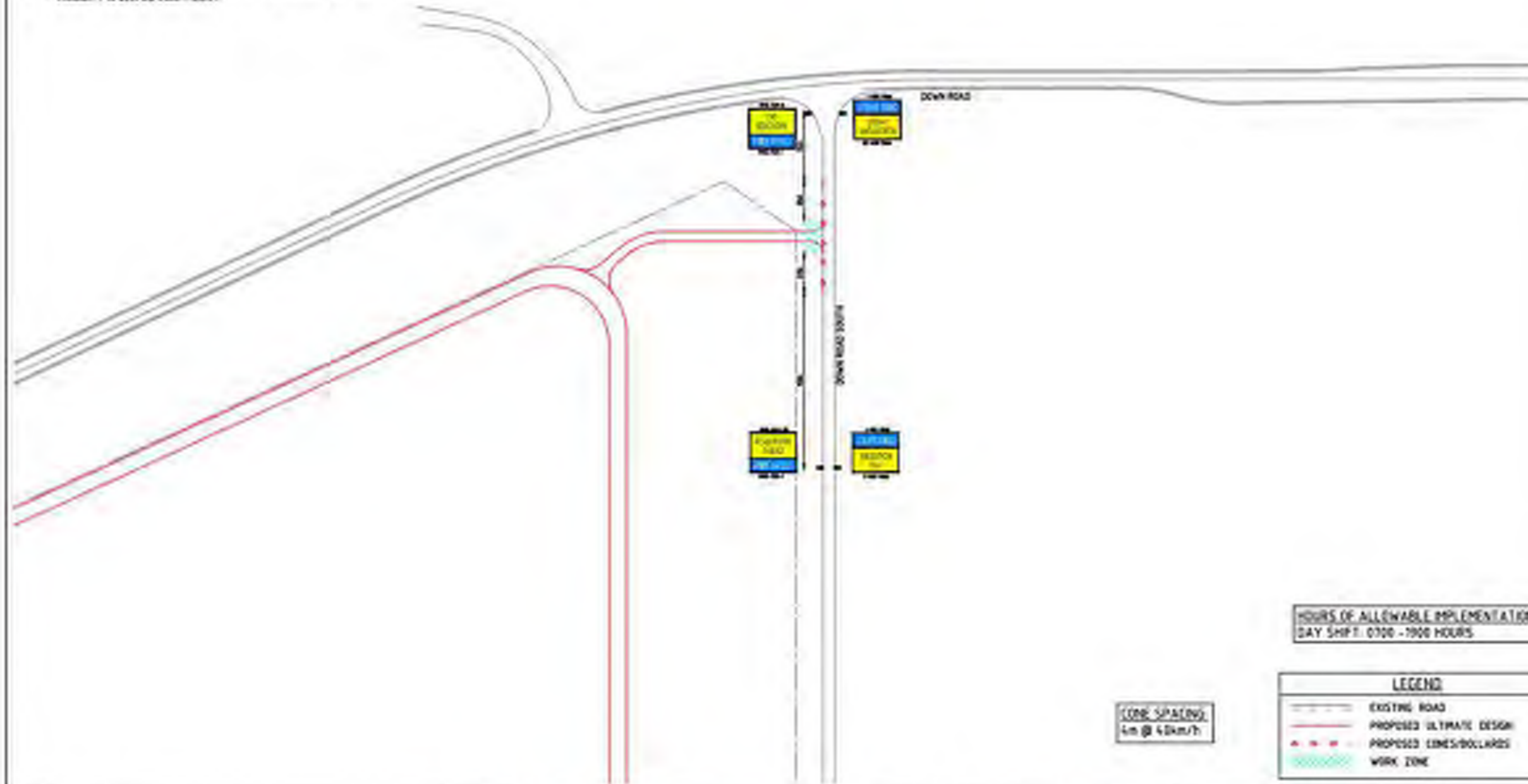


AWITH NAME: A. ANASTAS	
AWITH NO.: 19-4370-02	
AWITH DATE: 06/04/21	
REVIEWED BY: YAK	
AWITH NO.: 17-4573-01	
REVIEWED DATE: 06/04/21	

PROJECT	ALBANY MOTORSPORT PARK
ACCESS CONSTRUCTION WORKS	
TEMPORARY HOLDING TRAFFIC - 40km/h SCENARIO	
TRAFFIC GUIDANCE SCHEME	
SHAWMAC NUMBER	2103019-TGS-14
REV. A	

NOTES

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3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.3m.
5. EXCAVATIONS GREATER THAN 100mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LANES WITH (1) USE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



No.	DATE	DESCRIPTION	APPR.	SCALE
A	06-04-2021	ISSUED FOR CLIENT REVIEW	YR	1:1000
ISSUE AND DESIGN HISTORY				

CLIENT

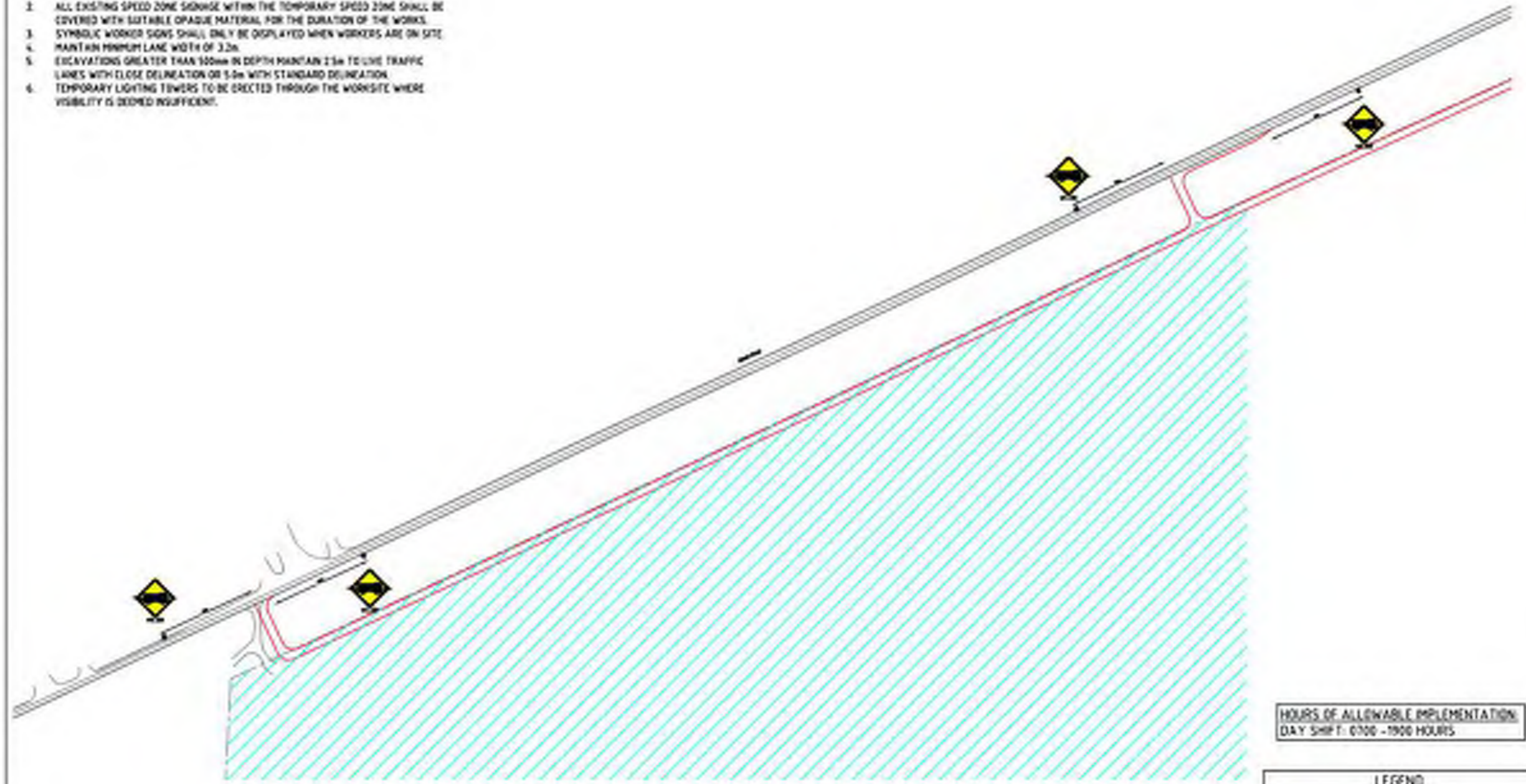
SHAWMAC
CONSULTING CIVIL AND TRAFFIC ENGINEERS

AWTR NAME: A. ANASTAS	
AWTR NO.: TR-0370-00	
AWTR DATE: 06-04-21	
REVIEWED BY: T. KE	
AWTR NO.: TR-4370-00	
REVIEWED DATE: 06-04-21	

TITLE	ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS AFTER CARE TRAFFIC GUIDANCE SCHEME
DRAWING NUMBER	2103019-TGS-75
REV.	REV. A

NOTES:

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LANE WIDTH OF 3.2m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE DRECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

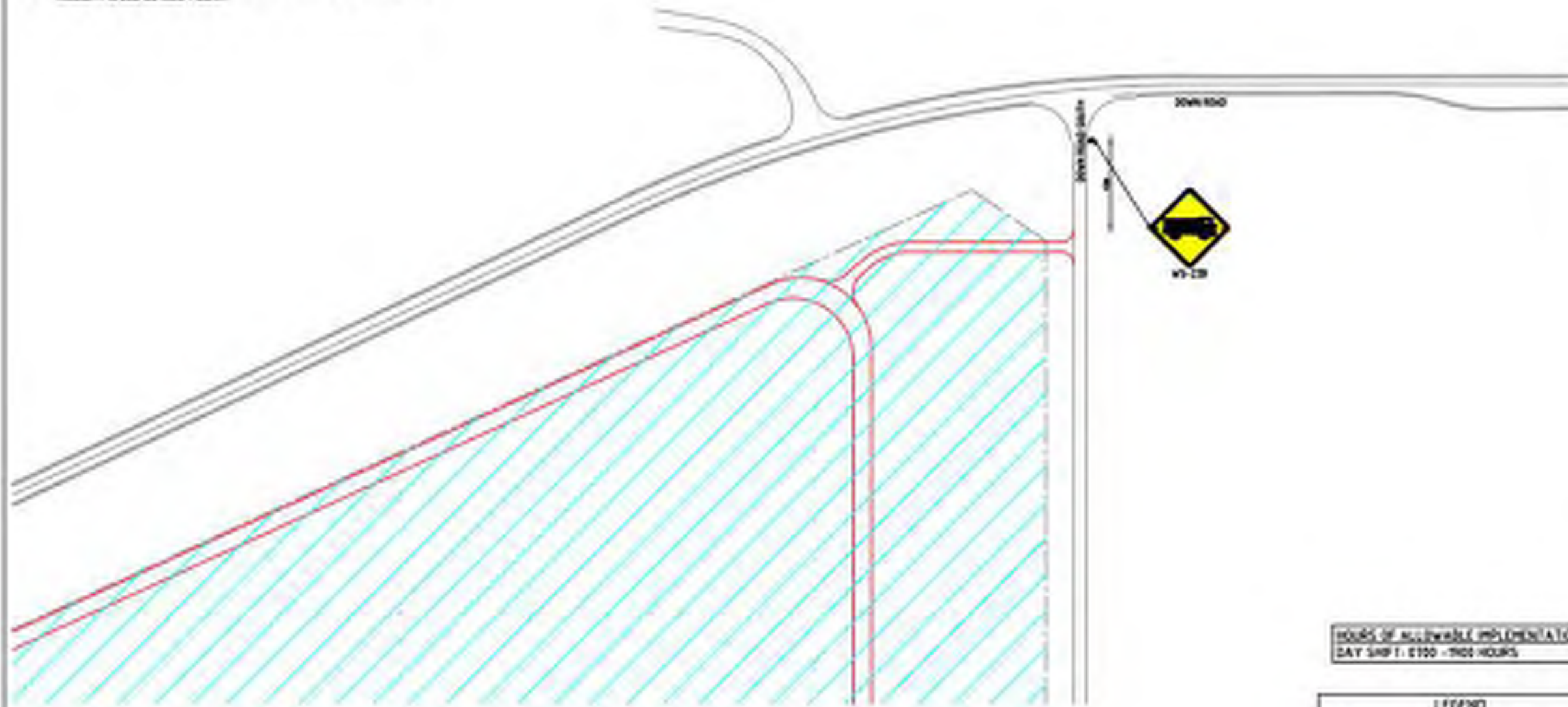
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No	DATE	DESCRIPTION	APP'D											
1	06-04-2021	ISSUED FOR CLIENT REVIEW	YK											

Path: C:\data\Area\2021\2103019\Construction Traffic Management\2103019_Traffic Management\Access Control Layout\2103019-TGS-16.dwg

LAST PRINTED BY: User: YK, Date: 06/04/2021 09:55 AM

NOTES:

1. ALL SIGNPLACEMENTS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE, WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE ENCASED WITH SUITABLE FRAME MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINLANE MINIMUM LANE WIDTH OF 12m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MUST BE 1.5m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OR 1.5m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SIGN T: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

			<p>SHAWMAC THE ALBANY MOTORSPORT CENTRE AT RIVERVIEW PARK 101-103 7 190 100 CORSEVALE NSW 2104</p>	<p>AW/PR NAME: J. KRASINS AW/PR NO: TR-4878-02 AUTHOR: GBL/DLZ REVIEWED BY: YSE AW/PR NO: 11-4573-02 REVIEWED DATE: 04/04/21</p>	<p>PROJECT: ALBANY MOTORSPORT PARK INTERNAL WORKS ACCESS CONTROL LAYOUT TRAFFIC GUIDANCE SCHEME</p>	<p>DRAWING NUMBER: 2103079-17 REV: A</p>								
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No.	DATE	DESCRIPTION	APPROVED											
A	04/04/21	ISSUED FOR CLIENT REVIEW	YSE											



Appendix G – Barrier Design Sheets

N/A



Appendix H- Stakeholder Approval



ghd.com

→ **The Power of Commitment**

Appendix K

**Albany Motorsport Park Development,
Pavement Investigation (Great Southern
Geotechics , 2021)**



GREAT SOUTHERN GEOTECHNICS

CONSTRUCTION MATERIALS TESTING

Pavement Investigation

Report 4212/1

Friday, 9 April 2021

GHD

Albany Motorsport Park Development

GREAT SOUTHERN GEOTECHNICS

1.0 INTRODUCTION

As authorised by GHD

an investigation for the proposed Albany Motorsport Park Development adjacent to Down Rd, Mirambeena was performed on the 25/03/2021

2.0 GENERAL

The intent of the investigation was to determine the following:

- Soil types and profiles.
- Characteristics of soil properties on select samples including Particle Size and Consistency Limits. (Liquid Limit, Plastic Limit, Plasticity Index & Linear Shrinkage).
- In Situ permeability rates. (Where applicable)
- Groundwater levels at time of investigation.

3.0 SITE INVESTIGATION

Site conditions and test pit locations were recorded and are displayed in [Appendix A - Maps](#).

Test pits logs various materials types are noted in [Appendix B - Test Pit Logs](#)

The field investigation consisted of 8 Boreholes excavated on-site to depths of up to 2.5 meters using a Kubota KX41-3V mini excavator with a 300mm Auger.

Test pits were spread across the extent of the proposed development and locations were predetermined by GHD.

All soil layers encountered were visually assessed and classified on-site.

Samples gathered from site were the taken back to Great Southern Geotechnics Albany Laboratory For further processing and analysis.

IMPORTANT NOTE: The test pits have been spread so that they are representative of the subsurface materials across the intended reconstruction area, however, soil conditions may change dramatically over short distances and our investigations may not locate all soil variations across the site.

4.0 LABORATORY TESTING

Results of any relevant Laboratory testing performed are shown in [Appendix C. \(Test Results Report 4212/2 \)](#)

This report and associated documentation was undertaken for the specific purpose described in the report and shall not be relied on for other purposes.

This report was prepared solely for the use by GHD any reliance assumed by other parties on this report shall be at such parties own risk.



Appendix A

Maps

Figure 1

Test Pits 1 to 8

Test Pit Locations



**GREAT SOUTHERN
GEOTECHNICS**
CONSTRUCTION MATERIALS TESTING

Job No: 4212
Client: GHD
Project: Albany Motorsport Park Development





Appendix B

Test Pit Logs





Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'58.4"S 117°44'13.1"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 200	200	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	MD		No water table encountered.		
200 - 550	350	SANDY gravel: Brown, fine to coarse, sub-rounded to sub-angular. Fine to medium grained sand.	M	MD-D				
550 - 2500	1950	Sandy CLAY: Low to medium plasticity, light brown/orange mottled red. Fine to medium grained sand.	M	F				

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.1



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°56'03.7"S 117°44'12.6"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 100	100	(Topsoil) SAND with silt: Dark grey, fine to medium. Roots and root fibres.	M	MD		No water table encountered.		
100 - 500	400	SANDY gravel: Brown, fine to coarse, sub-rounded to sub-angular. Fine to medium grained sand.	M	MD-D				
500 - 2500	2000	Sandy CLAY: Low to medium plasticity, light brown/orange mottled red. Fine to medium grained sand.	M	F				

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.2



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°56'11.6"S 117°44'13.5"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 160	160	(Topsoil) Gravelly SAND with silt: Grey/brown, fine to medium. Fine to medium, sub-rounded to sub-angular, gravel.	DM	L-MD		No water table encountered.		
160 - 2100	1940	(FILL) Sandy GRAVEL with clay: Low to medium plasticity, brown/red Fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand.	M	MD				
2100 - 2500	400	SAND with silt: White, fine.	M	L-MD				

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.3



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'55.3"S 117°44'25.3"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 50	50	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	D	L		No water table encountered.		
50 - 850	800	SAND with silt: Light grey/white, fine to medium.	D-M	L-MD				
850 - 2500	1650	SAND with silt: Brown, fine to medium.	M	D	WC			

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.4



Excavation



Spoil



Job No: 4212
Client: GHD
Project: Albany Motorsport Park Development

Sheet 8 **of** 16



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'52.7"S 117°44'34.4"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 240	240	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	D	L-MD		No water table encountered.		
240 - 1100	860	SAND with silt: Light grey/white, fine to medium.	M	L-MD				
1100 - 2500	1400	Gravelly SAND with silt: Light brown, fine to medium. Fine to medium, sub-rounded to sub-angular gravel.	M	MD	PC			

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.5



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'40.7"S 117°44'59.9"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 180	180	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	M	L-MD		No water table encountered.			
180 - 1400	1220	SAND with silt: Light grey/white, fine to medium.	M	L-MD					
1400 - 2500	1100	SAND with silt: Light brown, fine to medium.	M	MD-D	MC				

*Cobbles noted on outer edge of test pit in shoulder.

Target Depth	✓	2500
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented	
St - Stiff	D - Dense	M - Medium		
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented	
H - Hard	CO - Compact	VH - Very High		
		EH - Extremely High		

Test Pit No.6



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°55'52.2"S 117°44'50.8"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test	
0 - 170	170	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	D	MD		No water table encountered.			
170 - 450	280	SAND with silt: Light grey, fine to medium.	D	L-MD					
450 - 2100	1650	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular. Fine to medium grained sand.	D	MD-D					
2100 - 2500	400	Gravelly SAND with silt: Light brown, fine to medium. Fine to medium, sub-rounded to sub-angular gravel.	D	MD					

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.7



Excavation



Spoil



Client: GHD
Project: Albany Motorsport Park Development
Project No. 12546218
Location: 34°56'03.5"S 117°44'40.4"E

Date Commenced
25/03/2021
Logged By
M.Coffey

Operator/Contractor: GSG
Equipment type: Kubota KX41-3V
Excavation Method : 300mm Auger
Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 200	200	(Topsoil) SAND with silt: Grey, fine to medium. Roots and root fibres.	D	MD		No water table encountered.		
200 - 950	750	SAND with silt: Light grey, fine to medium.	D	MD				
950 - 2500	1550	Sandy GRAVEL: Brown, fine to coarse, sub-rounded to sub-angular. Fine to medium grained sand.	D	MD-D				

				Target Depth	✓	2500
				Cave In		
				Refusal		
				Near Refusal		
				Flooding		
				Lack of Reach		
Cohesive	Non-Cohesive	Rock	Cementation	General		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet N/A - Not Applicable N/D - Not Determined		
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented			
F - Firm	MD - Medium Dense	L - Low	MC - moderately Cemented			
St - Stiff	D - Dense	M - Medium				
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented			
H - Hard	CO - Compact	VH - Very High				
		EH - Extremely High				

Test Pit No.8



Excavation



Spoil



Job No: 4212
Client: GHD
Project: Albany Motorsport Park Development

Sheet 16 **of** 16



Appendix C

Test Results



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 4

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G9
------------	--------

Saturated Hydraulic Conductivity (cm/min)	0.0913
Saturated Hydraulic Conductivity (m/day)	1.31
Saturated Hydraulic Conductivity (m/sec)	1.52E-05

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced by use of this spreadsheet or any interpretation based on that data.

Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 5

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G10
------------	---------

Saturated Hydraulic Conductivity (cm/min)	0.0342
Saturated Hydraulic Conductivity (m/day)	0.49
Saturated Hydraulic Conductivity (m/sec)	5.70E-06

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced by use of this spreadsheet or any interpretation based on that data.

Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 6

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G11
------------	---------

Saturated Hydraulic Conductivity (cm/min)	0.2282
Saturated Hydraulic Conductivity (m/day)	3.29
Saturated Hydraulic Conductivity (m/sec)	3.80E-05

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced by use of this spreadsheet or any interpretation based on that data.

Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 7

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G12
------------	---------

Saturated Hydraulic Conductivity (cm/min)	0.2282
Saturated Hydraulic Conductivity (m/day)	3.29
Saturated Hydraulic Conductivity (m/sec)	3.80E-05

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced by use of this spreadsheet or any interpretation based on that data.

Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:



Client: GHD
Project: Albany Motorsport Park Development
Section: Test Pit 8

Client Number: 12546218
Date of Test: 25/03/2021

Talsma-Hallam Permeameter Test Report

Layer Type	In Situ	Material Description	Refer to Test Pit Logs (Report 4212/1)
------------	---------	----------------------	--

Sample No.	4212G13
------------	---------

Saturated Hydraulic Conductivity (cm/min)	0.0285
Saturated Hydraulic Conductivity (m/day)	0.41
Saturated Hydraulic Conductivity (m/sec)	4.75E-06

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced by use of this spreadsheet or any interpretation based on that data.

Distribution: Laboratory File / Vicki Davies - GHD
Document ID: WS_1547_TalsmaHallam_Rev2_Mar2020

Name: M.Coffey
Function: Quality Manager
Date: 9/04/2021

Approved
By:

Client: GHD
Project: Albany Motorsport Park Development
Section: Proposed Development - Materials Testing

Client Number: QU-0456
Date Sampled: 25/03/2021
Date Received: 25/03/2021

Soil Classification Test Report

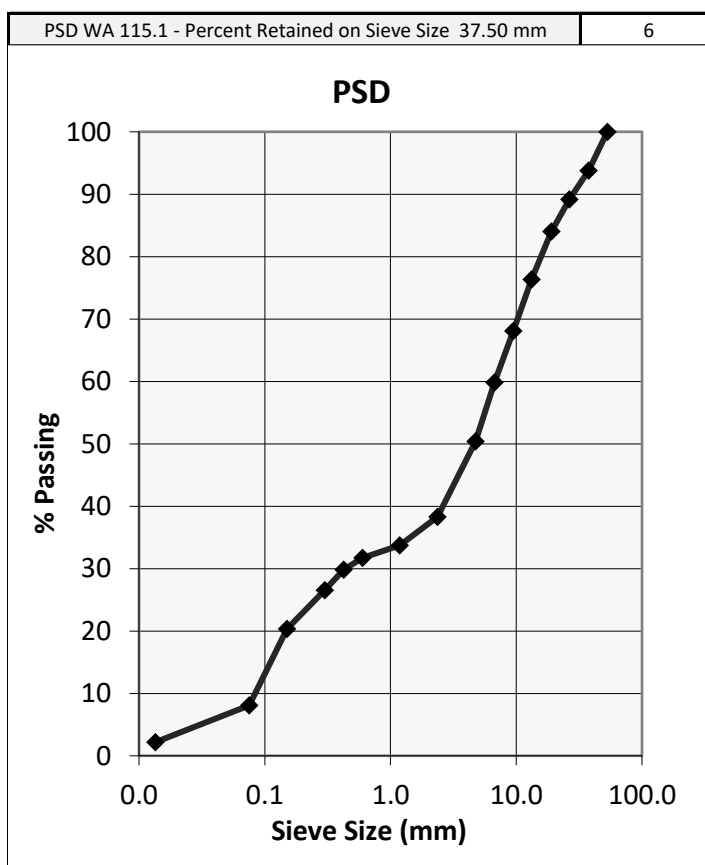
Test Method - WA 115.1, WA 120.2, WA 121.1, WA 122.1, WA 123.1 & AS 1726 - Tables 9 & 10

Location	Test Pit 1	Test Depth (mm)	200 - 550	Preparation Method	WA 105.1
Layer Type	In Situ	Layer Depth (mm)	200 - 550	Sampling Method	WA 100.1

Sample No.	4330G1	Material Description	Sandy GRAVEL
------------	--------	----------------------	--------------



Sieve Size (mm)	% Passing
125.0	-
106.0	-
75.0	-
53.0	100
37.5	94
26.5	89
19.0	84
13.2	76
9.5	68
6.7	60
4.75	50
2.36	38
1.18	34
0.600	32
0.425	30
0.300	27
0.150	20
0.075	8
0.0135	2

Liquid Limit	(WA 120.2) %	30.6
Plastic Limit	(WA 121.1) %	Non Plastic
Plasticity index	(WA 122.1) %	Non Plastic
Linear Shrinkage	(WA 123.1) %	0
Linear Shrinkage Condition		Normal



GROUP SYMBOL	GP
--------------	----

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

 <p>Comments:</p> <p>Distribution: Laboratory File / Vicki Davies Document ID: WS_WA_PSD_Rev4_Mar2021 Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092</p>	Name:	M.Coffey
	Function:	Quality Manager
	Date:	18/05/2021
	Approved	
	Signatory:	



Client: GHD
Project: Albany Motorsport Park Development
Section: Proposed Development - Materials Testing

Client Number: QU-0456
Date Sampled: 25/03/2021
Date Received:

Soil Classification Test Report

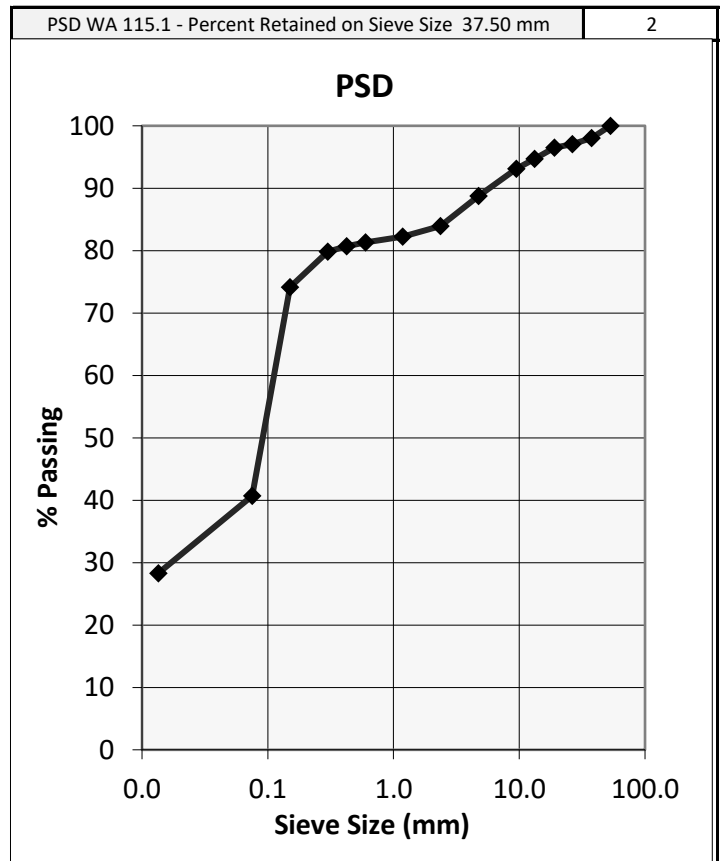
Test Method - WA 115.1, WA 120.2, WA 121.1, WA 122.1, WA 123.1 & AS 1726 - Tables 9 & 10

Location	Test Pit 2	Test Depth (mm)	500 - 2500	Preparation Method	WA 105.1
Layer Type	In Situ	Layer Depth (mm)	500 - 2500	Sampling Method	WA 100.1

Sample No.	4330G2	Material Description	Sandy CLAY
------------	--------	----------------------	------------

Sieve Size (mm)	% Passing
125.0	-
106.0	-
75.0	-
53.0	100
37.5	98
26.5	97
19.0	97
13.2	95
9.5	93
6.7	-
4.75	89
2.36	84
1.18	82
0.600	81
0.425	81
0.300	80
0.150	74
0.075	41
0.0135	28

Liquid Limit	(WA 120.2) %	37.6
Plastic Limit	(WA 121.1) %	18.3
Plasticity index	(WA 122.1) %	19.3
Linear Shrinkage	(WA 123.1) %	0.8
Linear Shrinkage Condition		Curling



GROUP SYMBOL	SC
--------------	----

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

<p>Comments:</p> <p>Distribution: Laboratory File / Vicki Davies Document ID: WS_WA_PSD_Rev4_Mar2021 Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092</p>	Name:	M.Coffey
	Function:	Quality Manager
	Date:	18/05/2021
	Approved	
Signatory:		

FALLING HEAD PERMEABILITY TEST REPORT

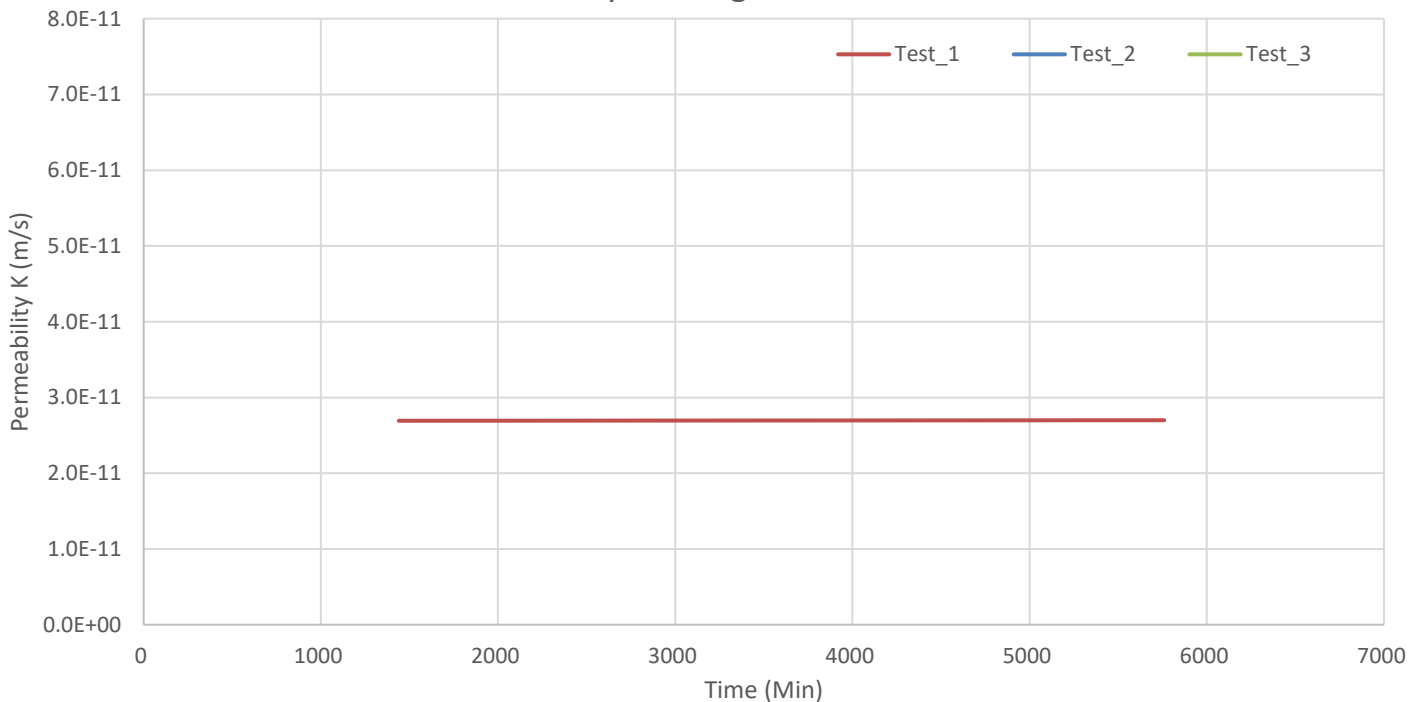
AS 1289.6.7.2, 2.1.1, 5.2.1

Client	GHD	Ticket No.	S4648
Client Address	5a 209 Chester Pass Rd, Milpara, WA 6330	Report No.	LLS21/1581_1_FHPERM
Project	Albany Motorsport Park Development	Sample No.	LLS21/1581
Location	Albany	Sampled By	Client
Sample Identification	Test Pit 3 - 160mm to 2100mm		
Sampling Method:	Sampled by Client, Tested as Received	Date Tested	5-9/05/2021

Specimen conditions at test

Laboratory Density Ratio (%)	95.0	Laboratory Moisture Ratio (%)	100.1
Compactive Effort	Modified	% Retained on 19mm Sieve	0.0
Surcharge (kPa)	3	Date tested	5-9/05/2021

Permeability - Falling Head Method



Coefficient of Permeability K_{20} (m/s) 2.70E-11

Comments:



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‡ NATA Accreditation does not cover the performance of this service

Approved Signatory



Name Wilhem Picard
Function Senior Technician
Issue Date 17-May-2021





COLOURS

	BLACK - BROWN (bk)		BLUE (bl)		ORANGE (or)
	BROWN (br)		BLUE - GREEN (bl/gr)		RED (rd)
	GREY - BROWN (gy/br)		GREEN (gr)		RED - BROWN (rd/br)
	GREY (gy)		YELLOW (yl)		PINK (pk)
	BLUE - GREY (bl/gy)		YELLOW - BROWN (yl/br)		PURPLE (pr)

MOISTURE CONDITION OF SOIL

TERM	DESCRIPTION
Dry	Cohesive soils; hard and friable or powdery, well dry of plastic limit. Granular soils; cohesionless and free-running.
Moist	Soil feels cool, darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	Soil feels cool, darkened in colour. Cohesive soils usually weakened and free water forms on hands when handling. Granular soils tend to cohere and free water forms on hands when handling.

PARTICLE SHAPES

ANGULAR	SUB-ANGULAR	SUB-ROUNDED	ROUNDED
			

PARTICLE SIZES

BOULDERS	COBBLES	COARSE GRAVEL	MEDIUM GRAVEL	FINE GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY
>200mm	63-200mm	20-63mm	6-20mm	2.36-6mm	0.6-2.36mm	0.2-0.6mm	0.075-0.2mm	0.002-0.075mm	<0.002mm

GRAIN SIZE

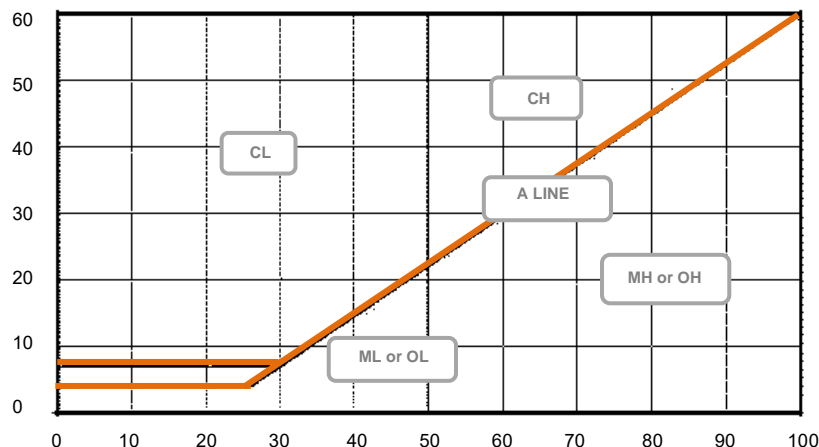
SOIL TYPE (ABBREV.)	CLAY (CL)	SILT (SI)	SAND (SA)			GRAVEL (GR)		COBBLES (CO)	
SIZE	< 2µm	2-75µm	Fine 0.075-0.2mm	Medium 0.2-0.6mm	Coarse 0.6-2.36mm	Fine 2.36-6mm	Medium 6-20mm	Coarse 20-63mm	63-200mm
SHAPE & TEXTURE	Shiny	Dull	← angular or sub angular or sub rounded or rounded →						
FIELD GUIDE	Not visible under 10x	Visible under 10x	Visible by eye	Visible at < 1m	Visible at < 3m	Visible at < 5m	Road gravel	Rail ballast	Beaching

CLASSIFICATION CHART

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60mm and basing fractions on estimated mass)				GROUP SYMBOLS	TYPICAL NAMES	
COARSE GRAINED SOILS More than 50% of material less than 63 mm is larger than 0.075 mm	GRAVELS More than 50% of coarse fraction is larger than 2.36mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	GW	Well graded gravels, gravel-sand mixtures, little or no fines	
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	GP	Poorly Graded gravels and gravel-sand mixtures, little or no fines, uniform gravels	
		GRAVELS WITH FINES (Appreciable amount of fines)	Dirty materials with excess of non-plastic fines, zero to medium dry strength	GM	Silty gravels, gravel-sand-silt mixtures	
			'Dirty' materials with excess of plastic fines, medium to high dry strength	GC	Clayey gravels, gravel-sand-clay mixtures	
	SANDS More than 50% of coarse fraction is smaller than 2.36mm	CLEAN SANDS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	SW	Well graded sands, gravelly sands, little or no fines	
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands	
		SANDS WITH FINES (Appreciable amount of fines)	Dirty materials with excess of non-plastic fines, zero to medium dry strength	SM	Silty sands, sand-silt mixtures	
			'Dirty' materials with excess of plastic fines, medium to high dry strength	SC	Clayey sands, sand-clay mixtures	
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2mm					
	SILTS AND CLAYS Liquid limit less than 50	DRY STRENGTH	DILATANCY	TOUGHNESS		
		None to low	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with low plasticity. Silts of low to medium Liquid Limit.
		Medium to high	None to very slow	Medium	CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
	SILTS AND CLAYS Liquid limit greater than 50	Low to medium	Slow	Low	OL	Organic silts and organic silt-clays of low to medium plasticity.
		Low to medium	Slow to none	Low to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, silts of high Liquid Limit.
		High to very high	None	High	CH	Inorganic clays of high plasticity.
	SILTS AND CLAYS Liquid limit greater than 50	Medium to high	None to very slow	Low to medium	OH	Organic clays of high plasticity
		HIGHLY ORGANIC SOILS			Readily identified by colour, odour, spongy feel and frequently by fibrous texture	Pt

PLASTICITY CHART

For laboratory classification of fine grained soils



PLASTICITY

DESCRIPTIVE TERM	OF LOW PLASTICITY	OF MEDIUM PLASTICITY	OF HIGH PLASTICITY
Range Of Liquid Limit (%)	≤ 35	> 35 ≤ 50	> 50

DESCRIPTION OF ORGANIC OR ARTIFICIAL MATERIALS

PREFERRED TERMS	SECONDARY DESCRIPTION
Organic Matter	Fibrous Peat/ Charcoal/ Wood Fragments/ Roots (greater than approximately 2mm diameter)/ Root Fibres (less than approximately 2mm diameter)
Waste Fill	Domestic Refuse/ Oil/ Bitumen/ Brickbats/ Concrete Rubble/ Fibrous Plaster/ Wood Pieces/ Wood Shavings/ Sawdust/ Iron Filings/ Drums/ Steel Bars/ Steel Scrap/ Bottles/ Broken Glass/ Leather

CONSISTENCY – Cohesive soils

TERM	VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD
Symbol	VS	S	F	St	VSt	H
Undrained Shear Strength (kPa)	< 12	12 – 25	25 – 50	50 – 100	100 – 200	> 200
SPT (N) Blowcount	0 – 2	2 – 4	4 – 8	8 – 15	15 – 30	> 30
Field Guide	Exudes between the fingers when squeezed	Can be moulded by light finger pressure	Can be moulded by strong finger pressure	Cannot be moulded by fingers. Can be indented by thumb nail	Can be indented by thumb nail	Can be indented with difficulty with thumb nail

CONSISTENCY – Non-cohesive soils

TERM	VERY LOOSE	LOOSE	MEDIUM DENSE	DENSE	VERY DENSE	COMPACT
Symbol	VL	L	MD	D	VD	CO
SPT (N) Blowcount	0 – 4	4 – 10	10 – 30	30 – 50	50 – 100	> 50/150 mm
Density Index (%)	< 15	15 – 35	35 – 65	65 – 85	85 – 95	> 95
Field Guide	Ravels	Shovels easily	Shovelling very difficult	Pick required	Pick difficult	Cannot be picked

MINOR COMPONENTS

TERM	TRACE	WITH
% Minor Component	Coarse grained soils: < 5% Fine grained soils: <15%	Coarse grained soils: 5 – 12% Fine grained soils: 15 – 30%
Field Guide	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary components	Presence easily detectable by feel or eye, soil properties little different to general properties of primary component

GEOLOGICAL ORIGIN

	TYPE	DETAILS
TRANSPORTED SOILS	Aeolian Soils	Deposited by wind
	Alluvial Soils	Deposited by streams and rivers
	Colluvial Soils	Deposited on slopes
	Lacustrine Soils	Deposited by lakes
	Marine Soils	Deposited in ocean, bays, beaches and estuaries
FILL MATERIALS	Soil Fill	Describe soil type, UCS symbol and add 'FILL'
	Rock Fill	Rock type, degree of weathering, and word 'FILL'.
	Domestic Fill	Percent soil or rock, whether pretrucible or not.
	Industrial Fill	Percent soil, whether contaminated, particle size & type of waste product, ie brick, concrete, metal

STRENGTH OF ROCK MATERIAL

TERM	SYMBOL	IS (50)	(MPA)	FIELD GUIDE TO STRENGTH
Extremely Low	EL	≤0.03		Easily remoulded by hand to a material with soil properties.
Very Low	VL	>0.03	≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxle sample by hand. Pieces up to 3 cm thick can be broken by finger pressure.
Low	L	>0.1	≤0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	>0.3	≤1.0	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
High	H	>1	≤3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	VH	>3	≤10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High	EH	>10		Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

ROCK MATERIAL WEATHERING CLASSIFICATION

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported
Extremely Weathered Rock	XW	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded, in water.
Distinctly Weathered Rock	DW	Rock strength usually changed by weathering. Rock may be highly discoloured, usually be iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.
Slightly Weathered Rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh Rock	FR	Rock shows no sign of decomposition or staining.

Appendix L

**Acid Sulfate Soil summary of results,
laboratory reports and chain of custody**



Appendix C

Table C-1 Combined field description and ASS data presentation table

City of Albany
Albany Motorsport Park

		ASS Field Parameters																		
		pH (Field)	pH-FOX	Difference (pH - pH-FOX)	Reaction Ratings* - wrong code															
		pH Units	pH Units		COMMENT	pH Units	mole H+/t	%S	mole H+/t	%S	mole H+/t	%S	mole H+/t	%S	mole H+/t	%S	mole H+/t	%S		
EQL		0.1	0.1	0.1		0.1	2	0.02	2	0.005	3	10	0.02	10	0.02	10	0.02			
WA DER 2015 ASS Criteria		4	4	1	NV	<4	18	0.03	18	0.03	18	18	0.03	18	0.03	18	0.03			
Location	Depth	Soil Strata			GW Depth	Lab Report Number														
TP01	0.0	(Topsoil) SAND with silt - dark grey				786961	7.1	4.9	2.2	3										
TP01	0.5	SANDY gravel - brown				786961	7	4.7	2.3	3										
TP01	1.0	Sandy CLAY - light brown/orange mottled red				786961	6.7	5.4	1.3	2										
TP01	1.5	Sandy CLAY - light brown/orange mottled red				786961	5.5	4.8	0.7	2	5.3	11	0.020	15	<0.005	<3	11	0.02	11	0.02
TP01	2.0	Sandy CLAY - light brown/orange mottled red				786961	6.1	4.9	1.2	2										
TP01	2.5	Sandy CLAY - light brown/orange mottled red				786961	5.8	4.8	1	2										
TP02	0.0	(Topsoil) SAND with silt - dark grey				786961	5.8	3.4	2.4	3	4.9	71	0.11	500	<0.005	<3	71	0.11	71	0.11
TP02	0.5	SANDY gravel - brown				786961	6.4	5.3	1.1	3										
TP02	1.0	Sandy CLAY - light brown/orange mottled red				786961	6.2	5.2	1	3										
TP02	1.5	Sandy CLAY - light brown/orange mottled red				786961	6	5.1	0.9	2										
TP02	2.0	Sandy CLAY - light brown/orange mottled red				786961	5.6	5.1	0.5	3										
TP02	2.5	Sandy CLAY - light brown/orange mottled red				786961	5.6	4.9	0.7	2										
TP03	0.0	(Topsoil) Gravelly SAND with silt - grey/brown				786961	8	6.2	1.8	2										
TP03	0.5	(FILL) Sandy GRAVEL with clay - brown/red				786961	6.9	5.8	1.1	3										
TP03	1.0	(FILL) Sandy GRAVEL with clay - brown/red				786961	7.3	6.4	0.9	3										
TP03	1.5	(FILL) Sandy GRAVEL with clay - brown/red				786961	5.6	4.9	0.7	3										
TP03	2.0	(FILL) Sandy GRAVEL with clay - brown/red				786961	5.9	5	0.9	2										
TP03	2.5	SAND with silt - white				786961	6.2	5.2	1	2	5.7	5	0.010	6	<0.005	<3	<10	<0.02	<10	<0.02

- Reaction ratings
- 1 No reaction to slight
 - 2 Moderate reaction
 - 3 Strong reaction with persistent froth
 - 4 Extreme reaction



Appendix C

Table C-1 Combined field description and ASS data presentation table

City of Albany
Albany Motorsport Park

	pH (Field)	pH-FOX	Difference (pH - PHFOX)	Reaction Ratings* - wrong code	pH Units	mole H+/t	%S	mole H+/t	%S	mole H+/t	mole H+/t	Net Acidity (acidty units)	Net Acidity (sulfur units)	Net Acidity (Acidity Units) Minus ANC	Net Acidity (Sulfur Units) Minus ANC			
																COMMENT	pH Units	Titratable Actual Acidity
EQL	0.1	0.1	0.1		0.1	2	0.02	2	0.005	3	10	0.02	10	10	0.02			
WA DER 2015 ASS Criteria	4	4	1	NV	<4	18	0.03	18	0.03	18	18	0.03	18	18	0.03			
Location	Depth	Soil Strata	GW Depth	Lab Report Number														
TP04	0.0	(Topsoil) SAND with silt - grey		786961	6.2	4.9	1.3	2										
TP04	0.5	SAND with silt - light grey/white		786961	5.8	4.7	1.1	2	5.4	15	0.020	36	<0.005	<3	15	0.02	15	0.02
TP04	1.0	SAND with silt - light grey/white		786961	5.8	4.8	1	1										
TP04	1.5	SAND with silt - brown		786961	6.1	4.7	1.4	1										
TP04	2.0	SAND with silt - brown		786961	6.2	4.9	1.3	1										
TP04	2.5	SAND with silt - brown		786961	6.2	5	1.2	1										
TP05	0.0	(Topsoil) SAND with silt - grey		786961	6.1	4.7	1.4	3										
TP05	0.5	SAND with silt - light grey/white		786961	6	5.1	0.9	2										
TP05	1.0	SAND with silt - light grey/white		786961	6.1	5.3	0.8	2	5.5	5	0.010	5	<0.005	<3	<10	<0.02	<10	<0.02
TP05	1.5	SAND with silt - light brown		786961	6.2	5.4	0.8	2										
TP05	2.0	SAND with silt - light brown		786961	6.3	5.3	1	2										
TP05	2.5	SAND with silt - light brown		786961	6.2	5.1	1.1	2										
TP06	0.0	(Topsoil) SAND with silt - grey		786961	6.6	4.9	1.7	3										
TP06	0.5	SAND with silt - light grey/white		786961	6.5	5.2	1.3	2										
TP06	1.0	SAND with silt - light grey/white		786961	6.3	5.2	1.1	2										
TP06	1.5	SAND with silt - light brown		786961	6	4.9	1.1	2										
TP06	2.0	SAND with silt - light brown		786961	6	5.1	0.9	2	5.3	31	0.050	80	<0.005	<3	31	0.05	31	0.05
TP06	2.5	SAND with silt - light brown		786961	6.1	5.2	0.9	2										

Reaction ratings

- 1 No reaction to slight
- 2 Moderate reaction
- 3 Strong reaction with persistent froth
- 4 Extreme reaction



Appendix C

Table C-1 Combined field description and ASS data presentation table

City of Albany
Albany Motorsport Park

	pH (Field)		Difference (pH - PHFOX)	Reaction Ratings* - wrong code	pH Units	Titratable Actual Acidity	Titratable Actual Acidity (sulfur units)	Titratable Peroxide Acidity	Chromium Reducible Sulfur	Chromium Reducible Sulphur (acidity units)	Net Acidity (acidity units)	Net Acidity (sulfur units)	Net Acidity (Acidity Units) Minus ANC	Net Acidity (Sulfur Units) Minus ANC				
	pH Units	pH Units													COMMENT	pH Units	mole H+/t	%S
EQL	0.1	0.1	0.1		0.1	2	0.02	2	0.005	3	10	0.02	10	0.02				
WA DER 2015 ASS Criteria	4	4	1	NV	<4	18	0.03	18	0.03	18	18	0.03	18	0.03				
Location	Depth	Soil Strata	GW Depth	Lab Report Number														
TP07	0.0	(Topsoil) SAND with silt - grey		786961	6.2	5	1.2	3										
TP07	0.5	SAND with silt - light grey		786961	6.2	4.5	1.7	2										
TP07	1.0	Sandy GRAVEL - brown		786961	6.3	4.9	1.4	3										
TP07	1.5	Sandy GRAVEL - brown		786961	6.4	4.9	1.5	3	5.5	12	0.020	11	<0.005	<3	12	0.02	12	0.020
TP07	2.0	Sandy GRAVEL - brown		786961	7.2	5.1	2.1	3										
TP07	2.5	Gravelly SAND with silt - light brown		786961	6.6	5	1.6	3										
TP08	0.0	(Topsoil) SAND with silt - grey		786961	6.4	4.9	1.5	3										
TP08	0.5	SAND with silt - light grey		786961	6.1	4.8	1.3	2										
TP08	1.0	Gravelly SAND with silt - light brown		786961	6	4.8	1.2	2										
TP08	1.5	Gravelly SAND with silt - light brown		786961	6.1	5	1.1	3										
TP08	2.0	Gravelly SAND with silt - light brown		786961	6.3	5.4	0.9	2										
TP08	2.5	Gravelly SAND with silt - light brown		786961	6.4	5.4	1	2	5.3	24	0.040	49	<0.005	<3	24	0.04	24	0.04

Reaction ratings

- 1 No reaction to slight
- 2 Moderate reaction
- 3 Strong reaction with persistent froth
- 4 Extreme reaction

GHD Pty Ltd WA
 999 Hay Street Perth
 Perth
 WA 6004

Attention: **Vicki Davies**

Report **786961-S**
 Project name **ALBANY MOTORSPORTS PARK DA**
 Project ID **12546218**
 Received Date **Apr 13, 2021**

Client Sample ID			TP01_0.0	TP01_0.5	TP01_1.0	TP01_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20090	P21-Ap20091	P21-Ap20092	P21-Ap20093
Date Sampled			Not Provided ¹²	Not Provided ¹²	Not Provided ¹²	Not Provided ¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	7.1	7.0	6.7	5.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	4.9	4.7	5.4	4.8
Reaction Ratings* ^{S05}	-	comment	3.0	3.0	2.0	2.0

Client Sample ID			TP01_2.0	TP01_2.5	TP02_0.0	TP02_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20094	P21-Ap20095	P21-Ap20096	P21-Ap20097
Date Sampled			Not Provided ¹²	Not Provided ¹²	Not Provided ¹²	Not Provided ¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.1	5.8	5.8	6.4
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	4.9	4.8	3.4	5.3
Reaction Ratings* ^{S05}	-	comment	2.0	2.0	3.0	3.0

Client Sample ID			TP02_1.0	TP02_1.5	TP02_2.0	TP02_2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20098	P21-Ap20099	P21-Ap20100	P21-Ap20101
Date Sampled			Not Provided ¹²	Not Provided ¹²	Not Provided ¹²	Not Provided ¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.2	6.0	5.6	5.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	5.2	5.1	5.1	4.9
Reaction Ratings* ^{S05}	-	comment	3.0	2.0	3.0	2.0

Client Sample ID			TP03_0.0	TP03_0.5	TP03_1.0	TP03_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20102	P21-Ap20103	P21-Ap20104	P21-Ap20105
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.0	6.9	7.3	5.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	6.2	5.8	6.4	4.9
Reaction Ratings* ^{S05}	-	comment	2.0	3.0	3.0	3.0

Client Sample ID			TP03_2.0	TP03_2.5	TP04_0.0	TP04_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20106	P21-Ap20107	P21-Ap20108	P21-Ap20109
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	5.9	6.2	6.2	5.8
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	5.0	5.2	4.9	4.7
Reaction Ratings* ^{S05}	-	comment	2.0	2.0	2.0	2.0

Client Sample ID			TP04_1.0	TP04_1.5	TP04_2.0	TP04_2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20110	P21-Ap20111	P21-Ap20112	P21-Ap20113
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	5.8	6.1	6.2	6.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	4.8	4.7	4.9	5.0
Reaction Ratings* ^{S05}	-	comment	1.0	1.0	1.0	1.0

Client Sample ID			TP05_0.0	TP05_0.5	TP05_1.0	TP05_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20114	P21-Ap20115	P21-Ap20116	P21-Ap20117
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.1	6.0	6.1	6.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	4.7	5.1	5.3	5.4
Reaction Ratings* ^{S05}	-	comment	3.0	2.0	2.0	2.0

Client Sample ID			TP05_2.0	TP05_2.5	TP06_0.0	TP06_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20118	P21-Ap20119	P21-Ap20120	P21-Ap20121
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.3	6.2	6.6	6.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	5.3	5.1	4.9	5.2
Reaction Ratings* ^{S05}	-	comment	2.0	2.0	3.0	2.0

Client Sample ID			TP06_1.0	TP06_1.5	TP06_2.0	TP06_2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20122	P21-Ap20123	P21-Ap20124	P21-Ap20125
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.3	6.0	6.0	6.1
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	5.2	4.9	5.1	5.2
Reaction Ratings* ^{S05}	-	comment	2.0	2.0	2.0	2.0

Client Sample ID			TP07_0.0	TP07_0.5	TP07_1.0	TP07_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20126	P21-Ap20127	P21-Ap20128	P21-Ap20129
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.2	6.2	6.3	6.4
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	5.0	4.5	4.9	4.9
Reaction Ratings* ^{S05}	-	comment	3.0	2.0	3.0	3.0

Client Sample ID			TP07_2.0	TP07_2.5	TP08_0.0	TP08_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20130	P21-Ap20131	P21-Ap20132	P21-Ap20133
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	7.2	6.6	6.4	6.1
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	5.1	5.0	4.9	4.8
Reaction Ratings* ^{S05}	-	comment	3.0	3.0	3.0	2.0

Client Sample ID			TP08_1.0	TP08_1.5	TP08_2.0	TP08_2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap20134	P21-Ap20135	P21-Ap20136	P21-Ap20137
Date Sampled			Not Provided¹²	Not Provided¹²	Not Provided¹²	Not Provided¹²
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.0	6.1	6.3	6.4
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	4.8	5.0	5.4	5.4
Reaction Ratings* ^{S05}	-	comment	2.0	3.0	2.0	2.0

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description

Acid Sulfate Soils Field pH Test

Testing Site

Perth

Extracted

Apr 14, 2021

Holding Time

7 Days

- Method: LTM-GEN- 7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests

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Company Name:	GHD Pty Ltd WA	Order No.:		Received:	Apr 13, 2021 1:13 PM
Address:	999 Hay Street Perth Perth WA 6004	Report #:	786961	Due:	Apr 14, 2021
Project Name:	ALBANY MOTORSPORTS PARK DA	Phone:	08 6222 8222	Priority:	1 Day
Project ID:	12546218	Fax:	08 9429 6555	Contact Name:	Vicki Davies
Eurofins Analytical Services Manager : Rhys Thomas					

Sample Detail						Acid Sulfate Soils Field pH Test
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory						
External Laboratory						
1	TP01_0.0	Not Provided		Soil	P21-Ap20090	X
2	TP01_0.5	Not Provided		Soil	P21-Ap20091	X
3	TP01_1.0	Not Provided		Soil	P21-Ap20092	X
4	TP01_1.5	Not Provided		Soil	P21-Ap20093	X
5	TP01_2.0	Not Provided		Soil	P21-Ap20094	X
6	TP01_2.5	Not Provided		Soil	P21-Ap20095	X
7	TP02_0.0	Not Provided		Soil	P21-Ap20096	X
8	TP02_0.5	Not Provided		Soil	P21-Ap20097	X
9	TP02_1.0	Not Provided		Soil	P21-Ap20098	X

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Sample Detail						Acid Sulfate Soils Field pH Test
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						X
Mayfield Laboratory						
External Laboratory						
10	TP02_1.5	Not Provided		Soil	P21-Ap20099	X
11	TP02_2.0	Not Provided		Soil	P21-Ap20100	X
12	TP02_2.5	Not Provided		Soil	P21-Ap20101	X
13	TP03_0.0	Not Provided		Soil	P21-Ap20102	X
14	TP03_0.5	Not Provided		Soil	P21-Ap20103	X
15	TP03_1.0	Not Provided		Soil	P21-Ap20104	X
16	TP03_1.5	Not Provided		Soil	P21-Ap20105	X
17	TP03_2.0	Not Provided		Soil	P21-Ap20106	X
18	TP03_2.5	Not Provided		Soil	P21-Ap20107	X
19	TP04_0.0	Not Provided		Soil	P21-Ap20108	X
20	TP04_0.5	Not Provided		Soil	P21-Ap20109	X

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Sample Detail						Acid Sulfate Soils Field pH Test
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						X
Mayfield Laboratory						
External Laboratory						
21	TP04_1.0	Not Provided		Soil	P21-Ap20110	X
22	TP04_1.5	Not Provided		Soil	P21-Ap20111	X
23	TP04_2.0	Not Provided		Soil	P21-Ap20112	X
24	TP04_2.5	Not Provided		Soil	P21-Ap20113	X
25	TP05_0.0	Not Provided		Soil	P21-Ap20114	X
26	TP05_0.5	Not Provided		Soil	P21-Ap20115	X
27	TP05_1.0	Not Provided		Soil	P21-Ap20116	X
28	TP05_1.5	Not Provided		Soil	P21-Ap20117	X
29	TP05_2.0	Not Provided		Soil	P21-Ap20118	X
30	TP05_2.5	Not Provided		Soil	P21-Ap20119	X
31	TP06_0.0	Not Provided		Soil	P21-Ap20120	X

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Project ID:	12546218	Fax:	08 9429 6555	Contact Name:	Vicki Davies

Eurofins Analytical Services Manager : Rhys Thomas

Sample Detail						Acid Sulfate Soils Field pH Test
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						X
Mayfield Laboratory						
External Laboratory						
32	TP06_0.5	Not Provided		Soil	P21-Ap20121	X
33	TP06_1.0	Not Provided		Soil	P21-Ap20122	X
34	TP06_1.5	Not Provided		Soil	P21-Ap20123	X
35	TP06_2.0	Not Provided		Soil	P21-Ap20124	X
36	TP06_2.5	Not Provided		Soil	P21-Ap20125	X
37	TP07_0.0	Not Provided		Soil	P21-Ap20126	X
38	TP07_0.5	Not Provided		Soil	P21-Ap20127	X
39	TP07_1.0	Not Provided		Soil	P21-Ap20128	X
40	TP07_1.5	Not Provided		Soil	P21-Ap20129	X
41	TP07_2.0	Not Provided		Soil	P21-Ap20130	X
42	TP07_2.5	Not Provided		Soil	P21-Ap20131	X

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Eurofins Analytical Services Manager : Rhys Thomas

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Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
Mayfield Laboratory							
External Laboratory							
43	TP08_0.0	Not Provided		Soil	P21-Ap20132		X
44	TP08_0.5	Not Provided		Soil	P21-Ap20133		X
45	TP08_1.0	Not Provided		Soil	P21-Ap20134		X
46	TP08_1.5	Not Provided		Soil	P21-Ap20135	X	
47	TP08_2.0	Not Provided		Soil	P21-Ap20136	X	
48	TP08_2.5	Not Provided		Soil	P21-Ap20137	X	
Test Counts						48	

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	P21-Ap20090	CP	pH Units	7.1	7.2	pass	30%	Pass	
pH-FOX (Field pH Peroxide test)*	P21-Ap20090	CP	pH Units	4.9	4.9	pass	30%	Pass	
Reaction Ratings*	P21-Ap20090	CP	comment	3.0	3.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	P21-Ap20100	CP	pH Units	5.6	5.9	pass	30%	Pass	
pH-FOX (Field pH Peroxide test)*	P21-Ap20100	CP	pH Units	5.1	5.1	pass	30%	Pass	
Reaction Ratings*	P21-Ap20100	CP	comment	3.0	3.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	P21-Ap20110	CP	pH Units	5.8	5.7	pass	30%	Pass	
pH-FOX (Field pH Peroxide test)*	P21-Ap20110	CP	pH Units	4.8	4.7	pass	30%	Pass	
Reaction Ratings*	P21-Ap20110	CP	comment	1.0	1.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	P21-Ap20120	CP	pH Units	6.6	6.6	pass	30%	Pass	
pH-FOX (Field pH Peroxide test)*	P21-Ap20120	CP	pH Units	4.9	5.0	pass	30%	Pass	
Reaction Ratings*	P21-Ap20120	CP	comment	3.0	3.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	P21-Ap20130	CP	pH Units	7.2	7.1	pass	30%	Pass	
pH-FOX (Field pH Peroxide test)*	P21-Ap20130	CP	pH Units	5.1	4.9	pass	30%	Pass	
Reaction Ratings*	P21-Ap20130	CP	comment	3.0	3.0	pass	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	N/A
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
I12	Where sampling date has not been provided, Eurofins Environment Testing is not able to determine whether analysis has been performed within recommended holding times.
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised by:

Rhys Thomas Analytical Services Manager
 Rhys Thomas Senior Analyst-SPOCAS (WA)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Caitlyn Gibson

From: Vicki Davies <Vicki.Davies@ghd.com>
Sent: Tuesday, 13 April 2021 11:21 AM
To: Caitlyn Gibson
Cc: Jon Cramer
Subject: RE: 12546218

Caitlyn Gibson @
Eurofins # 786961

EXTERNAL EMAIL*

Thanks Caitlyn

Much appreciated!

Yes it looks like FD01 and FD02 were missed during the field sampling.

Kind regards

Vicki Davies
Environmental Scientist

GHD
Proudly employee owned | ghd.com
166 Stirling Terrace WA 6330 Australia
D 61 8 9840 5104 E Vicki.Davies@ghd.com

→ The Power of Commitment

Connect



Please consider the environment before printing this email

From: Caitlyn Gibson <Caitlynlemma@Eurofins.com>
Sent: Tuesday, 13 April 2021 11:19 AM
To: Vicki Davies <Vicki.Davies@ghd.com>
Cc: Jon Cramer <Jon.Cramer@ghd.com>
Subject: RE: 12546218

You don't often get email from caitlynlemma@eurofins.com. [Learn why this is important](#)

Hi Vicki,

No problem we can do that for you. The turnaround time will be 1 Day, should get results tomorrow at latest the next day. give the lab the heads up and we'll process them as quick as we can for you.

Also we did not receive samples FD01 and FD02. I will proceed with the others accordingly.

Kind regards,
Caitlyn

Eurofins | Environment Testing AU/NZ
46-48 Banksia Road
WELSHPOOL WA 6106

Caitlyn Gibson

From: Vicki Davies <Vicki.Davies@ghd.com>
Sent: Tuesday, 13 April 2021 11:03 AM
To: Caitlyn Gibson
Cc: Jon Cramer
Subject: RE: 12546218
Attachments: SAU06PRT00221041311171.pdf

Caitlyn Gibson
Eurofins #786961

EXTERNAL EMAIL*

Hi Caitlyn

Could you please proceed with analysis of all samples (48) for ASS field test (fast field screen – non NATA) only at this stage

Once we get the results of the field tests we can determine which samples will be analysed for the Chromium reducible suite TPA.

Could you please let me know what the turn around will be for results of the field tests?

Kind regards

Vicki Davies
Environmental Scientist

GHD

Proudly employee owned | ghd.com
166 Stirling Terrace WA 6330 Australia
D 61 8 9840 5104 E Vicki.Davies@ghd.com

→ The Power of Commitment

Connect



Please consider the environment before printing this email

From: Caitlyn Gibson <Caitlynlemma@Eurofins.com>
Sent: Tuesday, 13 April 2021 10:52 AM
To: Vicki Davies <Vicki.Davies@ghd.com>
Subject: 12546218

You don't often get email from caitlynlemma@eurofins.com. [Learn why this is important](#)

Hi Vicki,

We received these sample on the 30/3/21 as stated on COC attached they have been put on hold. Is this still the case?

Kind regards,
Caitlyn

Eurofins | Environment Testing AU/NZ
46-48 Banksia Road

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST



GHD House
Hay Street
Perth WA 6000

999

PO Box Y3106 Telephone 08 6222 8222 Facsimile 08
Perth WA 6852 6222 8555

Page 1 of 3

COC No.

Project Albany Motorsports Park DA		Laboratory: Eurofins mgf					
Client City of Albany		Address: 46-48 Banksia Road, WELSHPOOL, WA 6106					
Job No. 12546218		Laboratory Contact:					
Laboratory Quote No.		Turnaround Time Standard					
Job Manager (Invoice) Vicki.Davies@ghd.com & GHD accounts		Email Address (Results) Vicki.Davies@ghd.com					
GHD Sample ID	Laboratory Sample ID	Date	Time	Sample Matrix: Soil / Sludge / W-Water / Air	Container	Analyses	Remarks
				Sample Matrix: Soil / Sludge / W-Water / Air	Type: B bottles / Jar / Vial / Bag / Glass / Plastic Preservative: Unpreserved / HCl / HNO ₃ / H ₂ O ₂ / Other No	Total Volume (mL) AS5 field test (fast field screen - non-NATA) Chromium reducible sulfur sulfate Total Peroxide Acidity (TPA)	
							HOLD 786961
TP01_0.0m				S	1		✓
TP01_0.5m				S	1		✓
TP01_1.0m				S	1		✓
TP01_1.5m				S	1		✓
TP01_2.0m				S	1		✓
TP01_2.5m				S	1		✓
TP02_0.0m				S	1		✓
TP02_0.5m				S	1	Date/Time: 30/3/21 11:15	✓
TP02_1.0m				S	1	Chilled Temp: 22.8	✓
TP02_1.5m				S	1	22.6	✓
TP02_2.0m				S	1	22.4	✓
TP02_2.5m				S	1	Correction: Final Temp: 22.6E	✓
TP03_0.0m				S	1		✓
TP03_0.5m				S	1		✓
TP03_1.0m				S	1		✓
TP03_1.5m				S	1		✓
TP03_2.0m				S	1		✓
TP03_2.5m				S	1		✓
Sampled by: Great Southern Geotechnics		Date/Time:		Relinquished by: Great Southern Geotechnics		Date/Time:	
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:		Courier/ Transport Company:			
Sample Conditions:		Remarks:					

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST



GHD House 999 Hay Street Perth WA 6000
 PO Box Y3106 Perth WA 6832
 Telephone 08 6222 8222 Facsimile 08 6222 8555

Project Albany Motorsports Park DA		Laboratory: Eurofins mgf											
Client City of Albany		Address: 46-48 Banksia Road, WELSHPOOL, WA 6106											
Laboratory Quote No.		Laboratory Contact:											
Turnaround Time Standard													
Job Manager (Invoice) Vicki Davies@ghd.com & GHD accounts		Email Address (Results) Vicki.Davies@ghd.com											
GHD Sample ID	Laboratory Sample ID	Date	Time	Sample Matrix (Substrate) - Soil / Water / Air	Container Type (Material) - via Bag / Glass / Plastic	Preservative (Organic/Inorganic) - HCL / HNO3 / H2O2 / Other	No	Total Volume (mL)	ASS field test (Fast Field Screen - non-NATA)	Chromium reducible sulfur sulfate	Total Peroxide Acidity (TPA)	HOLD	Remarks
TP04_0.0m				S			1						78696
TP04_0.5m				S			1						
TP04_1.0m				S			1						
TP04_1.5m				S			1						
TP04_2.0m				S			1						
TP04_2.5m				S			1						
TP05_0.0m				S			1						
TP05_0.5m				S			1						
TP05_1.0m				S			1						
TP05_1.5m				S			1						
TP05_2.0m				S			1						
TP05_2.5m				S			1						
TP06_0.0m				S			1						
TP06_0.5m				S			1						
TP06_1.0m				S			1						
TP06_1.5m				S			1						
TP06_2.0m				S			1						
TP06_2.5m				S			1						
Sampled by: Great Southern Geotechnics				Date/Time:				Relinquished by: Great Southern Geotechnics				Date/Time:	
Received by:				Date/Time:				Relinquished by:				Date/Time:	
Received by Lab:				Date/Time:				Courier/ Transport Company:					
Sample Conditions:				Remarks:									

GHD Pty Ltd WA
999 Hay Street Perth
Perth
WA 6004



NATA Accredited
Accreditation Number 1261
Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection and proficiency testing scheme providers
reports.

Attention: **Vicki Davies**

Report **788508-S**
Project name **ALBANY MOTORSPORTS PARK DA**
Project ID **12546218**
Received Date **Apr 16, 2021**

Client Sample ID			TP01_1.5m	TP02_0.0m	TP03_2.5m	TP04_0.5m
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap31761	P21-Ap31762	P21-Ap31763	P21-Ap31764
Date Sampled			Not Provided ¹²	Not Provided ¹²	Not Provided ¹²	Not Provided ¹²
Test/Reference	LOR	Unit				
SPOCAS Suite						
Acid trail - Titratable Peroxide Acidity	2	mol H+/t	15	500	6.0	36
Extraneous Material						
<2mm Fraction	0.005	g	32	19	35	31
>2mm Fraction	0.005	g	< 0.005	16	< 0.005	< 0.005
Analysed Material	0.1	%	100	55	100	100
Extraneous Material	0.1	%	< 0.1	45	< 0.1	< 0.1
Chromium Suite (Minus ANC- WA)						
CRS suite WA (-ANC) - Liming Rate	1	kg CaCO ₃ /t	< 1	5.3	< 1	1.1
CRS suite WA (-ANC) - Net Acidity (Acidity Units)	10	mol H+/t	11	71	< 10	15
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)	0.02	% S	0.02	0.11	< 0.02	0.02
pH-KCL	0.1	pH Units	5.3	4.9	5.7	5.4
Acid trail - Titratable Actual Acidity	2	mol H+/t	11	71	5.0	15
sulfidic - TAA equiv. S% pyrite	0.003	% pyrite S	0.020	0.11	0.010	0.020
Chromium Reducible Sulfur ^{S04}	0.005	% S	< 0.005	< 0.005	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	N/A	N/A	N/A	N/A
HCl Extractable Sulfur Correction Factor	1	factor	2.0	2.0	2.0	2.0
HCl Extractable Sulfur	0.02	% S	N/A	N/A	N/A	N/A
Net Acid soluble sulfur	0.02	% S	N/A	N/A	N/A	N/A
Net Acid soluble sulfur - acidity units	10	mol H+/t	N/A	N/A	N/A	N/A
Net Acid soluble sulfur - equivalent S% pyrite ^{S02}	0.02	% S	N/A	N/A	N/A	N/A
Acid Neutralising Capacity (ANCbt)	0.01	% CaCO ₃	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt) ^{S03}	0.02	% S	N/A	N/A	N/A	N/A
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	0.02	0.11	< 0.02	0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	11	71	< 10	15
CRS Suite - Liming Rate ^{S01}	1	kg CaCO ₃ /t	< 1	5.3	< 1	1.1
% Moisture						
	1	%	13	6.2	2.3	5.5

Client Sample ID			TP05_1.0m	TP06_2.0m	TP07_1.5m	TP08_2.5m
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			P21-Ap31765	P21-Ap31766	P21-Ap31767	P21-Ap31768
Date Sampled			Not Provided ¹²	Not Provided ¹²	Not Provided ¹²	Not Provided ¹²
Test/Reference	LOR	Unit				
SPOCAS Suite						
Acid trail - Titratable Peroxide Acidity	2	mol H+/t	5.0	80	11	49
Extraneous Material						
<2mm Fraction	0.005	g	33	35	33	39
>2mm Fraction	0.005	g	< 0.005	0.59	0.72	< 0.005
Analysed Material	0.1	%	100	98	98	100
Extraneous Material	0.1	%	< 0.1	1.7	2.1	< 0.1
Chromium Suite (Minus ANC- WA)						
CRS suite WA (-ANC) - Liming Rate	1	kg CaCO ₃ /t	< 1	2.4	< 1	1.8
CRS suite WA (-ANC) - Net Acidity (Acidity Units)	10	mol H+/t	< 10	31	12	24
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	0.05	0.02	0.04
pH-KCL	0.1	pH Units	5.5	5.3	5.5	5.3
Acid trail - Titratable Actual Acidity	2	mol H+/t	5.0	31	12	24
sulfidic - TAA equiv. S% pyrite	0.003	% pyrite S	0.010	0.050	0.020	0.040
Chromium Reducible Sulfur ^{S04}	0.005	% S	< 0.005	< 0.005	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	N/A	N/A	N/A	N/A
HCl Extractable Sulfur Correction Factor	1	factor	2.0	2.0	2.0	2.0
HCl Extractable Sulfur	0.02	% S	N/A	N/A	N/A	N/A
Net Acid soluble sulfur	0.02	% S	N/A	N/A	N/A	N/A
Net Acid soluble sulfur - acidity units	10	mol H+/t	N/A	N/A	N/A	N/A
Net Acid soluble sulfur - equivalent S% pyrite ^{S02}	0.02	% S	N/A	N/A	N/A	N/A
Acid Neutralising Capacity (ANCbt)	0.01	% CaCO ₃	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt) ^{S03}	0.02	% S	N/A	N/A	N/A	N/A
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	0.05	0.02	0.04
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	31	12	24
CRS Suite - Liming Rate ^{S01}	1	kg CaCO ₃ /t	< 1	2.4	< 1	1.8
% Moisture						
% Moisture	1	%	10	15	8.2	15

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
SPOCAS Suite - Method: LTM-GEN-7050	Brisbane	Apr 20, 2021	6 Week
Extraneous Material - Method: LTM-GEN-7050/7070	Brisbane	Apr 22, 2021	6 Week
Chromium Suite (Minus ANC- WA) - Method: LTM-GEN-7070 Chromium Reducible Sulfur Suite	Brisbane	Apr 22, 2021	6 Week
% Moisture - Method: LTM-GEN-7080 Moisture	Perth	Apr 20, 2021	14 Days

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name:	GHD Pty Ltd WA	Order No.:		Received:	Apr 16, 2021 9:37 AM
Address:	999 Hay Street Perth Perth WA 6004	Report #:	788508	Due:	Apr 23, 2021
Project Name:	ALBANY MOTORSPORTS PARK DA	Phone:	08 6222 8222	Priority:	5 Day
Project ID:	12546218	Fax:	08 9429 6555	Contact Name:	Vicki Davies

Eurofins Analytical Services Manager : Rhys Thomas

Sample Detail						Acid trail - Titratable Peroxide Acidity	Moisture Set	Chromium Suite (Minus ANC- WA)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X		X
Perth Laboratory - NATA Site # 23736							X	
Mayfield Laboratory								
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	TP01_1.5m	Not Provided		Soil	P21-Ap31761	X	X	X
2	TP02_0.0m	Not Provided		Soil	P21-Ap31762	X	X	X
3	TP03_2.5m	Not Provided		Soil	P21-Ap31763	X	X	X
4	TP04_0.5m	Not Provided		Soil	P21-Ap31764	X	X	X
5	TP05_1.0m	Not Provided		Soil	P21-Ap31765	X	X	X
6	TP06_2.0m	Not Provided		Soil	P21-Ap31766	X	X	X
7	TP07_1.5m	Not Provided		Soil	P21-Ap31767	X	X	X
8	TP08_2.5m	Not Provided		Soil	P21-Ap31768	X	X	X
Test Counts						8	8	8

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery										
Chromium Suite (Minus ANC- WA)										
pH-KCL				%	100			80-120	Pass	
Acid trail - Titratable Actual Acidity				%	99			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
SPOCAS Suite										
Acid trail - Titratable Peroxide Acidity				mol H+/t	< 2	< 2	< 1	30%	Pass	
Duplicate										
Chromium Suite (Minus ANC- WA)										
CRS suite WA (-ANC) - Liming Rate				kg CaCO3/t	< 1	< 1	< 1	30%	Pass	
CRS suite WA (-ANC) - Net Acidity (Acidity Units)				mol H+/t	< 10	< 10	< 1	30%	Pass	
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)				% S	< 0.02	< 0.02	< 1	30%	Pass	
pH-KCL				pH Units	6.1	6.1	< 1	30%	Pass	
Acid trail - Titratable Actual Acidity				mol H+/t	4.0	4.0	4.0	30%	Pass	
sulfidic - TAA equiv. S% pyrite				% pyrite S	0.010	0.010	4.0	30%	Pass	
Chromium Reducible Sulfur				% S	< 0.005	< 0.005	< 1	30%	Pass	
Chromium Reducible Sulfur -acidity units				mol H+/t	< 3	< 3	< 1	30%	Pass	
Sulfur - KCl Extractable				% S	N/A	N/A	N/A	30%	Pass	
HCl Extractable Sulfur				% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur				% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur - acidity units				mol H+/t	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite				% S	N/A	N/A	N/A	30%	Pass	
Acid Neutralising Capacity (ANCbt)				% CaCO3	N/A	N/A	N/A	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)				% S	N/A	N/A	N/A	30%	Pass	
ANC Fineness Factor				factor	1.5	1.5	< 1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)				% S	< 0.02	< 0.02	< 1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)				mol H+/t	< 10	< 10	< 1	30%	Pass	
CRS Suite - Liming Rate				kg CaCO3/t	< 1	< 1	< 1	30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
% Moisture				%	7.3	7.1	3.0	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	N/A
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
I12	Where sampling date has not been provided, Eurofins Environment Testing is not able to determine whether analysis has been performed within recommended holding times.
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO ₃) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m ³ in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m ³ '
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl is greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised by:

Rhys Thomas	Analytical Services Manager
Myles Clark	Senior Analyst-SPOCAS (QLD)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Caitlyn Gibson

From: Vicki Davies <Vicki.Davies@ghd.com>
Sent: Tuesday, 20 April 2021 9:37 AM
To: #AU06_EnviroSampleWA
Cc: Caitlyn Gibson
Subject: FW: Eurofins Test Results, Invoice - Report 786961 : Site ALBANY MOTORSPORTS PARK DA (12546218)
Attachments: Eurofins Quote 161026GHDW (Rev2).pdf; 12546218_COC_20210416 rebatch.pdf

EXTERNAL EMAIL*

From: Vicki Davies
Sent: Friday, 16 April 2021 12:47 PM
To: EnviroWA@eurofins.com
Subject: FW: Eurofins Test Results, Invoice - Report 786961 : Site ALBANY MOTORSPORTS PARK DA (12546218)

Hi

Could you please analyse the samples in the attached CoC for Soil Suite 2 as per the attached quote?

What will the turnaround time be for this analysis?

If you need any further information please let me know.

Kind regards

Vicki Davies
Environmental Scientist

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From: RhysThomas@eurofins.com <RhysThomas@eurofins.com>
Sent: Wednesday, 14 April 2021 5:50 PM
To: Vicki Davies <Vicki.Davies@ghd.com>
Cc: GHD Lab Reports <GHDLabReports@ghd.com>; Jon Cramer <Jon.Cramer@ghd.com>
Subject: Eurofins Test Results, Invoice - Report 786961 : Site ALBANY MOTORSPORTS PARK DA (12546218)

Rob Johnston 16/4/21 Eurofins

Hi Vicki,

Please find attached results and invoice for your project in the subject header.

Kind regards

Rhys Thomas
Analytical Services Manager

Eurofins
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AUSTRALIA
Phone: +61 0 9251 9692

[EnviroNote 1108 - Emissions from Stationary Sources](#)

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Rob Johnston
16/4/21
Eurofins

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Project Albany Motorsports Park DA		Job No. 12546218		Laboratory: Eurofins mgt							
Client City of Albany				Address: 46-48 Banksia Road, WELSHPOOL, WA 6106							
Laboratory Quote No.		Turnaround Time Standard		Laboratory Contact:							
Job Manager (Invoice) Vicki.Davies@ghd.com & GHD accounts		Email Address (Results) Vicki.Davies@ghd.com									
GHD Sample ID	Laboratory Sample ID	Date	Time	Sample Matrix (soil/sludge/water/Air)	Container	Total Volume (ml)	ASS field test (fast field screen - non-NATA)	ChromIam reducible sulfur suite	Total Peroxide Acidity (TPA)	Analyses	Remarks
TP04_0.0m				S		1					788508
TP04_0.5m				S		1		✓	✓		
TP04_1.0m				S		1					
TP04_1.5m				S		1					
TP04_2.0m				S		1					
TP04_2.5m				S		1					
TP05_0.0m				S		1					
TP05_0.5m				S		1					
TP05_1.0m				S		1		✓	✓		
TP05_1.5m				S		1					
TP05_2.0m				S		1					
TP05_2.5m				S		1					
TP06_0.0m				S		1					
TP06_0.5m				S		1					
TP06_1.0m				S		1					
TP06_1.5m				S		1					
TP06_2.0m				S		1		✓	✓		
TP06_2.5m				S		1					
Sampled by: Great Southern Geotechnics				Date/Time:		Relinquished by: Great Southern Geotechnics				Date/ Time:	
Received by:				Date/Time:		Relinquished by:				Date/ Time:	
Received by Lab: Rob Johnston Eurofins				Date/Time: 16/4/21 9:37		Courier/ Transport Company:				Date/ Time:	
Sample Conditions:				Remarks:							



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Appendix E

Visual Impact Assessment



Albany Motorsport Park – Development Application

Visual Impact Assessment

City of Albany

24 August 2021

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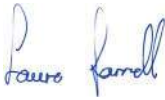

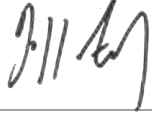
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Abbreviations

Abbreviation	Definition
AMP	Albany Motorsport Park
ARVS	Albany Regional Vegetation Survey
ATV	All-terrain vehicle
CoA	City of Albany
FIA	Fédération Internationalé de l'Automobile
FIM	Internationalé Motocyclisme
GSMG	Great Southern Motorplex Group Inc
ha	Hectare
LPS1	Local Planning Scheme No. 1
LVIA	Landscape and Visual Impact Assessment
m	Meters
MA	Motorcycling Australia
km	Kilometre
VIA	Visual Impact Assessment
4WD	Four-wheel drive

1. Introduction

1.1 Overview of the Proposal

The City of Albany (CoA) has engaged GHD to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure 1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*^[1] and Motorcycling Australia (MA) *Track Guidelines*^[2].
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).

Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

The proposed AMP forms part of the CoA's strategy to expand upon its existing motorsports facilities within the greater Albany area. The AMP is to be the largest facility of its kind in Western Australia and will support the local economy.

The Site, Lot 5780 Down Road South, is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Approximately 51 ha at the western end of the Site is covered with native vegetation and is excluded from the development of the AMP.

The Site is bounded by Down Road West to the north, Down Road South to the east, Lot 5781 Down Road South to the south (privately owned), and a local road reserve to the west. The Site is located adjacent to the Mirambeena Timber Processing Precinct and sits within the industrial buffer area. Refer to section 4 for a description of the proposal description.

1.2 Purpose and scope of this report

CoA in partnership with GSMG has requested that GHD prepare a Visual Impact Assessment (VIA), focusing on the southern side of the Site, as part of the application for planning approval.

Given the location and surrounding land uses, the scope of this report was to primarily assess a number of locations immediately to the south of the proposal and was not to undertake a full landscape and visual impact assessment.

¹ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

² MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

1.3 Report structure

This report comprises of the following sections:

Section 1 – Introduction: provides background information and an overview of the Project and assessment.

Section 2 – Methodology: describes the methodology used for the purposes of this report.

Section 3 – Context analysis: provides an analysis of the existing conditions in the context of the Proposal, as well as the legislation and policy context.

Section 4 – Proposal description: provides a description of key Proposal components relevant to this assessment.

Section 5 – Visual impact assessment: representative viewpoint locations are identified, and an assessment provided.

Section 6 – Mitigation and management measures: mitigation and management measures are recommended in response to issues arising in the assessment during construction and operation phases of the Proposal.

Section 7 – Landscape Plan: Illustrates the proposed mitigation measures.

Section 8 – Conclusion: presents a summary of the VIA.

1.4 Limitations

This report: has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and the City of Albany as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer to section 1.5). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

This assessment has been carried out based on the information provided in the Masterplan: Rev E Stage 1 GSM Masterplan_20210713. Any future proposed designs outside of this masterplan would need to be assessed at a later date.

1.5 Assumptions

- There is no national guidance on the assessment of landscape and visual impacts specific to Australia. However, in Western Australia, the industry typically refers to *Visual Landscape Planning in Western Australia: a manual for evaluation, assessment, siting and design* (Western Australian Planning Commission, 2007). This assessment has also made reference to *Guidelines for Landscape and Visual Impact Assessment, Third Edition* (Landscape Institute, 2013).
- The assessment aims to be objective and describe any changes factually. While potential changes resulting from the Proposal are defined, the significance of these changes requires qualitative (subjective) judgements.

This assessment's conclusion therefore combines objective measurement and professional interpretation. While this assessment aims to be objective, it is recognised that landscape and visual impact assessment can be subjective, and individuals are likely to associate different visual experiences to the study area.

- This is not a full Landscape and Visual Impact Assessment (LVIA). The assessment of visual impacts is to areas to the south of the site. The assessment of landscape character is not included.
- The author did not undertake a physical site inspection due to restrictions. However, they undertook a virtual site inspection with other project consultants.
- The scope of this assessment does not include consideration of landscape and visual impacts from lighting or during night-time conditions. It is noted that the GSMG does not propose to conduct any evening or night-time events at the Site.

2. Methodology

The following section outlines the methodology for this assessment.

2.1 Standards and guidance

Where practicable, the visual impacts associated with the project have been assessed in accordance with the advice provided in international and state recognised resource documents and in accordance with all relevant legislation. These include but are not limited to the following:

- *Visual Landscape Planning in Western Australia: a manual for evaluation, assessment, siting and design* (Western Australia Planning Commission, 2007)
- *Environmental Factor Guideline: Social Surroundings* (Environmental Protection Authority, 2016)
- *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* (Landscape Institute and Institute of Environmental Management & Assessment, 2013).

2.2 Context analysis

2.2.1 Legislation and policy context

A review of key planning designations, policies and guidance was undertaken in relation to landscape and visual amenity. The emphasis of the review was to identify designations, protections, values, and objectives relevant to the visual environment of the study area, including scenic amenity values.

2.2.2 Landscape context

Relevant background information relating to the Proposal and the study area was reviewed and summarised, refer to Section 3. This includes existing visual environment information such as:

- Topography and hydrology data
- Land use zoning and cadastral data
- Vegetation maps

2.3 Site inspection

A site inspection was undertaken by a project consultant on 24 March 2021 with sunny conditions and clear visibility. During the site inspection, the project consultant drove and walked the study area to gain representative views of the Proposal from both publicly accessible and private (where permission granted) viewpoints. The purpose of the site inspection was to:

- Appreciate views to the Site
- Inspect accessible locations identified in the desktop analysis as likely to provide views of the Proposal
- Identify sensitive visual receptor locations
- Undertake site photography for the visual assessment

The coordinates of each viewpoint were recorded during the site inspection. At each location a photographic record of landscape features, key views and receptors was obtained along with field notes.

2.4 Proposal description

The main visual components of the Proposal were identified and described, for both construction and operation phases of the Proposal, refer to Section 4.

2.5 Visual impact assessment

This section includes an assessment of visual impacts from key viewpoint locations.

2.5.1 Assessment of visual impacts

The assessment of visual impact involves an understanding of the sensitivity of viewing locations, the likely changes to the views, and an evaluation of the significance of the likely changes. Visual receptors have been considered in terms of the view they are likely to obtain from within the study area including consideration of any key vantage points such as lookouts, where there is particular interest in the view. Visual receptors are identified based on proximity of the receptor to the Proposal, as the most affected visual receptors are anticipated to be located closest to the Proposal unless located at an elevated vantage point. The type of receptor is also considered, as different viewer types would have different perceptions of the change.

A series of three representative viewpoint locations were selected for assessment to the southern area of the proposal (refer to Figure 5-1). Existing views were represented using a panorama technique (refer Section 2.5.3). An assessment of each viewpoint is provided which includes assessment of the sensitivity of the viewpoint to change, identification and description of the likely changes to the view, assessment of the magnitude of change that is likely to occur, and overall level of significance of the visual effect.

The sensitivity of each viewpoint is considered to be dependent on the importance of the view, its existing scenic qualities, the presence of other existing built elements in the view; and the type of visual receptor and their likely interest in the view. The magnitude of change to views and visual amenity depends on the nature, scale and duration of the change that is expected to occur. This depends on the loss, change or addition of any feature in the field of view of the receptor including an assessment of the level to which the change contrasts with the existing view or expected view of the landscape.

The assessment considers the likely impacts of the Proposal, refer to Section 5. The level of effect on a view depends on factors such as the extent of visibility, degree of obstruction of existing features, degree of contrast with the existing view, angle and duration of the view, and the distance from the Proposal.

The sensitivity and magnitude of visual effects address the following specific criteria:

- Sensitivity of visual receptor to proposed change, based on susceptibility of visual receptors to change, and value attached to the view (refer to Table 2.1)
- Magnitude of change, based on the size or scale of the change, geographical extent of effects, and duration and reversibility of effect (refer to Table 2.2)

Table 2.1 *Sensitivity criteria*

Rating	Criteria
High	Occupiers of residential properties, at home or going to or from, with long viewing periods, within close proximity to the proposed development; Communities that place value upon the urban landscape and enjoyment of views of their setting.
Moderate	Outdoor workers who have a key focus on their work who may also have intermittent views of the study area; Viewers at schools, or similar, when outdoor play and recreation areas are located within close proximity but viewing periods are limited; Occupiers of residential properties with long viewing periods, at a distance from or screened from the study area.
Low	Road users in motor vehicles, trains or on transport routes that are passing through or adjacent to the study area and therefore have short term views; Viewers indoor at their place of work, schools or similar.
Negligible	Viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short; Road users in motor vehicles, trains or on transport routes that are passing through/adjacent to the study area and have partially screened views and short viewing times.

Table 2.2 Magnitude of change criteria

Rating	Criteria
High	A substantial/obvious change to the existing view due to total loss of, or change to, elements, features or characteristics of the view. Would cause a view to be permanently changed and its quality diminished.
Moderate	Discernible changes in the existing view due to partial loss of, or change to elements, features or characteristics of the view, however has potential to be partly mitigated. The change would be out of scale with the existing view, and would leave an adverse impact on the view.
Low	Minor loss or alteration to one or more key view elements, features or characteristics, or the introduction of components that may be visible but may not be uncharacteristic within the existing view.
Negligible	Almost imperceptible or no change in the view as there is little or no loss of/or change to the elements, features or characteristics of the view.

2.5.2 Significance of impacts

The combination of sensitivity and magnitude determines the significance of impact on the visual environment or representative viewpoint. Refer to Table 2.3 which illustrates the matrix used to determine the significance of impacts.

Table 2.3 Significance of impact matrix

	Magnitude of impact			
	High	Moderate	Low	Negligible
High	High	High-Moderate	Moderate	Negligible
Moderate	High-Moderate	Moderate	Moderate-Low	Negligible
Low	Moderate	Moderate-Low	Low	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

2.5.3 Panorama

All photographic images were captured using a 50-millimetre fixed focal length lens on a full frame format camera at a camera height of 1.6 metres. All photograph GPS locations were recorded and mapped.

A series of three viewpoint locations were chosen and existing views represented using a panorama technique. This technique involves the stitching together of a number of adjoining images using the Adobe Photoshop software program representing an 80-degree horizontal field of view.

The panorama methodology is guided by industry accepted techniques recommended in:

- *Visual Representation of Development Proposals: Technical Guidance Note 06/19* (Landscape Institute, 2019).

2.6 Mitigation and management measures

Mitigation and management measures were provided to reduce negative impacts identified through the assessment. The mitigation and management measures relate to the visual impacts identified.

3. Context analysis

3.1 Legislation and policy context

3.1.1 State legislation and policy

Statement of Planning Policy: Environment and Natural Resources Policy (2003).

This policy applies throughout the state of Western Australia and includes specific objectives for the protection of landscapes.

Policy measure 5.9 *Landscape* highlights Western Australia's diversity of high value landscapes and scenic areas. It recognises that as the State grows, it will be increasingly important to ensure that landscapes valued by the community are protected. To do this, it is necessary to identify the landscape types and features requiring special attention and develop appropriate management and planning policies that can positively contribute to their maintenance and enhancement. To achieve this, planning strategies, schemes and decision-making should:

- i. Identify and safeguard landscapes with high geological, geomorphological or ecological values, as well as those of aesthetic, cultural or historical value to the community, and encourage the restoration of those that are degraded*
- ii. In areas identified in 5.9 (i) above, consider the level or capacity of the landscape to absorb new activities and incorporate appropriate planning and building design and siting criteria to ensure that new development is consistent and sensitive to the character and quality of the landscape*
- iii. Consider the need for a landscape, cultural or visual impact assessment for land use or development proposals that may have a significant impact on sensitive landscapes*

Lower Great Southern Strategy 2016

The Lower Great Southern Strategy will guide land use planning for the region over the next twenty years. With the specific landscape objectives and actions within the Lower Great Southern Strategy to:

Identify and protect valued landscape features and viewsheds. With the following actions:

- Incorporate suitable provisions in local planning schemes to guide development in landscape priority areas that have been identified in endorsed local planning strategies
- Ensure that new development takes into consideration the visual quality and character of landscapes, in particular natural, rural and urban landscape values
- Identify degraded landscapes in local planning strategies and develop measures to rehabilitate them

3.1.2 Regional and local legislation and policy

City of Albany Local Planning Strategy 2019

The CoA Local Planning Strategy (2019) identifies the Site location within the area identified in the Strategy as 'Investigation Area 4 – Mirambeena Strategic Industrial Expansion Area'. This investigation area includes the listed action to address the impact of visual amenity and landscape within this area. While also listing the proposed Albany Motorsport Park as a matter of interest within the Mirambeena Strategic Industrial Expansion Area.

City of Albany Local Planning Scheme No. 1

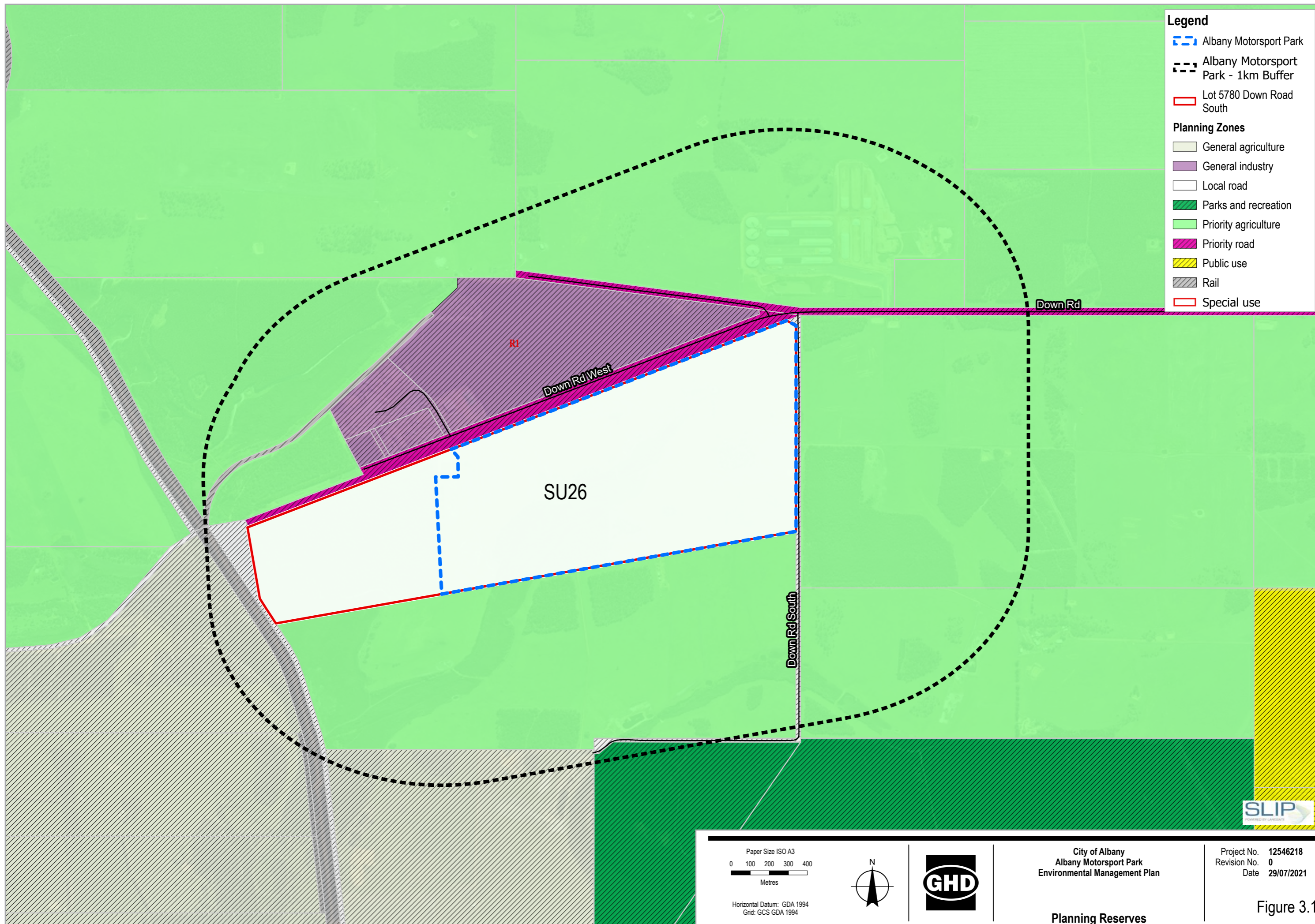
The Site is currently zoned Priority Agriculture under the Local Planning Scheme No. 1 (LPS1), as seen in Figure 3-1. However, a scheme amendment application will be submitted to convert the site to "Special Use", specifically for Motorsport based recreation and incidental uses. The planning scheme amendment No.35 to rezone Lot 5780 Down Road South, Drome includes several conditions specified in Schedule 4 of the scheme, including the specific visual condition:

- Condition 5: Any application for development approval for the site shall be accompanied by a visual impact assessment to determine the appropriate physical treatments to mitigate visual impact to Lot 5781 Down Road South, Drome." (City of Albany, 2020).

3.1.3 Other guiding documents

Visual resource management on Land and Waters (CALM) Policy statement No. 34

The visual management system is for land and water management by the Department of Conservation and Land Management. To ensure all uses are planned and carried out in ways that sustain the beauty of the natural environment. This includes the appearance or visual quality of an area as determined by its geology, soils, landforms, vegetation, water features and land use history. Visual resource management is based on the premise that the visual quality of a landscape is a resource in its own right.



- Legend**
- Albany Motorsport Park
 - Albany Motorsport Park - 1km Buffer
 - Lot 5780 Down Road South
- Planning Zones**
- General agriculture
 - General industry
 - Local road
 - Parks and recreation
 - Priority agriculture
 - Priority road
 - Public use
 - Rail
 - Special use

Paper Size ISO A3 Metres Horizontal Datum: GDA 1994 Grid: GCS GDA 1994			City of Albany Albany Motorsport Park Environmental Management Plan	Project No. 12546218 Revision No. 0 Date 29/07/2021
			Planning Reserves	Figure 3.1

C:\Users\vdavies\Desktop\Motor sports\12546218_EnvironmentalManagementPlan\12546218_EnvironmentalManagementPlan.aprx\12546218_EMP_LocalPlanningScheme_RevA Print date: 29 Jul 2021 - 22:38

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3.2 Landscape context

The following section provides an overview of the existing landscape context for the study area.

3.2.1 Topography and hydrology

The centre of the Site is low lying with an unnamed water course draining from the north-east and centre of the Site, south to the southern boundary and to the Marbelup Brook, which ultimately drains to Lake Powell.

The watercourse was observed to be in a modified state, with cattle having access to the watercourse and erosion was evident, particularly in the eastern extent of the watercourse.

There is higher ground to the north-west and the south-west of the Site, and a variance of 24 m between the lowest point and the highest point.

3.2.2 Land use and built form

The Site is currently zoned *Priority Agriculture* being used for livestock grazing, sand extraction, wood chip storage and a drainage basin associated with the nearby operations of Plantation Energy Australia Pty Ltd. However, for the purposes of this report, it is assumed that the land will be rezoned to *Special Use* imminently and the waste and stockpiles etc. be removed.

The immediately surrounding land uses include a railway to the west, a wood chip processing facility on the north side of Down Road, and land used for agricultural purposes (stock grazing) to the south and east. The Down Road Nature Reserve is located approximately 900 metres to the south. There is a tree plantation 2.5 km to the east and the Mirambeena Strategic Industrial area is located approximately 2 km to the east on Albany Highway.

There are four residential receptors within 2 km of the Site.

Rural agricultural lands

The dominant views within this landscape setting are over undulating agricultural lands. This land is typically stock grazing to the south and the east of the proposal. Views are generally over boundary post and wire fencing, with open views into the surrounding cleared paddocks, with some paddock blocks being densely vegetated. Aligning the road and paddock interface there are some low-lying shrubs and small to large sized trees partially filtering views.

Industrial agricultural sites

A woodchip processing facility is located across Down Road West, to the north-west of the Site and a grain storage facility (CBH Mirambeena) is located to the north-east. These areas are typically large areas of cleared land, connected by roads with a number of industrial structures, works and operations. The industrial sites visually contrast with the surrounding agricultural landscapes. These industrial sites are partially screened from certain views by vegetation; however, when they can be seen they are large visual landmarks within this rural setting.

Rural residential roadway

Rural roadways within the area are typically single lane dirt roads with views out over the surrounding agricultural lands. These roadways are commonly lined with low-lying shrubs or small to medium trees that buffer views towards the surrounding landscape. The surrounding landscape is typically open cleared paddocks, industrial sites or densely vegetated blocks.

3.2.3 Vegetation

Project Site vegetation

The Site is predominantly cleared of native vegetation and is currently used for cattle grazing. There are some stands of Marri / Jarrah Forest within the paddocks, devoid of any native understory. There are other remnant patches of Marri / Jarrah Forest with a native shrub and understory layer, occurring in the western extent of the Site and in a patch through the central section and along Down Road West.

Along Down Road South and along the northern side of the watercourse there are Jarrah / Sheoak / Eucalyptus staeri Woodland species (Sandiford & Barrett, 2010).

Project Site wetland

The centre of the Site includes a low-lying area surrounding an unnamed water course. The low-lying area is mostly devoid of native vegetation, with the exception of some sedges (Juncus spp). The western section of the watercourse contains native shrubs / sedges, with a defined bed / banks.

Regional biography

The Site is located in the southwest Botanical Province of Western Australia. The Southern Jarrah Forest IBRA subregion is characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by Wandoo - Marri woodlands on clayey soils. Eluvial and alluvial deposits support Agonis shrublands. In areas of Mesozoic sediments, Jarrah forests occur in a mosaic with a variety of species-rich shrublands" (Hearn , Williams, Comer, & Beecham, 2002).

3.2.4 Landscape Character Types of Western Australia

The Western Australian landscapes have been classified into Landscape Character Types as part of the *Reading the Remote - Landscape Characters of Western Australia* study (Department of Conservation and Land Management , 1994). This study classifies the landscapes of Western Australia into broad landscape character types in terms of '*common distinguishing visual landform, vegetation, water form and land-use characteristics*'. The Wheatbelt Plateau Landscape Character Type is located within the study area for this assessment and includes the following distinguishable features:

- Wide open landscapes with long views dominated by agricultural uses
- Broad slopes and shallow valleys with low ridges which are not visually dominant but are surrounded by similar landforms
- Extensively cleared natural vegetation, openly displays the gently undulating topography of the surrounding landscape setting
- Scattered remnant vegetation standing sentinel at the periphery of the broad fields or are clustered within groups.

4. Proposal description

The following section provides a summary of the Proposal and includes detail relating to the main visual components that have potential to affect the visual amenity of the study area.

4.1 Site details

The Site is currently unserviced, with no connections to scheme water, sewerage, power or wired telecommunications.

The Site is currently being used for livestock grazing, wood chip storage and a drainage basin associated with the nearby operations of Plantation Energy Australia Pty Ltd. Refer to section 1.1 for a description of the Site.

4.2 Summary of the Proposal

The AMP proposal area as defined in section 1.1, is for the development of a multi-purpose regional motorsport facility. The proposed AMP master plan is shown in Figure 4-1.

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*^[3] and Motorcycling Australia (MA) *Track Guidelines*^[4].
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

4.2.1 Construction staging

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

Stage 1 (this Development Application):

- Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and transportable toilet block plus a permanent building shed as a first aid, scrutineering building with a canteen/kiosk, a covered concrete bunded refuelling area in the motocross precinct
- Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).

Stage 2

- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.
- Stage 2 to include provision of power (not part of this assessment).

At full development, the proposed components of the proposal are outlined below:

³ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

⁴ MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

4.2.2 Racetrack Precinct

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling.
- A pit lane area including a concrete bunded covered area (to accommodate refuelling).
- External transportable toilets, clubrooms include first aid and ambulance
- Competitor, marshalling and spectator parking areas
- Spectator viewing area.

4.2.3 Motocross Precinct

- Motocross circuit designed and constructed in association with *MA Track Guidelines* (MA, 2011).
- Competitor, marshalling and spectator parking areas
- Spectator viewing area
- Permanent single storey clubrooms including toilets, first aid and ambulance control room
- Transportable toilets zone.

4.2.4 4WD and ATV Training Precinct

- An off-road 4WD and ATV training area.

4.3 Main visual components of the proposal

The following section describes the main visual components of the Proposal in relation to the proposed racetracks, earthworks, vegetation and construction.

4.3.1 Proposed racetracks, fencing and car parking

- The racetracks grey tarmac (with sand run-offs) and motocross track (sand/gravel/clay) will be visible within the racetrack precinct and the motocross precinct.
- Two large car parking areas located on the eastern hillside. The masterplan proposes these car parks to be large, solid, angular areas with compacted gravel surfacing.
- A large 4WD training area on the western hillside.
- An earth backed tyre wall on the southern boundary will be approximately 1.5 m high.

4.3.2 Earthworks

- It is anticipated that the proposed levels will generally follow the existing levels, with parts of the motocross and racetracks likely to be filled to achieve a 2 m vertical separation to groundwater.
- The low-lying creek running north-east to south-west will remain at existing levels, with higher ground being developed, to the north-west and the south-east of the Site.
- An earth backed tyre wall of approximately 1.5 m height will run near to the southern boundary, south of the racetrack. This is intended to act as an impact barrier; however it will also offer some visual screening of the racetrack area, from the southern side.

4.3.3 Vegetation

- Some limited tree planting is proposed to be positioned outside of the racetrack, motocross track and 4WD precinct, in keeping with the 'low fuel' design consideration for bushfire risk. Refer to the Landscape Masterplan in Figure 4-1 for further details on the proposed vegetation design.
- A 6-10 m wide 'tree lined shelterbelt' is proposed on the southern boundary of the racetrack.
- Wetland vegetation is proposed within the vegetated creek zone, refer to the Masterplan in Figure 4-1.

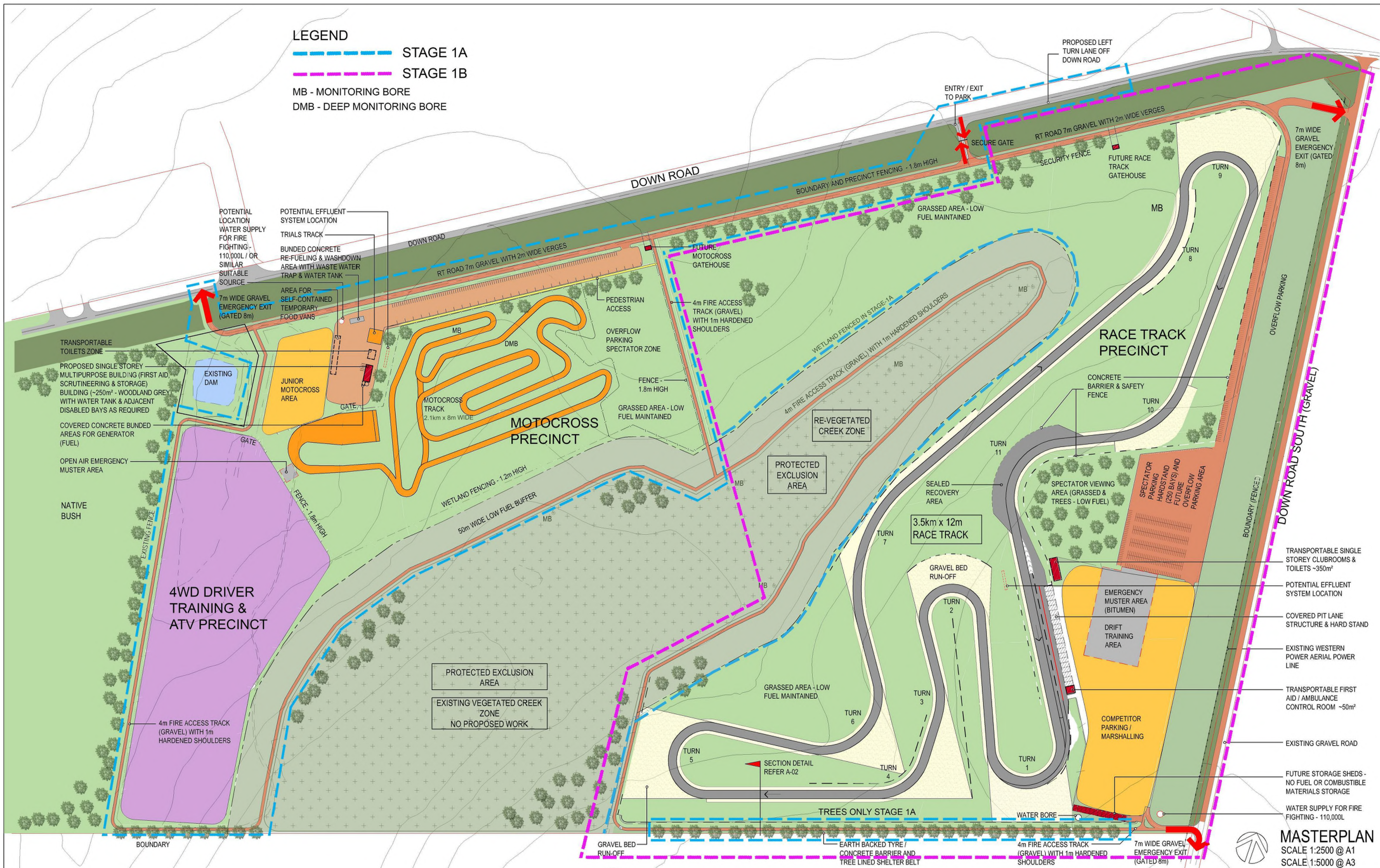
- The spectator viewing area is proposed to be grassed with the retention of existing trees with 'low fuel' design consideration for fire risk.

4.3.4 Construction

Construction of the proposal is expected to be temporary in nature, occurring during daylight hours. The following activities are likely to occur during construction:

- Construction of temporary construction compounds, laydown and storage areas
- Civil works, including construction of racetracks, buildings, fencing, associated earthworks, carparking and excavation for the foundations
- Limited vegetation clearance associated with the construction of the proposal
- Presence of the construction machinery and workers.

Figure 4-1 Albany Motorsport Park Master Plan



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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

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 telephone: (08) 9841 5455
 email: admin@rgarchitects.com.au

Roberts Gardiner
Architects

project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file
 drawn CB project number 21-002

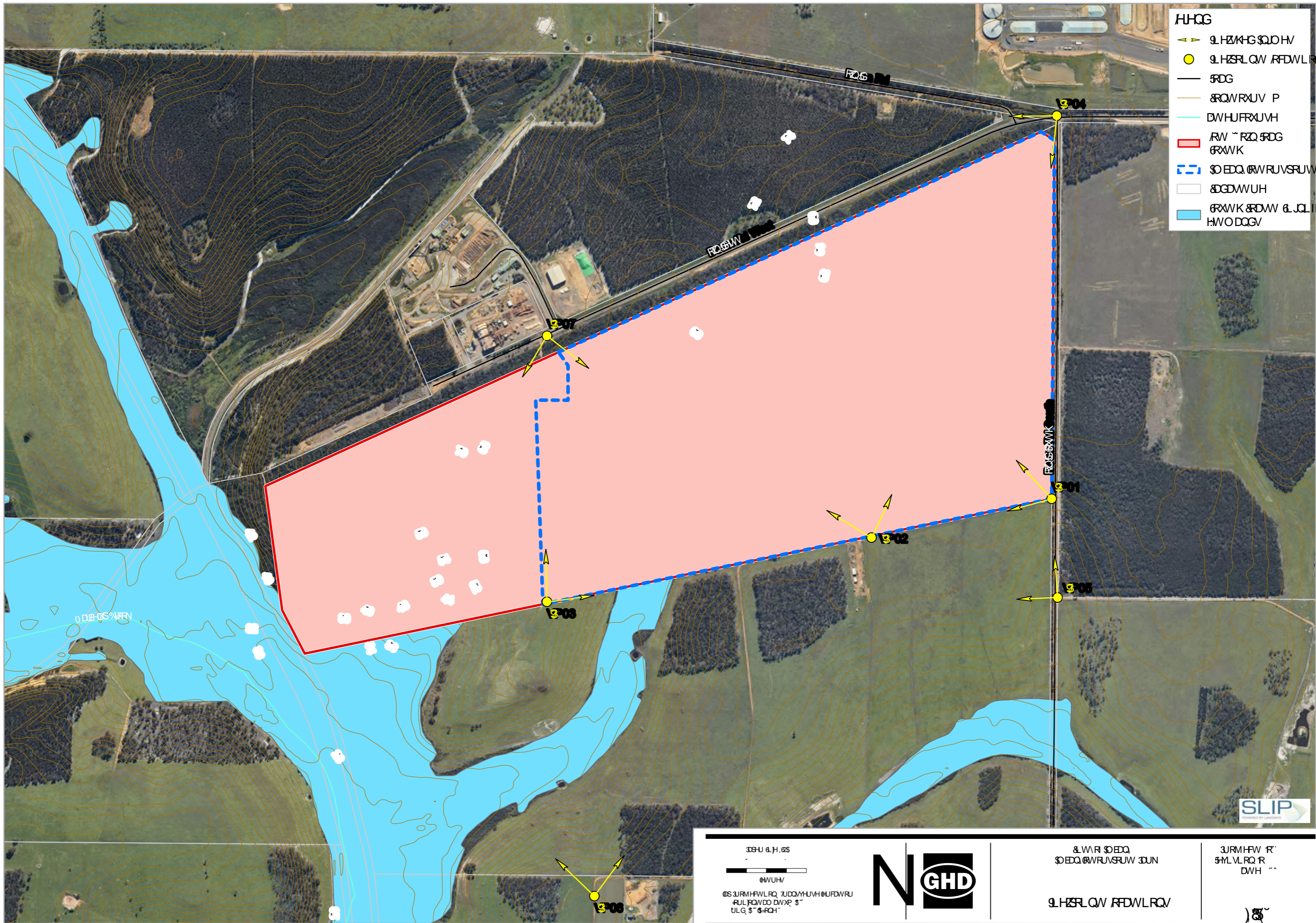
scale 1:2500 @A1
 date JULY 2021
 dwg no. **A-01** rev. **E**

5. Visual impact assessment

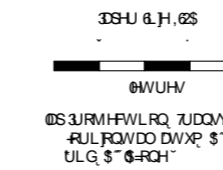
Based on the visual analysis combined with an understanding of the proposal, viewpoint locations were selected for assessment of visual receptors. Refer to Table 5.1 and Figure 5-1 for locations. For each viewpoint, a description and panorama of the existing view is provided, and the anticipated changes, and impact assessment rating are outlined.

Table 5.1 Viewpoint locations

Viewpoint	Location	Sensitive Receptors
VP01	Down Road South	Road users (predominantly local workers and residents)
VP02	South of precinct boundary (from Lot 5781)	Workers on farmland
VP03	Farmland to the south-west corner of the Site.	Workers on farmland



- HFCG**
- 1. HZKHG \$QJHV
 - 1. HZRLQW RFDWL RQV
 - 5RDG
 - 8RQWRXUV P
 - DWHUFRXUVH
 - RW ~ RQ 5RDG 6RXWK
 - 50 EDQ @WRUVRUW 3UN
 - 8GDWUHV
 - 6RXWK 8DW 6 JQL LFDG HWO DQGV



8WR 50EQ
50EQ@WRUVRUW 3UN

1. HZRLQW RFDWL RQV

3URMFW R'
5MLVLRQ R
DWH

5.1 Viewpoint location VP01: Down Road South

VP01 is located off Down Road South and along a local dirt road. This viewpoint represents views of local road users and the view from the adjacent property. VP01 is looking west as shown in Photo 5-1. Refer to Table 5.2 for assessment.



Photo 5-1 View looking west, from dirt road off Down Road South

Table 5.2 VP01 visual impact assessment

Criteria	Comments
Location and view direction	VP01 is located off Down Road South and along a local dirt road within surrounding agricultural lands, looking west against the proposal area boundary towards the proposal area. This viewpoint represents views of local road users and the view from the adjacent property.
Description of existing view	VP01 comprises of a view over the existing low-lying open grass paddock. To the left of view, a dirt road can be seen running parallel to the south of the property boundary. There is a slight elevation of the landscape in the background and a post and wire fence at the interface of the dirt road and the open grass paddock, in the foreground.
Anticipated change to view	Anticipated changes would include the works associated with the earth-backed tyre barrier (or concrete barrier) and tree-lined shelter belt along the dirt road and paddock interface. Some sections of the proposed development including the racetrack run off area and car parking and future storage sheds would be seen from VP01. This corner location would also include a 4 m wide fire access track (gravel) with 2 m verges, and a 7 m wide emergency exit (gated 8 m) exiting from this viewpoint. The competitor parking / marshalling area would also be constructed within view and a row of proposed storage sheds (Stage 2) near the existing fence line may also be visible within the distance. The proposed transportable first aid / ambulance control room may also be visible in the far right of this view, however it may also be just out of view from this viewpoint angle.
Sensitivity to change	Low , as there are limited existing local road users that are passing through or adjacent the study area and therefore have short term views. The views from the adjacent farmland would represent a view from their place of work, or similar and would also be considered a short-term view.
Magnitude of change	High , as there would be a substantial and obvious change to the existing view due to the change of landform and the grass open paddock. The change of landscape features, including the addition of the earth backed tyre barrier (or concrete wall) and tree lined shelter belt would alter the existing characteristics of the view. This would cause VP01 to be permanently changed.
Significance of impact	The significance of impact would be moderate due to the high magnitude of change and the sensitivity of change being considered low.

5.2 Viewpoint location VP02: South of precinct boundary (from Lot 5781)

VP02 is located to the south of the proposal boundary and is taken from a local dirt road. This viewpoint represents views of outdoor workers from the adjacent farmland and farming sheds (situated behind). VP02 is looking north over the Site, as shown in Photo 5-2. Refer to Table 5.3 for assessment.

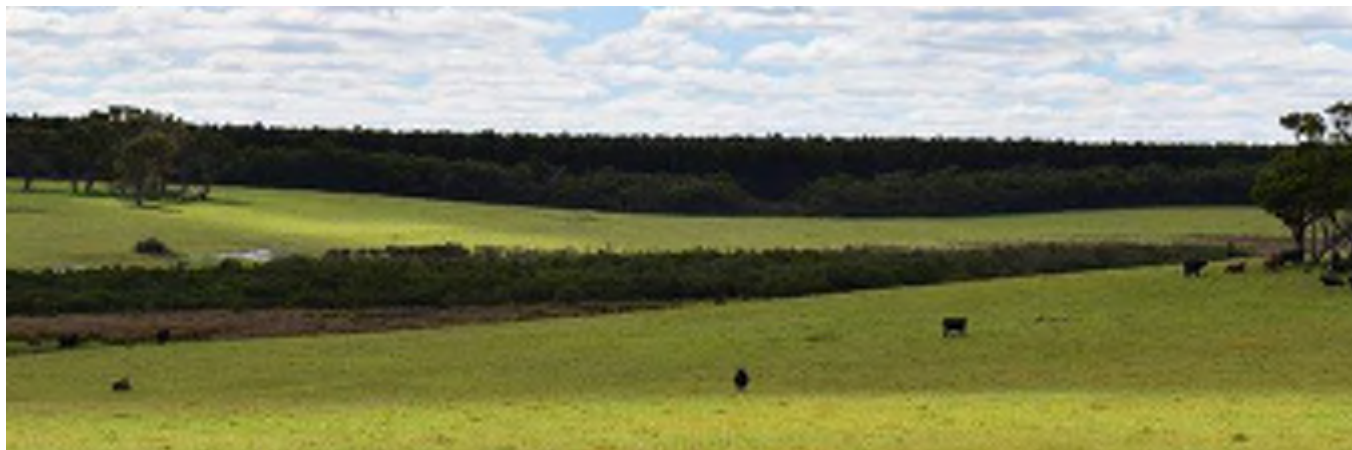


Photo 5-2 View looking north, from south of AMP boundary

Table 5.3 VP02 visual impact assessment

Criteria	Comments
Location and view direction	VP02 is located on adjacent Lot 5781 and along a dirt road with farmlands behind, looking north over the boundary fence line towards the proposal area. This viewpoint represents views from outdoor workers from the adjacent farmland and farming sheds (situated behind).
Description of existing view	VP02 comprises of a view over a gently undulating open grass paddock. There is a vegetated creek zone on the lower ground, within the centre of view. A small grouping of shrubs and small trees filter views to either side of VP02. While longer views over the vegetated creek zone are towards a dense band of woodland screens further views to the north and to Down road.
Anticipated change to view	Anticipated changes would include the proposed earth backed tyre barrier (or concrete barrier) and narrow 'tree lined shelter belt' along the dirt road and paddock interface. Some sections of the Racetrack may be seen from VP02 in the foreground, along with the associated run-off area. The competitor parking / marshalling area may also be visible to the far right of view. The motocross precinct may also be visible on the distant hill to the upper left of the view.
Sensitivity to change	Moderate , as seasonal outdoor workers within the farmland would have a key focus on their work who may also have intermittent views of the Site. Outdoor workers are located within close proximity to the Site but viewing periods are limited.
Magnitude of change	High , as there would be a substantial and obvious change to the existing view due to the change of landform and the grass open paddock. The change of landscape features, including the addition of racetracks and car parking areas would alter the existing characteristics of the view. This would cause VP02 to be permanently changed.
Significance of impact	The significance of impact would be high-moderate due to the magnitude of change and the sensitivity of VP02.

5.3 Viewpoint location VP03: Farmland

VP03 is located within agricultural land. This viewpoint represents views of farmers working within the farmland. VP03 is looking north-east as shown in Photo 5-3. Refer to Table 5.4 for assessment.



Photo 5-3 View looking north-east, from agricultural land

Table 5.4 VP03 visual impact assessment

Criteria	Comments
Location and view direction	VP03 is located within farmland, looking north-east over the boundary fence line and towards the proposal area. This viewpoint represents views of farmers working within the farmland.
Description of existing view	VP03 comprises of a view over a gently undulating open grass paddock that is sloping downward to the right of view. To the left and right of VP03 there are small trees and shrubs that frame the view. There is dense tree canopy cover that screen background views.
Anticipated change to view	Anticipated changes would include the proposed shelterbelt of trees, in front of the fire access track in the foreground, with the 4WD precinct in the middle ground and background. The motocross car park area and associated buildings may also be visible to the left of the view in the far distance, including the 3.8 m high 'Club House' permanent multipurpose building. The proposed three storey high transportable first aid / ambulance control room may also be visible in the far right of this view, however it may also be just out of view from this viewpoint angle.
Sensitivity to change	Moderate , as seasonal outdoor workers within the farmland would have a key focus on their work who may also have intermittent views of the Site. Outdoor workers are located within close proximity to the Site but viewing periods are limited.
Magnitude of change	High , as a substantial/obvious change to the existing view due to total loss of, or change to, elements, features or characteristics of the view. Would cause a view to be permanently changed and its quality diminished.
Significance of impact	The significance of impact would be high-moderate due to the Magnitude of change and the sensitivity of VP03.

5.4 Other viewpoints

5.4.1 Viewpoint location VP04: Down Road West

VP04 is located along Down Road West to the north-east of the proposal boundary area. This viewpoint represents views of local road users. VP04 is looking south-west as shown in Photo 5-4. The proposed AMP would be the left of picture, behind the dense verge vegetation.



Photo 5-4 View looking south-west, from Down Rd West

VP04 is positioned along a sealed road, with adjacent dense screening shrubs and small trees. The proposal boundary is positioned behind the screening vegetation within VP04 and the changes would be expected to be screened from view. However, some clearings within the nearby area may have glimpses through the vegetation and would have filtered views towards the proposal area.

VP04 is not positioned along the southern boundary of concern and has not been fully assessed.

5.4.2 Viewpoint location VP05: Down Road South

VP05 is located along Down Road South to the south-east of the proposal boundary area. This viewpoint represents views of local road users. VP05 is looking north-west as shown in Photo 5-5.



Photo 5-5 View looking north-west, from Down Road South

VP05 is positioned along a local dirt road that is lined with dense screening shrubs and small trees. The roadside vegetation limits views down the road corridor. VP05 would be expected to have no anticipated changes to the view.

VP05 is not directly positioned along the southern boundary of concern and has not been fully assessed.

5.4.3 Viewpoint location VP06: from a private driveway within Lot 3536

VP06 is located along Down Road South, well to the south of the proposal boundary area. This viewpoint represents views of local road users, and a nearby residential property entrance way. VP06 is looking north as shown in Photo 5-6.



Photo 5-6 View looking north, from Down Road South

VP06 is positioned along a local dirt road with long and open views towards the Site and the hills beyond. This view would be expected to have changes to the open paddocks within the Site.

VP06 is not directly positioned along the southern boundary of concern and has not been fully assessed.

5.4.4 Viewpoint location VP07: Down Road West

VP07 is located along Down Rd West, to the north-west of the proposal boundary area. This viewpoint represents views of local road users and screened views from the workers in the adjacent APEC Woodchip facility. VP07 is facing south-east as shown in Photo 5-7.



Photo 5-7 View looking south-east, from Down Rd West

VP07 is positioned along a local dirt road that is lined with dense screening shrubs and small trees. The vegetation limits views from VP07. This view would be expected to have some changes to the density of the screening vegetation and would have some filtered views through to the proposal area.

VP07 is not directly positioned along the southern boundary of concern and has not been fully assessed.

5.5 Construction impacts

During the construction of the Project, there would be temporary impacts on visual amenity. The visual impacts associated with construction activities would be similar to operation, although these are temporary in nature. Visual impacts during construction resulting from activities are outlined in section 4.2 and may include the following:

- Potential views of construction activities, including excavation; vegetation clearing; earthworks associated with the construction of the racetrack, car parking, buildings and access tracks and slip lane.
- Potential views of temporary construction compounds, machinery and materials storage areas, and temporary parking areas.
- Potential views of delivery and storage activities associated with construction equipment and materials, including large scale machinery and materials
- Potential views of construction traffic and workers.

6. Mitigation measures

Mitigation measures for the proposed AMP have been identified in Table 6.1.

Table 6.1 Mitigation measures identified

Potential impact	Location	Suggested mitigation
Views of the development from the southern boundary.	On the southern boundary of the racetrack	Boundary planting of 6 – 10 m wide fire-retardant screening trees, with low fuel maintained understorey, in keeping with bushfire management requirements for the Site.
Visual impacts of a possible concrete barrier on the southern boundary		Suggest earth backed tyre wall with grassed slope option, instead of concrete wall option.
Removal of large mature trees which screen the site	General	Retain large mature tree on site where possible to help visually mitigate, break up and screen the proposal. Consider retaining mature trees in medians, road reservations, WSUDS planting areas and consider redesigning areas to maximise tree retention.
Lack of vegetation screening on the south-west boundary		Boundary planting to continue along all the southern boundary.
Visual impacts of large built elements, such as the proposed Club House	Within the racetrack precinct with the first aid building, in the southeast of the site.	Any large visually prominent buildings (e.g. Club house or any taller buildings) should be designed to minimise visual impact, with height and form kept to a minimum and sympathetic with surrounding landform. Suggest tree planting around any large or high built form, where possible, to mitigate visual impacts from surrounding areas, particularly from the south. Suggest non-reflective materials and colours be used which are sympathetic to the surrounding landscape e.g. Woodland Grey colour or similar.
Views of the two large car parking areas. These are located on the highest parts of the site will be visually prominent from surrounding areas. The masterplan proposes these car parks to be solid areas of hardstanding, unvegetated, with angular unnatural shapes and long linear edges. These areas are up to 400 m long.	On high ground to the north-west and to the south-east	Break up visual bulk of open car parking areas (as shown in the landscape masterplan) by: <ul style="list-style-type: none"> Planting frequent rows of trees within the parking areas, rows to be parallel to the southern boundary for maximum visual mitigation. Suggest 1 tree per 4 car parking spaces (as per CoA Landscape policy). Re-design the layout to make the precinct look more natural and in keeping with the landscape by: <ul style="list-style-type: none"> Softening angular unnatural shapes and long linear edges Using planted edges, planted outstands and planted parking bays. Reducing long or wide areas (which are up to 400 m long). Design around the natural contours and topography to retain areas of mounding to help screen large areas of car parking.
A large 4WD training areas will be visually prominent	On the western hillside.	<ul style="list-style-type: none"> Design around natural contours and topography It is recommended that the 'tree lined shelterbelt' be extended to the 4WD southern boundary, as shown in the landscape masterplan (refer Figure 7-1).

7. Landscape Plan

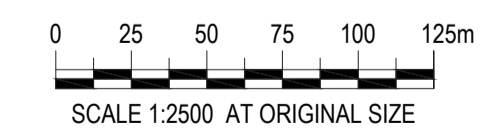
As part of the assessment, a proposed Landscape Plan has been developed. This plan shows how the proposed mitigation measures listed in Chapter 6 can be designed into the landscape, to assist with reducing the visual impact of the proposal (refer to Figure 7-1 Proposed Landscape Plan and Figure 7-2 Proposed Southern Boundary treatment – earth backed tire wall option).

Figure 7-1 Proposed Landscape Plan



Note:

1. Spectator parking bays (Race):
Standard - 270; Caravan/ RV/ truck - 13; DDA - 3; Motorcycle - 5;
2. Spectator parking bays (Motocross):
Standard - 25; Caravan/ RV/ truck - 28



Albany Motorsport Park

Proposed Master Plan Stage 1

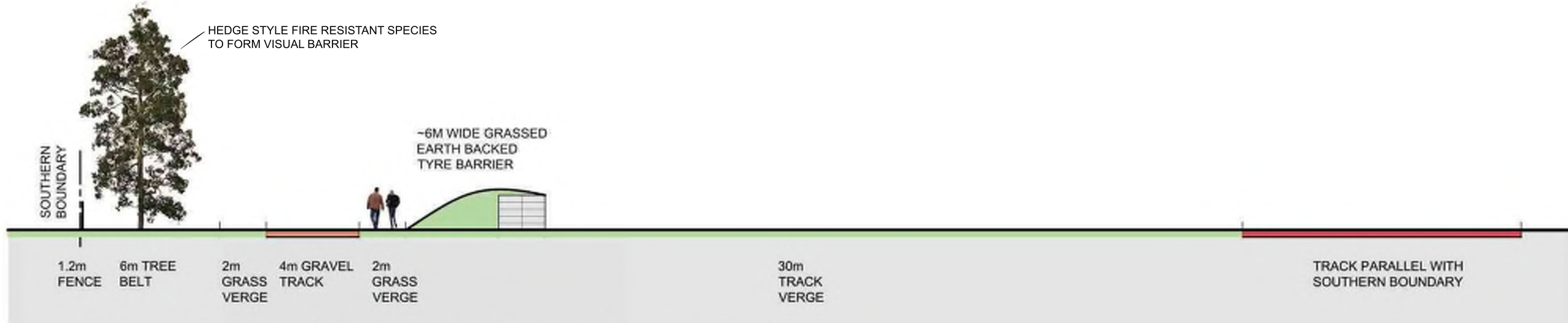
Prepared for **City of Albany**
Western Australia

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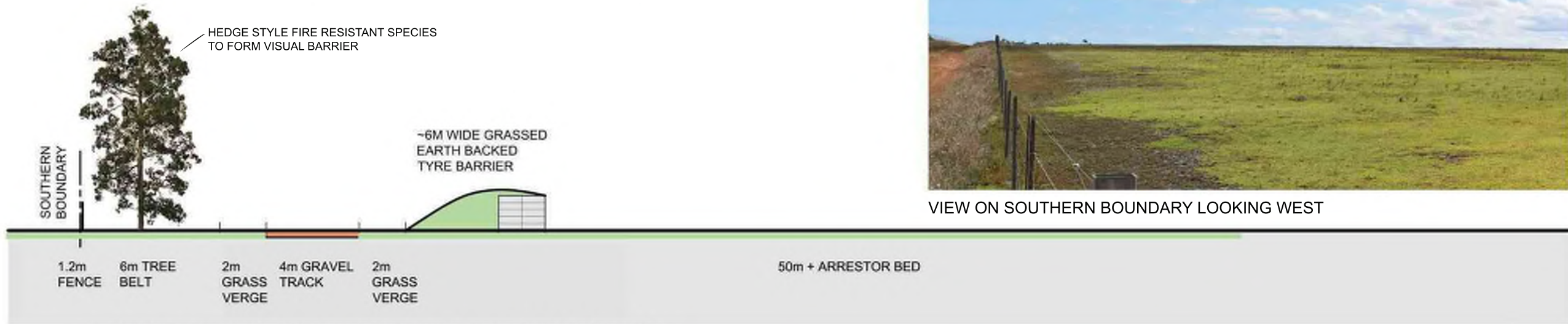
999 Hay Street Perth WA 6000 / PO Box 3106 Perth WA 6832
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Job No: **12546218** / Date: **July 2021**
Approved: **I Pexton** / Scale: **1:2500 @ A1**
Sheet No: **SK-L001** / Rev No: **B**

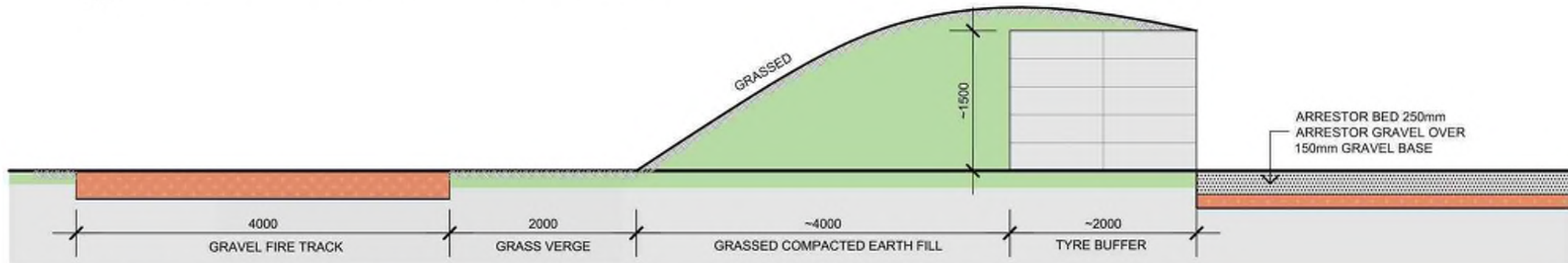
Figure 7-2 Proposed Southern Boundary treatment – earth backed tyre wall option



SECTION THRU SOUTHERN BOUNDARY (AT TRACK PARALLEL WITH BOUNDARY)
1:200



SECTION THRU SOUTHERN BOUNDARY (AT ARRESTOR BED)
1:200



TYPICAL SECTION THROUGH TYRE BARRIER
1:50

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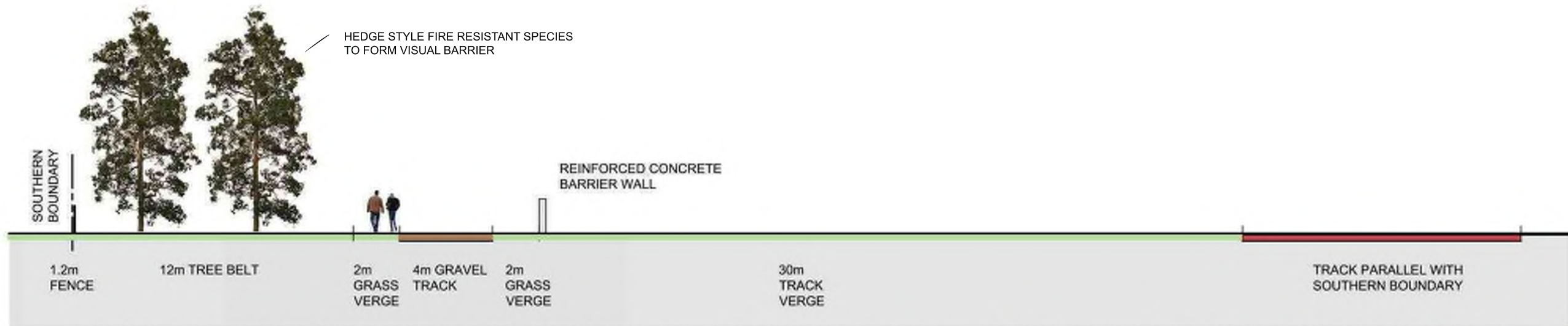
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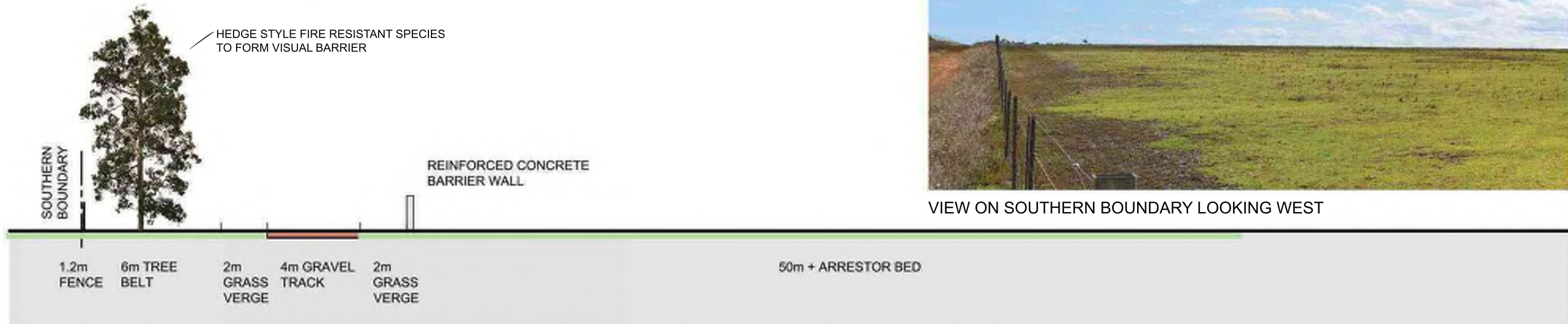
project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Section Through Southern Boundary		scale 1:200 @A3
cad file		date APRIL 2021
drawn CB	project number 21-002	dwg no. rev. A-02 A

Figure 7-3 Proposed Southern Boundary treatment – concrete barrier option

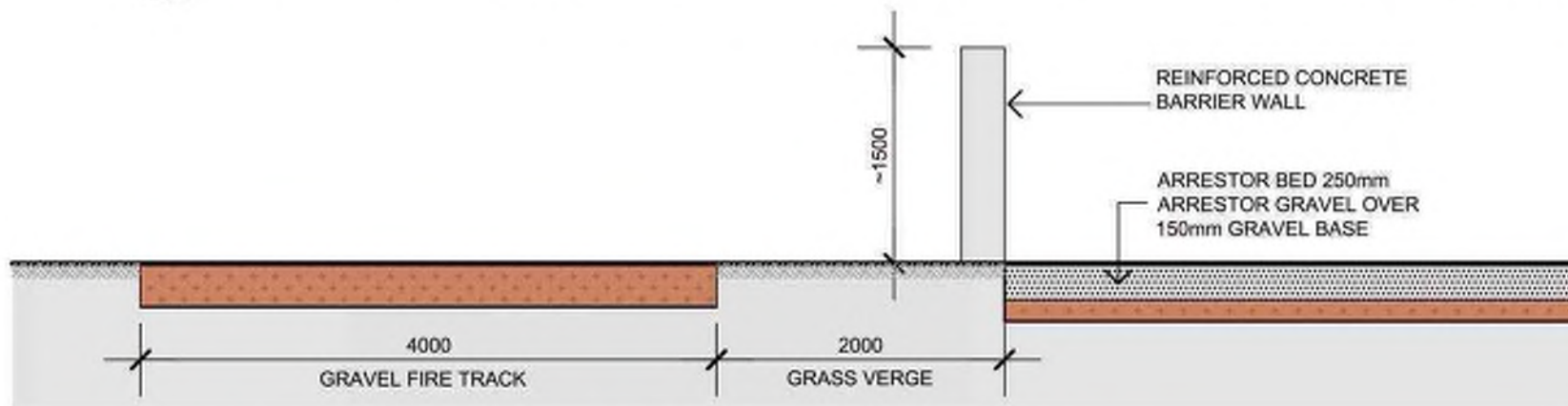


CONCRETE BARRIER SECTION THRU SOUTHERN BOUNDARY (12m TREE PLANTING AT TRACK PARALLEL WITH BOUNDARY & 4WD TRAINING PRECINCT)
1:200



VIEW ON SOUTHERN BOUNDARY LOOKING WEST

CONCRETE BARRIER SECTION THRU SOUTHERN BOUNDARY (6m TREE PLANTING AT ARRESTOR BED)
1:200



TYPICAL SECTION THROUGH REINFORCED CONCRETE BARRIER
1:50

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 client
 City of Albany

Section Through Southern Boundary Concrete Barrier Option		scale 1:200 @A3
cad file		date MAY 2021
drawn CB	project number 21-002	dwg no. rev. A-03 A

8. Conclusion

The proposed AMP is located within the CoA, within Lot 5780 Down Road South approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The existing visual amenity of the Site includes cleared grazing land, some remnant vegetation, and a vegetated wetland. This VIA was primarily undertaken along the southern boundary of the Site and has assessed three viewpoints, as discussed in Sections 5.1 to 5.3.

The construction and operation of the proposed AMP has the potential to impact visual amenity of the local area. The residual visual amenity impacts are expected to be permanent, however the nearest residence is 1.4 km from the Site.

Sensitive receptors of varying levels of significance were identified, including outdoor workers and road users along the southern boundary. Due to the sensitive receptors the highest rating has been assessed as moderate from the outdoor workers located within the adjacent farmland. The assessment found that visual impacts ranged up to high-moderate from VP02 and VP03. This is due to their proximity to the Proposal, and the proposed magnitude of change within the AMP master plan.

Additional views would be expected towards the Site, due to the undulating topography of the Site and surrounding topography. Therefore there may be other distant views to the proposal from higher ground, refer to Photo 5-6.

An integrated approach to landscape design and visual mitigation has been recommended within the Landscape Plan for the AMP to help mitigate some of the visual impacts as identified within section 6.

It should be noted that this report is primarily focussed on the southern boundary, is not a full LVIA, and an assessment of landscape character has not been undertaken.

9. References

- CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.
- City of Albany. (2020). *Local Planning Scheme No. 1*. Perth: Department of Planning, Lands and Heritage.
- Department of Conservation and Land Management . (1994). *Reading the Remote Landscape Characters of Western Australia* . Perth : CALM.
- Environmental Protection Authority . (2016). *Environmental Factor Guideline: Social Surroundings* . Perth: EPA.
- Hearn , R., Williams, K., Comer, S., & Beecham, B. (2002). *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions*.
- Landscape Institute. (2019). *Visual Representation of Development Proposals*. London: Landscape Institute.
- Landscape Institute and Institute of Environmental Management & Assessment. (2013). *Guidelines for Landscape and Visual Impact Assessment (Third edition.)*. Routledge.
- MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.
- Sandiford, E., & Barrett, S. (2010). *Albany Regional Vegetation Survey Extent, Type and Status: A project funded by the Western Australian Planning Commission (EnviroPlanning "Integrating NRM into Land Use Planning" and State NRM Program)*. Western Australia: South Coast Natural Resource Management Inc. and City of Albany for the Department of Environment and Conservation.
- Western Australia Planning Commission. (2007). *Visual Landscape Planning in Western Australia: A manual for evaluation, assessment, sitting and design*. Perth.



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Appendix F

Bushfire Management Plan and addendum

**Albany Motorsport
Park
Lot 5780 Down Road
Drome**

Bushfire Management Plan



DOCUMENT CONTROL

TITLE

Title: Bushfire Management Plan Albany Motorsport Park – Lot 5780 Down Road, Drome

Author (s): Kathryn Kinnear, Daniel Panickar & Bruce Horkings

Reviewer (s): Bianca Theyer, Bruce Horkings

Job No.: COA0020

Client: City of Albany

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1. Executive Summary

The City of Albany commissioned Bio Diverse Solutions and Eco Logical Australia to prepare a Bushfire Management Plan (BMP) for the proposed Albany Motorsport Park (AMP) at Lot 5780 Down Road, Drome WA 6330. The City of Albany Local Planning Scheme (LPS) No.1 outlines the area zoned as 'Priority Agriculture' and is located within the Drome Industrial Buffer Area. It is proposed through the Scheme Amendment Process to rezone the area to 'Special use' under LPS1.

This BMP has been prepared to assess the subject site against the current and endorsed Guidelines for Planning in Bushfire Prone Areas Vers 1.3 (WAPC, 2017) and State Planning Policy 3.7 (SPP 3.7; WAPC, 2015). Such planning takes into consideration standards and requirements specified in various documents such as Australian Standard (AS) 3959-2009, Western Australian Planning Commission (WAPC) Guidelines for Planning in Bushfire Prone Areas Vers 1.3 (WAPC, 2017) and SPP 3.7 (WAPC, 2015). These policies, plans and guidelines have been developed by WAPC to ensure uniformity to planning in designated "Bushfire Prone Areas" and consideration of the relevant bushfire hazards when identifying or investigating land for future development.

The concept plan outlines a multi-use development, the details of this plan will be finalised as part of the future Development Application, the plan includes:

- Motocross track and clubrooms;
- A multi-use 3.5km bitumen race track for race events such as for motor car racing, motorcycle racing, drifting, driver training and cycling;
- A 1000 foot drag strip for drag racing;
- A 1300m² burnout area;
- A function building and club rooms;
- Spectator viewing areas;
- Pit marshalling areas and storage sheds;
- Site parking; and
- An off-road four-wheel drive and all-terrain vehicle training area.

The staging of the development of the AMP includes a 2 staged process:

Stage 1: Development of the motocross track in the north of the site, development of the multiuse track for state motor car, motorcycle and cycling events; and enabling works such as feasibility, planning, design works and access roads.

Stage 2: Contemplate the further development of the AMP site as patronage increases and the range of uses in broadened (e.g. lighted evening events, international events) and is dependent on further funding. (GHD, 2018)

The proposed Motorsport Park is located in a Bushfire Prone Area (SLIP, 2018) and as such triggers compliance with requirements of State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7). The proposed scheme amendment is considered a 'Strategic Planning Proposal' under SPP 3.7 and must be accompanied by a Bushfire Hazard Level (BHL) Assessment and demonstrate compliance with bushfire protection criteria in the form of a BMP. The BMP is to provide sufficient evidence that the rezoning proposal has, or can be made to have a low to moderate Bushfire Hazard Level.

The external bushfire risks to the site are the continuous remnant vegetation and plantations located to the west and north west, east, north and south east. The creek central to the subject site drains to the south west and risks of bushfire in this direction is also evident. Remnant vegetation located internal to the subject site in the west was burnt in the recent May 2018 bushfires. The external remnant forest areas (including plantations) present Extreme Bushfire Hazard levels (as defined by WAPC) to the AMP development. To the south and east of the site is predominantly farmland areas grazed by cattle which present moderate BHL risks.

The subject site was assessed as having internal areas of Forest Type A, Woodland Type B, Grassland Type G, Shrubland Type C and Scrub Type D. Bushfire Hazard Level (BHL) Mapping has allocated extreme,

moderate and low hazard level across the site with the post development BHL moderate or low in development areas of the AMP.

BAL contouring across the subject site has allocated BAL ratings of BAL-29 or less applies to buildings within the proposed concept plan. All internal woodland and grassland areas (previously grazed paddocks) will be managed and maintained in low fuel state (slashed/mowed to <100mm for grasses and trees to WAPC APZ standards) and documented through the Operational Management Plan (OMP) prior to the AMP operating.

To mitigate bushfire risks to the site the following parameters are to be employed:

- Fuel hazard reduction burning in the internal western remnant bushland (rotation 8-10 years and governed by CoA Emergency services priorities and resources). Refer to Section 9.2 of this report.
- Excluding bushfire from the central creek area to reduce the risk of peat fires on the subject site (no planned burning, mineral earth firebreaks, low fuel buffers).
- Reducing risks of ignition from the motorsport events (internal) as outlined in Section 7 of this report.
- Reducing risk of ignition from external sources through liaison with neighbours and consultation with the Local Bushfire Brigade (Highway Brigade located 5km away near Albany Airport).
- Modifying and maintaining the existing internal areas of Grassland Type G and Woodland Type B to a low fuel state at all times (as per WAPC Standards).
- Traffic control during events to ensure safe and timely evacuation of personnel from the site in event of bushfire.
- Consideration of purchase of fast attack light unit for the AMP site and to be placed adjacent to any practise areas (non-event days).
- Event days will have full fire safety crews, ambulance and safety personnel strategically located around the track.
- Documentation of control measures in the OMP as outlined in this BMP report for the site.
- Lease arrangements from the CoA to the AMP controlling body to define management controls of the development site as defined in the implementation table Section 10 of this report.

Consultation with Department of Fire and Emergency Services (DFES) and Department of Planning, Lands and Heritage (DPLH) confirmed that they deemed the AMP to be a “High risk” land use. SPP 3.7 outlines that certain land uses may potentially ignite a bushfire, prolong its duration or increase its intensity. Such land uses are defined as ‘High Risk’. The proposed Albany Motorsport Park (AMP) is defined a high-risk industry due to:

- Motorsport activities giving rise to risk of ignition and bushfire; and
- Exposure of the community, fire fighters and environment to dangerous substances from vehicles igniting.

A summary of recommendations from the brief risk assessment process includes:

- A detailed Operational Management Plan (OMP) to be developed by AMP which includes risk assessments (refer to example Appendix 5) as per Confederation of Australian Motor Sport (CAMS) policy and regulations to ensure there are actions to minimize risks of ignition from internal sources of the park.
- The OMP will be reviewed and endorsed by the CAMS prior to operation of the Albany Motorsport Park.
- Restricting public access through the site to spectator viewing areas and competitor areas, access around the whole of the site is restricted to emergency and safety services.
- Practice days and non-events are to be controlled and regulated by AMP and documented in the OMP for the site.
- Hazard reduction burning only occurs in the western remnant vegetation block, restrictions of fire in central creek area (peat fire risk) through 8m firebreak at edge of fencing of remnant vegetation (restrict grass fires passing into remnant vegetation).
- Controlled re-fueling of vehicles in designated areas, documented in OMP.

- Observing and complying with “Total fire ban days” and “Vehicle movement restrictions/bans” as set by LGA.
- No events held during Catastrophic Fire Danger Rating (FDR) days.

It is noted that although designated as a High-risk industry through the definition of SPP 3.7, the controls and management procedures implemented through the risk management process will reduce the risks of the AMP. The proposed uses associated with the AMP will be controlled and governed through:

- Designed to comply with CAMS’ Track Operator’s Safety Guide (CAMS 2012) and Motorcycling Australia (MA) Track Guidelines (MA 2011).
- To be licensed by CAMS for Fédération Internationalé de l’Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- Motocross track designed and constructed in association with Motocross Australia guidelines.
- Drag strip designed and constructed in accordance with FIA specifications for drag strips and in association with Australian National Drag Racing Association (ANDRA).

Consideration of the High-risk nature of the AMP site is an ongoing process to be refined in future stages of the development approval process and to be addressed under a Bushfire Risk Management Plan (BRMP) if required or requested from the approving agency.

The proposal is defined as ‘Vulnerable Land Use’ (as per SPP 3.7) due to:

- Large numbers of people attending the AMP events (400-500 people club events, 10,000 people state events);
- Elderly demographic, children and mobility impaired people attending the AMP events;
- Presence of a function centre and clubrooms; and
- Site evacuation challenges associated with visitors and spectators on site.

Access internal the site will be provided in alternative directions to separate destinations to Down Road to the north and Down Road South to the west. Multiple gates will also facilitate access/egress from the site on the north and eastern boundaries. Down Road is essentially a long cul-de-sac (dead end road terminating to the north west of the subject site), as is Down South Road (terminating to the south of the subject site). The surrounding public road network is a legacy to previous precinct planning and development approvals. During the preparation of this BMP report four access options were investigated to the north, west, and south. The City of Albany will be providing secondary emergency access to Albany Highway via securing tenure and implementing the construction as per Option 4 outlined in Appendix 7 of this report.

Access Option 4 is the construction of an Emergency Access Way (EAW) to link Down Road South and Albany Highway to enable a secondary access/egress for the AMP site. Consultation undertaken by CoA during the preparation of this BMP has sought verbal in-principle agreement for the linking EAW by Main Roads Western Australia (MRWA), Water Corporation Western Australia (WCWA) (landowner), and Lindsay Black (landowner). This will be gazetted as an easement in gross to allow for emergency access/egress in a bushfire event. This will give the AMP an alternative access route, which presently does not exist. The EAW will be an easement in gross to a minimum of 12m wide and measures 4.38km which does not meet the Acceptable Solutions (WAPC, 2017) and therefore has been assessed as non-compliant to the acceptable solutions (assessed under a performance based assessment as per the WAPC guidelines).

A Bushfire Emergency Evacuation Plan (BEEP) has been prepared to support this development and provides contingency actions in accordance with the requirements of the DPLH current and endorsed *Position Statement: Tourism land uses within bushfire prone areas* (WAPC, 2019). These contingencies include early closure of the site, off-site evacuation and as a last resort, refuge on site in a suitable building / open space.

The aim of the BEEP is early, safe and timely evacuation of the site prior to bushfire events and no events held on site during Catastrophic Fire Danger Rating (FDR) days (i.e. consider evening events, “Total Fire Ban” days and “Restricted vehicle movement days” (harvest bans). Contingency planning for evacuation is via an on-site open-air refuge (located in an area subject to a radiant heat flux of ≤ 2 kW/m²) for large events and clubroom buildings built to the ABCB handbook (ABCB, 2014) and BAL-29 (located in an area subject to a

radiant heat flux of $\leq 10 \text{ kW/m}^2$). This is compliant with the current and endorsed DPLH *Position Statement: Tourism land uses within bushfire prone areas* (WAPC, 2019). The BEEP will form part of the Emergency Management Plan for the site which will be developed by AMP and updated prior to operations of the site.

An assessment to the WAPC Guidelines for Planning in Bushfire Prone Areas Vers 1.3, (WAPC,2017) bushfire protection criteria is summarised in Table 1 over the page.

Table 1: Bushfire protection criteria applicable to the site

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 1 – Location	A1.1 Development Location	Yes	Compliant. BAL 29 or less applied to development footprint, Low to Moderate BHL post development.
Element 2 – Siting and Design	A2.1 Asset Protection Zone	Yes	Compliant. APZ applies to whole of development area to WAPC guidelines and contained within the subject site.
Element 3 – Vehicular Access	A3.1 Two Access Routes	Yes	Internal compliant, external non-compliant. Two access to 2 destinations addressed using BEEP as per WAPC <i>Draft Position Statement: Tourism land uses within bushfire prone areas</i> (WAPC, 2018).
	A3.2 Public Road	No	Not assessed existing public road network to be used.
	A3.3 Cul-de-sacs	No	N/A
	A3.4 Battle axes	No	N/A
	A3.5 Private driveways	Yes	Compliant, all internal access to 6m pavement with 12m horizontal clearance.
	A3.6 Emergency Access Ways	Yes	Non-compliant external alternative emergency access via easement in gross 4.38km from site to Albany Highway, via a performance-based assessment.
	A3.7 Fire Service Access Ways	Yes	All internal FSAs to 8m width and linking around the subject site.
	A3.8 Firebreaks	Yes	All firebreaks to CoA FMN or to 8m as defined in report.
Element 4 – Water	A4.1 Reticulated areas	No	N/A
	A4.2 Non-reticulated areas	Yes	Compliant, Bore and Tank supply internal to the site.
	A4.3 Individual lots in non-reticulated areas	No	N/A

The City of Albany is presently pursuing the purchase of Lot 5780 Down Road Drome. Once purchased, the property, tracks and all permanent facilities and infrastructure constructed on the property will be owned by the City of Albany. The Albany Motorsport Park (AMP) will then be leased to an operator-manager by the City of Albany, with all operational and maintenance activities to be conducted by the operator-manager. Responsibilities for implementation are documented in Section 10 of this report and outlines responsibilities for the AMP Developer (occupiers of the development area) and the City of Albany as land managers. Measures outlined in this report are to be implemented in subsequent stages of planning and development.

2. Introduction

The City of Albany commissioned Bio Diverse Solutions in consultation with Eco Logical Australia to prepare a Bushfire Management Plan (BMP) for the proposed Albany Motorsport Park at Lot 5780 Down Road, Drome WA 6330. This BMP has been prepared to assess the subject site against the current and endorsed Guidelines for Planning in Bushfire Prone Areas Vers 1.3 (WAPC, 2017) and State Planning Policy 3.7 (SPP 3.7; WAPC, 2015). Such planning takes into consideration standards and requirements specified in various documents such as Australian Standard (AS) 3959-2009, Western Australian Planning Commission (WAPC) Guidelines for Planning in Bushfire Prone Areas Vers 1.3 (WAPC, 2017) and SPP 3.7 (WAPC, 2015). These policies, plans and guidelines have been developed by WAPC to ensure uniformity to planning in designated “Bushfire Prone Areas” and consideration of the relevant bushfire hazards when identifying or investigating land for future development.

Consultation with Department of Fire and Emergency Services (DFES) and Department of Planning, Lands and Heritage (DPLH) confirmed that they deemed the AMP to be a “High risk”. SPP 3.7 outlines that certain land uses may potentially ignite a bushfire, prolong its duration or increase its intensity. Such land uses are defined as ‘High Risk’.

The proposed Albany Motorsport Park (AMP) is defined a high-risk industry as per SPP 3.7 due to:

- Motorsport activities giving rise to risk of ignition and bushfire; and
- Exposure of the community, fire fighters and environment to dangerous substances from vehicles igniting.

Consideration of the High-risk nature of the AMP site is an ongoing process to be refined in future stages of the development approval process and to be addressed under a Bushfire Risk Management Plan (BRMP) if required

The proposal is defined as ‘Vulnerable Land Use’ (as per SPP 3.7) due to:

- Large numbers of people attending the AMP events (400-500 people club events, 10,000 people state events);
- Elderly demographic, children and mobility impaired people attending the AMP events;
- Presence of a function centre and clubrooms; and
- Site evacuation challenges associated with visitors and spectators on site.

The BEEP prepared to support this development provides contingency actions in accordance with the requirements of the DPLH current and endorsed *Position Statement: Tourism land uses within bushfire prone areas* (WAPC, 201). These contingencies include early closure of the site, off-site evacuation and as a last resort, refuge on site in a suitable building / open space. Eco Logical Australia has been engaged to provide Level 3 BPAD practitioners input into the BMP and prepare the Bushfire Emergency Evacuation Plan (BEEP) for the site.

2.1. Location

The “Subject Site” is defined as Lot 5780 Down Road, in the locality of Drome, refer to Figure 1. The development location of the proposed Albany Motorsport Park is the open paddock areas of Lot 5780, refer to current “Concept Plan” Figure 2. The subject site is located 31 km from the Albany CBD in the Drome Industrial zone and is approximately 192.20ha in size. The site is currently used for agricultural pursuits (grazing of cattle).



Figure 1: Location Plan

2.2. Development Proposal

Lot 5780 Down Road, Drome is the proposed Albany Motorsport Park site. The concept plan covers approximately 142.8ha of the site as shown in Figure 2 and outlines a multi-use development. The details of this plan will be finalised as part of the future Development Application, the plan includes:

- Motocross track and clubrooms;
- A multi-use 3.5km bitumen race track for race events such as for motor car racing, motorcycle racing, drifting, driver training and cycling;
- A 1000 foot drag strip for drag racing;
- A 1300m² burnout area;
- A function building and club rooms;
- Spectator viewing areas;
- Pit marshalling areas and storage sheds;
- Site parking; and
- An off-road four wheel drive and all-terrain vehicle training area.

The staging of the development of the AMP includes a 2 staged process:

Stage 1: Development of the motocross track development in the north of the site, development of the multiuse track for state motor car, motorcycle and cycling events; and enabling works such as feasibility, planning, design works and access roads.

Stage 2: Contemplate the further development of the AMP site as patronage increases and the range of uses in broadened (e.g. lighted evening events, international events) and is dependent on further funding. (GHD, 2018).

The City of Albany Local Planning Scheme (LPS) No.1 outlines the area zoned as 'Priority Agriculture' and is located within the Drome Industrial Buffer Area. It is proposed through the Scheme Amendment Process to rezone the area to 'Special use' under LPS1. The proposed Motorsport Park is located in a Bushfire Prone Area (SLIP, 2018) and as such is required to comply with requirements of State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7). The proposed scheme amendment is considered a 'Strategic Planning Proposal' under SPP 3.7 and must be accompanied by a Bushfire Hazard Level (BHL) Assessment, demonstrate compliance with bushfire protection criteria in the form of a BMP. The BMP is to provide sufficient evidence that the rezoning proposal has, or can be made to have a low to moderate Bushfire Hazard Level.

The proposed Motorsport Park is also classified according to SPP 3.7 as 'High Risk' and 'Vulnerable Land Use' and therefore in accordance with SPP 3.7 requires the consultation of a Level 3 BPAD Accredited Bushfire Practitioner. Eco Logical Australia has been engaged to provide Level 3 BPAD practitioner input into the BMP and prepare a Bushfire Emergency Evacuation Plan (BEEP).

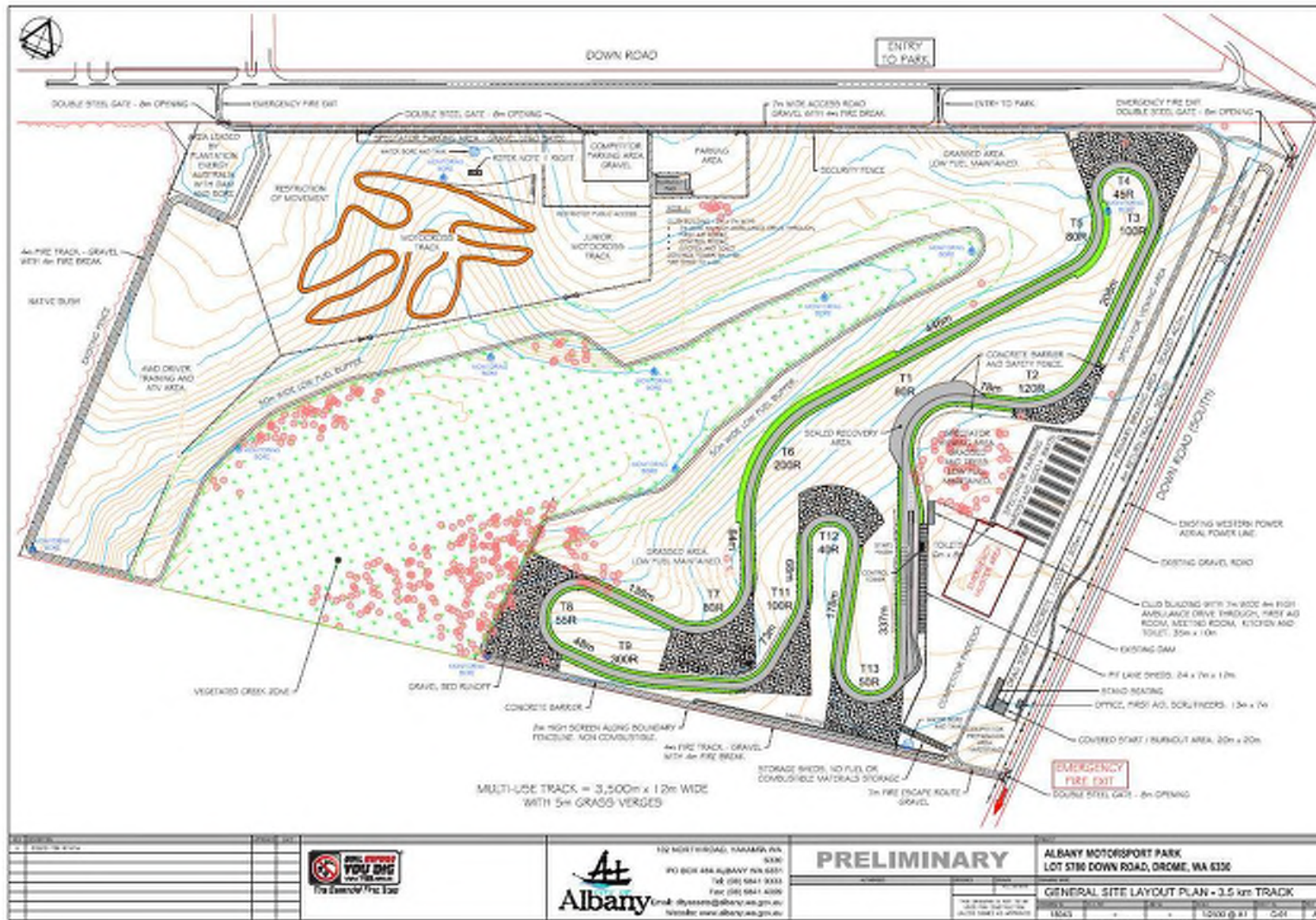


Figure 2: AMP General Site Layout Plan (Concept Plan)

2.3. Statutory Framework

This document and the recommendations contained within are aligned to the following policy and guidelines:

- *Planning and Development Act 2005;*
- *Planning and Development Regulations 2009;*
- *Planning and Development (Local Planning Scheme) Regulations 2015;*
- State Planning Policy 3.7 Planning in Bushfire Prone Areas;
- Guidelines for Planning in Bushfire Prone Areas;
- *Fire and Emergency Services Act 1998.*
- AS 3959-2009 “Construction of Buildings in Bushfire Prone Areas” current and endorsed standards;
- *Bushfires Act 1954;*
- *Position Statement: Tourism land uses within bushfire prone areas* (DPLH, 2019); and
- City of Albany Annual Fire Management Notice.

The publicly released Bushfire Prone Area Mapping (SLIP, 2018) shows that the Subject Site is located within a Bushfire Prone Area (situated within 100m of >1 ha of bushfire prone vegetation). The WA Bushfire Prone Area Mapping is shown on Figure 3.

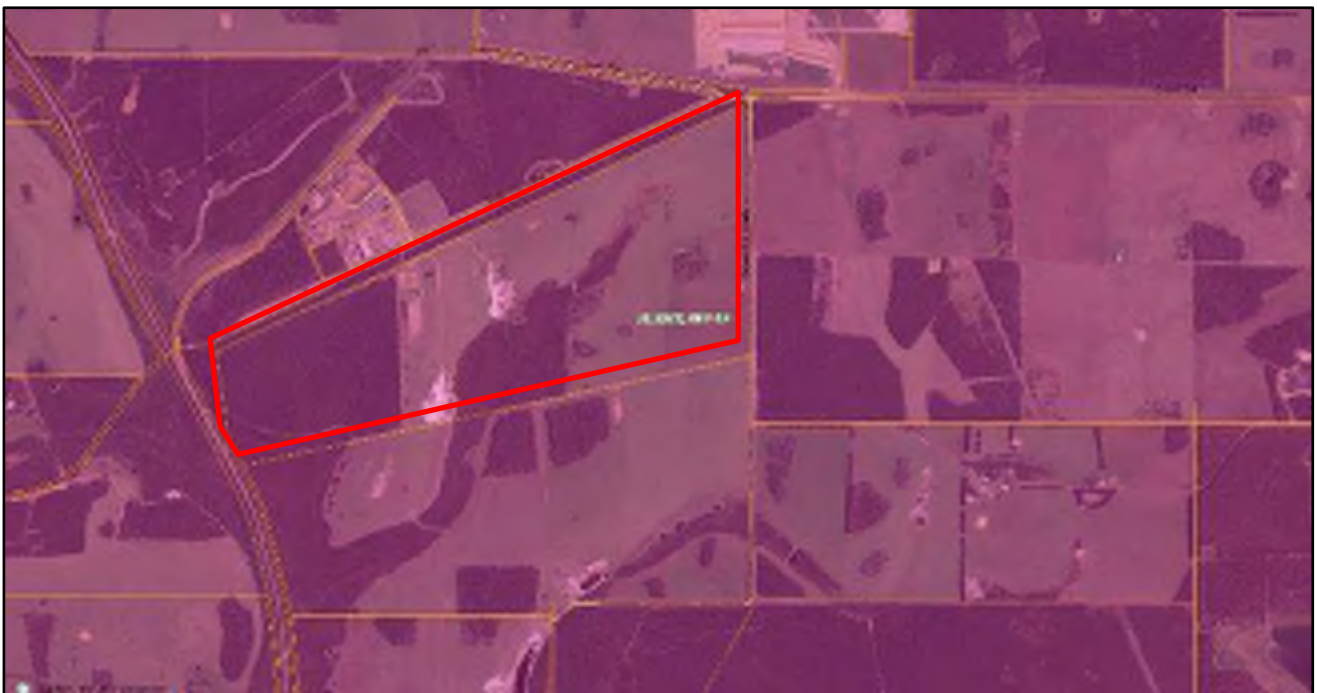


Figure 3: Bushfire Prone Area Mapping (SLIP, 2018)

2.4. Suitably Qualified Bushfire Consultant

This BMP has been prepared by Kathryn Kinnear (nee White), who has 10 years operational fire experience with the (formerly) DEC (1995-2005) and has the following accreditation in bushfire management:

- Incident Control Systems;
- Operations Officer;
- Prescribed Burning Operations;
- Fire and Incident Operations;
- Wildfire Suppression 1, 2 & 3;
- Structural Modules – Hydrants and hoses, Introduction to Structural Fires, and Fire extinguishers; and
- Ground Controller.

Kathryn Kinnear currently has the following tertiary Qualifications:

- BAS Technology Studies & Environmental Management;
- Diploma Business Studies; and
- Graduate Diploma in Environmental Management.

Kathryn Kinnear is an accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD30794). Bio Diverse Solutions are Bronze Corporate Members of the Fire Protection Australia Association and Kathryn is a suitably qualified Bushfire Practitioner to prepare this Bushfire Management Plan.

Level 3 Bushfire Practitioner Bruce Horkings (Eco Logical Australia, FPAA BPAD 29962-L3) and Daniel Panickar (Eco Logical Australia, FPAA BPAD 37802-L2) were commissioned to assist in the preparation of this report specifically in relation to the “High Risk Industry” (as defined by SPP3.7) nature of the proposal, prepare the performance based assessment for “Vulnerable Land use”, to prepare the Bushfire Emergency Evacuation Plan (BEEP), and undertake a technical peer review of the BMP report.

3. Objectives

The objectives of this BMP are to assess the bushfire risks associated with the proposed Concept Plan to reduce the occurrence of, and minimise the impact of bushfires, thereby reducing the threat to life, property and the environment. It also aims to guide the design by assessing the proposed Concept Plan against the Bushfire Protection Criteria as outlined in the Guidelines.

The BMP aims to:

- Achieve consistency with objectives and policy measures of SPP 3.7 (WAPC, 2015);
- Assess any building requirements to AS3959 (current and endorsed standards) and BAL Construction;
- Assess the proposal as a “High Risk Industry” and Vulnerable Land use” as outlined in the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017);
- Assess the proposal against the Bushfire Protection Criteria Acceptable Solutions as outlined in the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017);
- Understand and document the extent of the bushfire risk to the subject site;
- Prepare bushfire risk management measures for bushfire management of all land within the subject site with due regard to people, property, infrastructure and the environment;
- Nominate individuals and organisations responsible for implementation of fire management and associated works within the subject site; and
- Ensure alignment to the recommended assessment procedure which evaluates the effectiveness and impact of proposed, as well as existing, bushfire risk management measures and strategies.

4. Spatial consideration of bushfire threat

4.1. Climate

The Albany area is characterised by a Mediterranean climate with mild wet winters and mild to hot dry summers. The average annual temperature in Albany ranges from 11.8 – 19.5°C. The average summer temperature range between 14-22.9°C, whilst average winter temperatures range between 8.2-15.8°C. The annual mean rainfall for Albany is 927.1mm (BOM, 2019).

4.2. Topography

The subject site has an undulating topography within the existing agricultural areas, sloping from a high point of 75m AHD along the eastern boundary to 40m AHD within the creek line (east - west). It then ascends to 70m AHD in a north westerly direction towards Down Road. The remnant vegetation block to the west slopes in a north-south / north-south westerly direction from 70m AHD from the northern boundary to 30m AHD to the southern boundary. Topographic contours (5 metre contours) are shown on Figure 4.

The effective slopes (measured as per AS3959) for the subject site are generally low in the central (creek line), eastern and some northern (grassland) areas ranging from 0.4 to 4.6 degrees downslope. The effective slope in the western grassland areas ranges from 5.1 to 6.5 degrees downslope. The effective slopes in the remnant vegetation in the west range from upslope in the south eastern and north eastern corners to downslope from 2 degrees to 14.3 degrees downslope. The effective slopes for the Subject Site and surrounding areas are shown on Figure 4.

4.3. Environmental consideration

A reconnaissance flora, vegetation and Level 1 fauna survey was undertaken in spring 2018 by Bio Diverse Solutions (Bio Diverse Solutions, 2018) and identified six vegetation types across the subject site; Jarrah/Marri/Sheoak Laterite Forest, Jarrah/Sheoak/*Eucalyptus staeri* Sandy Woodland, *Homalospermum firmum*/*Callistemon glaucus* Peat Thicket, *Melaleuca preissiana* Low Woodland, Miscellaneous Drainage Woodland/Shrubland and Open paddock / agricultural land including bare and sand extraction areas. Of the 141 flora species recorded within the survey area, 19 (12.7%) are introduced (weeds).

The vegetation types described above align with vegetation units described in the Albany Regional Vegetation Survey (ARVS) report by Sandiford and Barret (2010). The vegetation types / wildlife habitat present within the survey area are well represented locally and in nearby reserves. The Jarrah / Marri dominated woodland and forest present are one of the most abundant habitat types present within the ARVS survey area, providing a significant proportion of wildlife habitat. The *Homalospermum* and *Callistemon* dominated thickets present within the survey area are not as common at a regional level based on ARVS mapping. However, these habitat types are well represented in surrounding remnant vegetation and nearby reserves such as the Down Road Nature Reserve. A copy of the vegetation complex mapping and vegetation condition mapping is provided in Appendix 2.

Potential habitat for threatened species within the survey area includes all remnant vegetation within the site, the creek system and the larger stands of paddock trees throughout the paddock areas. There is a high level of fauna activity in vegetation surrounding the creek line from both threatened and non-threatened fauna species as well as the highest occurrence of significant trees that contain hollows. This indicates that the area contains highly attractive habitat for fauna.

The southern pocket of Jarrah / Marri remnant vegetation had the highest occurrences of *Calyptorhynchus banksii subsp. naso* (Red Tailed Black Cockatoo) and *Calyptorhynchus baudinii* (Baudin's Black Cockatoo), feeding signs. The majority of feeding evidence consisted of *Corymbia calophylla* nuts. As the number of significant Black Cockatoo feeding sites across the survey area was relatively low this indicates that although the site contains potential high value foraging habitat for the three species it is currently not a favoured feeding area. The presence of significant feeding signs in the remnant vegetation in the south appears to indicate this area is anecdotally more attractive for food than the other vegetated areas.

Assessment of the proposal by governing environmental agencies will occur through the Scheme Amendment process with referral under the WA *Environmental Protection Act (EPA Act)*.

4.4. Bushfire fuels – Vegetation

Site assessment occurred on the 14th February 2019 by Kathryn Kinnear (BPAD 30794). All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in Appendix 3 and shown on the Vegetation Classes Map Figure 4. A summary of the vegetation classifications and plot data is provided in Table 2.

Table 2: Classified Vegetation to AS3959

Plot Number	Vegetation Classification Table 2.3 AS3959	Effective Slope AS3959	Location on Vegetation Classes Mapping
1	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)	N/A	North of subject site in APEC and Plantation Energy site, roads and buildings
2	Low fuel or non-vegetated areas Exc 2.2.3.2 (f)	N/A	Firebreaks internal t the site, adjacent private property areas maintained in a low fuel state.
3	Forest Type A (04)	Upslope	Internal to the site in north west, external to the north, east and south
4	Forest Type A (04)	Downslope >0-5 degrees	Internal to the site to the west and central creek area. External to the south and south east.
5	Forest Type A (04)	Downslope >10-15 degrees	External to the site to the west and north west. Internal along western ridgeline.
6	Grassland Type G (26)	Downslope >5-10 degrees	Internal to the site in the west.
7	Grassland Type G (26)	Downslope >0-5 degrees	Internal to the site in the north, east and north east. External to the south east.
8	Grassland Type G (26)	Upslope	Internal to the site in the north and south east. External to the north, north east and
9	Woodland Type B (06)	Upslope	Internal to the site in the east in grazed paddock areas, external to the north.
10	Woodland Type B (06)	Downslope >0 to 5 degrees	Internal to the site adjacent in the east in grazed paddock areas.
11	Woodland Type B (06)	Downslope >5 to 10 degrees	Internal adjacent to central creek area (central to the site). External to the south east.
12	Shrubland Type C (12)	Downslope >0 to 5 degrees	Central creek areas in the north east.
13	Scrub Type D (13)	Downslope >0 to 5 degrees	Central creek areas in the subject site and in the south west internal and external to the site in wet areas.
14	Scrub Type D (13)	Upslope	External to the site near Down Road and Down South Road, east in property.

Plot 1 and 2 is allocated exclusion Clauses 2.2.3.2 of AS3959 and therefore does not have an effective slope allocation.

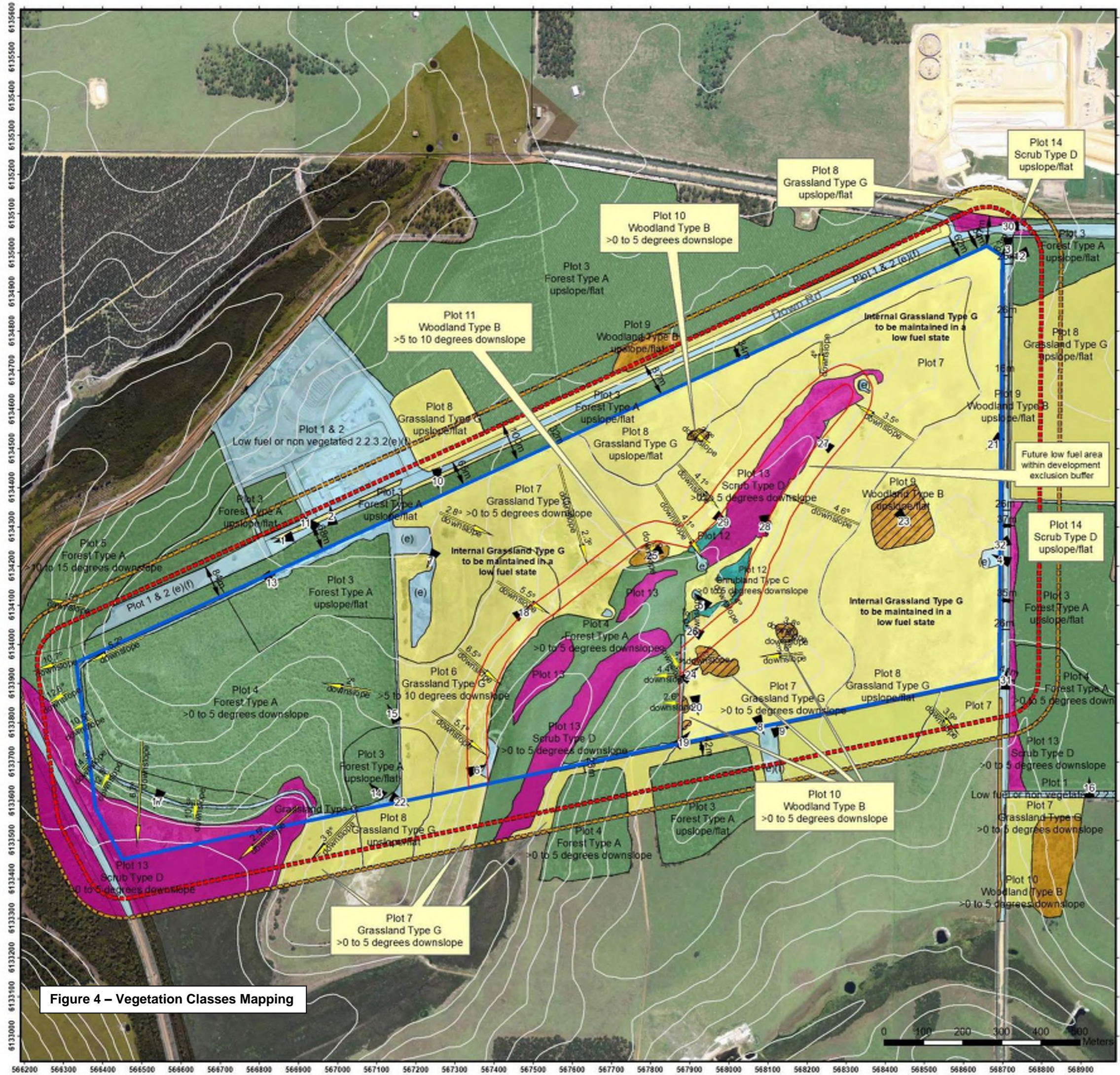


Figure 4 – Vegetation Classes Mapping

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Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours
- Low Fuel Buffer
- Future Low Fuel
- Separation Distance
- Slope Degrees

Vegetation

- Forest Type A
- Woodland Type B
- Shrubland Type C
- Scrub Type D
- Grassland Type G
- Low fuel or non vegetated 2.2.3.2

Scale
 1:9,500 @ A3
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: WA Now, Landgate Subscription Imagery
 Cadastre, Relief Contours and Roads: Landgate 2017
 IRIS Road Network: Main Roads Western Australia 2017
 Overview Map: World Topographic map service, ESR1 2012

CLIENT
 City of Albany
 Lot 5780 Down Road
 Drome, WA 6330

Vegetation Classes

BAL Assessor	QA Check	Drawn by
KK	KK	BT
STATUS	FILE	DATE
FINAL	COA0020	10/05/2019

5. Bushfire Assessment Outputs

5.1. Bushfire Hazard Level Mapping

The BHL process provides an indication of the likely impact of a bushfire event as it interacts with the bushfire hazards within and adjacent to the site. The BHL is a measure of the likely intensity of a bushfire and the likely level of bushfire attack on a site by categorizing the hazard (WAPC, 2017). The allocation of category of the bushfire hazard is determined as per Table 3 of the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017). Refer to Figure 5 below.

Table 3: BHL and classified vegetation (as per AS-3959)

HAZARD LEVEL	CHARACTERISTICS
Extreme	<ul style="list-style-type: none"> Class A: Forest Class B: Woodland (05) Class D: Scrub Any classified vegetation with a greater than 10 degree slope
Moderate	<ul style="list-style-type: none"> Class B: Open woodland (06), Low woodland (07), Low open woodland (08), Open shrubland (09)* Class C: Shrubland Class E: Mallee/Mulga Class G: Grassland, including sown pasture and crops Vegetation that has a low hazard level but is within 100 metres of vegetation classified as a moderate or extreme hazard, is to adopt a moderate hazard level.
Low	<ul style="list-style-type: none"> Low threat vegetation may include areas of maintained lawns, golf courses, public recreation reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks. Managed grassland in a minimal fuel condition (insufficient fuel is available to significantly increase the severity of the bushfire attack). For example, short-cropped grass to a nominal height of 100 millimetres. Non-vegetated areas including waterways, roads, footpaths, buildings and rock outcrops.

Figure 5: BHL Assessment allocation of category (WAPC, 2017).

5.2. Potential Bushfire Impacts

The potential bushfire impact to the site / proposed development from each of the identified vegetation plots are identified below and shown on the Bushfire Hazard Assessment Mapping Figure 6 Pre-Development BHL, and Figure 7 Post Development BHL.



Figure 6 - Pre-development BHL mapping

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Overview Map Scale 1:250,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastral

Bushfire Hazard Level

- Extreme
- Moderate
- Low

Scale
 1:9,000 @ A3
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: 500/800, Landsat Subscription Imagery
 Cadastral: Relief Contours and Finest: Landgate 2017
 900 Road Network: State Roads, Western Australia 2017
 Overview Map: World Topographic map service, ESR: 2012

CLIENT
 City of Albany
 Lot 5780 Down Road
 Drome, WA 6332

BHL - Pre Development

BAL Assessor KK	QA Check KK	Drawn By BT
STATUS FINAL	FILE COA/3020	DATE 10/05/2019

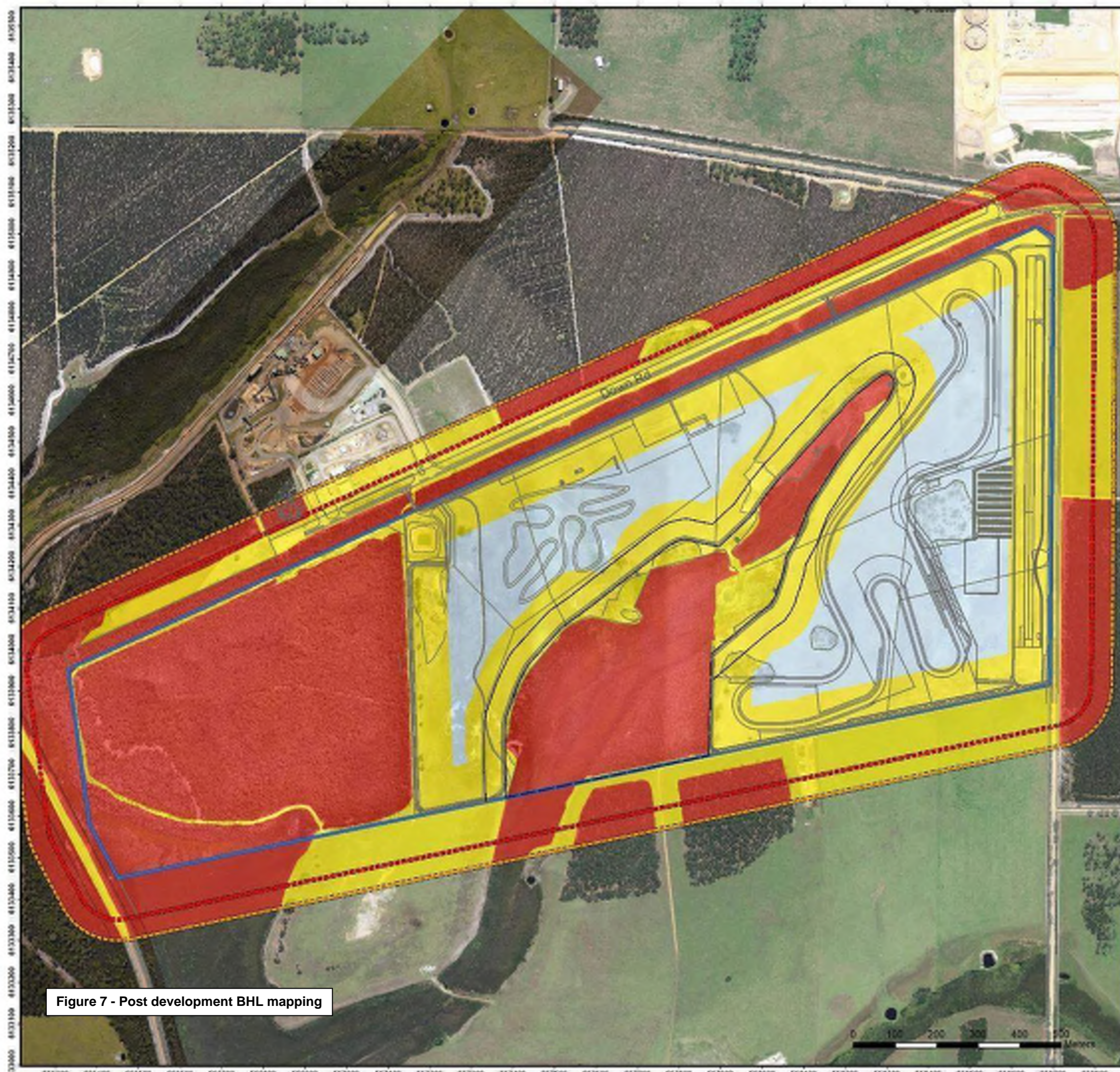


Figure 7 - Post development BHL mapping

This BAL Plan was prepared by:
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 Fax: 08 9642 1576

Overview Map Scale 1:250,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastral
- Low Fuel Buffer

Bushfire Hazard Level

- Extreme
- Moderate
- Low

Scale
 1:9,000 @ A3
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: 50k/50m, Landgate Subscription Imagery
 Contours: Relief Contours and Floors: Landgate 2017
 90m Road Network: State Roads, Western Australia 2017
 Overview Map: World Topographic map service, EPSG: 2952

CLIENT
 City of Albany
 Lot 5780 Down Road
 Drome, WA 6330

BHL - Post Development

BAL Assessor	GA Check	Drawn by
KK	KK	BT
STATUS	FILE	DATE
FINAL	COA/3020	10/05/2019

Table 3: Potential bushfire impacts (BHL)

Plot number	Vegetation Type (Table 2.3)	Effective Slope (Table 2.4.3)	BHL Pre Development	BHL Post Development
1	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)	N/A	Moderate	Moderate
2	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)	N/A	Moderate	Moderate
3	Forest Type A	Upslope	Extreme	Extreme
4	Forest Type A	Downslope >0 to 5 degrees	Extreme	Extreme
5	Forest Type A	Downslope >15 to 20 degrees	Extreme	Extreme
6	Grassland Type G	Downslope >5 to 10 degrees	Moderate	Moderate / Low
7	Grassland Type G	Downslope >0 to 5 degrees	Moderate	Moderate / Low
8	Grassland Type G	Upslope	Moderate	Moderate / Low
9	Woodland Type B (06)	Upslope	Moderate	Moderate / Low
10	Woodland Type B (06)	Downslope >0 to 5 degrees	Moderate	Moderate / Low
11	Woodland Type B (06)	Downslope >5 to 10 degrees	Moderate	Moderate
12	Shrubland Type C	Downslope >0 to 5 degrees	Moderate	Moderate
13	Scrub Type D	Downslope >0 to 5 degrees	Extreme	Extreme
14	Scrub Type D	Upslope	Extreme	Extreme

Notes on BHL Assessment:

- The BHL assessment was prepared by an Accredited Level 2 Bushfire Planning Practitioner (BPAD30794);
- The BHL Assessment and BHL Map has been prepared in accordance with Department of Planning (WAPC) Guidelines for Planning in Bushfire Prone Areas Version 1.3 (WAPC, 2017) Appendix 2; and
- Subject Site is located in a Bushfire Prone Area (SLIP, 2018).

5.3. Method 1 BAL Calculation

A Method 1 BAL calculation (in the form of BAL contours) has been completed for the proposed development in accordance with AS 3959-2009 methodology. The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by proposed buildings and subsequently informs the standard of building construction required to increase building tolerance to potentially withstand such impacts in line with the assessed BAL. The Bushfire Attack Level (BAL) has been calculated using the Method 1 procedure as outlined in AS3959. This incorporates the following factors:

- WA adopted Fire Danger Index (FDI);
- Vegetation Classes;
- Slope under classified vegetation; and
- Distance between proposed development site and classified vegetation.

The outcomes of the above inputs then allocate a specified BAL construction/setback for proposed buildings.

5.4. Fire Danger Index

The Western Australian adopted FDI is 80 as outlined in AS3959 and endorsed by Australasian Fire and Emergency Services Authorities Council. The FDI input for this project is also therefore 80.

5.5. Slope under Classified Vegetation

Slope under classifiable vegetation (Effective Slope) was assessed in accordance with Section 2.2.5 of AS3959. Table 2 summarises the slopes assigned to each plot of classifiable vegetation for the BAL calculation.

5.6. AS 3959 BAL Allocation

The assessed BAL ratings for the development are depicted as BAL contours, BAL ratings for the subject site are presented in Table 3 with BAL Contours shown on Figures 8 and 9. All proposed buildings will be located in areas subject to a BAL rating of BAL-29 or lower.

Table 4: BAL ratings

Plot number	Vegetation Type	Effective Slope	Applicable BAL Rating to AMP Concept Plan
1	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)	N/A	BAL-LOW
2	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)	N/A	BAL-LOW
3	Forest Type A	Upslope	BAL-29 or less can apply.
4	Forest Type A	Downslope >0 to 5 degrees	BAL-29 or less can apply.
5	Forest Type A	Downslope >15 to 20 degrees	BAL-29 or less can apply.
6	Grassland Type G	Downslope >5 to 10 degrees	N/A all internal grasslands will be maintained in a low fuel condition at all times.
7	Grassland Type G	Downslope >0 to 5 degrees	N/A all internal grasslands will be maintained in a low fuel condition at all times.
8	Grassland Type G	Upslope	N/A all internal grasslands will be maintained in a low fuel condition at all times.
9	Woodland Type B (06)	Upslope	All internal woodland areas to be modified and maintained in a low fuel condition at all times. External Woodland areas BAL-29 or less can apply.
10	Woodland Type B (06)	Downslope >0 to 5 degrees	All internal woodland areas to be modified and maintained in a low fuel condition at all times. External Woodland areas BAL-29 or less can apply.
11	Woodland Type B (06)	Downslope >5 to 10 degrees	BAL-29 or less can apply.
12	Shrubland Type C	Downslope >0 to 5 degrees	BAL-29 or less can apply.
13	Scrub Type D	Downslope >0 to 5 degrees	BAL-29 or less can apply.
14	Scrub Type D	Upslope	BAL 29 or less can apply.

Assumptions made in BAL Contour Mapping:

- The subject site will be developed according to the guiding principles in the Concept Plan; and
- The Albany Motorsport Park will modify and maintain grasslands and woodland areas (east) internal to the site in a low fuel state at all times (i.e. slashed to <100mm).

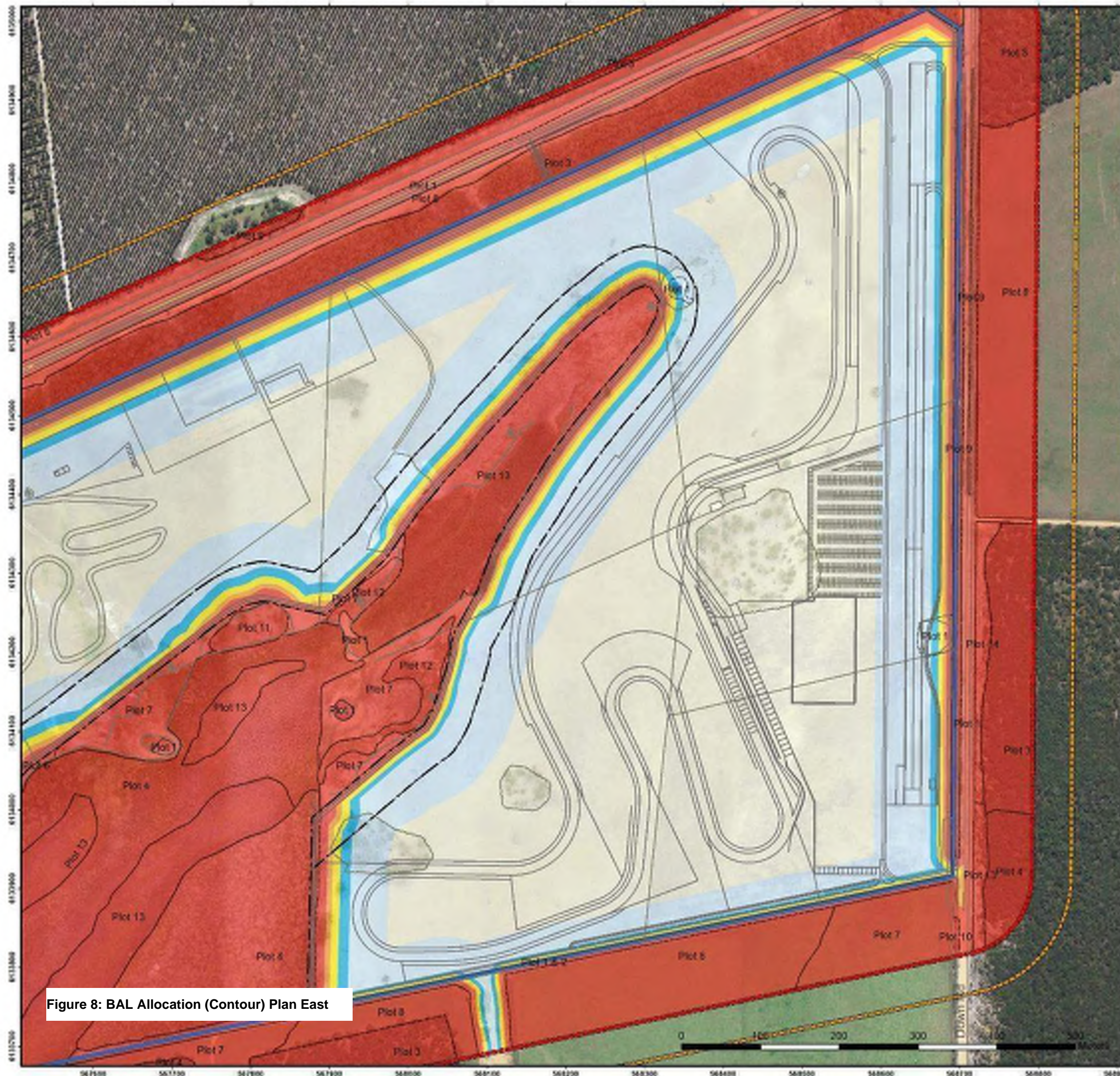


Figure 8: BAL Allocation (Contour) Plan East

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Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastral
- Low Fuel Buffer

BAL Contours

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

Scale
 1:4,750 @ A3
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: 50k/50k, Landsat Subscription Imagery
 Cadastral, Relief Contours and Flows: Landgate 2013
 90% Road Network: State Roads, Western Australia 2017
 Overview Map: World Topographic map service, ESRI 2012

CLIENT
 City of Albany
 Lot 5780 Down Road
 Drome, WA 6330

BAL Contour - East

BAL Assessor KK	GA Clerk KK	Drawn By BT
STATUS FINAL	FILE CO/3020	DATE 10/05/2019

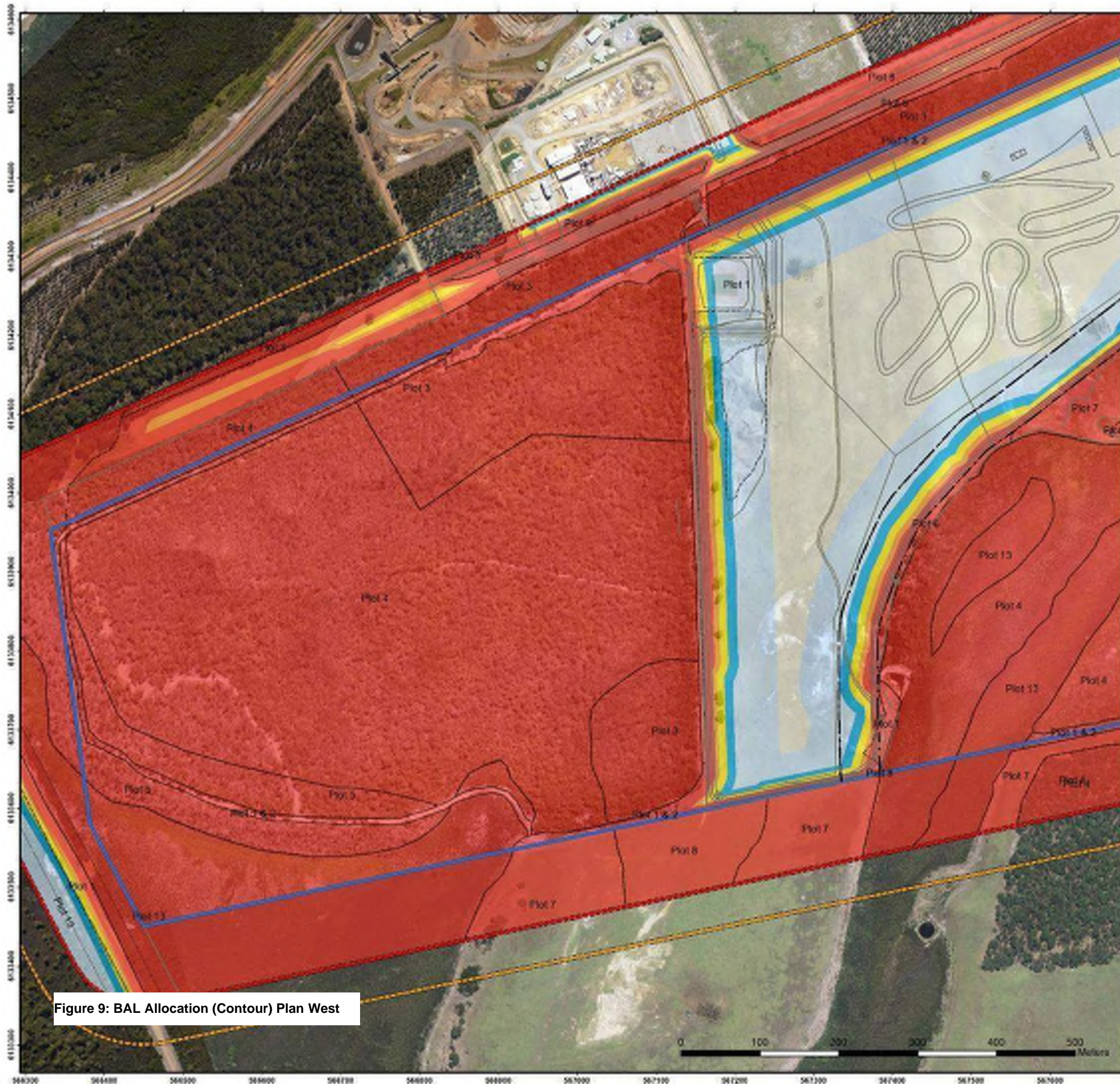


Figure 9: BAL Allocation (Contour) Plan West

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Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- Low Fuel Buffer
- BAL Contours**
- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW



Scale
 1:4,750 @ A3
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: 50k/50m, Landgate Subscription Imagery
 Cadastre: Relief Contours and Rivers: Landgate 2017
 90% Road Network: Main Roads Western Australia 2017
 Overview Map: From Topographic map service, ESR 2012

CLIENT

City of Albany
 Lot 5780 Down Road
 Drome, WA 6330

BAL Contour - West

BAL Assessor KK	QA Check KK	Drawn by BT
STATUS FINAL	FILE COA/3020	DATE 10/05/2019

6. Identification of bushfire issues pertinent to the AMP site

6.1. Bushfire risks

The external bushfire risks to the site are the continuous remnant vegetation and plantations located to the west and north west, east, north and south east. The creek central to the subject site drains to the south west and risks of bushfire this direction are also evident. Remnant vegetation located internal to the subject site in the west was burnt in the recent May 2018 fires (refer to Redmond fire scar as Figure 10 below, courtesy of CoA, Emergency Services).

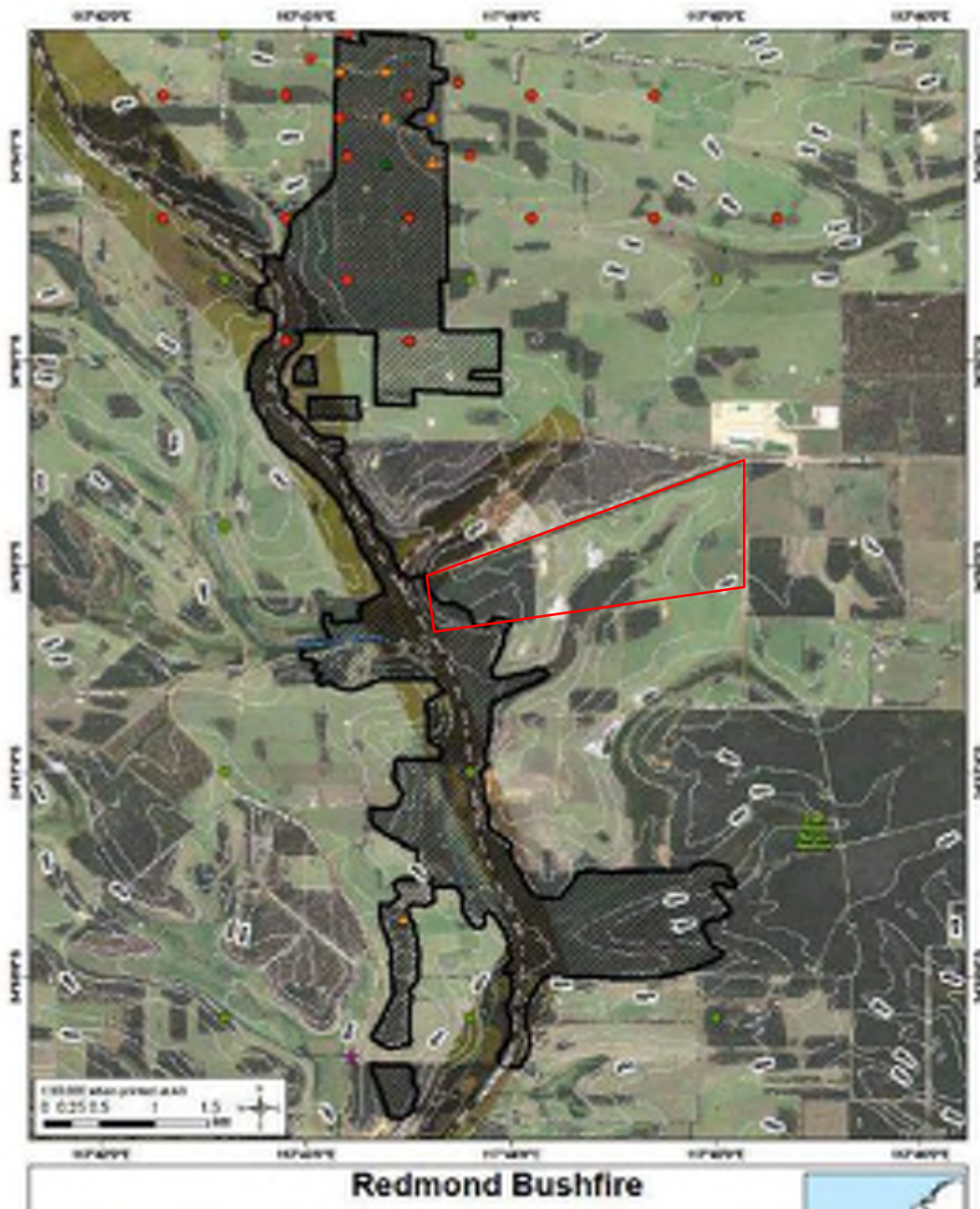


Figure 10 – May 2018 Redmond Fire Scar and the subject site (CoA, 2019)

The external remnant forest areas (including plantations) present Extreme Bushfire Hazard Levels (as per the definition of bushfire hazards in the Guidelines) to the AMP development. To the south and east

of the site is predominantly farmland areas grazed by cattle which present Low BHL risks. Under hot, dry and unstable conditions (Severe to Catastrophic bushfire weather) the subject site is most at risk from bushfire from the north, north east, north west and west. Risk of ignition of bushfire events is detailed in Section 7 of this report.

To mitigate bushfire risks to the site the following parameters are to be employed:

- Fuel hazard reduction burning in the internal western remnant bushland (rotation 8-10 years and governed by CoA Emergency services priorities and resources). Refer to Section 9.1.2 of this report.
- Excluding bushfire from the central creek area to reduce the risk of peat fires on the subject site (no planned burning, mineral earth firebreaks, low fuel buffers).
- Reducing risks of ignition from the motorsport events (internal) as outlined in Section 7 of this report.
- Reducing risk of ignition from external sources of through liaison with neighbours and consultation with the Local Bushfire Brigade (Highway Brigade located 5km away near Albany Airport).
- Modifying and maintaining the existing internal areas of Grassland Type G and Woodland Type B to a low fuel state at all times (as per WAPC Standards).
- Traffic control during events to ensure safe and timely evacuation of personnel from the site in event of bushfire. This will ensure all gates are accessible for emergency access/egress.
- Consideration of purchase of fast attack light unit for the AMP site and to be placed adjacent to any practise areas (non-event days).
- Event days will have full fire safety crews, ambulance and safety personnel strategically located around the track.
- Documentation of control measures in the OMP as outlined in this BMP report for the site.
- Lease arrangements from the CoA to the AMP controlling body to define management controls of the development site as defined in the implementation table Section 10 of this report.

6.2. Water Sources for bushfire

Water supply will be through on-site resources via bore extraction. A copy of a monitoring bore testing for water sources in the northern area of the precinct is provided in Appendix 4. Storage of water for fire fighting will be located in the north and the eastern precincts and tanks are to be a minimum of 110,000L (DFES to confirm). Water tanks are shown conceptually at the northern motocross precinct and at the southern boundary. A test water supply bore was drilled in April 2019, refer to bore test log in Appendix 4. This indicates that water is available for supply at a suitable depth and rate of supply. A suitably qualified Fire Engineer will need to be engaged by the AMP prior to DA to ensure hydrants and supply pressure are to the required standards, to be approved by the CoA at Development Approval Stages.

6.3. Internal fire service access and firebreak network

A network of Fire Service Access (FSA) and Firebreaks are to be developed during construction phases and prior to operations of the AMP. Details of management of the maintenance of the internal FSA, Firebreak networks and internal service roads is to be documented in the OMP in the AMP lease area. FSA's outside of the lease area are to be maintained by CoA and documented in their reserve's management plan for the area.

To facilitate in access and evacuation of the site there are additional gates along northern and eastern boundaries. Refer to the Internal Access Plan Figure 11.



Figure 11: Internal Access Plan

This BAL Plan was prepared by:
 Kathryn Kinnear, Bio Diverse Solutions
 Accreditation No: BPAD30794
 Jurisdiction: Level 2 - WA



Overview Map Scale 1:250,000

- Legend**
- Cadastre
 - Turnaround Point
 - Access Points
 - Gate
 - Low Fuel Buffer
 - Internal Access Road
 - Fire Service Access & 4m wide firebreaks

Scale
 1:8,500 @ A3
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: WA Now, Landgate Subscription Imagery
 Cadastre, Relief Contours and Roads: Landgate 2017
 IRIS Road Network: Main Roads Western Australia 2017
 Overview Map: World Topographic map service, ESRI 2012

CLIENT
 City of Albany
 Lot 5780 Down Road
 Drome, WA 6330

Internal Access & Fuel Management Plan

BAL Assessor KK	QA Check KK	Drawn by BT
STATUS FINAL	FILE COA0020	DATE 10/05/2019

7. Bushfire risk assessment – high risk land use

Consultation with Department of Fire and Emergency Services (DFES) and Department of Planning, Lands and Heritage (DPLH) confirmed that they deemed the AMP to be a “High risk”. SPP 3.7 outlines that certain land uses may potentially ignite a bushfire, prolong its duration or increase its intensity. Such land uses are defined as ‘High Risk’. The proposed Albany Motorsport Park (AMP) is defined a high-risk industry due to:

- Motorsport activities giving rise to risk of ignition and bushfire; and
- Exposure of the community, fire fighters and environment to dangerous substances from vehicles igniting.

A risk assessment has been prepared by Bio Diverse Solutions and is detailed in Appendix 5 of this report. A summary of the risk assessment is provided below in Table 5.

Data has been gathered from following sources for the risk assessment:

- 20km radius of the subject site on originating fire causes (sources CoA Emergency Services, Parks and Wildlife & DFES);
- Consultation with CoA Emergency Services, DFES land use planning unit, DFES Regional Services Albany and Parks and Wildlife Albany office;
- CAMS risk register; and
- Great Southern Motorsport Group Inc (cross section of sporting codes).

Table 5: Summary of Risk Assessment AMP

Risk No.	Hazard -Bushfire originating/causing fire	Risk rating
1	Ignition Vehicles/Bikes combusting on track due to crashes including fuel or oil line leaks on track	Substantial/high risk
2	Grinding sparks in pits or near fuel sources (hot works)	Low risk
3	Smoking public viewing areas or in pits near fuels	Low risk
4	Vehicles (exhausts) near dry vegetation or slashing/mowing rocky ground (maintenance)	Low risk
5	Electrical faults building faults	Moderate risk
6	Electrical faults from extension cords/cables (pits/trailers)	Moderate risk
7	Re-fueling area (designated and controlled)	Very high risk
8	Substandard race vehicles using the facility	Low risk
9	Re-ignition of previously controlled fires (peat Central creek area)	Substantial risk
10	Water pump failure causing spark/ignition	Substantial risk
11	Gas Barbecues and camp fires causing ignition (unattended, faulty)	High risk
12	Tyre barriers igniting from crash from vehicle	High risk
13	Re-ignition of previously controlled fires (May and November non-prohibited periods)	Moderate risk
14	External: Ignition from trains under heavy loads sparks associated with braking	Low risk
15	External: Aircraft Crash	Low risk
16	External: Western powerlines transmission	High risk
17	External: Ignition from stockpiled woodchips north of site at Plantation Energy site.	High risk
18	External: Ignition from Blue gum slash burning (cause of May 2018 fire)	High risk
19	External and Internal: Lightning strikes	High risk
20	Illegally lit fires (deliberate)	Moderate risk

A summary of recommendations from the risk assessment process includes:

- A detailed Operational Management Plan (OMP) is to be developed by AMP which includes risk assessments (refer to example from Confederation of Australian Motor Sport (CAMS) prior Appendix 6) as per CAMS policy and regulations to ensure there are actions to minimize risks of ignition from internal sources of the park.
- The operational plan will be reviewed and endorsed by the CAMS prior to operation of the Albany Motorsport Park.
- Restricting public access through the site to spectator viewing areas and competitor areas, access around the whole of the site is restricted to emergency and safety services.
- Practice days and non-events are to be controlled and regulated by AMP and documented in the Operational Management Plan for the site.
- Hazard reduction burning only occurs in the western remnant vegetation block, restrictions of fire in central creek area (peat fire risk) through 8m Fire Service Access (4m pavement and 4m mineral earth firebreak) at edge of fencing of remnant vegetation (restrict grass fires into remnant vegetation).
- Controlled re-fueling in designated areas, documented in Operational Procedures Manual.
- No fuel storage on site, only fuel will be in vehicles during race events.
- Observing and complying with “Total fire ban days” and “vehicle movement bans” as set by LGA.
- No events held during catastrophic Fire Danger Rating (FDR) days.

The proposed uses associated with the AMP will be controlled and governed through:

- Designed to comply with CAMS’ Track Operator’s Safety Guide (CAMS 2012) and Motorcycling Australia (MA) Track Guidelines (MA 2011).
- To be licensed by CAMS for Fédération Internationalé de l’Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- Motocross track designed and constructed in association with Motocross Australia guidelines.
- Drag strip designed and constructed in accordance with FIA specifications for drag strips and in association with Australian National Drag Racing Association (ANDRA).

Consideration of the High-risk nature of the AMP site is an ongoing process to be refined in future stages of the development approval process and to be addressed under a Bushfire Risk Management Plan (BRMP) if required.

8. Vulnerable Land Use and Access

8.1. Access

Access internal the site will be provided in alternative directions to separate destinations to Down Road to the north and Down Road South. Multiple gates will also facilitate access/egress from the site on the north and eastern boundaries. Down Road is essentially a long cul-de-sac (dead end road terminating to the north west of the subject site), as is Down South Road (terminating to the south of the subject site). The surrounding public road network is a legacy to previous precinct planning and development approvals. During the preparation of this BMP report four access options were investigated to the north, west, and south. The City of Albany will be providing secondary emergency access to Albany Highway via securing tenure and implementing the construction as per Option 4 outlined in Appendix 7 of this report.

Access Option 4 is the construction of an Emergency Access Way (EAW) to link Down Road South and Albany Highway to enable a secondary access/egress for the AMP site. Consultation undertaken by CoA during the preparation of this BMP has sought verbal in-principal agreement for the linking EAW by Main Roads Western Australia (MRWA), Water Corporation Western Australia (WCWA) (landowner), and Lindsay Black (landowner). This will give the AMP an alternative access route, which presently does not exist. The EAW will be a 20m wide road reserve excised from Lot 1 Down Road, and a 10m wide easement in gross through Lot 10 Down Road and measures 4.38km which does not meet the Acceptable Solutions (WAPC, 2017) and therefore has been assessed as non-compliant to the acceptable solutions (assessed under a performance-based assessment as per the WAPC guidelines).

The BEEP prepared to support this development provides contingency actions in accordance with the requirements of the *Position Statement: Tourism land uses within bushfire prone areas* (WAPC, 2018). These contingencies include early closure of the site, off-site evacuation and as a last resort, refuge on site in a suitable building / open space.

It is noted the following will apply for the proposed EAW:

- Traffic control for evacuation, contracted and documented in Operational Management Plan.
- Consultation during the preparation of this plan occurred with Main Roads Western Australia (MRWA), Water Corporation Western Australia (WCWA), & Lindsay Black (landowner) in principle agreement for the EAW is currently being sought by the CoA as stated in email from J Van Der Mescht Appendix 7. Legal agreements/ documentation will be sought in following stages (i.e. Development approval stages).
- The conditions of Scheme Amendment to document land owner agreements in subsequent DA documentation.
- It is 5km to Highway Volunteer Bushfire Brigade (located near Albany Airport).
- Water bombers and air attack facilities are located at Albany Airport.
- A public road is presently deemed not viable by CoA, it may be investigated in the future for wider precinct in the future through a Structure Planning process.
- Regular inspections along EAW (condition, gates etc) by AMP representatives prior to events occurring, documented in the OMP.

The BEEP and the alignment to the DPLH position statement have been utilised as a performance-based assessment to meet the intent for Access as per the WAPC guideline allow.

8.2. Bushfire Emergency Evacuation Plan

The aim of the BEEP is early, safe and timely evacuation of the site prior to bushfire events and no events are to be held on site during Catastrophic Fire Danger Rating (FDR) days. The BEEP has been prepared to support the proposed development will address on-site and off-site refuges, triggers for evacuation and roles and responsibilities for staff and stakeholders. Refer to Appendix 8. As the proposed development progresses beyond the rezoning phase, the BEEP will be updated for each stage including further specific details.

As previously identified, the design of the site does not allow for alternative access and is a legacy issue. As a result of legacy issues of the surrounding public road network, these constraints are addressed by the BEEP providing contingency measures to address identified risks including:

- Clear triggers for off and onsite evacuation (to be updated to support future planning applications);
- Clear triggers & guidelines for scheduling events or cancelling based on such factors as Fire Danger Rating (FDR), evening events during certain times of the year, 'Total Fire Ban' days and "Restricted vehicle movement days" (harvest bans);
- An on-site refuge for use in an emergency (i.e. a building constructed to the requirements of a 'community refuge' as per the Australian Building Codes Board 'Design and Construction of Community Bushfire Refuges' that can accommodate the number of people using that part of the facility (i.e. 200-500 for a club event);
- The proposed building located within the site and position to limit radiant heat exposure to <10 kW/m² and constructed to BAL-29; and
- Open air refuge with the capacity for a large event (upto 10,000 approx.) located in area where radiant heat exposure is limited to <2 kW/m².and preferably shaded with non-combustible material.

This is compliant with the WAPC *Position Statement: Tourism land uses within bushfire prone areas* (WAPC 2019). The BEEP will form part of the Emergency Management Plan for the site which will be developed by AMP prior to operations of the site.

The current locations of the proposed building and open-air refuge locations are indicative only and may change as development design progresses.

8.3. Bushfire Emergency Evacuation Plan inputs

The BEEP will be updated to support future planning applications and could consider the following inputs underpinning the drivers for evacuation:

- Offsite / On site evacuation time for different event sizes and locations within overall site;
- Potential fire scenarios under different Fire Danger Ratings (FDR);
- Bushfire modelling to determine the 10 kW/m² and 2 kW/m² line used an FFDI value of 80 and a flame temperature of 1200K;
- In determining the required capacity for any refuge building and open space dimensions an area of 0.75 m² to 1m² per person has been used; and
- Address potential numbers for people onsite ranging from 200-500 for club events up to 10,000 for state events.

ELA has identified suitable on-site refuge locations (see Figure 12) in the event of a bushfire. Early evacuation is always preferable however, in the event that this cannot occur, a building located within the 10 kW/m² zone (and constructed to specified standards) will provide a 'safer-place' option for onsite users. For larger events, open space areas that provide radiant heat exposure limited to <2 kW/m².is also identified. These areas (10kW/m² and 2 kW/m²) have been determined using a Method 2 BAL

assessment (refer to Appendix 9). A designated outdoor emergency assembly area and refuge building have been incorporated into the master plan design as indicated in Figure 12.

Triggers for evacuation will be identified in the BEEP and will be updated to support future planning applications in accordance with SPP 3.7. This will include: potential closures of the site under certain Fire Danger Ratings (FDR), triggers for off-site evacuation and procedures for staff and visitors in the event of an emergency etc.

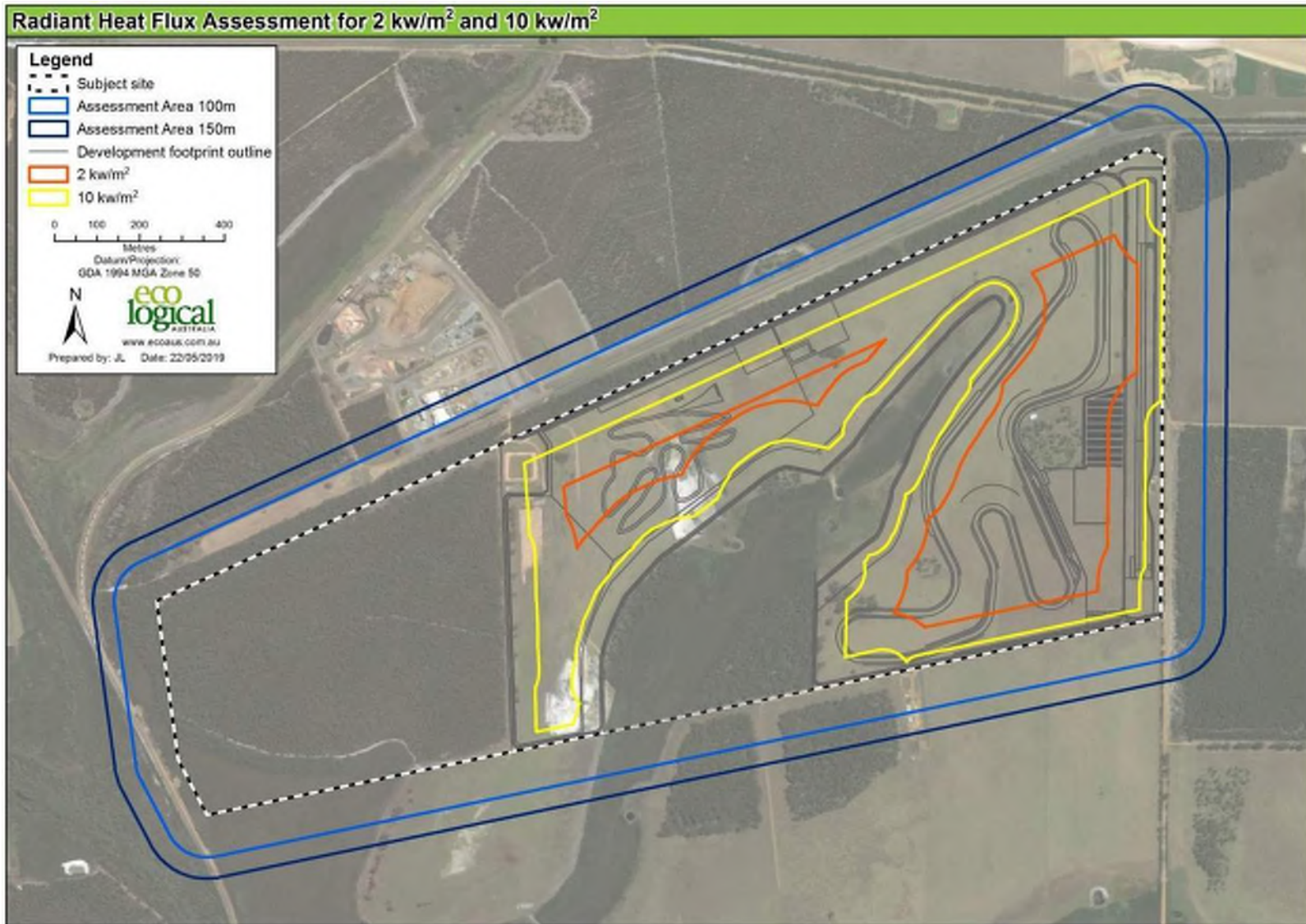


Figure 12: 10 kW/m² and 2 kW/m² locations

It is to be noted by the AMP governing body:

- Emergency Management Plan for the site which will be developed by AMP prior to operations of the site and will include the BEEP which will be finalised in consultation with CoA Emergency Management Services, DFES Albany Region and LEMC at Development Approval Stages; and
- CoA Emergency Management Services to ensure the BEEP and Emergency Management Plan for the AMP site is referred and registered through the Local Emergency Management Committee (LEMC).

9. Assessment to the bushfire protection criteria

The Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) outlines bushfire protection criteria which subdivision and development proposals are assessed for compliance. The bushfire protection criteria (Appendix 4, WAPC, 2017) are a performance-based criteria utilised to assess bushfire risk management measures and they outline four elements, being:

- Element 1: Location
- Element 2: Siting and Design of Development;
- Element 3: Vehicle Access; and
- Element 4: Water.

(WAPC, 2017)

The development is required to meet the “Acceptable Solutions” of each Element of the bushfire protection criteria (WAPC, 2017). The proposal has been assessed against the bushfire protection criteria Acceptable Solutions for Elements A1, A2, A3 and A4. As stated in Section 7 of this report the subject site has one way in and one-way out due to the legacy of the surrounding road network. A performance-based assessment has been detailed in Section 9.2 and a summary of the Performance Principle and Acceptable Solutions assessment is provided in Table 6.

Table 6: Bushfire protection criteria applicable to the site

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 1 – Location	A1.1 Development Location	Yes	<p>Compliant.</p> <p>The proposed AMP concept plan is located in an area (post development) which all infrastructure will be in either Moderate or Low BHL. BAL Contour mapping indicates that all infrastructure and development can be located in BAL 29 or less with no BAL 40 prevailing over the development. Refer to Figure 8 and 9.</p> <p>Proposal meets acceptable solution A1.1.</p>
Element 2 – Siting and Design	A2.1 Asset Protection Zone	Yes	<p>Compliant.</p> <p>APZ standards will apply to the development footprint and the buffer (50m) areas. Low fuel standards are to be to WAPC APZ standards (refer to Appendix 10) at all times. Maintenance and management of the site is to be documented in the Operational Management Plan for the site.</p> <p>Proposal meets acceptable solution A2.1.</p>
Element 3 – Vehicular Access	A3.1 Two Access Routes	Yes	<p>Non-compliant.</p> <p>Access internal the site will be provided in alternative directions to separate destinations to Down Road to the north and Down Road South (south east). Multiple gates will also facilitate access/egress from the site in the north and eastern boundaries. Refer to internal Access Plan Figure 11. Down Road is essentially a long cul-de-sac (dead end road terminating to the north west of the subject site), as is Down South Road (terminating to the south of the subject site). The surrounding public road network is a legacy to previous precinct planning and development approvals.</p> <p>The City of Albany will be providing secondary emergency access to Albany Highway via securing tenure and implementing the construction of the Emergency Access Way as per Option 4 outlined in Appendix 7 of this report. Access Option 4 is the construction of and Emergency Access Way (EAW) to link Down Road South and Albany Highway to enable a secondary access/egress for the AMP site. This will give the AMP an alternative access route, which presently does not exist. The EAW will be a 20m wide road reserve excised from Lot 1 Down Road, and a 10m wide easement in gross through Lot 10 Down Road and measures 4.38km which does not meet the Acceptable Solutions (WAPC, 2017) and therefore has been assessed as non-compliant to the acceptable solutions (assessed under a performance-based assessment as per the WAPC guidelines).</p> <p>The BEEP prepared to support this development provides contingency actions in accordance with the requirements of the <i>DPLH Position Statement: Tourism land uses within bushfire prone areas</i> (WAPC, 2019). These contingencies include early closure of the site, off-site evacuation and as a last resort, refuge on site in a suitable building / open space.</p>

Table 6 cont.

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 3 – Vehicular Access cont.	A3.2 Public Road	No	No public roads are proposed. Not assessed to A3.2.
	A3.3 Cul-de-sacs	No	No cul-de-sacs are proposed. Not assessed to A3.3.
	A3.4 Battle axes	No	No cul-de-sacs are proposed. Not assessed to A3.4.
	A3.5 Private driveways	Yes	<p>Compliant.</p> <p>Internal driveways and access ways in and around the site are to confirm to public road standards and will be a minimum of 12m wide horizontal clearance with a 6m trafficable surface. Standards for the internal driveways/public access roads meet the minimum requirements as set by the guidelines as shown in Table 7 Vehicle Access Technical Requirements. Detail on the internal access driveways will be documented in the detailed civil engineering drawings to be approved by CoA at Development Approval Stages.</p> <p>Proposal is deemed compliant to A3.5.</p>
	A3.6 Emergency Access Ways	Yes	<p>Non-compliant. Performance based assessment</p> <p>An Emergency Access Way is to be constructed to enable a secondary access/egress to Albany Highway. This will be gazetted as an easement in gross to allow for emergency access/egress in a bushfire event. This will give the AMP an alternative access route, which presently does not exist. The EAW to Albany Highway from Down Road South (Option 4) will be an easement in gross to a minimum of 12m wide and measures 4.38km in length (from the site to Albany Highway) which does not meet the Acceptable Solutions (WAPC, 2017) and therefore has been assessed as non-compliant. Standards for the EAW are to meet Table 7 Vehicle Access Technical Requirements and documented in the detailed civil engineering drawings to be approved by CoA at Development Approval Stages.</p> <p>The BEEP prepared to support this development provides contingency actions in accordance with the requirements of the <i>DPLH Position Statement: Tourism land uses within bushfire prone areas</i> (WAPC, 2018). These contingencies include early closure of the site, off-site evacuation and as a last resort, refuge on site in a suitable building / open space. The BEEP and the alignment to the DPLH position statement have been utilised as a performance based assessment to meet the intent for Access as per the WAPC guideline allow.</p>

Table 6 cont.

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 3 – Vehicular Access cont.	A3.7 Fire Service Access Ways	Yes	<p>Compliant</p> <p>Fire Service Access Ways (FSA's) will be located internal to the site to enable fire appliances to easily access the site during motorsport events and non-event days. Refer to the Access Plan Figure 11. FSA's are to be 8m wide horizontal clearance with a 4m wide trafficable surface (noting 1m wide stabilised shoulders can apply as per Table 7). Standards for the internal FSA's are to meet table 7 Vehicle Access Technical Requirements and documented in the detailed civil engineering drawings to be approved by CoA at Development Approval Stages.</p> <p>Proposal is deemed compliant to A3.7.</p>
	A3.8 Firebreaks	Yes	<p>Compliant.</p> <p>A network of strategic fire breaks and FSA access to 8m is proposed for the site and has been prepared in consultation with CoA Emergency Management Services and AMP representatives. Refer to the Access Plan Figure 11. Existing firebreaks are evident across the site and are to be maintained by the leasees until AMP and CoA are managers of Lot 5780 Down Road. CoA to ensure this is documented in any temporary lease agreements once in ownership of the land.</p> <p>Proposal is deemed compliant to A3.8.</p>
Element 4 – Water	A4.1 Reticulated areas	No	N/A not assessed to A 4.1.
	A4.2 Non-reticulated areas	Yes	<p>Compliant</p> <p>Water supply will be through on-site resources via bore extraction to tank storage and pumped to facilities around the site. Bore water supply is known to the area, a copy of a monitoring bore testing for water sources in the northern area of the precinct is provided in Appendix 4. Storage of water dedicated for fire fighting will be located in the north and the eastern precincts and tanks are to be a minimum of 110,000L. A suitably qualified Fire Engineer will be engaged by the AMP prior to DA to ensure hydrants and supply pressure are to the required standards, to be approved by the CoA at Development Approval Stages.</p> <p>Proposal is deemed compliant to A4.2.</p>
	A4.3 Individual lots in non-reticulated areas	No	N/A not assessed to A4.3.

Table 7: Vehicular Access Technical Requirements (WAPC, 2017)

Technical requirements	Private Driveways	Emergency Access Ways (EAW)	Fire Service Access Ways (FSA)
Minimum trafficable surface (m)	4	*6	*6
Horizontal clearance (m)	6	6	6
Vertical clearance (m)	4.5	4.5	4.5
Maximum grades	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5

*Denotes the width can include a 4m wide paving with one metre wide constructed road shoulders

9.1. Barrier Fencing

In November 2010 the Australian Bushfire CRC issued a “Fire Note” (Bushfire CRC, 2010) which outlined the potential for residential fencing systems to act as a barrier against radiant heat, burning debris and flame impingement during bushfire. The research aimed to observe, record, measure and compare the performance of commercial fencing of Colourbond steel and timber (treated softwood and hardwood).

The findings of the research found that:

“.. Colourbond steel fencing panels do not ignite and contribute significant heat release during cone calorimeter exposure” (exposure to heat)

..”Colourbond steel (fencing) had the best performance as a non-combustible material. It maintained structural integrity as a heat barrier under all experimental exposure conditions, and it did not spread flame laterally and contribute to fire intensity during exposure”

It is also noted that non-combustible fences are recommended by WAPC (APZ standards: Fences and sheds within the APZ are constructed using non-combustible materials e.g. colourbond iron, brick, limestone, metal post and wire). The AMP will be required to build non-combustible fences through-out the site and will be documented through the OMP.

9.2. Fuel Reduction Strategy

The following parameters/strategies are recommended for the property. Sampling and fuel calculation should be as per the recommended methodology as outlined by DFES:

- Forest fuels are maintained to maximum of 15 t/ha in Forest (Type A) vegetation types;
- Woodland fuels are maintained to maximum of 8 t/ha in Woodland (Type B) vegetation types;
- Fuel reduction can be achieved through slashing or hazard reduction burning;
- Hazard reduction burning in the western remnant native vegetation area should be carried out in consultation with DFES and the CoA in accordance with the *Bushfires Act 1954*. This will be the responsibility of the landowner (CoA) and documented through their reserve’s management plan;
- Hazard reduction burning in the western remnant native vegetation (Jarrah/Marri vegetation) is generally recommended to be a rotation 8-10 years over a series of cells;
- Slashing/mowing all internal grassland and woodland areas to maintain in a low fuel status;
- Observing no vehicle movement bans and total fire bans during slashing operations; and
- Hazard reduction burning only occurs in the western remnant vegetation block, restrictions of fire in central creek area (to reduce risk of peat fires) through an 8m firebreak/FSA at edge of fencing of remnant vegetation (restrict grass fires into remnant vegetation).

10. Implementation of the BMP

Implementation of this BMP will be the responsibility of the AMP and City of Albany. A draft governance document is provided in Appendix 1, which will be further refined through the development process. Table 8 and 9 outline responsibilities for implementation of this BMP report, noting there are further standards requirements documented throughout this BMP report.

10.1. Developer Responsibility

It is recommended the AMP governing body be responsible for the following:

Table 8: Implementation actions AMP

Developer – Prior to issue of titles			
No	Implementation Action	Prior to D/A	Prior to operations
1	A detailed Operational Management Plan (OMP) to be developed by AMP which includes risk assessments (refer to example Appendix 5) as per Confederation of Australian Motor Sport (CAMS) OSH policy and governing regulations to ensure there are actions to minimize risks of ignition and potential bushfire from internal sources of the park.	✓	
2	OMP to outline maintenance requirements across the lease area especially in regards to management and maintenance of Fire Service Access, fire breaks, low fuel areas, inspections of the secondary Emergency Access Ways from Down Road South to Albany Highway	✓	
3	OMP to outline arrangement in place for communication to local brigades and neighbours in relation to external bushfire risks.	✓	
4	The OMP will be reviewed and endorsed by the CAMS prior to operation of the AMP.	✓	
5	AMP governing body to ensure that events are not held on Catastrophic FDR days, Total fire ban days and vehicle movement restrictions as regulated by CoA or DFES.	✓	
6	Consideration of purchase of fast attack light unit for the AMP site and to be placed adjacent to any practise areas (non-event days).		✓
7	Practice days and non-events are to be controlled and regulated by AMP and documented in the OMP for the site.	✓	
8	Event days will have full fire safety crews, ambulance and safety personnel strategically located around the track and documented through the OMP.	✓	
9	Restricting public access through the site to spectator viewing areas and competitor areas, access around the whole of the site is restricted to emergency and safety services.		✓
10	Controlled re-fueling in designated areas for all motorsport park precincts and documented in OMP.	✓	
11	Traffic control for evacuation, contracted and documented in Operational Management Plan.	✓	✓
12	Site construction activities are to confirm to the BMP report and detailed in contractual arrangements with any contractors.		✓
13	Refuge buildings for (club days) 200-500 people built to AS 3959 BAL-29 and conform to the ABCB handbook.		✓
14	Emergency Management Plan for the site which will be developed by AMP prior to operations of the site and will include the BEEP which will be finalised in consultation with CoA Emergency Management Services, DFES Albany region and LEMC at Development Approval Stages.		✓

Table 8 cont.

No	Implementation Action	Prior to D/A	Prior to operations
15	Standards for the internal driveways/public access roads, EAW and FSA's are to meet Table 7 Vehicle Access Technical Requirements and documented in the detailed civil engineering drawings to be approved by CoA at Development Approval Stages.	✓	
16	Existing firebreaks are evident across the site and are to be maintained to the CoA FMN standards by the AMP and maintenance documented in the OMP. Once operational the firebreaks are to confirm to the standards as outlined in the Access mapping Figure 11.	✓	✓
17	Fire Engineer will be engaged by the AMP prior to DA to ensure hydrants and supply pressure are to the required standards.	✓	✓
18	Update and review the BMP and BEEP as any changes occur, prior to Development Approval or every 5 years.	✓	✓

10.2. Local Government Responsibility

It is recommended the City of Albany shall be responsible for the following:

Table 9: Implementation actions City of Albany

LGA– Clearance of conditions			
No	Implementation Action	Lease arrangements	Land manager
1	Restricting public access through the site to spectator viewing areas and competitor areas, access around the whole of the site is restricted to emergency and safety services.	✓	
2	A Management Plan be developed for the remnant vegetation (future CoA managed land) outside of AMP lease area, particularly in relation to maintenance of Fire Service Access (outside of the AMP lease area), fire control and hazard reduction protocols as outlined in this document.		✓
3	Ensure the secondary access for the AMP is secured as a 20m wide road reserve excised from Lot 1 Down Road, and a 10m wide easement in gross through Lot 10 Down Road (min 6m trafficable surface) prior to any operations or construction of the AMP site.	✓	
4	CoA Emergency Management Services to ensure the BEEP and Emergency management Plan for the AMP site is referred and registered through the Local Emergency Management Committee (LEMC).		
5	Existing firebreaks are evident across the site and are to be maintained to the CoA FMN by the leasees until AMP and CoA are managers of Lot 5780 Down Road. CoA to ensure this is documented in any temporary lease agreements once in ownership of the land.		
6	Developing and maintaining District Fire Fighting Facilities and related infrastructure.	N/A, ongoing	
7	Provide advice on standards and methods to achieve community fire protection to owners/occupiers of land through issue and enforcement of the current Fire Management Notice (yearly advice brochure updated annually).	N/A, ongoing	
8	CoA, through their Bush Fire Brigade Organisation is the Controlling Authority for fire suppression and prescribed burning operations on the area.	N/A, ongoing	

11. Disclaimer

The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959 – Building in Bushfire Prone Areas, WAPC State Planning Policy 3.7 (WAPC, 2015), WAPC Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017), and CSIRO’s research into Bushfire behaviour. These are considered the minimum standards required to balance the protection of the proposed dwelling and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed dwelling are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire protection consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.


AS3959 disclaimer: It should be borne in mind that the measures contained within this Standard (AS3959) cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather conditions.

Building to AS3959 is a standard primarily concerned with improving the ability of buildings in designated bushfire prone areas to better withstand attack from bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself.

(AS3959)

12. Certification

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959 (Incorporating Amendment Nos 1, 2 and 3) and the Guidelines for Planning in Bushfire Prone Areas Ver 1.3 (WAPC, 2017).



SIGNED, ASSESSOR: DATE: 01/07/2021

Kathryn Kinnear, Bio Diverse Solutions
Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD30794)



Please refer to Appendix 11 for the certification of this BMP report from Level 3 BPAD practitioners, Eco Logical Australia.

13. References

AS 3959 Australian Standard, Construction of buildings in bushfire-prone areas, Building Code of Australia, Primary Referenced Standard, Australian Building Codes Board and Standards Australia.

Australian Building Codes Board (ABCB) (2014) Design and Construction of Community Bushfire Refuges. Australian Government and States and Territories of Australia. ABCB, GPO 9839, Canberra ACT 2601

Bio Diverse Solutions (2018) Reconnaissance Flora and Level 1 Fauna Survey, Lot 5780 Down Road, Drome. Unpublished report prepared for the City of Albany

Bushfire CRC (2010) Managing Forest in South West Western Australia, Research project undertaken by Dr Lachlan McCaw and Dr Roy Wittkuhn, retrieved from: <http://www.bushfirecrc.com/projects/b11/managing-forest-fires-south-western-australia>

Bureau of Meteorology Australia Climate Data online accessed September 2018 from: <http://www.bom.gov.au>

City of Albany (2019) Redmond Bushfire mapping, supplied by Brendan Gordon Community Emergency Services Manager, City of Albany.

City of Albany Fire Management Notice, yearly advice brochure, accessed July 2017 from: <http://www.albany.wa.gov.au>

Confederation of Australian Motor Sport (CAMS) Occupational Health and Safety Policy, accessed March 2019 retrieved from: www.cams.com.au

Confederation of Australian Motor Sport (CAMS) (2012) CAMS' Track Operator's Safety Guide. Accessed March 2019 retrieved from: www.cams.com.au

Department of Planning, Lands and Heritage (DPLH) (2019) *Position Statement: Tourism land uses within bushfire prone areas*. Government of Western Australia.

Motorcycling Australia (MA) (2011) Track Guidelines. Accessed March 2019 retrieved from: www.ma.org.au/

GHD (2018) extract from: Albany Motorsport Park Site Feasibility Study – Lot 5780 Down Road South Drome. Unpublished report prepared for the City of Albany.

Sandiford, E.M. and Barrett, S. (2010) *Albany Regional Vegetation Survey, Extent Type and Status, A project funded by the Western Australian Planning Commission (EnviroPlanning "Integrating NRM into Land Use Planning" and State NRM Program), South Coast Natural Resource Management Inc. and City of Albany for the Department of Environment and Conservation*. Unpublished report. Department of Environment and Conservation, Western Australia.

Western Australian Planning Commission (WAPC) (2017) Guidelines for Planning in Bushfire Prone Areas. Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.

Western Australian Planning Commission (WAPC, 2015) State Planning Policy 3.2 Planning in Bushfire Prone Areas. Department of Planning WA and Western Australian Planning Commission.

State Land Information Portal (SLIP) (2018) Map of Bushfire Prone Areas. Office of Bushfire Risk Management (OBRM) data retrieved from:
<https://maps.slip.wa.gov.au/landgate/bushfireprone/>

Appendices

Appendix 1: Governance Model for AMP

Appendix 2: Flora survey vegetation complex mapping and vegetation condition mapping
(BDS, 2018)

Appendix 3: Vegetation classifications to AS3959

Appendix 4: Bore Test Certificate

Appendix 5: BDS Risk Assessment AMP

Appendix 6: CAMS OSH policy and risk assessment template

Appendix 7: Access options

Appendix 8: Bushfire Emergency Evacuation Plan

Appendix 9: ELA Method 2 BAL Calculations ELA

Appendix 10: WAPC APZ standards

Appendix 11: ELA peer review

Appendix 1

Draft governance model AMP

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

1. **VENUE**
Albany Motorsport Park
2. **LOCATION**
Lot 5780 Down Road, DROME, Western Australia
3. **LAND OWNER**
City of Albany
owns the land (LOCATION)
approving Authority for any modifications
4. **VENUE OWNER**
Albany Motorsport Venue Incorporated (AMV Inc.)
leases land from the LAND OWNER
owns and maintains the facilities and infrastructure
5. **THE BOARD**
VENUE OWNER's board of 7 Directors
responsible for management and operation of the VENUE
6. **OCCUPIER**
The VENUE OWNER
7. **AFFILIATIONS**
Confederation of Australian Motor Sport Limited, trading as Motorsport Australia
Motorcycling Australia Ltd
8. **VENUE MAP**
Albany Motorsport Park Masterplan
9. **OWNERSHIP & OPERATION**
 - Ownership of the land (The Land) is and will remain owned by the City of Albany.
 - Post construction by the City of Albany, ownership of all facilities and infrastructure (will be transferred to the Albany Motorsport Venue Incorporated (AMV Inc.) by written agreement.
 - ▲ The Land (not the Venue) will be leased by the City of Albany to the AMV Inc.
 - The AMV Inc. will be responsible for the operation, maintenance and repair of the Venue.
10. **AMV INC. BOARD GOVERNANCE**
 - AMV Inc. is to be established as a not for profit association incorporated in accordance with the Associations Incorporation Act 2015.
 - Noting it is acceptable for an association to trade with the public so long as the profits from those transactions are used to promote the objects and purposes of the association and members do not profit from the activities.
 - AMV Inc. will consist of a Board of Directors (the Board).
 - The Directors will be paid a remuneration agreed annually.
11. **THE BOARD**
 - 11.1 The Board may have up to seven (7) Directors, who shall comprise:
 - Two (2) community representatives recommended by the City of Albany for the Board's consideration.

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

- One (1) representing Motorsport Australia;
- One (1) representing Motorcycling Western Australia (MWA);
- One (1) representing 4-wheel racing clubs;
- One (1) representing 2-wheel racing (motorcycle road racing) clubs;
- One (1) representing motocross clubs;

11.2 The Chairman of the Board will be elected by the Directors.

11.3 Appointments are to be up to a two-year term, with skills determined by the Board.

11.4 The Directors shall meet monthly or on more occasions if the need dictates.

11.5 The Board to employ an Operations Manager and any other staff deemed necessary to ensure the safe and compliant Venue.

11.6 The Board shall lease the Land from the City of Albany.

11.7 A Lease Agreement shall be prepared by the City of Albany and approved by the City of Albany Council.

11.8 The Board shall be responsible for the insurance of the tracks, roads and any other permanent buildings and fixtures on the Venue.

11.9 The Board is responsible for the development of an Albany Motorsport Park Strategic Development Plan and overseeing the implementation of the strategies and supporting policies.

11.10 The Board is responsible for the development and implementation of systems to enable it to comply with its legal and policy obligations, adhering to accounting standards and ensuring the Venue assets are protected through appropriate risk management.

11.11 The Board is responsible for the marketing, management, programming and the safe use of the Venue.

12. VENUE OWNER

12.1 The Venue Owner shall carry out:

- marketing the Venue;
- hiring of facilities to various users and user groups;
- programme the hiring and events held at the Venue;
- ensure the hirer has the appropriate permit for the event being conducted;
- ensure the hirer has the appropriate event insurance in place;
- adherence to the Motorsport Australia "Track Operations Safety Guide";
- adherence to the Motorcycling Australia "Track Standards" and current "Manual of Motorcycle Sport";
- management and maintenance of the infrastructure;
- establish and maintain an ongoing maintenance (sinking) fund;
- ensure the Venue is cost-effective, that is, income is equal to or greater than expenses;
- adherence to the Bushfire Management Plan;

Version: Thursday, 13 May 2021 | Page 2 of 4

Appendix 2

Flora Vegetation Complexes and Vegetation Condition Mapping



615000 615100 615200 615300 615400 615500 615600 615700 615800 615900 616000 616100 616200 616300 616400 616500 616600 616700 616800 616900 617000 617100 617200 617300 617400 617500 617600 617700 617800 617900 618000 618100 618200 618300 618400 618500 618600 618700 618800



29 Hercules Crescent
Albany, WA 6330
Australia
Tel: 08 9842 1575
Fax: 08 9842 1575



Overview Map Scale 1:100,000

- Legend**
- Subject Site
 - Cadastre
 - 5m Contours
 - ▲ Vegetation Reliefs
- Vegetation Complexes**
- Jarrah/Sheoak/Eucalyptus steen Sandy Woodland
 - Jarrah/Marri/Sheoak Laterite Forest
 - Homalium ferrugineum/Callolemon glaucus Peat Thicket
 - Melaleuca preissiana Low Woodland
 - Open paddock / agricultural land
 - Miscellaneous Drainage Woodland/Shrubland

Scale
1:8,500 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: 6th Nov; Landscape Subdivision Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
PEI Road Network, Water Roads Western Australia 2017
Overview Map: World Topographic map service, EPS: 3012

CLIENT
City of Albany
PO Box 484
Albany, WA 6331

Vegetation Complexes Mapping

Assessor	QA Check	Drawn by
EH	KK	BT
STATUS	FILE	DATE
FINAL	MSC0137-002	06/02/2019



29 Hercules Crescent
Albany, WA 6330
Australia
Tel: 08 9842 1575
Fax: 08 9842 1575



Overview Map Scale 1:100,000

Legend

- Subject Site
- Cadastre
- 5m Contours
- Completely Degraded
- Very Good
- Excellent
- Pristine



Scale
1:8,500 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Gov. Landcare Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
985 Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service: ©2012

CLIENT

City of Albany
PO Box 484
Albany, WA 6331

Vegetation Condition Mapping

Assessor: BH	QA Check: KK	Drawn by: BT
STATUS: FINAL	FILE: MSC0137-002	DATE: 13/12/2018

Appendix 3

Vegetation Classifications to AS3959

Vegetation classification to AS3959

Site Details			
Address:	Lot 5780 Down Road		
Suburb:	Drome	State:	W.A.
Local Government Area:	City of Albany		
Stage of WAPC Planning	Scheme Amendment and Rezoning		
Report use:	Preparation of the BMP for AMP		

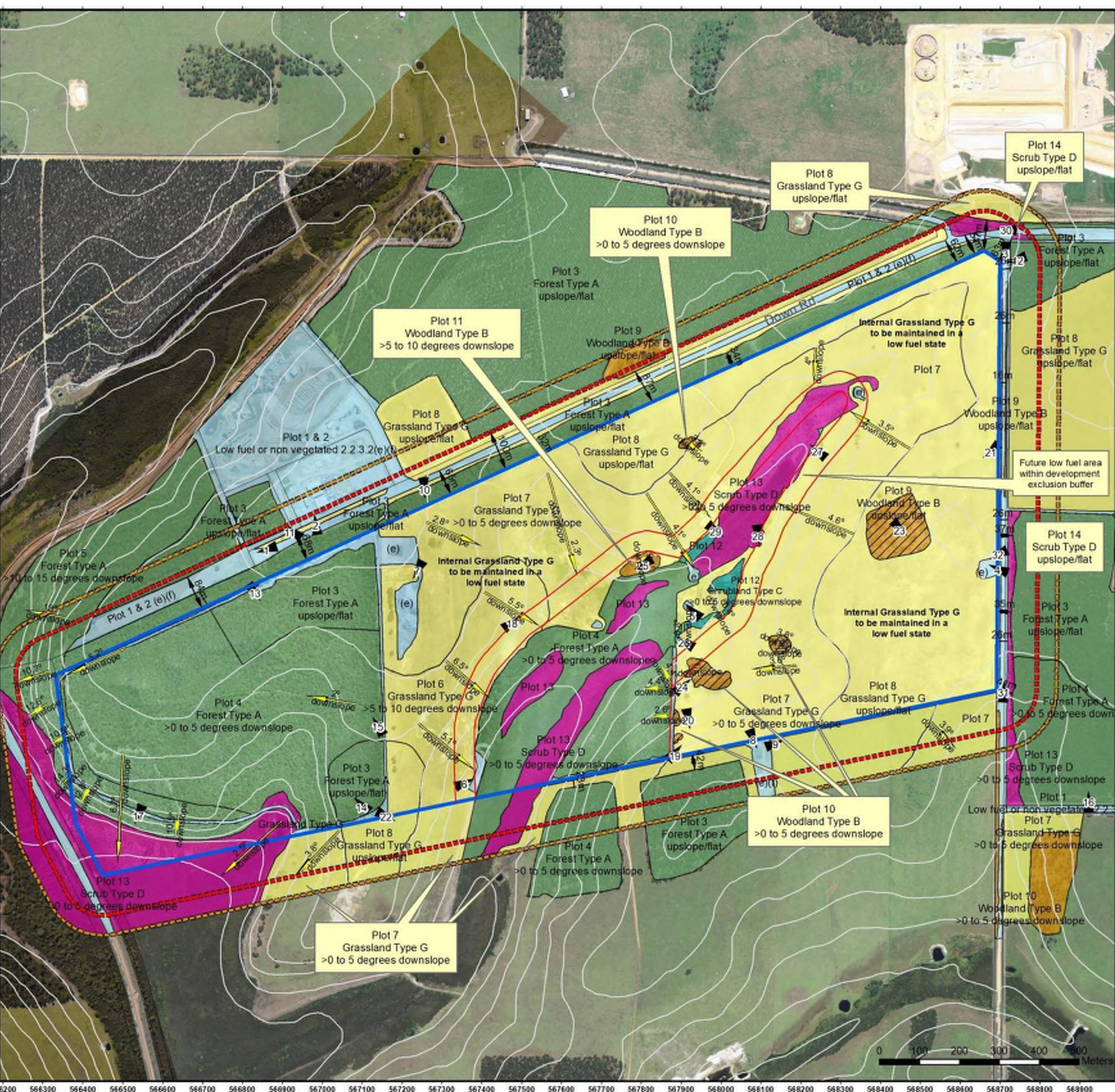
BMP Plan Details			
Report / Job Number:	COA0020	Report Version:	FINAL
Assessment Date:	14/02/2019	Report Date:	10/05/2019
BPAD Practitioner	Kathryn Kinnear	Accreditation No.	BPAD 30794



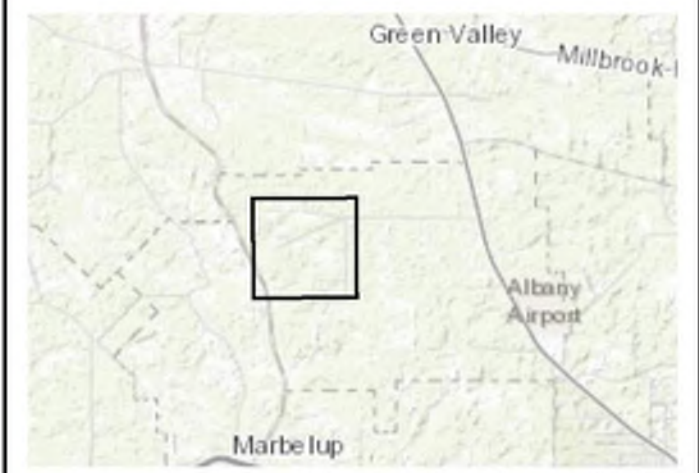
Vegetation Classification

Site assessment occurred on the 14th February 2019 by Kathryn Kinnear (BPAD 30794). All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in the following pages and shown on the Vegetation Classes Map Page 2.

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568400
568500
568600
568700
568800
568900
569000



This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPA030794
Jurisdiction: Level 2 - WA



Overview Map Scale 1:100,000

Legend

- Subject Site
 - 100m Assessment Boundary
 - 150m Assessment Boundary
 - Cadastre
 - 5m Contours
 - Low Fuel Buffer
 - Future Low Fuel
 - Separation Distance
 - Slope Degrees
- Vegetation**
- Forest Type A
 - Woodland Type B
 - Shrubland Type C
 - Scrub Type D
 - Grassland Type G
 - Low fuel or non vegetated 2.2.3.2

Scale
1:9,500 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
City of Albany
Lot 5780 Down Road
Drome, WA 6330

Vegetation Classes

BAL Assessor	QA Check	Drawn by
KK	KK	BT
STATUS	FILE	DATE
FINAL	COA0020	10/05/2019


Plot	1	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			<p>Location: Internal and external to the site.</p> <p>Description: Hardstand areas, roads, driveways, dams, and buildings. Excluded as per AS3959 exclusion clause 2.2.3.2 (e).</p>

Photo Id 1: View of Down Road to the west where it terminates west of Plantation Energy site.




Plot	1 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			<p>Additional Photo of Plot 1.</p>

Photo Id 2: View to the north of the Plantation Energy site.

Plot	1 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			<p>Additional Photo of Plot 1.</p>
<p><i>Photo Id 3: View to the south along Down Road South.</i></p>			
Plot	1 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			<p>Additional Photo of Plot 1.</p>
<p><i>Photo Id 4: View of existing internal dam located along eastern boundary.</i></p>			


Plot	1 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			<p>Additional Photo of Plot 1.</p>

Photo Id 5: View of existing internal dam/soak located in the central creek area.




Plot	1 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			<p>Additional Photo of Plot 1.</p>

Photo Id 6: View of existing internal dam/soak located along the southern boundary.

Plot	1 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			<p>Additional Photo of Plot 1.</p>
<p><i>Photo Id 7: View of hardstand area in the north west of the site.</i></p>			

Plot	2	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			<p>Location: Located around existing buildings to the south and north of the subject site. Along established firebreaks.</p> <p>Description: Maintained vegetation & low fuel areas associated with existing surrounding farms and development sites. Includes low fuel firebreaks.</p> <p>As per exclusion clause 2.2.3.2 (f) of AS3959.</p> <p>Excluded as per AS3959 exclusion clause 2.2.3.2 (f).</p>
<p><i>Photo Id 8: View to the south/south east of adjacent farm/shed area.</i></p>			

Plot	2 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			<p>Additional Photo of Plot 2.</p>
<p><i>Photo Id 9: View along the southern boundary showing low fuel fire break and adjacent driveways access maintained in a low fuel condition.</i></p>			
Plot	3	Classification or Exclusion Clause	Forest Type A
			<p>Location: Located internal to the subject site in the north and south east corners of the western remnant vegetation block. External to the site in the north, and north east.</p> <p>Separation Distance: Nil internal,</p> <p>Description: Jarrah, Marri and Sheoak low forest. Midstorey dominated by <i>Banksia</i>, <i>Agonis</i>, <i>Hakea</i> and <i>Leucopogon</i>. Understorey of native shrubs, sedges and grasses. Multilayered. Includes Blue gum plantations external to the site.</p> <p>Average vegetation height: 8 -13m.</p> <p>Vegetation Coverage: 30-70%.</p> <p>Available fuel loading: 25-35t/ha.</p> <p>Effective slope: Upslope.</p>
<p><i>Photo Id 10: View to the south of fringing vegetation along Down Road.</i></p>			

Plot	3 cont.	Classification or Exclusion Clause	Forest Type A
			<p>Additional Photo of Plot 3.</p>

Photo Id 11: View to the north west of Blue Gum Plantations located north of Down Road.

Plot	3 cont.	Classification or Exclusion Clause	Forest Type A
			<p>Additional Photo of Plot 3.</p>

Photo Id 12: View to the west of Forest Type A along Down Road South.

Plot	3 cont.	Classification or Exclusion Clause	Forest Type A
			<p>Additional Photo of Plot 3.</p>

Photo Id 13: View to the south east of internal Forest located in the north west of the site.


Plot	3 cont.	Classification or Exclusion Clause	Forest Type A
			<p>Additional Photo of Plot 3.</p>

Photo Id 14: View to the north west of Forest Type A located in the south west (internal) of the site.


Plot	4	Classification or Exclusion Clause	Forest Type A
			<p>Location: Internal in remnant vegetation along creekline and in the remnant to the west. External to the east and south east.</p> <p>Separation distance: Nil internal and 35-41m to the east.</p> <p>Dominant species & description: Jarrah, Marri and Sheoak low forest. Midstorey dominated by <i>Banksia</i>, <i>Agonis</i>, <i>Hakea</i> and <i>Leucopogon</i>. Understorey of native shrubs, sedges and grasses. Multilayered. In creekline dominated by <i>Taxandria linearifolia</i> and Native Willow</p> <p>Average vegetation height: 8-13m.</p> <p>Vegetation Coverage: 30-70%.</p> <p>Available fuel loading: 25-35t/ha.</p> <p>Effective slope: Downslope >0 to 5 degrees.</p>

Photo Id 15: View to the north west of Forest Type A.

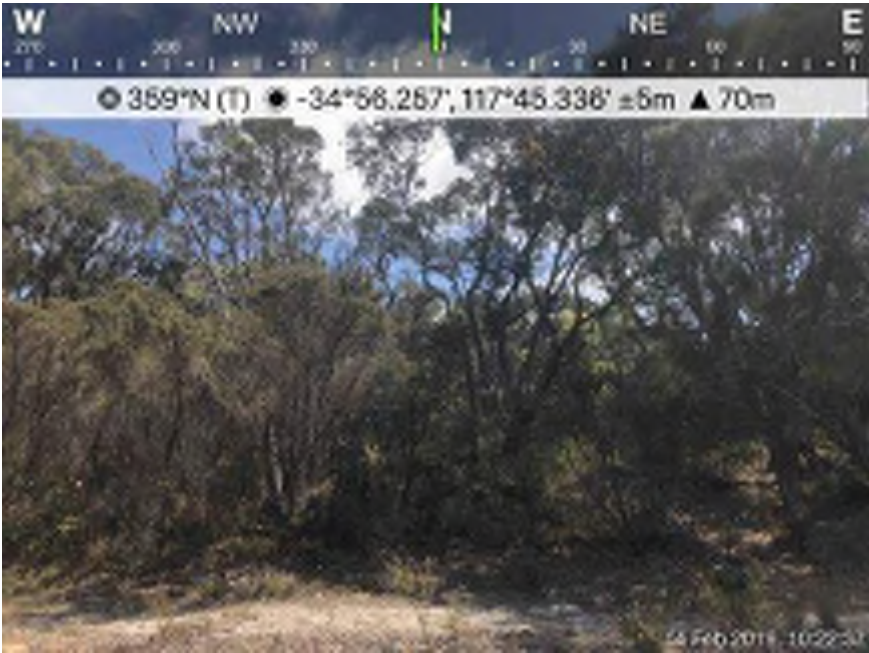
Plot	4 cont.	Classification or Exclusion Clause	Forest Type A
			<p>Additional Photo of Plot 4.</p>

Photo Id 16: View to the north of Forest Type A located to the east/south east of the site in private property.


Plot	5	Classification or Exclusion Clause	Forest Type A
			<p>Location: Internal to the subject site along a ridge in the western remnant vegetation block. Extends to the north of the subject site. Recently burnt (May 2018 bushfires).</p> <p>Separation distance: Nil.</p> <p>Dominant species & description: Jarrah, Marri and Sheoak low forest. Midstorey dominated by <i>Banksia</i>, <i>Agonis</i>, <i>Hakea</i> and <i>Leucopogon</i>. Understorey of native shrubs, sedges and grasses. Multilayered.</p> <p>Average vegetation height: 8-13m.</p> <p>Vegetation Coverage: 30-70%.</p> <p>Available fuel loading: 28-35t/ha.</p> <p>Effective slope: Downslope > 10 to 15 degrees.</p>

Photo Id 17: View to the south of Forest Type A recently burnt (May 2018).

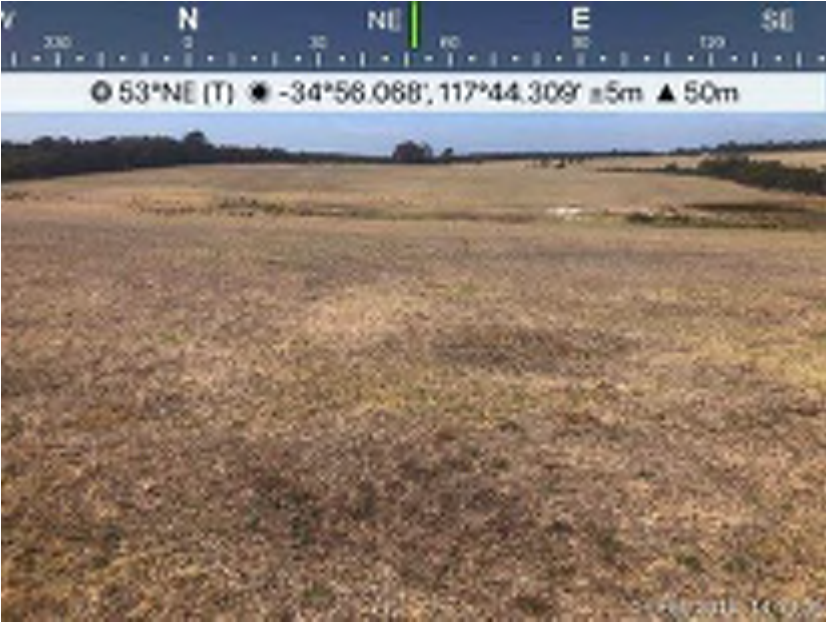
Plot	6	Classification or Exclusion Clause	Grassland Type G
			<p>Location: Internal to the west of the creekline area.</p> <p>Separation distance: Nil.</p> <p>Dominant species & description: Kikuyu, Cape Weed, Clovers, <i>Hypochaeris sp.</i>, and patches of Fiddle Dock, Inkweed and Burr (mainly in rehabilitated areas).</p> <p>Average vegetation height: 50-500mm.</p> <p>Vegetation Coverage: <10% trees.</p> <p>Available fuel loading: 4.5t/ha.</p> <p>Effective slope: Downslope >5 to 10 degrees.</p>

Photo Id 18: View to the north east of internal paddock areas in the west of the subject site.


Plot	7	Classification or Exclusion Clause	Grassland Type G
			<p>Location: Internal to the site in the east, north and west, also located to the south in adjacent property.</p> <p>Separation distance: Nil internal, 0-6m to the south.</p> <p>Dominant species & description: Kikuyu, Cape Weed, Clovers, <i>Hypochaeris sp.</i>, and patches of Fiddle Dock, Inkweed and Burr (mainly in rehabilitated areas).</p> <p>Average vegetation height: 50-500mm.</p> <p>Vegetation Coverage: <10% trees.</p> <p>Available fuel loading: 4.5t/ha.</p> <p>Effective slope: Downslope >0 to 5 degrees.</p>

Photo Id 19: View to the north east of internal paddock areas from the southern boundary.


Plot	7	Classification or Exclusion Clause	Grassland Type G
			<p>Additional Photo of Plot 7.</p>

Photo Id 20: View of Plot 7 on the eastern side of the remnant vegetation (Plot 4), note rocky ground.

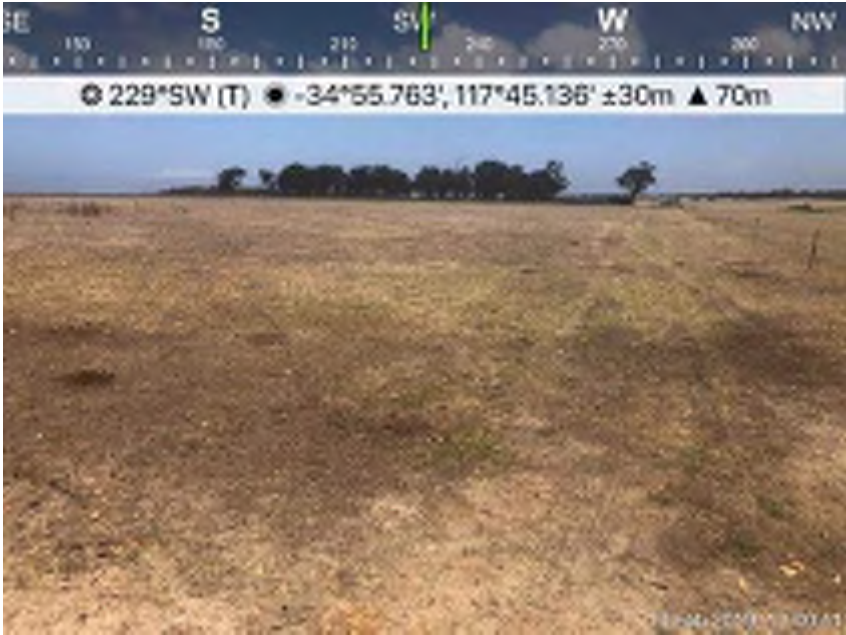
Plot	8	Classification or Exclusion Clause	Grassland Type G
			<p>Location: Internal to the site to the east. To the north, south and east of the subject site in adjacent properties and road reserves.</p> <p>Separation distance: Nil internal, 26m to the east, 0-6m to the south and 32-71m to the north.</p> <p>Dominant species & description: Kikuyu, Cape Weed, Clovers, <i>Hypochaeris sp.</i>, and patches of Fiddle Dock, Inkweed and Burr (mainly in rehabilitated areas).</p> <p>Average vegetation height: 50-500mm.</p> <p>Vegetation Coverage: <10% trees.</p> <p>Available fuel loading: 4.5t/ha.</p> <p>Effective slope: Upslope.</p>

Photo Id 21: View along internal fenceline in the east (central) area of internal paddocks.

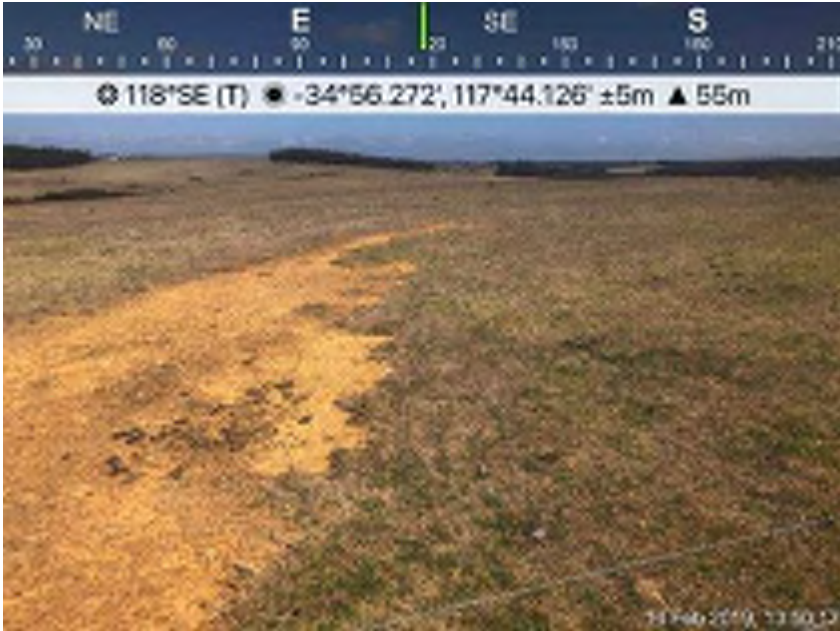


Plot	8	Classification or Exclusion Clause	Grassland Type G
			<p>Additional Photo of Plot 8.</p>

Photo Id 22: View to the south east along ridgeline located south/south west of the subject site.

Plot	9	Classification or Exclusion Clause	Woodland Type B (06)
			<p>Location: Internal to the site in small isolated patches. North in adjacent property and east along Down Road South.</p> <p>Separation distance: Nil internal and Down Road South, 87m to the north.</p> <p>Dominant species & description: Stands of Marri and Jarrah trees in open paddock areas. Grazed and disturbed understorey. Not multilayered.</p> <p>Average vegetation height: 12-15m.</p> <p>Vegetation Coverage: 10-30%.</p> <p>Available fuel loading: 15-25t/ha.</p> <p>Effective slope: Upslope.</p> <p>Note: Central paddock areas will be maintained as low fuel near track and facilities.</p>
<p><i>Photo Id 23: View to the south east through open woodland areas (central paddock areas in the east).</i></p>			
Plot	9 cont.	Classification or Exclusion Clause	Woodland Type B (06)
			<p>Additional Photo of Plot 9.</p>
<p><i>Photo Id 32: View along Down Road South.</i></p>			

Plot	10	Classification or Exclusion Clause	Woodland Type B (06)
			<p>Location: Internal to the site in small isolated patches.</p> <p>Separation distance: Nil.</p> <p>Dominant species & description: Stands of Marri and Jarrah trees in open paddock areas. Grazed and disturbed understorey. Not multilayered. Noted as future low fuel.</p> <p>Average vegetation height: 12-15m.</p> <p>Vegetation Coverage: 10-30%.</p> <p>Available fuel loading: 15-25t/ha.</p> <p>Effective slope: Downslope >0 to 5 degrees.</p>

Photo Id 24: View to the north east through Plot 10.


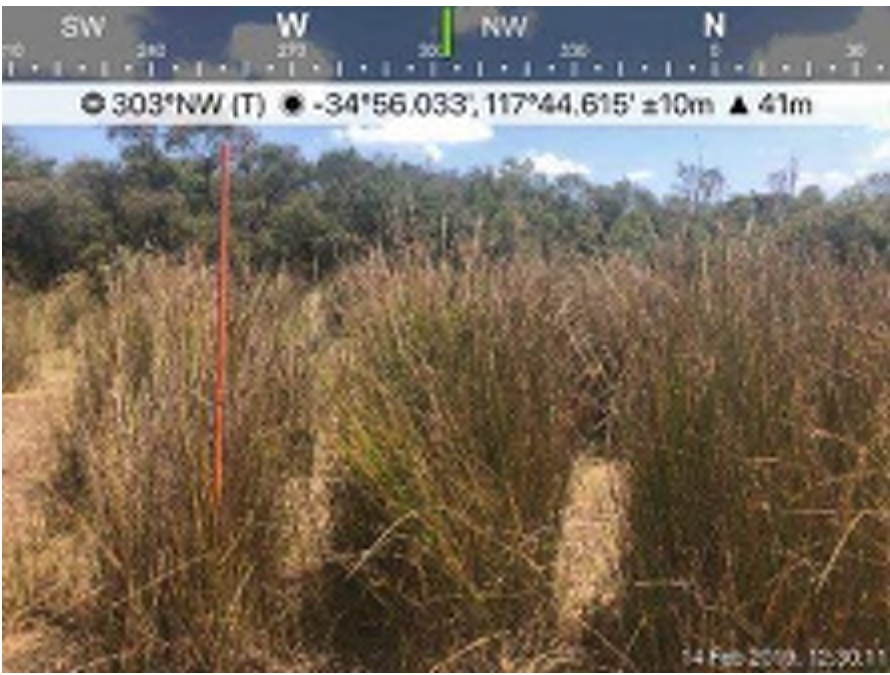

Plot	11	Classification or Exclusion Clause	Woodland Type B (06)
			<p>Location: Internal to the subject site situated the north of the creek.</p> <p>Separation distance: Nil.</p> <p>Dominant species & description: Stands of Marri and Jarrah trees in open paddock areas. Grazed and disturbed understorey. Not multilayered. Noted as future low fuel.</p> <p>Average vegetation height: 12-15m.</p> <p>Vegetation Coverage: 10-30%.</p> <p>Available fuel loading: 15-25t/ha.</p> <p>Effective slope: Downslope >5 to 10 degrees.</p>

Photo Id 25: View to the south west through Plot 11 located on the north of the central creek area.

Plot	12	Classification or Exclusion Clause	Shrubland Type C
			<p>Location: Internal to the site situated along creek line area.</p> <p>Separation distance: Nil.</p> <p>Dominant species & description: Taxandria, Homalospermum, Callistemon, native sedges and introduced grasses.</p> <p>Average vegetation height: 1-1.5m.</p> <p>Vegetation Coverage: 30% foliage cover.</p> <p>Available fuel loading: 15t/ha.</p> <p>Effective slope: Downslope >0 to 5 degrees.</p>
<p>Photo Id 26: View through Shrubland Type C located around central creek area (southern edge).</p>			
Plot	13	Classification or Exclusion Clause	Scrub Type D
			<p>Location: Internal in creek area.</p> <p>Separation distance: Nil.</p> <p>Dominant species & description: Melaleuca, Callistemon, Homalospermum, Banksia, Taxandria, Acacia and native sedges.</p> <p>Average vegetation height: 3-4m.</p> <p>Vegetation Coverage: >30% foliage cover.</p> <p>Available fuel loading: 25t/ha.</p> <p>Effective slope: Downslope >0 to 5 degrees.</p> <p>Note: Although this currently presents as Shrubland Type C, future revegetation within the creek area is expected to result in Scrub Type D vegetation type.</p>
<p>Photo Id 27: View through future Scrub Type D located around central creek area (eastern edge).</p>			


Plot	13 cont.	Classification or Exclusion Clause	Scrub Type D
			<p>Additional Photo of Plot 13.</p>

Photo Id 28: View of Scrub Type D located along central creek area (southern edge). Note 4m height staff.


Plot	13 cont.	Classification or Exclusion Clause	Scrub Type D
			<p>Additional Photo of Plot 13.</p>

Photo Id 29: View through Plot 13 on the northern side of the central creek area. Note 4m height staff.


Plot	14	Classification or Exclusion Clause	Scrub Type D
			<p>Location: External to the east along Down South Road and to the North at the Down Road and Down Road South intersection.</p> <p>Separation distance: 26m to the east 54-63m to the north.</p> <p>Dominant species & description: Predominately Taxandria (Tea tree) and Taylorina, some native sedges and introduced grasses.</p> <p>Average vegetation height: 2-4m.</p> <p>Vegetation Coverage: >30% foliage cover.</p> <p>Available fuel loading: 25t/ha.</p> <p>Effective slope: Upslope.</p>

Photo Id 30: View along Down Road at the intersection of Down Road South (note 1.5m high sign).


Plot	14 cont.	Classification or Exclusion Clause	Scrub Type D
			<p>Additional Photo of Plot 14..</p>

Photo Id 31: View along Down Road of adjacent property, low fuel firebreak in foreground, regrowth Tea Tree Scrub in background.

Comments on Vegetation Classifications:

- Distances from vegetation were made based on surface fuels to edge of lot (subject site) boundary;
- Effective slopes were measured in the field using a Nikon Forestry Pro and represented on the respective plots;
- Method 1 (AS3959) Simplified procedure was used for vegetation classification Assessment process;
- All vegetation was classified within the subject site and within 150m of the lot boundaries to AS3959 Table 2.3; and
- The perimeter of the vegetation was measured using field GPS and notations on field GIS maps.

CERTIFICATION

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959 (Incorporating Amendment Nos 1, 2 and 3).

SIGNED, ASSESSOR:



... DATE:

10/05/2019

Kathryn Kinnear, Bio Diverse Solutions

Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD30794)



Appendix 4

Bore water supply test certificate

WA DRILLING SERVICES

Details of Person carrying out the works

Driller	Phil Putland		
Driller License	48	Driller Classification	Class 2
Address	PO Box 5150 ALBANY WA 6331		
Telephone	0427 882 551		
Email	daniel@dominnet.net.au		

Location of Well

Client	City of Albany		
Address	Po Box 484 Albany WA 6330		
Location	Proposed motor race track Downs Rd		
	S3493037		
	E11773865+7		

Construction Details (all measurements taken from ground level)

Production casing detail					
Material	Nominal bore	Diameter O.D. (mm)	Wall thickness (mm)	Depth	
				From (m)	To (m)
PVC	100mm	114mm	7mm	0	17
				23.78	35.78

Screen/slots				
Screens/slot (type)	Diameter O.D. (mm)	Aperture (mm)	Top of screen (m)	Bottom of screen (m)
PVC	114mm	5mm	17.78	23.78
Open Hole				

Gravel pack details		
Gravel size	From (m)	To (m)
85-2mm	20	35.78

Annular Fill		
Material Type	From (m)	To (m)
Drill cuttings		
Bentonite Pellets	19	20

Cementing detail		
Casing diameter (mm O.D.)	Depth	
	From (m)	To (m)
5% Cement Bentonite Grout	19	0
Head works Concrete Block	500mm x 500mm	

From (m)	To (m)	Strata description
0	2	Sandy clay with gravel
3	5	sandy clay
6	7	clayey sand
10	12	silty sandy clay
17	28	siltstone sandstone
29	32	Clay dark grey, Milling formation
32	40	clay and shale siltstone
40	ExH	basement granite

Particulars of well

Drilling start	09-05-19	Drilling completion	10-05-19
Drilling method used	<input checked="" type="checkbox"/>	Rotary air	
	<input type="checkbox"/>	Rotary mud	
	<input type="checkbox"/>	Other	

Well Development

Duration of development	3hrs
Conductivity	110m/s
Recommended Supply	2lts/sec
SWL	7.720mtrs
Drawdown	20mtrs
Recommended Pumping	100lts/min
Set Pump	21mtrs

Appendix 5

Risk Assessment AMP

Albany Motorsport Park Risk Assessment

Risk No.	Hazard -Bushfire originating/causing fire	Probability of event occurring	Exposure of Visitors	Possible consequences if event occurs	Risk rating	Control measure
Internal to the site						
1	Ignition Vehicles/Bikes combusting on track due to crashes Inc fuel or oil line leaks on track	Almost Certain	Occasional	Very serious	Substantial/high	<ul style="list-style-type: none"> • Low fuel grass areas • Buffer areas low fuel to vegetation • Requirements outlined in Operators safety manual (CAMS) • Fire extinguishers located around the track and pit areas. • Safety crews on site every meeting and fire unit for unsupervised non track days during summer. • Spark arrestors on Motocross bikes. • No events on Total fire ban periods and Catastrophic & Extreme FDI. Consider twilight events. • Restrict public access and vehicle movement near the central creek area (safety and fire crews only).
2	Grinding sparks in pits or near fuel sources (hot works)	Very unlikely (designated re-fuelling areas)	Rare	Disaster	Low risk	<ul style="list-style-type: none"> • Operators safety manual (CAMS). • No storage of fuels on site. • Designated re-fueling areas (controlled zone). • Fire extinguishers strategically located. • Fire extinguishers each event participant. • Requirements outlined in Operators safety manual (CAMS). • Ensure control measures instigated during unsupervised non track days during summer.
3	Smoking public viewing areas or in pits near fuels	Unlikely (smoke free site)	Rare	Disaster	Low risk	<ul style="list-style-type: none"> • No smoking on site • Fire extinguishers strategically located. • Security enforcement to general public.
4	Vehicles (exhausts) near dry vegetation or slashing/mowing rocky ground (maintenance)	Likely	Rare	Very serious	Low risk	<ul style="list-style-type: none"> • Operations manual to define slashing procedures • Fast attack unit on site. • No slashing on high winds and hot days, Total fire ban periods and Catastrophic & Extreme FDI. • Observe no vehicle movement bans and total fire bans in Operators safety manual (CAMS).

Risk No.	Hazard -Bushfire originating/causing fire	Probability of event occurring	Exposure of Visitors	Possible consequences if event occurs	Risk rating	Control measure
Internal cont.						
5	Electrical faults building faults	Possible	Occasional	Very serious	Moderate	<ul style="list-style-type: none"> • New buildings to be constructed, less risk of faults. • Regular building inspections. • Compliance in new building, safety certification on electrical elements. (regulated) • All buildings built to BAL 29 on site.
6	Electrical faults from extension cords/cables (pits/trailers)	Possible	Occasional	Very serious	Moderate	<ul style="list-style-type: none"> • Worksafe procedures in place - Tagged and tested extension cords only from all event participants. • Fire extinguishers strategically located in pit area and with each event participant. • RCD protection on all power supply on site. (regulated). • Pit inspections & participant gear inspections for compliance during events.
7	Re-fuelling area (designated and controlled)	Likely	Occasional	Very serious	Very high risk	<ul style="list-style-type: none"> • Designated area for each site. • Low fuel non-combustible area. • Requirements outlined in Operators safety manual (CAMS) • Safety crews on site every meeting. • Fire unit for unsupervised non-track days during summer. • No events on Total fire ban periods and Catastrophic & Extreme FDI. • Restrict public access and vehicle movement near refuelling area.
8	Substandard race vehicles using the facility	Remotely possible	Very rare	Serious	Low risk	<ul style="list-style-type: none"> • Race scrutineering controls • Designated practice area • Requirements outlined in Operators safety manual (CAMS) •

Risk No.	Hazard -Bushfire originating/causing fire	Probability of event occurring	Exposure of Visitors	Possible consequences if event occurs	Risk rating	Control measure
Internal cont.						
9	Re-ignition of previously controlled fires (peat Central creek area)	Possible	Infrequent	Very serious/Disaster	Substantial	<ul style="list-style-type: none"> No controlled burning in creek area. Restrict public access and vehicle movement near the central creek area (safety and fire crews only). Barriers non combustible material to central creek area. Access (FSA) to creek/remnant vegetation area from fire crews, turnarounds and 6-8m wide horizontal clearance, 4m trafficable surface. Gates for fire access. Low fuel buffer areas (50m) from vegetated areas. No hazard reduction burning in central creek/remnant vegetation area. 8m firebreak around central remnant vegetation area to restrict grass fires from entering the area.
10	Water pump failure causing spark/ignition	Possible	Infrequent	Very serious/Disaster	Substantial	<ul style="list-style-type: none"> Ensure pumps adjacent bores are regularly maintained and inspected. Located in low fuel area, non-combustible materials No fuel storage near. Not located near buildings.
11	Gas Barbecues and camp fires causing ignition (unattended, faulty)	Very likely	Occasional	Very serious/Disaster	High risk	<ul style="list-style-type: none"> No camping on site No barbecues, unless in organized near kitchen (register) facility. Condition on lease No informal BBQ's from participants Inspections in pit areas. Requirements outlined in Operators safety manual (CAMS) CoA licensed vendors for food catering
12	Tire barriers igniting from crash from vehicle	Very likely	Occasional	Very serious/Disaster	High risk	<ul style="list-style-type: none"> Tires to be placed in accordance with DFES practice note Use concrete barriers and sand traps instead of tire barriers No storage of tyres on site. Refer to DFES guideline of storage of tires.

Risk No.	Hazard -Bushfire originating/causing fire	Probability of event occurring	Exposure of Visitors	Possible consequences if event occurs	Risk rating	Control measure
External						
13	Re-ignition of previously controlled fires (May and November non-prohibited periods)	Very likely	Occasional	Serious injury	Moderate	<ul style="list-style-type: none"> • Monitor and liaison with brigade fire control officer. • Restrictions of burning within 20m of site? • Monitor weather conditions prior to event, documented in operations manual and fire warden for site. • Liaison with neighbours during summer periods. • Scheduling of events - No events on Total fire ban periods and Catastrophic & Extreme FDI. Consider twilight events.
14	External: Ignition from trains under heavy loads sparks associated with braking	Conceivable but very unlikely	Rare	Serious	Low risk	<ul style="list-style-type: none"> • Train movements low • Low fuel areas adjacent to railway • Monitor weather conditions prior to event, documented in operations manual and fire warden for site. • Liaison with neighbours during summer periods.
15	External: Aircraft Crash	Conceivable but very unlikely	Rare	Serious	Low risk	<ul style="list-style-type: none"> • Flight path 1km west • Plane movements mostly through weekdays • Monitor weather conditions prior to event, documented in operations manual and fire warden for site.
16	External: Western powerlines transmission	Very likely	Occasional	Very serious	High risk	<ul style="list-style-type: none"> • Underground power supply to site? • Major transmission lines to the east • Monitor weather conditions and fires in area • Liaison with Chief Fire Control Officer • Radio for Warden?
						<ul style="list-style-type: none"> •

Risk No.	Hazard -Bushfire originating/causing fire	Probability of event occurring	Exposure of Visitors	Possible consequences if event occurs	Risk rating	Control measure
External						
17	External: Ignition from stockpiled woodchips north of site	Very likely	Occasional	Very serious	High risk	<ul style="list-style-type: none"> • Plantation energy stockpiles of woodchips • Safety measures and fire control procedures in place. • Low fuel environment north of subject site. • Water supply in lease area of subject site for sprinkler system • Storage controls for woodchips, monitors and wardens in place. • No woodchips stored on Motorsport park site. • Copy of emergency response procedure to Albany motorsport park • Liaison with APEC and plantation energy.
18	External: Ignition from Blue gum slash burning (cause of May 2018 fire)	Very likely	Occasional	Very serious	High risk	<ul style="list-style-type: none"> • Monitor and liaison with brigade fire control officer. • Restrictions of burning within 20m of site? • Monitor weather conditions prior to event, documented in operations manual and fire warden for site. • Liaison with neighbours during summer periods. • Scheduling of events - No events on Total fire ban periods and Catastrophic & Extreme FDI. Consider twilight events.
19	External and Internal: Lightning strikes	Very likely	Occasional	Very serious	High risk	<ul style="list-style-type: none"> • Monitor and liaison with brigade fire control officer. • Monitor weather conditions prior to event, documented in operations manual and fire warden for site. • Liaison with neighbours during summer periods. • Scheduling of events - No events on Total fire ban periods and Catastrophic & Extreme FDI. Consider twilight events.

Risk No.	Hazard -Bushfire originating/causing fire	Probability of event occurring	Exposure of Visitors	Possible consequences if event occurs	Risk rating	• Control measure
20	Illegally lit fires (deliberate)	Unusual but possible	Occasional	Very serious	Moderate risk	<ul style="list-style-type: none"> • Monitor and liaison with brigade fire control officer. • Monitor weather conditions prior to event, documented in operations manual and fire warden for site. • Liaison with neighbours during summer periods. • Scheduling of events - No events on Total fire ban periods and Catastrophic & Extreme FDI. Consider twilight events.

Probability – Almost Certain, Likely, Possible Unlikely

Exposure – Very rare, infrequent, occasional, frequent, continuous

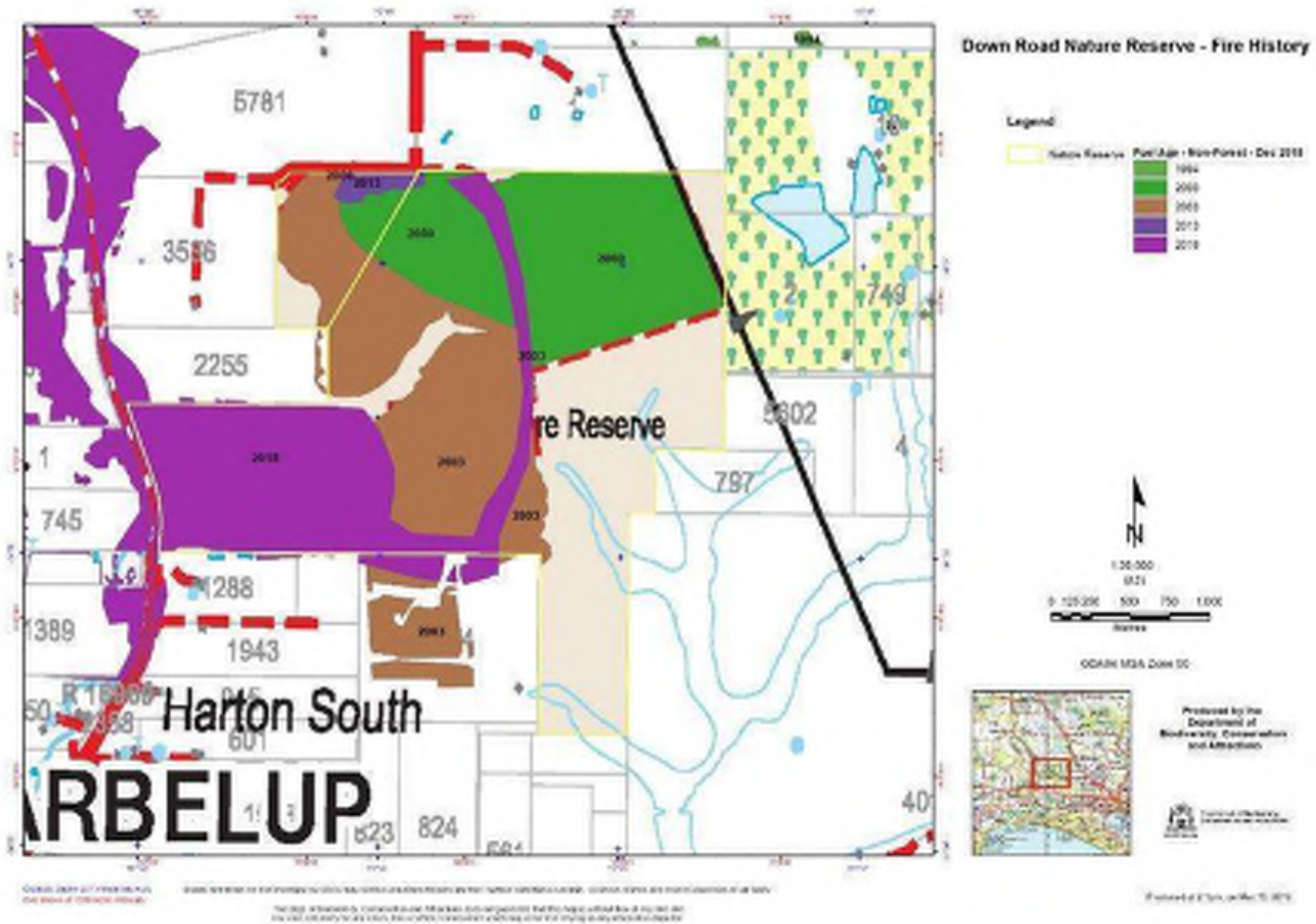
Consequence- Catastrophe, Disaster, Very Serious, Serious, Important, Noticeable

Risk – Very High, High, Substantial, Moderate and Low

Data has been gathered from following sources:

- 20km radius of the subject site on originating fire causes (DBCA, CoA & DFES)
- CAMS risk register
- Great Southern Motorsport Group Inc (cross section of sporting codes)

Kindly provided by Department of Biodiversity Conservation and Attractions (2019)



Appendix 6

CAMS Occupational health and safety policy

Example of CAMS risk assessment forms

Occupational Health & Safety Policy

Scope

This policy applies to all CAMS Staff and Volunteers working for CAMS.



Policy Objective

This Policy shows CAMS' commitment to ensuring the health and safety of staff, contractors and volunteers who work for CAMS, and for minimising the risk to competitors, participants, officials, contractors, and visitors at CAMS Events, to the extent reasonably practicable.

Policy Statement

1. The Working Environment

CAMS will use its best endeavours to achieve a working environment that, to the extent reasonably practicable, eliminates or reduces risks to health and safety by:

- conducting risk assessments on hazards and risks relating to the work of Staff and Volunteers;
- monitoring the health and safety of Staff and Volunteers;
- seeking advice on safety matters when required;
- promoting safety and welfare to Staff and Volunteers;
- working with Staff who are returning to work after illness or injury to assist their rehabilitation;
- providing training to Staff on work health and safety on induction and then as required;
- providing training and instruction to Volunteers as to the safe performance of their work as required;
- ensuring contractors comply with their health and safety obligations by requiring them in CAMS contracts to address risks and have in place control measures to eliminate or reduce risks arising from their work;

- ensuring those conducting Permitted Events adopt any work health and safety policies required by CAMS and address risks and have in place control measures to eliminate or reduce risks arising from their Permitted Event/s;
- consulting with Staff and Volunteers on work health and safety matters;
- reporting to the Board Members on work health and safety.

2. The Motor Sport Environment

CAMS recognises that motor sport may present risks to the health and safety of competitors, officials, contractors, and visitors at CAMS Events. CAMS seeks to reduce those potential risks by:

- having a health and safety program ('the program'), which will protect and enhance the health and safety of all relevant CAMS stakeholders;
- having CAMS Board Members, Staff, Volunteers and CAMS-associated and affiliated organisations working together to develop and implement the program;
- providing training to Volunteers as required;
- applying the program at all CAMS Events and, to the extent possible, Permitted Events;
- reviewing the program annually or more frequently if required;
- reporting on compliance and implementation to the Board Members.

3. Procedures

3.1 Best Practice

CAMS aims to be recognised as the motor sport leader in safety as it relates to its Staff and Volunteers.

3.2 Leadership

All CAMS managers and those in leadership positions, including senior volunteers, will provide the leadership needed to reach these goals.

3.3 Managers and Senior Volunteers

CAMS Managers and Senior Volunteers are committed to the provision and maintenance of a healthy and safe workplace, and to the extent reasonably practicable and as appropriate, will:

- consult and participate with CAMS Staff, Volunteers and associated stakeholders in the health and safety program;
- use risk identification, assessment and control principles to reach CAMS health and safety objectives;
- inform and train CAMS Staff and Volunteers and associated stakeholders in relevant policies, procedures and health and safety obligations;
- participate in CAMS induction and implement all safety procedures;
- allocate appropriate resources for the program.

3.4 Staff and Volunteers

CAMS Staff and Volunteers will:

- participate and support CAMS in its efforts to reach its health, safety and where relevant, rehabilitation objectives;
- follow reasonable health and safety instructions from managers, supervisors or senior volunteers;
- report any serious incidents, accidents, injuries or hazards in the workplace to supervisors or designated representatives;
- aim to work in a way that does not endanger the safety of themselves and/or others;
- properly use and maintain safety equipment;
- make sure other CAMS Staff and Volunteers and visitors follow safety rules in the workplace;
- participate in all CAMS induction programs when required, and follow all safety procedures.

3.5 CAMS Staff and CAMS Appointed Officials at Permitted Events

- CAMS Staff and CAMS Appointed Officials will conduct themselves in a safe manner and in line with local safety policies and procedures when attending Permitted Events on behalf of CAMS. In the absence of these, CAMS' organisational procedures will apply;
- CAMS Staff and CAMS Appointed Officials have the right to cease work at any Permitted Event if the staff member or CAMS Appointed Official has concerns that risks to health and safety have not been appropriately eliminated or reduced.

3.6 Consultation

CAMS consults on work health and safety with its Staff, Volunteers and stakeholders in a number of different ways and in accordance with any Consultation Policy.

3.7 Dispute Resolution

Any disputes as to work health and safety matters that are not addressed by other CAMS policies or procedures will be at the first instance addressed through informal mediation between the parties. If this is unsuccessful the CAMS CEO will refer the matter to formal mediation, and may then arbitrate the dispute if required.

Definitions

The following definitions apply to this policy:

Staff

A paid employee of CAMS who conducts work for CAMS including at CAMS Events and Permitted Events.

CAMS Appointed Officials

Officials appointed by CAMS to work at a CAMS Event or a Permitted Event, namely Stewards of Meetings, Race Directors, Technical Commissioners and any other official expressly appointed by CAMS.

Contractor

A contractor or subcontractor engaged by CAMS.

Senior Volunteers

A volunteer who is a Board Member of CAMS, or a Chair of any CAMS Commission, Committee, State Executive, Working Group, Panel or is otherwise appointed by CAMS to a senior voluntary position.

Volunteers

Unpaid/Honorary representatives working for CAMS on authorised and approved CAMS business, including senior volunteers, Commission and Committee members and CAMS Appointed Officials.

Board Members (The Board)

Directors of the CAMS Board, which also includes the President and FIA delegate.

CAMS Events

Motor sport events conducted by CAMS excluding Permitted Events.

Permitted Events

Motor sport events that are not conducted by CAMS but are conducted pursuant to a licence, permit or authority issued by CAMS.

Note: OH&S Policies on specific issues

Policies, procedures, operational safety requirements and safe work methods on specific occupational health and safety issues, consistent with the principles in this policy, will be issued as appropriate.

Does your Life/Income protection policy cover you for motor sport?

Gallagher Life Solutions can provide CAMS members with life, trauma, total permanent disablement and income protection insurance solutions that DO cover you for motor sport.

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Endorsed by






Sanctioned Event – Targeted Risk Assessment

Form TRA-01

Event / Venue		Type of Work being performed <i>e.g. refuelling, waving flag, walking to work area</i>
Area / Location		
Date		

RISK MATRIX Likelihood	Consequence			
	1 Insignificant	2 Minor	3 Moderate	4 Major
A - Almost Certain	High	High	<i>Extreme</i>	<i>Extreme</i>
B - Likely	Medium	High	High	<i>Extreme</i>
C - Possible	Low	Medium	High	<i>Extreme</i>
D – Unlikely	Low	Low	Medium	High

ACTIONS REQUIRED FOLLOWING ASSESSMENT OF RISK:

Extreme risk Immediate actions required
 High risk Senior Management (Senior Event Official) attention needed
 Medium risk Management (Organiser) responsibility must be specified
 Low risk Manage by current procedures / continue current process

Note: "Management" and "Official" are considered to be like terms
See reverse for descriptions of Likelihood and Consequence outcomes

IDENTIFIED RISKS:

Description of identified Risks	Likelihood (A-D)	Consequence (1-4)	Resultant Risk	Controls / Treatment performed What has been done about it ?	Who will Implement?	Who will Check?	Who confirmed actions were completed (sign)
<i>Example: spectator could be hit by debris from car</i>	<i>C</i>	<i>3</i>	<i>HIGH</i>	<i>Debris fence, move spectators further back, additional crowd control officials</i>	<i>Organiser Marshals</i>	<i>Race Sec</i>	
1.							
2.							
3.							
4.							



LIKELIHOOD/CONSEQUENCE DESCRIPTIONS:

Likelihood		Consequence	Personal Injury	Administrative
A - Almost certain	Action will probably occur numerous times or in many circumstances	4 – Major Consequence	Death, permanent or extensive injury requiring hospitalisation to one or more people.	Significant hardship to Organisation
B - Likely	Action may occur occasionally or in some circumstances	3 – Moderate Consequence	Serious injury requiring hospitalisation; broken limbs or stand down for duration of event	Significant rejigging of organisational plans required
C - Possible	Action may occur in exceptional circumstances and has been known to occur elsewhere	2 – Minor Consequence	Medical attention on-site or ongoing attention to injury may be required	Minor rearrangement of plans required to address the situation
D - Unlikely	Whist theoretically possible is not known to have occurred	1 – Insignificant Consequence	Minor first aid, if at all. No ongoing medical attention	Localised assessment of affected issue to be considered

POINTS TO REMEMBER:

What can cause injury or death?
<ul style="list-style-type: none"> ▪ slips/trips ▪ Collapse of structures ▪ Dangerous or flammable Materials ▪ Electrical cables ▪ Heavy equipment ▪ Public access / egress / behaviour ▪ Weather (e.g. Rain / Hail / Wind / Thunderstorms) ▪ Projectiles

Four Risk Treatments
<ul style="list-style-type: none"> ▪ Avoid: Don't do the activity ▪ Treat: Reduce by use of controls ▪ Accept: If low or if consequences can be tolerated. ▪ Transfer: (Caution – not possible to transfer duty of care.)

Levels of Control Methods
<ul style="list-style-type: none"> ▪ Avoid ← Try to start here ▪ Substitute ▪ Isolate ▪ Reduce by physical controls ▪ Reduce by admin warning and rules ▪ Use Personal Protection Equipment ← Last resort

WHO DID YOU TALK TO IN ASSESSING AND IDENTIFYING THIS RISK?

Date	Name	Position	Signature

Completed by: _____

Signed: _____

Date: _____

Appendix 7

Access options AMP

Albany Motorsport Park Access Options

Option No.	Location/direction	Comments	Bushfire risks and features	Outcome/feasibility
Option 1	North to Redmond Road then east to Albany Highway PL 05775 PL 5774 PL5778	Originally desired by DFES and destination is Redmond VBFB Fire shed.	<ul style="list-style-type: none"> • Moderate BHL through the paddocks some small isolated patches of remnant vegetation extreme BHL. • Redmond VBFB Fire shed not a safe destination, shed is not attended. • Shed surrounded by Extreme BHL risks and no parking or facilities. • Redmond Road is narrow carriageway with Extreme BHL along the length (both sides Forest Type A). • 3.55km to construct to link Redmond Road to Down Road. 	Land owner not willing to entertain idea of access on their land. Refer to letter from XXX. (? JVM) Not feasible.
Option 2	West from Down Road west to Marbelup Road P054723 RRnth-A Railway RRsth-PL02358 PL4117 PL4118	Undeveloped road reserve	<ul style="list-style-type: none"> • High slopes in excess of 15° west of down road prior to crossing railway line. • Railway to cross, not easily approved and costly to construct. • Low lying native vegetation (wetland) west of railway line. • Extensive native vegetation clearing in road reserve required to link public roads. • Extreme BHL with Extreme slopes to pass through. • 2.28km to construct from Down Road to Marbelup Rd. 	Not deemed feasible due to large environmental constraints to overcome. Extreme Bushfire risks to overcome.
Option 3	South then linking east to Gun Road. D04385 PL00749 D0438451 D084694 Down Rd E NR 20948 PL01248 815	Formed CoA road then Class A Nature Reserve Down Road Nature Reserve 20948	<ul style="list-style-type: none"> • Extreme BHL to pass through in NR Reserve area. • Clearing native vegetation would be required in Class A Nature Reserve • Wetland/low lying areas to negotiate • Western powerline alignment? • 4.64 km to construct from Down Road South to Gunn Road 	Not deemed feasible due to extensive environmental constraints in Class A nature Reserve to overcome. Extreme Bushfire risks to overcome.
Option 4	South along Down Road then east to Albany Highway PL 2026 D043845 PL04638 D084694	Formed CoA road then Private property and Water Corp land.	<ul style="list-style-type: none"> • Two areas of remnant vegetation at west end of PP on north of alignment (6m firebreak present) are extreme BHL • Paddock areas along majority of central area of route Mod BHL. • BG Plantations recently harvested on east end. • BG Plantation present Extreme BHL, however a 25m corridor can be achieved from plantations. • Sightlines at entry/exit point are good. • Eastern passing lane terminating. Traffic control would be required. • 4.07 km from Down Road South to Albany Hwy. • 1.8km Constructed all weather in W/C land. 2.27 Km to construct. 	Water corporation and MRWA supports this arrangement in principle. See attached correspondence. Private Property owner in principle support. Most likely feasible option. 12m Easement in Gross refer to attached email from Jan Van Der Mescht.



This BAL Plan was prepared by:
 Kathryn Kinnear, Bio Diverse Solutions
 Accreditation No: BPAD02798
 Jurisdiction: Level 2 - WA



25 Hercules Crescent
 Albany, WA 6330
 Australia
 Tel: 08 9842 1575
 Fax: 08 9842 1576



Overview Map Scale 1:100,000

Legend

- Subject Site
- Boundary
- Access Options**
- Option 1
- Option 2
- Option 3
- Option 4



Scale
 1:15,000 @ A1
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: SLR Virtual Models, RTGS Service, Landgate 2017
 Coasters, River Corours and Roads: Landgate 2017
 PBS Road Network, State Roads Network Australia 2017
 Overview Map: World Topographic map service, ESR 2012

CLIENT
 City of Albany
 Lot 5780 Down Road
 Drome, WA 6330

Access Options

DAL Assessor KK	DL Check KK	Drawn by BT
STATUS FINAL	FILE COA0020	DATE 21/02/2019

Hi Kath,

I can confirm that the secondary access for the AMP will be in the form of a 12m easement in Cross to Albany Highway from Down South Road as per Option 4 of the attached mapping.

We will now commence work on getting an "in principle agreement" from Lynday Black, Water Corporation and MRWA in place.

Regards



Jen Van Der Mescht / Manager Planning and Land Information Services

jen@albany.wa.gov.au

(08) 9428 3347

(08) 9441 4399

PO BOX 384, Albany, WA, 6331

182 North Road, Yakamia

www.albany.wa.gov.au



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Please consider the environment before printing this email.

From: Kathryn Kinnear <kath@bioofwinesolutions.com.au>

Sent: Monday, 11 March 2013 11:10 AM

To: Jen Van Der Mescht <jen@albany.wa.gov.au>

Cc: Theo Newhouse <theo.newhouse@piperind.com>; Michael Cole <michael.cole@albany.wa.gov.au>

Subject: AMP Secondary Access easement

Importance: High

Hi Jen,

Can you please confirm via return written advice that the secondary access for the AMP will be in the form of a 12m easement to Albany Highway from Down South Road as per Option 4 of the attached mapping? AMP have indicated this emergency access will only operate with traffic control during events.




As per our stakeholder pre-application meeting with DDES and DPUH the other day, if you can provide some "in principle agreement" from Lynday Black, Water Corporation and MRWA that will greatly assist in the approval process of the AMP report for AMP.

Kind regards,

Kathryn Kinnear

Director/Manager of Environmental Services

21 Hovell Drive

- Legend**
-  Cadastre (View 1)
 - MRWA Road Hierarchy**
 -  Primary Distributor
 -  Access Road

Lot 5780 Down Road South - Proposed Regional Motorsports Facility

Emergency access - excise as road reserve from Lot 1

Emergency access - secure as easement from Lot 10

Highway Fire Brigade

Lot 1 Down Road South - Lindsay and Joy Black

Lot 10 Albany Highway - Water Corporation

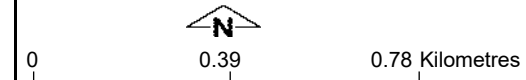
Notes:

- * The data that appears on the map may be out of date, not intended to be used at the scale displayed, or subject to license agreements. The map should only be used in matters related to Department of Planning, Lands and Heritage business.
- * This map is not intended to be used for measurement purposes.

Map was produced using DPLH's InQuery.

InQuery Map

DPLH BUSINESS USE ONLY



1: 18,056
at A3

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Date produced: 12-May-2021

Appendix 8

ELA Bushfire Emergency Evacuation Plan

1. Location details

Facility type:

- Motorsport Park in land zoned as "Priority Agriculture" area

Location:

- Lot 5780 Down Road, Drome, Western Australia

Infrastructure:

- A motorsport Park including a motorcycle track and raceway track plus associated buildings.

Occupation (number of people):

- Maximum occupants:
 - 200-500 people (club event)
 - 10,000 people (full event)

Access:

- Four different internal driveways accessing four separate points along Down Road West and Down Road South; and
- An Emergency Access Way is to be constructed to enable access/ egress to Albany Hwy. The EAW is to the south of Down Road South.

Fire Weather Forecast Area:

- South West Land Division Fire District
- Stirling Coast Region

2. Communications

Mobile:

- Mobile reception is available – however, mobile communications can become unreliable during bushfire/emergency events due to the volume of usage

Landline / NBN:

- Landline: **to be confirmed**
- Satellite phone: **to be confirmed**

Radio:

- ABC: 630 AM

Internet Sites:

- Preparing your Property – [DFES Link](#)
- Emergency WA – www.emergency.wa.gov.au
- DFES on Facebook - www.facebook.com/dfeswa
- DFES on Twitter - www.twitter.com/dfes_wa
- National Bushfires app - www.bushfireblankets.com/bushfire-app.html

3. Contacts

Fire reporting	000	
Warden	to be confirmed	to be confirmed
DFES (Emergency Information)	13 33 37	
SES (Emergency Assistance)	132 500	
SES (Local)	9841 2400	
WA Police	000	
Police Station (Local – Albany)	9892 9300	
WA Ambulance	000	
Ambulance (Local)	9841 4212	
Albany Hospital	9892 2222	
Bureau of Meteorology (BoM) Recorded Information	1300 659 213	

4. Evacuation preparedness

- All staff must be briefed during the Bushfire Danger Period (November-April) on the bushfire evacuation procedures with updated advice provided when the fire danger exceeds Very High or a fire warning is issued by Emergency Services (currently DFES) for the locality.
- This Evacuation Plan is to be displayed in all buildings around the Motorsport Park.

BUSHFIRE PREPAREDNESS MATRIX

ACTION	LOW/ MOD	HIGH	VERY HIGH	SEVERE	EXTREME	CATASTROPHIC
Warden to perform daily check (after 4pm) on the DFES and BoM websites to determine the Fire Danger Rating (FDR) for the following day and weekly prediction. Update staff and parents if there is a likelihood of the site being closed to due to Catastrophic Fire Danger Rating.						
Warden to monitor Emergency WA / or DFES website or ABC Radio or 'National Bushfires' app for fire incidents		Min. 1pm	Min. 1pm, 3pm	Min. 9am, 11am, 1pm, 3pm (or more frequently if fire event in locality)	Facility to be closed	Facility to be closed
Complete building preparedness checks			By 10am	By 8am		

5. Evacuation triggers

A decision to evacuate off-site is to be determined by:

- Instructions from Police, DFES, other Emergency Services, the Warden or the manager of the Motorsport Park.
- the Bushfire Evacuation Matrix (overleaf) or public bushfire warnings in conjunction with confirmation from DFES / Emergency Services.

Minimum time for evacuation is **to be confirmed**. To travel from the Motorsport Park to Albany, will take approximately 25 minutes.

SEE EVACUATION DECISION MATRIX (OVERLEAF)

6. Evacuation Procedures

Every bushfire attack is different. The response to each must therefore be specific and be in response to bushfire warnings

Bushfire Warning Notification

- Emergency WA website, SMS or the 'National Bushfires' App (for smartphones) will provide initial notification of a fire and evacuation instructions.
- DFES, Police (or other incident personnel) may also attempt to notify the Motorsport Park.
- The Motorsport Park is also responsible to ensure any visitors are aware of a fire warning has been issued

Off-site refuge

- Off-site evacuation is always safer, provided adequate time is available to complete it safely. Confirm with Lead Agency (DFES or other Emergency Service) prior to evacuating and follow all directions.
- Off-site evacuation is to occur by buses to the nominated off-site refuge at **to be confirmed**.
- Evacuation well in advance of a fire's predicted arrival time is safer than remaining on-site.

On-site safer Location

- Evacuating to the nominated Safer Location may be required where it is not possible to evacuate to the off-site refuge.
- The on-site safer location are the club rooms adjacent to the motorbike track or to the open space adjacent to the main race track.
- A building (site location to be determined later) ensuring that the building is subject to a radiant heat flux of <10 kW/m², is accessible by emergency service vehicles and has an approximate floor space of 375 m² for 500 people (assuming a minimum of 0.75m² per person).
- The open space on-site safer location is within an area that is subject to a radiant heat flux of <2 kW/m². This area is 10,634 m² which is sufficient to accommodate up to 10,000 people (maximum amount of people for a full event, assuming a minimum of 1m² per person).

7. Staff welfare during shelter in offsite refuge and on-site safer location

- The Facility Manager/Warden and Accredited First Aid Officers nominated will be in charge of spectator/ users welfare. Serious medical needs will require emergency response via 000.

8. Building Preparedness Checks

- Include such tasks as ensuring reduced fuel loads around buildings, routine maintenance is up to date including cleaning of gutters, fire breaks are in place, and static water supply is available.
- Checklists on tasks for completion before the fire season is provided within the schools College Bushfire Plan
- Detailed information and checklists are available on the DFES website including the 'The Homeowner's Bushfire Survival Manual' and the 'Prepare Act Survive Booklet' published by DFES:
https://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/BushfireManualsandGuides/DFES_Bushfire-Homeowners_Survival_Manual.pdf
<https://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/BushfireManualsandGuides/DFES-Fire-Chat-Bushfire-Preparedness-Toolkit.pdf>

9. Notes on Fire Danger Rating and Total Fire Ban Declaration

- The Fire Danger Rating (FDR) gives an indication of the potential consequences of a fire, if a fire was to start.
- The rating is based on predicted conditions such as the forecast temperature, humidity, wind and dryness of the landscape.
- The higher the fire danger rating, the more dangerous the conditions.
- During the Bushfire Danger Period (1st November – 30th April) the forecast FDR for the following day is typically released around 4pm but can be changed as weather conditions unfold.
- Both predicted and current FDR are available from the DFES and BoM websites.



A 'Total Fire Ban' (known as TFB) is a separate declaration (i.e. a particular day or part thereof may have both 'Severe' FDR and a TFB).

10. What to do if caught in a bushfire

The following provide current guidelines* on what to do if caught in a bushfire in a building or on foot. Each requires a different response involving critical decisions for your survival.

What to do if caught in a bushfire IN A BUILDING

Outside your building

- Ensure you drink plenty of water so you do not dehydrate
- Block your downpipes, (a sock full of sand/soil will help) and fill your gutters with water
- Move flammable items such as outdoor furniture, doormats,
- Gas cylinders should have the valve facing away from the building
- Do not stand on the roof with a hose. In bush fires, often more people are injured by falling from roofs than suffering burns
- Patrol the outside of the building, putting out any embers and spot fires that may start. An ember or spark can reach your home hours before the fire front arrives
- Just before the fire arrives, wet down timber decks and gardens close to the building
- Move any firefighting equipment to a place where it will not get burnt.

Inside your building

- Continue to drink water so you do not dehydrate
- Close doors, windows, vents, blinds and curtains to prevent flames, smoke and embers from entering
- Put tape across the inside of the windows so they stay in place if they break
- Shut off gas at the meter or bottle
- Move furniture away from the windows to prevent any embers that enter the building from igniting
- Fill sinks, bath and buckets with water for putting out any fires that may start inside
- Place wet towels around window and door edges to stop smoke and embers from entering
- Put a ladder next to the access hole to the roof space so you can check for spot fires.

During the fire

- When the fire arrives, go inside to protect you from the radiant heat
- Ensure you have torches ready as it is likely to become completely dark and you will not be able to see
- Patrol the inside of the building, including the roof space for sparks and embers
- Remember – if your life is at risk, call Triple Zero (000) immediately.

After the fire

- Once the fire has passed, you may need to patrol the property for hours. Go outside and put out any part of the building which is alight.
- An ember or spark from a fire can impact on a house many hours after the main fire front has passed and small spot fires can quickly get out of control.

What to do if caught in a bushfire ON FOOT/ IN VEHICLE

- Try to move on to bare or burnt ground at least 100 m from where fire is likely to burn, if this is not feasible find the largest bare or burnt ground possible
- Do not run uphill or away from the fire unless you know a safe refuge is able to be reached before the fire arrives. Try and position yourself downhill of the on-coming fire.
- Move across the slope out of the path of the fire front and work your way downslope towards the back of the fire or onto burnt ground.
- Do not attempt to run through flames unless you can see clearly behind them. This generally means that the flames are less than 1 metre high and less than 1 to 2 metres deep at the back or on the flanks of the fire.
- Lulls in the fire often result in the flames in these parts being low enough to step or run through to the burnt ground beyond.
- When conditions become severe use every possible means to protect yourself from radiation. On bare ground cover yourself, use wheel ruts, depressions, large rocks or logs to give protection.
- Take refuge in ponds, running streams or culverts, but behind solid objects such a rock
- Remain calm and do not run blindly from the fire. If you become exhausted you are much more prone to heat stroke and you may easily overlook a safe refuge. Consider an alternative course of action.

* adapted from NSW RFS bushfire training modules.

Bushfire Emergency Evacuation Plan - Motorsport Park Albany



RISK STATUS	LOW/ MOD	HIGH	VERY HIGH	SEVERE	EXTREME	CATASTROPHIC
Fire predicted to impact site or egress				If fire is greater than to be confirmed km north-east counter clockwise to north-west of the subject site then: <ul style="list-style-type: none"> evacuate to the xx – to be confirmed if safe (seek advice from DFES / Emergency Services) or if instructed to do so*1 For fires in all other directions from the subject site confirm evacuation plan with DFES / Emergency Services or if instructed to do so*1 	Close Motorsport Park for forecast period Confirm with DFES / Emergency Services to evacuate if FDR changes during the day	
Fire predicted to impact site within to be confirmed *2	For fires greater than to be confirmed km from the subject site in all directions, confirm evacuation plan with DFES / Emergency Services or if instructed to do so*1			Allow a minimum of xx hours to evacuate the Motorsport Park.		
Fires exist in region but no risk to site	<ul style="list-style-type: none"> Seek refuge in on-site Safer Location*3 Contact DFES / Emergency Services for advice Do not evacuate unless advised by DFES / Emergency Services Allow minimum of xx hours to evacuate the Motorsport Park 			Obtain emergency service advice on whether to close the Motorsport Park and evacuate staff and spectators off-site.		
No fires	Maintain appropriate monitoring as per Bushfire Preparedness Matrix					
Event scheduling	Clear triggers & guidelines for scheduling events or cancelling based on such factors as Fire Danger Rating (FDR), evening events during certain times of the year, 'Total Fire Ban' days and "Restricted vehicle movement days" (harvest bans). To be developed at a later stage					

Legend

- Subject site
- Development footprint outline
- Indicative Off-site refuge (Albany - to be determined)
- Indicative On-site safer location
- Subject site access points
- Primary evacuation route
- Proposed Emergency Access Way
- 2 kw/m² Area
- 10 kW/m² Area

0 265 530 1,060 Metres

Datum/Projection: GDA 1994 MGA Zone 50

eco logical AUSTRALIA
www.ecoaus.com.au

Prepared by: JL Date: 22/05/2019

*1 Evacuation safety is dependent on factors such as Fire Danger Rating, wind strength and direction, and the proximity and direction of the fire. Follow advice of emergency service broadcast fire warnings or telephone them. Do not evacuate to **xx – to be confirmed** unless this can be completed many hours before the potential fire arrival. Advice from DFES or other Emergency Service should be sought before evacuating.

*2 NB: time to relocate is the estimated time for all staff and users access and drive to **xx – to be confirmed** PLUS adding extra precautionary time based upon the FDR. Check with emergency service warnings before evacuating. Pre-emptive closure of the Motorsport Park should occur the day before where forecasted FDR is Catastrophic (i.e. no later than 4.30 pm the day before a planned closure). Refer to BMP for justification of triggers.

*3 Relocate – ONLY if safe to do so e.g. flames are not visible or nearby dense smoke is not blown directly toward you. If you risk being caught on foot or in a car prior to reaching the on-site refuge, stay inside the classroom or building.

Albany - Site to be determined

Appendix 9

ELA Method 2 BAL Assessment

NBC Bushfire Attack Assessment Report V2.1

AS3959 (2009) Appendix B - Detailed Method 2

Printed: 11/04/2019 Assessment Date: 27/02/2019



Site Street Address: Albany Motorsport Complex, Albany

Assessor: Bruce Horkings; Ecological Australia

Local Government Area: WA

Alpine Area:

No

Equations Used

Transmissivity: Fuss and Hammins, 2002

Flame Length: RFS PBP, 2001

Rate of Fire Spread: Noble et al., 1980

Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005

Peak Elevation of Receiver: Tan et al., 2005

Peak Flame Angle: Tan et al., 2005

Run Description: Plot 10 - 10 kW/m²

Vegetation Information

Vegetation Type: Woodland

Vegetation Group: Forest and Woodland

Vegetation Slope: 5 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 15

Overall Fuel Load(t/ha): 25

Site Information

Site Slope: 0 Degrees

Site Slope Type: Level

Elevation of Receiver(m): Default

APZ/Separation(m): 56

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1200

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 80

Program Outputs

Category of Attack: LOW

Peak Elevation of Receiver(m): 7.93

Level of Construction: BAL 12.5

Fire Intensity(kW/m): 26263

Radiant Heat(kW/m²): 9.85

Flame Angle (degrees): 78

Flame Length(m): 16.22

Maximum View Factor: 0.114

Rate Of Spread (km/h): 2.03

Inner Protection Area(m): 56

Transmissivity: 0.773

Outer Protection Area(m): 0

Run Description: Plot 10 - 2 kW/m2

Vegetation Information

Vegetation Type:	Woodland	Vegetation Group:	Forest and Woodland
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	15	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	138

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	8.06
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	26263
Radiant Heat(kW/m2):	1.99	Flame Angle (degrees):	84
Flame Length(m):	16.22	Maximum View Factor:	0.025
Rate Of Spread (km/h):	2.03	Inner Protection Area(m):	138
Transmissivity:	0.711	Outer Protection Area(m):	0

Run Description: Plot 11 - 10 kW/m2

Vegetation Information

Vegetation Type:	Woodland	Vegetation Group:	Forest and Woodland
Vegetation Slope:	10 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	15	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	67

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	10.51
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	37083
Radiant Heat(kW/m2):	9.96	Flame Angle (degrees):	76
Flame Length(m):	21.66	Maximum View Factor:	0.117
Rate Of Spread (km/h):	2.87	Inner Protection Area(m):	67
Transmissivity:	0.761	Outer Protection Area(m):	0

Run Description: Plot 11 - 2 kW/m²

Vegetation Information

Vegetation Type:	Woodland	Vegetation Group:	Forest and Woodland
Vegetation Slope:	10 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	15	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	160

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	10.75
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	37083
Radiant Heat(kW/m²):	1.98	Flame Angle (degrees):	83
Flame Length(m):	21.66	Maximum View Factor:	0.025
Rate Of Spread (km/h):	2.87	Inner Protection Area(m):	160
Transmissivity:	0.697	Outer Protection Area(m):	0

Run Description: Plot 12 - 10 kW/m2

Vegetation Information

Vegetation Type:	Shrubland/Short Heath	Vegetation Group:	Shrub & Heath
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	15	Overall Fuel Load(t/ha):	15

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	37

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	4.48
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	31357
Radiant Heat(kW/m2):	9.89	Flame Angle (degrees):	81
Flame Length(m):	9.07	Maximum View Factor:	0.111
Rate Of Spread (km/h):	4.05	Inner Protection Area(m):	37
Transmissivity:	0.801	Outer Protection Area(m):	0

Run Description: Plot 12 - 2 kW/m2

Vegetation Information

Vegetation Type:	Shrubland/Short Heath	Vegetation Group:	Shrub & Heath
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	15	Overall Fuel Load(t/ha):	15

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	102

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	4.52
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	31357
Radiant Heat(kW/m2):	1.98	Flame Angle (degrees):	86
Flame Length(m):	9.07	Maximum View Factor:	0.024
Rate Of Spread (km/h):	4.05	Inner Protection Area(m):	102
Transmissivity:	0.733	Outer Protection Area(m):	0

Run Description: Plot 13 - 10 kW/m2

Vegetation Information

Vegetation Type:	Scrub/Tall Heath	Vegetation Group:	Shrub & Heath
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	50

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	6.69
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	75988
Radiant Heat(kW/m2):	9.79	Flame Angle (degrees):	79
Flame Length(m):	13.63	Maximum View Factor:	0.112
Rate Of Spread (km/h):	5.88	Inner Protection Area(m):	50
Transmissivity:	0.78	Outer Protection Area(m):	0

Run Description: Plot 13 - 10 kW/m2

Vegetation Information

Vegetation Type:	Scrub/Tall Heath	Vegetation Group:	Shrub & Heath
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	126

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	6.78
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	75988
Radiant Heat(kW/m2):	2	Flame Angle (degrees):	84
Flame Length(m):	13.63	Maximum View Factor:	0.025
Rate Of Spread (km/h):	5.88	Inner Protection Area(m):	126
Transmissivity:	0.718	Outer Protection Area(m):	0

Run Description: Plot 14 - 10 kW/m2

Vegetation Information

Vegetation Type:	Scrub/Tall Heath	Vegetation Group:	Shrub & Heath
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	45

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	5.73
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	53816
Radiant Heat(kW/m2):	9.71	Flame Angle (degrees):	80
Flame Length(m):	11.63	Maximum View Factor:	0.11
Rate Of Spread (km/h):	4.17	Inner Protection Area(m):	45
Transmissivity:	0.787	Outer Protection Area(m):	0

Run Description: Plot 14 - 2 kW/m2

Vegetation Information

Vegetation Type:	Scrub/Tall Heath	Vegetation Group:	Shrub & Heath
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	116

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	5.79
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	53816
Radiant Heat(kW/m2):	1.99	Flame Angle (degrees):	85
Flame Length(m):	11.63	Maximum View Factor:	0.025
Rate Of Spread (km/h):	4.17	Inner Protection Area(m):	116
Transmissivity:	0.724	Outer Protection Area(m):	0

Run Description: Plot 3 - 10 kW/m²

Vegetation Information

Vegetation Type:	Forest	Vegetation Group:	Forest and Woodland
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	35

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	64

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	9.65
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	43400
Radiant Heat(kW/m²):	9.78	Flame Angle (degrees):	77
Flame Length(m):	19.8	Maximum View Factor:	0.115
Rate Of Spread (km/h):	2.4	Inner Protection Area(m):	47
Transmissivity:	0.764	Outer Protection Area(m):	17

Run Description: Plot 3 - 2 kW/m2

Vegetation Information

Vegetation Type:	Forest	Vegetation Group:	Forest and Woodland
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	35

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	153

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	9.83
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	43400
Radiant Heat(kW/m2):	1.98	Flame Angle (degrees):	83
Flame Length(m):	19.8	Maximum View Factor:	0.025
Rate Of Spread (km/h):	2.4	Inner Protection Area(m):	120
Transmissivity:	0.702	Outer Protection Area(m):	33

Run Description: Plot 4 - 10 kW/m²

Vegetation Information

Vegetation Type:	Forest	Vegetation Group:	Forest and Woodland
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	35

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	76

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	12.61
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	61280
Radiant Heat(kW/m²):	9.83	Flame Angle (degrees):	74
Flame Length(m):	26.23	Maximum View Factor:	0.117
Rate Of Spread (km/h):	3.39	Inner Protection Area(m):	56
Transmissivity:	0.754	Outer Protection Area(m):	20

Run Description: Plot 4 - 2 kW/m2

Vegetation Information

Vegetation Type:	Forest	Vegetation Group:	Forest and Woodland
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	35

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	175

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	12.99
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	61280
Radiant Heat(kW/m2):	2	Flame Angle (degrees):	82
Flame Length(m):	26.23	Maximum View Factor:	0.026
Rate Of Spread (km/h):	3.39	Inner Protection Area(m):	138
Transmissivity:	0.689	Outer Protection Area(m):	37

Run Description: Plot 5 - 10 kW/m2

Vegetation Information

Vegetation Type:	Forest	Vegetation Group:	Forest and Woodland
Vegetation Slope:	15 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	35

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	108

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	22.31
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	122176
Radiant Heat(kW/m2):	9.93	Flame Angle (degrees):	68
Flame Length(m):	48.12	Maximum View Factor:	0.121
Rate Of Spread (km/h):	6.76	Inner Protection Area(m):	81
Transmissivity:	0.735	Outer Protection Area(m):	27

Run Description: Plot 5 - 2 kW/m2

Vegetation Information

Vegetation Type:	Forest	Vegetation Group:	Forest and Woodland
Vegetation Slope:	15 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	25	Overall Fuel Load(t/ha):	35

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	240

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	23.62
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	122176
Radiant Heat(kW/m2):	1.99	Flame Angle (degrees):	79
Flame Length(m):	48.12	Maximum View Factor:	0.026
Rate Of Spread (km/h):	6.76	Inner Protection Area(m):	186
Transmissivity:	0.681	Outer Protection Area(m):	54

Run Description: Plot 6 - 10 kW/m2

Vegetation Information

Vegetation Type:	Grassland	Vegetation Group:	Grassland
Vegetation Slope:	10 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	4.5	Overall Fuel Load(t/ha):	4.5

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	39

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	110

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	4.79
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	66286
Radiant Heat(kW/m2):	9.86	Flame Angle (degrees):	81
Flame Length(m):	9.7	Maximum View Factor:	0.111
Rate Of Spread (km/h):	28.51	Inner Protection Area(m):	39
Transmissivity:	0.797	Outer Protection Area(m):	0

Run Description: Plot 6 - 2 kW/m2

Vegetation Information

Vegetation Type:	Grassland	Vegetation Group:	Grassland
Vegetation Slope:	10 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	4.5	Overall Fuel Load(t/ha):	4.5

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	105

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	110

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	4.83
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	66286
Radiant Heat(kW/m2):	2	Flame Angle (degrees):	85
Flame Length(m):	9.7	Maximum View Factor:	0.025
Rate Of Spread (km/h):	28.51	Inner Protection Area(m):	105
Transmissivity:	0.731	Outer Protection Area(m):	0

Run Description: Plot 7 - 10 kW/m²

Vegetation Information

Vegetation Type:	Grassland	Vegetation Group:	Grassland
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	4.5	Overall Fuel Load(t/ha):	4.5

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	34

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	110

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	4.04
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	46945
Radiant Heat(kW/m²):	9.94	Flame Angle (degrees):	82
Flame Length(m):	8.17	Maximum View Factor:	0.11
Rate Of Spread (km/h):	20.19	Inner Protection Area(m):	34
Transmissivity:	0.806	Outer Protection Area(m):	0

Run Description: Plot 7 - 2 kW/m2

Vegetation Information

Vegetation Type:	Grassland	Vegetation Group:	Grassland
Vegetation Slope:	5 Degrees	Vegetation Slope Type:	Downslope
Surface Fuel Load(t/ha):	4.5	Overall Fuel Load(t/ha):	4.5

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	96

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	110

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	4.07
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	46945
Radiant Heat(kW/m2):	1.99	Flame Angle (degrees):	86
Flame Length(m):	8.17	Maximum View Factor:	0.024
Rate Of Spread (km/h):	20.19	Inner Protection Area(m):	96
Transmissivity:	0.737	Outer Protection Area(m):	0

Run Description: Plot 8 - 10 kW/m²

Vegetation Information

Vegetation Type:	Grassland	Vegetation Group:	Grassland
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	4.5	Overall Fuel Load(t/ha):	4.5

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	30

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	110

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	3.4
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	33248
Radiant Heat(kW/m²):	9.79	Flame Angle (degrees):	82
Flame Length(m):	6.87	Maximum View Factor:	0.108
Rate Of Spread (km/h):	14.3	Inner Protection Area(m):	30
Transmissivity:	0.815	Outer Protection Area(m):	0

Run Description: Plot 8 - 2 kW/m2

Vegetation Information

Vegetation Type:	Grassland	Vegetation Group:	Grassland
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	4.5	Overall Fuel Load(t/ha):	4.5

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	87

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	110

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	3.43
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	33248
Radiant Heat(kW/m2):	1.99	Flame Angle (degrees):	86
Flame Length(m):	6.87	Maximum View Factor:	0.024
Rate Of Spread (km/h):	14.3	Inner Protection Area(m):	87
Transmissivity:	0.743	Outer Protection Area(m):	0

Run Description: Plot 9 - 10 kW/m2

Vegetation Information

Vegetation Type:	Woodland	Vegetation Group:	Forest and Woodland
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	15	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	47

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	LOW	Peak Elevation of Receiver(m):	6.09
Level of Construction:	BAL 12.5	Fire Intensity(kW/m):	18600
Radiant Heat(kW/m2):	9.7	Flame Angle (degrees):	80
Flame Length(m):	12.36	Maximum View Factor:	0.111
Rate Of Spread (km/h):	1.44	Inner Protection Area(m):	47
Transmissivity:	0.784	Outer Protection Area(m):	0

Run Description: Plot 9 - 2 kW/m2

Vegetation Information

Vegetation Type:	Woodland	Vegetation Group:	Forest and Woodland
Vegetation Slope:	0 Degrees	Vegetation Slope Type:	Level
Surface Fuel Load(t/ha):	15	Overall Fuel Load(t/ha):	25

Site Information

Site Slope:	0 Degrees	Site Slope Type:	Level
Elevation of Receiver(m):	Default	APZ/Separation(m):	120

Fire Inputs

Veg./Flame Width(m):	100	Flame Temp(K)	1200
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Calculation Parameters

Flame Emissivity:	95	Relative Humidity(%):	25
Heat of Combustion(kJ/kg)	18600	Ambient Temp(K):	308
Moisture Factor:	5	FDI:	80

Program Outputs

Category of Attack:	VERY LOW	Peak Elevation of Receiver(m):	6.16
Level of Construction:	BAL LOW	Fire Intensity(kW/m):	18600
Radiant Heat(kW/m2):	1.99	Flame Angle (degrees):	85
Flame Length(m):	12.36	Maximum View Factor:	0.025
Rate Of Spread (km/h):	1.44	Inner Protection Area(m):	120
Transmissivity:	0.722	Outer Protection Area(m):	0

Appendix 10

WAPC APZ standards to apply

Standards for an Asset Protection Zone (APZ) (WAPC, 2017)

Fences: Within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.

Objects: Within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.

Fine Fuel load: Combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.

Trees (> 5 metres in height): Trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy. See Figure 10 (WAPC Figure 16, Appendix 4) below.

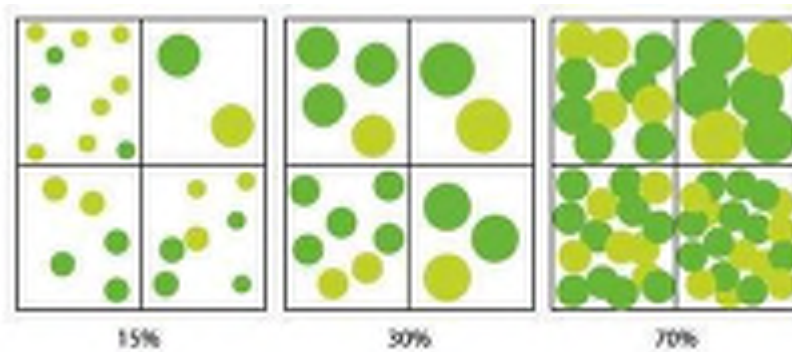


Figure 1 – Tree Canopy Cover

(WAPC, 2017)

Shrubs (0.5 metres to 5 metres in height): Should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.

Ground covers (<0.5 metres in height): Can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs. –

Grass: Should be managed to maintain a height of 100 millimetres or less.

Appendix 11
ELA Peer Review

23 May 2019

Our ref: 12360

To whom it may concern,

**Peer review of Bushfire Management Plan
Albany Motorsport Park: Lot 5780 Down Road, Drome**

Eco Logical Australia (ELA) was engaged by Bio Diverse Solutions (BDS) to undertake a technical peer review of a Bushfire Management Plan (BMP) for the proposed development of the above-mentioned site.

ELA has not physically inspected the site, however, has reviewed data and photographs taken by BDS during their site assessments.

The technical peer review was undertaken by ELA Senior Bushfire Consultants Daniel Panickar (BPAD 37802) and Bruce Horkings (BPAD 29962). Bruce is a BPAD Level 3 accredited practitioner in NSW and has attended the relevant FPA workshop held in Sydney specifically for NSW based consultants undertaking BPAD Level 3 accredited works in WA.

BDS engaged ELA to undertake a technical peer review of the final Bushfire Management Plan (BMP), prepare a Bushfire Emergency Evacuation Plan (BEEP) and provide a letter documenting the completion of the review.

PEER REVIEW

The peer review process began at the inception of the project with the provision of ongoing technical advice and guidance in the development of the report. The final version of the BMP (dated 23 May 2019) was assessed against Policy Measures 6.2 and 6.3 of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC December 2015) with consideration given to Policy measure 6.6, and is technically consistent with the identified requirements of SPP 3.7 and *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC December 2017).

The proposed development meets the bushfire protection criteria of the Guidelines using Acceptable Solutions where possible. Compliance with the Acceptable Solutions for *Element 3: Vehicular Access* is not possible and as such, the BEEP prepared to support this development provides contingency actions in accordance with the requirements of the *Draft Position Statement: Tourism land uses within bushfire*

prone areas (WAPC, 2018). These contingencies include early closure of the site, off-site evacuation and as a last resort, refuge on site in a suitable building / open space.

ELA note there are a few minor typographical errors in the report, however these do not detract from the overall outcomes of the plan.

BUSHFIRE EMERGENCY EVACUATION PLAN

The BEEP developed by ELA was produced in a usable poster style to be located at relevant locations in the site.

The aim of the BEEP is early, safe and timely evacuation of the site prior to bushfire events and no events are to be held on site during Catastrophic Fire Danger Rating (FDR) days. The BEEP has been prepared to support the proposed development will address on-site and off-site refuges, triggers for evacuation and roles and responsibilities for staff and stakeholders. As the proposed development progresses beyond the rezoning phase, the BEEP will be updated for each stage including further specific details.

As previously identified, the design of the site does not allow for alternative access and is a legacy issue. As a result of legacy issues of the surrounding public road network, these constraints are addressed by the BEEP providing contingency measures to address identified risks including:

- Clear triggers for off and onsite evacuation (to be updated to support future planning applications);
- Clear triggers & guidelines for scheduling events or cancelling based on such factors as Fire Danger Rating (FDR), evening events during certain times of the year, 'Total Fire Ban' days and "Restricted vehicle movement days" (harvest bans);
- An on-site refuge for use in an emergency (i.e. a building constructed to the requirements of a 'community refuge' as per the Australian Building Codes Board 'Design and Construction of Community Bushfire Refuges' that can accommodate the number of people using that part of the facility (i.e. 200-500 for a club event);
- The proposed building located within the site and position to limit radiant heat exposure to <10 kW/m² and constructed to BAL-29; and
- Open air refuge with the capacity for a large event (upto 10,000 approx.) located in area where radiant heat exposure is limited to <2 kW/m² and preferably shaded with non-combustible material.

This is compliant with the *WAPC Draft Position Statement: Tourism land uses within bushfire prone areas* (WAPC 2018). The BEEP will form part of the Emergency Management Plan for the site which will be developed prior to operation of the site.

CONCLUSION

The peer review undertaken by ELA of the Bushfire Management Plan written by BDS (dated 23 May 2019) concludes that this report meets the technical requirements of SPP 3.7 and the Guidelines. Furthermore, the BMP incorporates a Bushfire Emergency Evacuation Plan developed by a suitably accredited Bushfire Planning Practitioner.

CV's of the ELA bushfire consultants involved in this project are included below.

Yours sincerely,

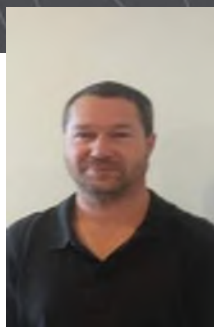


Daniel Panickar
Manager and Bushfire Lead - WA (BPAD 37802)



Bruce Horkings
Senior Bushfire Consultant (BPAD 29962)





Bruce Horkings SENIOR BUSHFIRE CONSULTANT

Bruce holds a Post Graduate Diploma in Bushfire Protection from the University of Western Sydney, and also both an Associate Degree in Forestry Management and Diploma of Conservation and Land Management from Melbourne University. Bruce has over 14 years' experience in the environmental and bushfire realm with a focus on bushfire consulting over the last 10 years in Western Australia, Victoria and New South Wales and is an accredited Level 3 Bushfire Planning and Design (BPAD) practitioner.

Work undertaken includes bushfire site assessments and production of reports including constraints & analysis, Bushfire Protection Assessments, Bushfire Management Plans, Evacuations Plans and acceptable and performance-based solutions in line with current state standards and Australian Standard AS 3959. Most recently he has been involved with complex projects involving detailed bushfire weather analysis, short fire run modelling and landscape based modelling using SPARK.

He has a good working knowledge of bushfire planning legislation in many states and territories across the country especially WA, NSW and Vic and specialises in complex assessments, bushfire modelling and the development of performance solution response. Bruce is experienced in bushfire site assessment and analysis, project management, tender preparation and assessment, and detailed technical analysis of building design and construction materials against AS 3959.

QUALIFICATIONS

- Post Graduate Diploma of Bushfire Protection, University of Western Sydney (2013)
- Development and Building in Bushfire Prone Areas, UTS Centre for Local Government (2013)
- Associate Degree of Forestry Management, Melbourne University (2006)
- Diploma of Conservation and Land Management, Melbourne University (2004-2006)

PROJECT EXPERIENCE

- Development of a detailed bushfire risk analysis at a landscape and local scale of built assets, critical infrastructure and research facilities for CSIRO in Canberra with a corresponding Bushfire Operations Plan to implement risk mitigation measures to enhance resilience from bushfire for the rural site and surrounding residential developments.
- Use and development of the landscape bushfire modelling tool SPARK developed by CSIRO for projects where thousands of bushfire scenarios are assessed.
- Creation of a Short Fire Run models (point ignition) to demonstrate bushfire behaviour as part of developing performance solutions where the standard fire models found in AS 3959 over predict this scenario.
- Development of performance based solutions to demonstrate compliance to various state based bushfire planning requirements.
- Completion of hundreds of bushfire assessments across the country.
- Assessment of Defence projects from Bushfire Management Plans to compliance with bushfire specifications detailed in the Manual of Fire Protection Engineering (MFPE) and state-based requirements.
- Analysis of building design and construction materials against AS 3959 for residential and non-residential buildings.



Daniel Panickar **MANAGER AND BUSHFIRE LEAD - WA**

Daniel is an experienced environmental and bushfire consultant with over eight years' experience in the consulting industry. Initially trained as an ecologist and environmental planner, Daniel has gained invaluable experience in fire ecology, flora and fauna surveys and environmental approvals. Since being involved in the industry, Daniel's skills have diversified to include bushfire management planning and team management and he has held senior roles including lead ecologist and lead bushfire consultant. Daniel currently manages ELA's Western Australian operations.

Daniel also possesses well-developed project management skills and has managed over 50 land development projects throughout Western Australia and has been responsible for undertaking field investigations, managing sub-consultants and provision of advice regarding bushfire and environmental approvals.

Daniel has worked on over 500 bushfire management projects across Australia and is an accredited Level 2 Bushfire Planning and Design (BPAD) practitioner with experience in Bushfire Attack Level (BAL) assessments, preparation of Bushfire Management Plans, Bushfire Emergency Evacuation Plans, Bushfire Risk Assessments and providing expert advice at Joint Development Assessment Panel (JDAP) meetings and State Administrative Tribunal (SAT) hearings.

Daniel's experience in environmental approvals and bushfire planning, particularly in the land development and infrastructure sectors allow him to provide accurate, pragmatic advice regarding opportunities and constraints, and develop innovative solutions to facilitate development in potentially problematic areas. This experience has been acknowledged through Daniel's membership on the Fire Protection Association Australia (FPAA) WA Bushfire Working Group, National Environmental Law Association (NELA) WA State Committee and the Urban Development Institute of Australia (UDIA) Outlook Committee.

QUALIFICATIONS

Bachelor of Science (Environmental Biology; Honours), Curtin University of Technology, 2011

Graduate Diploma in Bushfire Protection, Western Sydney University, in progress

Level 2 accredited Bushfire Planning and Design (BPAD) practitioner, 2016

PUBLICATIONS

Panickar, D 2018, 'Bushfire protection and environmental management for mine sites in arid and semi-arid regions', *Goldfields Environmental Management Group, Kalgoorlie, 16-18 May*.

PROJECT EXPERIENCE

Land development

Daniel has been involved in over 100 urban development projects across WA, NSW and QLD. A few detailed examples are provided below, and some other key projects have been listed further to this.

The Hales: Satterley Property Group: Environmental project manager to ensure the project meets the requirements of all relevant environmental legislation whilst meeting project timeframes and yield objectives. Undertook and/or coordinated all environmental surveys within the development site (ecological and bushfire assessments, groundwater monitoring and contaminated sites investigations). Provided ongoing strategic environmental and bushfire management advice and prepared all required environmental approvals documentation including a native vegetation clearing permit application and referral to the Commonwealth Department of the Environment. Prepared the Bushfire Management Plan for the estate.

Shorehaven: Peet Limited: Led and coordinated all bushfire assessments within the development site. Provided ongoing strategic advice to reduce bushfire risk and maintain visual amenity and prepared/reviewed Bushfire Management Plans, Bushfire Attack Level Assessments and associated Native Vegetation Clearing permits to facilitate development. Assisted in negotiations with adjacent landowners to clear vegetation and reduce bushfire risk to the Shorehaven site.

Sienna Wood: Stockland: Undertook a bushfire hazard level assessment of the estate (including wetlands of conservation significance, revegetation areas and Aboriginal heritage areas). Provision of advice to the project team regarding redesigning road networks and landscaping areas (including natural streams and wetlands) to achieve a layout that was fully compliant with bushfire planning guidelines and State legislation while maintaining the integrity of the planning vision for the estate. The final Bushfire Management Plan prepared for the estate was endorsed by the Department of Fire and Emergency Services (DFES), the Department of Parks and Wildlife (Parks and Wildlife) and local government and approved for use.

Redevelopment of St Vincent's Aged Care Facility: Catholic Homes Inc.: Undertook a bushfire hazard level assessment, prepared a Bushfire Management and Evacuation Plan and coordinated geotechnical investigations. Site constraints compromised the ability to achieve a compliant bushfire management outcome and a strategy was developed whereby vegetation on neighbouring land would be cleared and landscaped to facilitate a compliant outcome. Organised meetings between the Western Australia Planning Commission, the project team and other relevant stakeholders to negotiate a favourable outcome. All stakeholders agreed with my proposed approach and following the preparation of the revised development design; the DA was lodged successfully.

Rezoning support – 119 Hammond Road: Private land developer: Managed and undertook an environmental opportunities and constraints analysis to inform proposed rezoning of the site. Facilitated environmental and bushfire planning approvals for the site which included undertaking a flora, vegetation and black cockatoo survey and preparation of a Bushfire Management Plan.

Frenchman Bay Resort: Private land developer: Developed a Bushfire Management Plan and Bushfire Emergency Evacuation Plan to support a resort in Frenchman Bay (an extreme bushfire risk area). Method 2 Bushfire Attack Level (BAL) assessments and performance-based bushfire management solutions were developed to facilitate development and ensure a safer outcome for future guests. The plans were approved by the City of Albany and Department of Fire and Emergency Services.

Some other key land development projects Daniel has been involved in as an environmental and bushfire consultant are:

- Butler North District Open Space, Butler;
- Baldivis District Open Space;
- Catalina Estate, Clarkson;
- Brightwood Estate, Baldivis;
- Flamewood Estate, Brabham;
- Mason Green Estate, Piara Waters;
- The Village at Wellard Estate, Wellard;
- Newhaven Estate, Piara Waters;
- Beenyup Grove Estate, Byford;
- Allara Estate, Eglinton;
- Burns Beach Estate, Burns Beach;
- Holland Park Estate, Piara Waters;
- Numerous BP and Caltex service stations across Western Australia;

- Chinatown Revitalisation Project, Broome;
- Glenmore Park/Mulgoa, Western Sydney;
- New Breeze Estate, Bardia (NSW).

Department of Defence

Daniel has been involved in ecological surveys and the preparation of bushfire management reports for numerous Department of Defence bases across Australia. Some key projects are highlighted below. Daniel also has baseline security clearance from the Department of Defence.

Preparation of bushfire construction advice (Campbell Barracks and RAAF Base Townsville): Assessed proposed building upgrades, refurbishments and new structures at Campbell Barracks, Western Australia and RAAF Base Townsville, Queensland. All structures were assessed for bushfire risk and treatments were prescribed based on State and National guidelines as well as relevant construction standards.

Preparation of Bushfire Management Plans for HMAS Stirling and Exmouth properties: Project manager and author for a new Bushfire Risk Management Plan, Emergency Evacuation Plan and Operations Plan for the entirety of Defence's operations on Garden Island and Exmouth, Western Australia. The project involved close liaison with Defence, Department of Biodiversity Conservation and Attractions, Department of Fire and Emergency Services and local stakeholders. Risk workshops were organised and facilitated to discuss risks and responses prior to finalisation.

Preparation of Bushfire Management Plans for RAAF Base Learmonth and Lancelin Defence Training Area: Project manager and author for a new Bushfire Risk Management Plan, Emergency Evacuation Plan, Bushfire Prevention Plan and Operations Plan for the entirety of Defence's operations at Learmonth and Lancelin, Western Australia. State of the art fire spread modelling was also undertaken to identify impacts associated with Defence activities on the base and surrounding properties. The project involved close liaison with Defence, Department of Fire and Emergency Services and local stakeholders. Risk workshops were organised and facilitated to discuss risks and responses prior to finalisation.

Preparation of Bushfire Management Plans for HMAS Albatross, Bhewerre Ridge and Beecroft Air Weapons Range properties: Prepared bushfire risk management plans and strategies for these three Defence properties in Shoalhaven NSW. Developed Emergency Evacuation Plans for HMAS Albatross and the high-risk Bhewerre Ridge properties as part of the works package.

Weed surveys for HMAS Stirling Garden Island: Managed and coordinated weed surveys throughout Garden Island, Western Australia to inform annual weed control programs and identify new species of invasive plants on the naval base and surrounding island.

Addendum Report

Albany Motorsport
Park
Lot 5780 Down Road
Drome

Bushfire Management Plan



Site Details				
Address:	Lot 5780 Down Road			
Suburb:	Drome	State:	W.A.	Postcode 6330
Local Government Area:	City of Albany			
Description of Building Works:	Development of Stage 1A -Motocross track and 4-wheel drive training area and Stage 1B – Multi use track			
Stage of WAPC Planning	Development Application			

Report Details			
Report / Job Number:	GHD003	Report Version:	Final v1
Assessment Date:	1 April 2021	Report Date:	26 July 2021
BPAD Practitioner	Kathryn Kinnear (Level 2)	Accreditation No.	BPAD 30794

Revision	Prepared By	Summary	Reviewed By	Date
Draft Id 1/07/2021	Kathryn Kinnear	Internal QA review	Bianca Theyer	1/07/2021
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Final Vers 1 26/07/2021	Kathryn Kinnear	Updated from client review		26/07/2021

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1. Introduction

GHD commissioned Bio Diverse Solutions (Bushfire Consultants), on behalf of the City of Albany to prepare an Addendum report to the original approved Bushfire Management Plan (BMP) to accompany a Development Application (DA) to the City of Albany for the construction of Stage 1 (including 1A and 1B) of the Proposed Albany Motorsport Park at Lot 5780 Down Road, Drome (the subject site) within the City of Albany (CoA).

A Bushfire Management Plan was prepared during the Scheme Amendment stages of planning for the greater Albany Motorsport Park (AMP) development in 2019, and updated in June 2021, and should be consulted for further detail and risk management procedures. This Addendum document will guide the implementation of the development/construction of Stage 1A and 1B of the AMP site. It is recommended that the original, overarching BMP is updated to reflect changes through the DA approvals process to have one all-inclusive BMP plan for the AMP site. Refer to the Implementation table of this report (Action 6, Table 4).

1.2 Location

The subject site is described as Stage 1A and 1B located to the northwest of Albany in the suburb of Drome in the municipality of the CoA, as shown in Figure 1. Lot 5780 Down Road South is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the site. Approximately 51 ha at the western end of the site is covered with native vegetation and is excluded from the development of the AMP.



Figure 1: Location Mapping of the subject site.

1.3 Development Proposal

The Great Southern Motorplex Group Inc. (GSMG), the Proponent, in partnership with the City of Albany, intends to develop the site as a regional motorsports facility. In October 2018, the City of Albany Council resolved to purchase the site. Settlement of the land purchase was concluded in 2019.

The proposed AMP forms part of the CoA's strategy to expand upon its existing motorsports facilities within the greater Albany area. The AMP is to be the largest facility of its kind in Western Australia and will support the local economy.

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with CAMS' *Track Operator's Safety Guide* (CAMS, 2012) and Motorcycling Australia (MA) *Track Standards for Inspectors 1st Edition 1 August 2018*; and
 - To be licensed by CAMS for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit:
 - Designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and structures.

Due to the scale and nature of the complex, the works have been broken down into two (2) key stages which comprise of:

Stage 1:

1A: Construction of Motocross Precinct and 4WD Driver Training and ATV Precinct; and
 1B: Construction of Race Track Precinct (with temporary structures).

Stage 1A of the development proposal includes (Figure 2):

- 4WD Driver Training & ATV Precinct.
- Motocross Precinct which includes:
 - Motocross track;
 - Junior motocross track;
 - Spectator and competitor parking;
 - Overflow parking and spectator area;
 - Clubrooms, first aid and scrutineering building;
 - Trials track; and
 - Refuelling area.
- Open air emergency muster area.
- Fencing of protected exclusion area, fencing of precincts and fencing of venue boundary.
- Constructing fire access tracks.

Stage 1 B of the development proposal includes (Figure 2):

Multi-use sealed race track, runoff areas, barriers, safety fencing, spectator and competitor parking, concrete covered refuelling and minor maintenance area, drift training transportable clubroom and toilets, open air emergency muster area.

Stage 1A and 1B have been assessed briefly in this addendum document for compliance to the original BMP report.

Stage 2:

Construction of remaining permanent structures to support the function of the motorsports park.

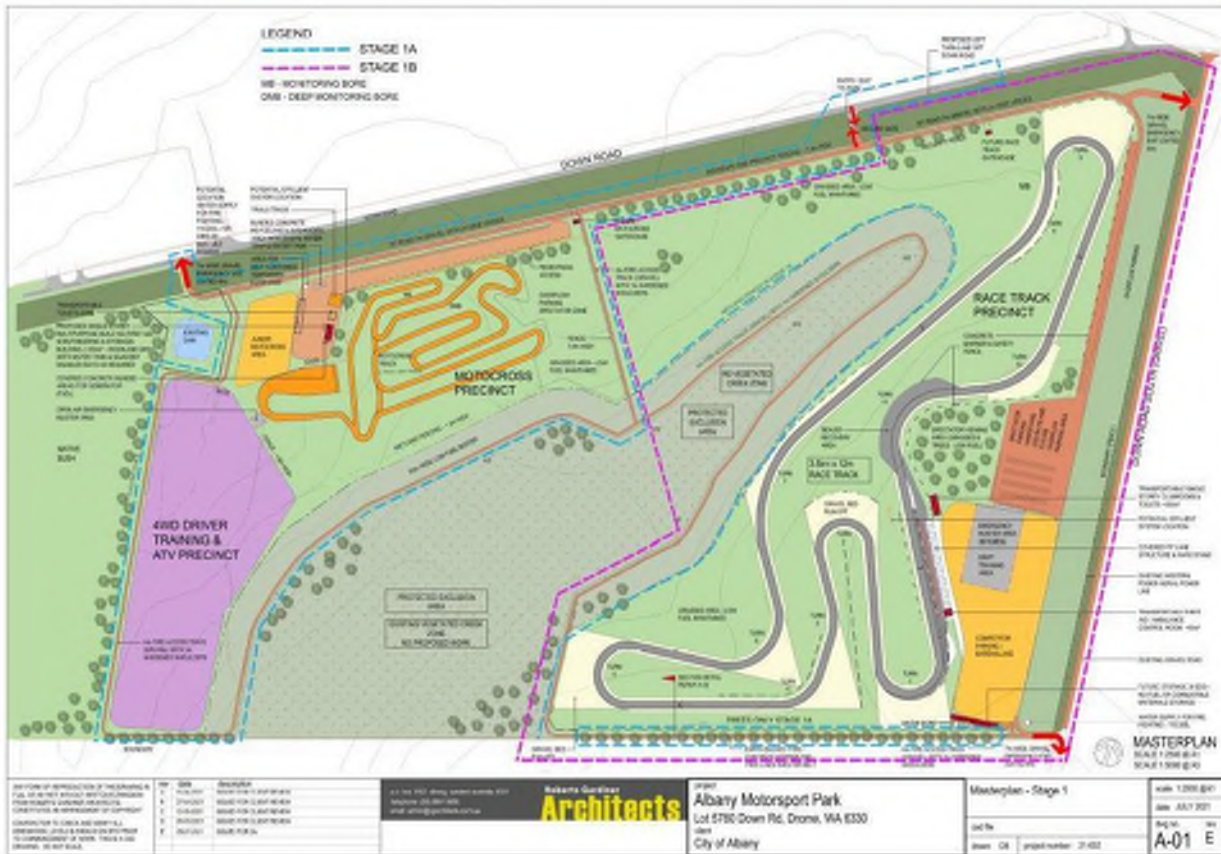


Figure 2: Masterplan (Stage 1A and 1B).

The publicly released Bushfire Prone Area Mapping (OBRM, 2019) shows that the subject site is located within a Bushfire Prone Area (within 100m of >1ha of bushfire prone vegetation) and as such is subject to a planning assessment of the bushfire risks. Bushfire Prone Area Mapping (OBRM, 2019) is shown in Figure 3.

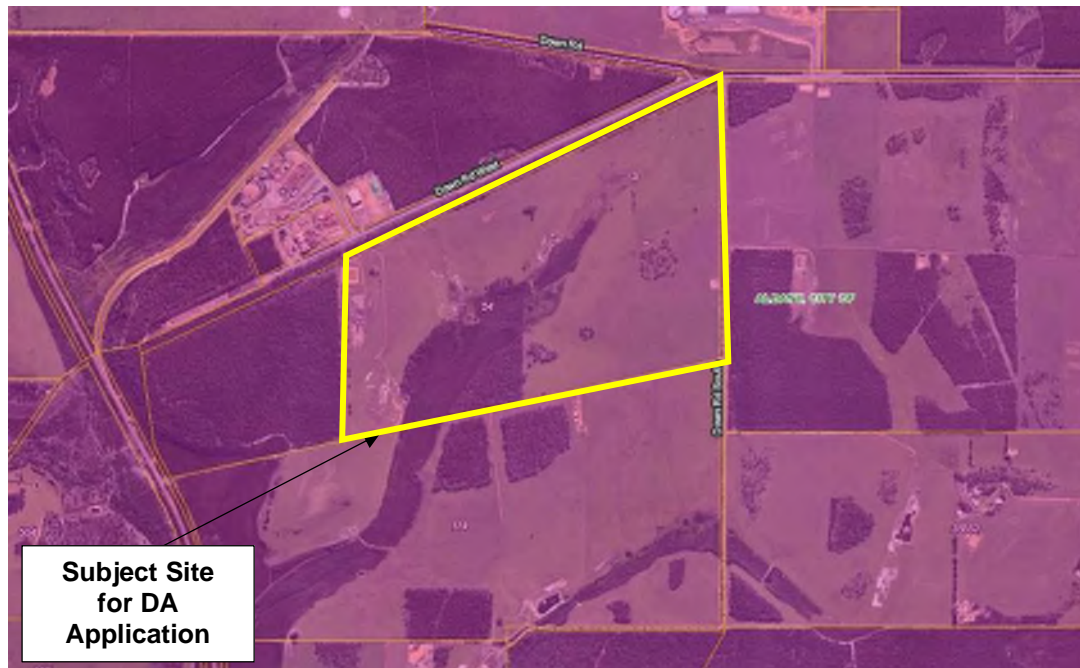


Figure 3: Map of Bushfire Prone Areas and relevance to subject site (OBRM, 2019).

1.4 Albany Motorsport Park BMP (2021)

In 2019 an all-encompassing BMP report was prepared for the Albany Motorsport Park (AMP) by Bio Diverse Solutions and Eco Logical Australia. This report is formally approved by WAPC and CoA from the Scheme Amendment Stages and is to be implemented during the development of the AMP.

In 2021 the BMP was updated to reflect the requests from WAPC during Scheme Amendment. The version which should be referred to during the Assessment of the Development Approval is *FINAL Vers 4.0 BMP Report Albany Motorsport Park Down Road Drome 01-07-2021*.

This Addendum report aims to:

- Assess the updated Development Guide Plan to the WAPC Bushfire Protection Criteria (WAPC, 2017);
- Assess the requirements under the approved BMP (specifically Table 8 – implementation actions); and
- Give recommendation to the Decision Maker regarding the approval of the AMP and actions to be undertaken in the subsequent stages of planning and development of the site.

1.5 Additional information since original BMP report

This section is described in relevance to the BMP and not necessarily all of the other documents and plans, these should be consulted if required.

1. Development Guide Plan

The development guide plan has been updated to indicate the staged development of the site and the infrastructure requirements. The most recent Development Plan is shown in Figure 2. The overlay of the Development plan is shown in the mapping Appendix A (Map1-3).

2. Landscaping Plan and Protected Exclusion Area Management Plan

These plans are located in Appendix B of this document and have been prepared through the Scheme Amendment process to guide the revegetation and the landscaping of the AMP site.

3. Governance

An update to the draft governance model has been developed for the AMP site and is shown in Appendix B.

4. Alternative Access to South Coast Highway

An excise of land through various land acquisitions has occurred to enable the development of a road reserve to link from Down South Road to Albany Highway. An update on the access and securing of tenure is provided in Appendix B.

2 Assessment against the Bushfire Protection Criteria

2.1 Compliance table

The Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) outlines bushfire protection criteria which subdivision and development proposals are assessed for compliance. The bushfire protection criteria (Appendix 4, WAPC, 2017) are performance-based criteria utilised to assess bushfire risk management measures and they outline four elements, being:

- Element 1: Location;
- Element 2: Siting and Design of Development;
- Element 3: Vehicle Access; and
- Element 4: Water.

2.2 Compliance Table

The subject site and the Development Plan will be assessed and are required to meet the “Acceptable Solutions” of each element of the bushfire mitigation measures (WAPC, 2017). The proposal will be assessed against all elements of the bushfire protection criteria (Table 1).

Maps supporting the compliance table are located in Appendix 1, being:

Map 1: Vegetation Classes Stage 1A

Map 2: BAL Contour plan Stage 1A

Map 3: BAL Contour plan Stage 1B

Table 1: Bushfire protection criteria applicable to the subject site

Note. Acronyms used in Table 1 include Bushfire Attack Level (BAL), Asset Protection Zone (APZ), and Local Government Authority (CoA).

Element	Acceptable Solution	Applicable or not Yes/No	Proposal meets Acceptable Solution Stage 1A	Proposal meets Acceptable Solution Stage 1B
Element 1 – Location	A1.1 Development Location	Yes	<p>Compliant</p> <p>Refer to Map 1 outlining all structures located in BAL 29 or less. Construction to BAL and AS3959 does not apply to the class buildings.</p> <p>Proposal meets Acceptable Solution A1.1.</p>	<p>Compliant</p> <p>Refer to map 1 outlining all structures located in BAL 29 or less (all in BAL Low). See map 4 Appendix A.</p> <p>Construction to BAL and AS3959 does not apply to the class buildings.</p> <p>Proposal meets Acceptable Solution A1.1.</p>
Element 2 – Siting and Design	A2.1 Asset Protection Zone (APZ)	Yes	<p>Compliant</p> <p>Low fuel status will apply within the motocross track area as shown on the concept plan and outlined in the original BMP. Any landscaping/streetscaping is to conform to WAPC APZ standards (WAPC, 2017). Refer to standards in original BMP.</p> <p>Proposal meets Acceptable Solution A2.1.</p>	<p>Compliant</p> <p>Low fuel status will apply within stage 1B (including the race circuit) as shown on the concept plan and outlined in the original BMP. Any landscaping/streetscaping is to conform to WAPC APZ standards (WAPC, 2017). Refer to standards in original BMP.</p> <p>Proposal meets Acceptable Solution A2.1.</p>
Element 3 – Vehicular Access	A3.1 Two Access Routes	Yes	<p>N/A</p> <p>The development is located on Down Road which is a cul-de-sac road. The access for the greater AMP site was assessed as a “Performance Based Solution” for the site and for the development. The approving agency should refer to the overarching BMP report for the performance-based assessment and subsequent approvals. The development of a secondary road access from Down Road South to Albany Highway is being provided by the CoA, refer to Appendix B.</p>	
	A3.2 Public Road	No	<p>No public roads are proposed as part of this development. Internal public access is discussed in A3.5 as private driveways. Not assessed to Acceptable Solution A3.2.</p>	
	A3.3 Cul-de-sacs	No	<p>No cul-de-sacs are proposed as part of this development. Not assessed to Acceptable Solution A3.3.</p>	
	A3.4 Battle axes	No	<p>No battle axes are proposed as part of this development. Not assessed to Acceptable Solution A3.4.</p>	
Element 3 – Vehicular Access	A3.5 Private driveways	Yes	<p>Compliant</p> <p>The main access point / driveway into the Albany Motorsport Park will be built to a 7.6m wide standard for public access. CoA to ensure the engineering plans meet the minimum technical requirements as per Table 2.</p> <p>Proposal meets Acceptable Solution A3.5.</p>	
	A3.6 Emergency Access Ways	Yes	<p>Compliant</p> <p>Emergency Access Ways are to be built to a minimum of 6m horizontal clearance and the CoA to ensure at DA the minimum technical requirements are met as per Table 2.</p> <p>Proposal meets Acceptable Solution A3.6.</p>	

Table 1: Continued

Element	Acceptable Solution	Applicable or Not Yes/No	Proposal meets Acceptable Solution
Element 3 – Vehicular Access Cont.	A3.7 Fire Service Access Ways	Yes	Compliant Fire service access (FSA) ways are to be built to a minimum of 6m horizontal clearance and the CoA to ensure at DA the minimum technical requirements are met as per Table 2. Proposal meets Acceptable Solution A3.7.
	A3.8 Firebreaks	Yes	Compliant Firebreaks are noted to be installed around the entirety of the subject site lot (Lot 5780). Furthermore, internal firebreaks are proposed to be a minimum of 4m wide. It is noted that as the land is owned by the CoA that the CoA Fire Management Notice (and subsequent section 33 notices) are not applicable to this site (CoA and GSMA to note). The implementation of this addendum BMP and the overarching BMP and conformance to the BMP's are essential. Proposal meets Acceptable Solution A3.8.
Element 4 – Water	A4.1 Reticulated areas	No	N/A reticulated water is not available. Not assessed to Acceptable Solution A4.1.
	A4.2 non-reticulated areas	Yes	Water supply will be through on-site resources via bore extraction to tank storage and pumped to facilities around the site. Bore water supply is known to the area, a copy of a monitoring bore testing for water sources in the northern area of the precinct is provided in the overarching BMP report. Storage of water dedicated for firefighting will be located in the north and the eastern precincts and tanks are to be a minimum of 110,000L (as shown on Masterplan). 75mm Camlock fittings and turnaround hardstand areas (See Figure 4) to be installed at tanks. To be approved by the CoA at Development Approval Stages. Proposal meets Acceptable Solution A4.1.
	A4.3 Individual lots in non-reticulated areas	No	Not assessed to A4.3.

Table 2: Minimum technical requirements for access

Technical requirements	Private Driveways & public access ways	Emergency Access Ways	Fire Service Access Ways
Minimum trafficable surface (m)	4	6*	6*
Horizontal clearance (m)	6	6	6
Vertical clearance (m)	4.5	4.5	4.5
Maximum grades	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5
Maximum Length	50m	600m	N/A

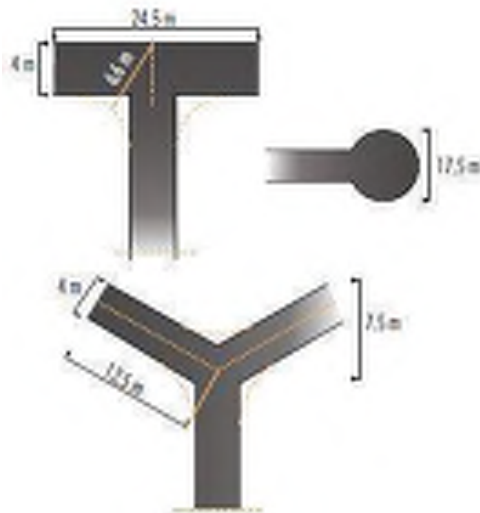


Figure 4: Turnaround areas minimum standard

2.3 Other bushfire mitigation measures

The following section outlines additional measures to assist in mitigating the bushfire risk for the proposed development and should be added into the overarching BMP report as a maintenance schedule for the AMP.

2.3.1 Minimise ignition sources

There is little control of offsite ignition sources, however the following is recommended to be undertaken by the AMP (as per the recommendations in the overarching BMP) while in ownership of the land and any subsequent lease areas:

Prior to the bushfire season (October) the following activities are undertaken:

- Mowing, slashing and brush cutting (noting illegal to do so on Total fire ban days);
- Maintenance of road access into and out of the site; and
- Sub-contractors and volunteers are aware of their obligations to observe any total fire bans or vehicle movement bans as designated by the CoA.

During the summer bushfire season (1st December to 30th April inclusive) maintenance activities internal to the site should be planned and risk assessed prior to commencement. This includes but not limited to:

- Mowing, slashing and brush cutting (noting illegal to do so on Total fire ban days);
- Welding, grinding and hot works (not undertaken on Total fire ban days);
- Temporary waste disposal areas and green waste dumps – ensure piles are not exceeding 1.5m high and have bare mineral earth surrounding (min of 10m); and
- A water tender (min of 200L) fast attack unit is on site during the fire season.

The Site manager in consultation with developer are responsible for safety in during the bushfire season and are to ensure safety of the site and adjacent properties at all times from potential ignition sources.

2.3.2 Fuel reduction and site maintenance schedule

Fuel reduction through mechanical slashing and mowing will be required to be undertaken regularly to ensure all internal grasses are maintained. Buildings are to be inspected regularly for build-up of wind-borne debris and leaf accumulation in gutters and at penetrations to buildings (doors, windows, etc). The Lessee or site manager is to be responsible for implementation of the maintenance schedule which should generally reflect the following actions, refer to Table 4.

Table 3: Maintenance Schedule

Frequency & Compliance Number	Activity
Weekly (During fire season operations and prior to event)	Check all buildings for wind borne debris build up and remove.
	Check waste materials collected from site are correctly sorted and stored (i.e. green waste, refuelling in designated areas only).
	Check personal safety equipment before each use.
	Check dust filters on equipment.
	Visually check vehicles and equipment for leaks or potential oil spills, check on fuel storage areas (if applicable).
	Check signage, gates and access gates are unlocked and accessible on emergency cues points.
	Check noise and spark suppression devices on equipment prior to working.
	Check gutters are free from vegetation or overhand.
	Trimming and removing dead plants or leaf litter.
	Pruning climbing vegetation (such as vines) on a trellis, to ensure it does not connect to a building, particularly near windows and doors.
	Removing vegetation in close proximity to a water tank to ensure it is not touching the sides of a tank.
	Check fire firefighting water tanks are full and serviceable.
	Check outdoor objects around buildings (see list below).
	Raking and cleaning underfloor spaces (if applicable).
Monthly	Mowing, slashing and maintaining grasses, more frequent during spring and Autumn growth periods.
	Whipper snipper/grass cutter around all buildings.
	Ensure all Fire Service Access tracks are traversable and no erosion or washouts.
	Ensure public access is restricted and signage in place.
	Check no combustible materials are store near buildings or penetrations of buildings (windows doors etc), includes but not limited to – gas bottles, fences stored combustible material, vines, plants etc.
Yearly (prior to bushfire season)	Undertake any fuel reduction burning (if applicable).
	Maintain firebreaks and fire service access tracks, check gates can easily be opened and closed.
	Check locks are in working order and check gates which are not to be locked (i.e. for emergency access).
	Check water tank cam lock (Storz) valves are working and in good order (i.e. open and shut).
	Check hardstand areas are clear and traversable adjacent to firefighting storage tanks.
	Ensure weeds or woody material is not encroaching into the APZ area around buildings (20m minimum), attend to any dead material through trimming and pruning, raking and removing to green waste.
	Any material from pre fire season preparation is either disposed to green waste or burn in piles away for the buildings with a 10m mineral earth break around the pile.

The above is recommended to be combined into the AMP site Operational Management Plans. Prior to a fire event best practice recommends that objects within the APZ are moved away from the building prior to any bushfire event. Objects may include, but are not limited to:

- Door mats
- Outdoor furniture
- Potted plants
- Shade sails or umbrellas
- Plastic garbage bins
- Firewood stacks
- Flammable sculptures
- Playground equipment and children's toys.

These should always be considered in the proximity to buildings and stored appropriately when not in attendance at site. Consider any replanting or landscaping refer and to the Country Fire Authority's Landscaping for Bushfire Garden Design and Plant Selection (CFA, 2012) – Plant Selection Key or aim for plants within the APZ that have the following characteristics:

- Grow in a predicted structure, shape and height.
- Are open and loose branching with leaves that are thinly spread.
- Have a coarse texture and low surface-area-to-volume ratio.
- Will not drop large amounts of leaves or limbs, that require regular maintenance.
- Have wide, flat, and thick or succulent leaves.
- Trees that have bark attached tightly to their trunk or have smooth bark.
- Have low amounts of oils, waxes, and resins (which will often have a strong scent when crushed).
- Do not produce or hold large amounts of fine dead material in their crowns.
- Will not become a weed in the area.

3 Implementation Actions Matters to be addressed as DA conditions

3.1 AMP/Lessee Responsibility

It is recommended the future lessee's shall be responsible for the following:

Table 4: Implementation actions AMP/Lessee's

No	Implementation Action	DA condition	DA clearances
1	Ensure internal road, fire access and public entry/exit points are constructed in accordance with the minimum requirements of vehicle access as required in the overarching BMP.	No	Yes
2	Prepare and implement Operational Environmental Management Plan for the site and comply to maintenance schedule as per original BMP requirements.	Yes	Yes
3	Ensure low fuel areas implemented prior to commencement of any site works or events. Any landscaping/streetscaping is to conform to WAPC APZ standards (WAPC, 2017). Refer to the standard Appendix B and the maintenance schedule implemented as outlined in Table 3.	No	Yes
4	Install minimum storage of water dedicated for firefighting as shown on Masterplan for Stage 1A and 1B and tanks are to be a minimum of 110,000L. 75mm Camlock and turnaround hardstand areas (See Figure 4) to be installed at tanks. If future buildings (Stage 2) are required to have structural (internal) fire water supply and (external) hydrants then (if required) a Fire Engineer is to be engaged to ensure flow rates are achieved to the relevant technical requirements.	Yes	Yes
5	Ensure the Bushfire Emergency Evacuation Plan (BEEP) is updated for the site with wardens and responsible persons identified. This can be undertaken as a condition of the DA approval.	Yes	Yes
6	Update the overarching BMP report to incorporate the changes through the DA stages (including the updated BEEP) to ensure there is one BMP report for the whole of site and for the AMP governing body to consult with the lease holders. The BMP update can be conditioned at DA stages and should be reviewed every 5 years for consistency, updates or changes or legislative requirements.		

3.2 City of Albany Responsibility

It is recommended the City of Albany and GSMG be responsible for the following:

Table 5: Implementation actions City of Albany

No	Implementation Action	D/A condition
1	Continue to arrange for designation and construction of the Emergency Access way from Down Road South to Albany Highway as outlined in Appendix C of this report.	N/A
2	Ensure internal road and public access is constructed in accordance with the minimum requirements of vehicle access as shown in Table 2.	Yes
3	Ensure the Bushfire Emergency Evacuation Plan (BEEP) is updated for the Albany site with wardens and responsible persons identified. This can be undertaken as a condition of the DA approval.	Yes
4	Ensure compliance of the BMP through the condition of the DA, update of the overarching BMP to reflect any changes through DA stages.	Yes
5	CoA to consider fuel reduction management on the native vegetated areas through hazard reduction burning as per the City of Albany Bushfire mitigation planning or through designated reserve management plans. Noting that the CoA Fire Management Notice does not apply to crown land or lease arrangements of crown land.	N/A

4 Disclaimer

The recommendations and measures contained in this assessment report are based on the information available at the time of writing following the instructions of the regulatory authorities and following the requirements of the Australian Standards 3959-2018 – Building in Bushfire Prone Areas, WAPC State Planning Policy 3.7 (WAPC, 2015), WAPC Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) Vers 1.3, and applying best practise as described by Fire Protection Association Australia. These are considered the minimum standards required to balance the protection of the dwellings and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire, people injured, or fatalities occur either at the site or while evacuating. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed development are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the bushfire consultant has no control. Notwithstanding anything contained within, the consultant/s will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the bushfire consultant) arising out of the services rendered by the consultant.

AS3959-2018 disclaimer: It should be borne in mind that the measures contained within this Standard (AS3959-2018) cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather condition.

Building to AS3959-2018 is a standard primarily concerned with improving the ability of buildings in designated bushfire prone areas to better withstand attack from bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself.

(AS3959, 2018)

5 Certification

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level (s) stated in this document have been prepared in accordance with the requirements of AS 3959-2018 and the WAPC Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017).



SIGNED, ASSESSOR: DATE: 26/07/2021

Kathryn Kinnear, Bio Diverse Solutions

Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD30794)



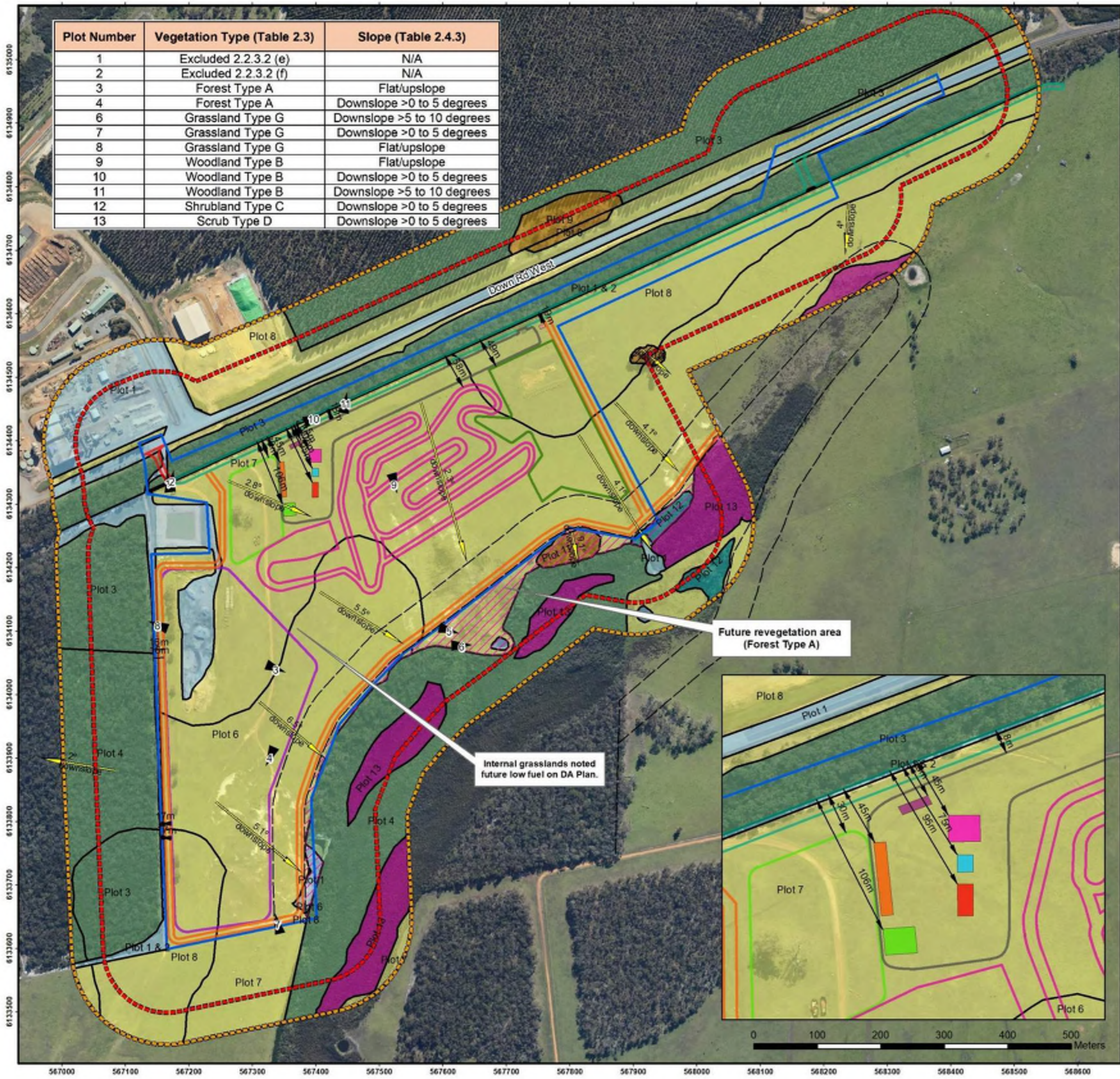
6 Appendices

Appendix A: Mapping (Map 1- 3)

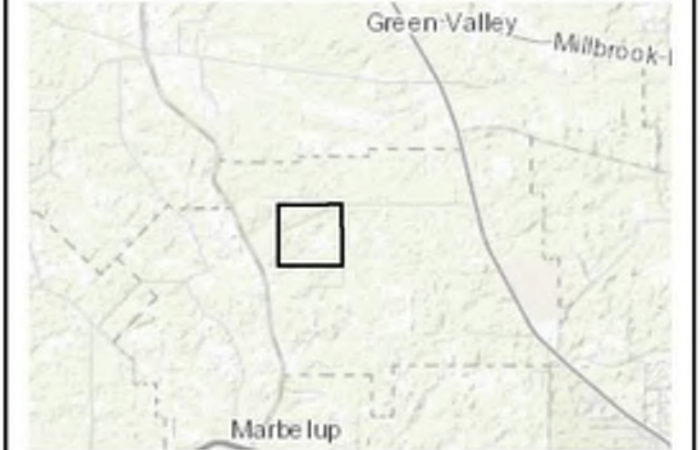
Appendix B: Additional information for the AMP site

Appendix A:
Mapping (Maps 1-3)

Plot Number	Vegetation Type (Table 2.3)	Slope (Table 2.4.3)
1	Excluded 2.2.3.2 (e)	N/A
2	Excluded 2.2.3.2 (f)	N/A
3	Forest Type A	Flat/upslope
4	Forest Type A	Downslope >0 to 5 degrees
6	Grassland Type G	Downslope >5 to 10 degrees
7	Grassland Type G	Downslope >0 to 5 degrees
8	Grassland Type G	Flat/upslope
9	Woodland Type B	Flat/upslope
10	Woodland Type B	Downslope >0 to 5 degrees
11	Woodland Type B	Downslope >5 to 10 degrees
12	Shrubland Type C	Downslope >0 to 5 degrees
13	Scrub Type D	Downslope >0 to 5 degrees



Albany Office: 29 Hercules Crescent Albany, WA 6330 (08) 9842 1575
 Denmark Office: 7/40 South Coast Highway Denmark, WA 6333 (08) 9848 1309
 Esperance Office: 2A/113 Dempster Street Esperance, WA 6450



- Legend**
- Subject Site - Stage 1
 - 100m Assessment Boundary
 - 150m Assessment Boundary
 - Stage 1 Facilities
 - 4WD Driver Training & ATV Precinct
 - 4m gravel fire track & 4m firebreak
 - 7m Emergency Exit
 - 7m gravel road with 4m verges
 - Junior Motocross Area
 - Motocross Track
 - Parking
 - Overflow parking & spectator area
 - First aid, Scrutineering & Storage
 - Future Motocross Gatehouse
 - Re-fueling & Washdown Area
 - Open Air Emergency Muster Area
 - Temporary Food Van Area
 - Transportable Toilet Zone
 - Trials Track
 - Cadastral
 - Low Fuel Buffer
 - Separation Distance
 - Slope Degrees
 - Photo Point
 - Future Low Fuel
 - Future Revegetation Area
 - Vegetation/Plot Boundary
 - Vegetation
 - Forest Type A
 - Woodland Type B
 - Shrubland Type C
 - Scrub Type D
 - Grassland Type G
 - Low fuel or non vegetated 2.2.3.2

Scale 1:5,893 @ A3
 GDA MGA 94 Zone 50

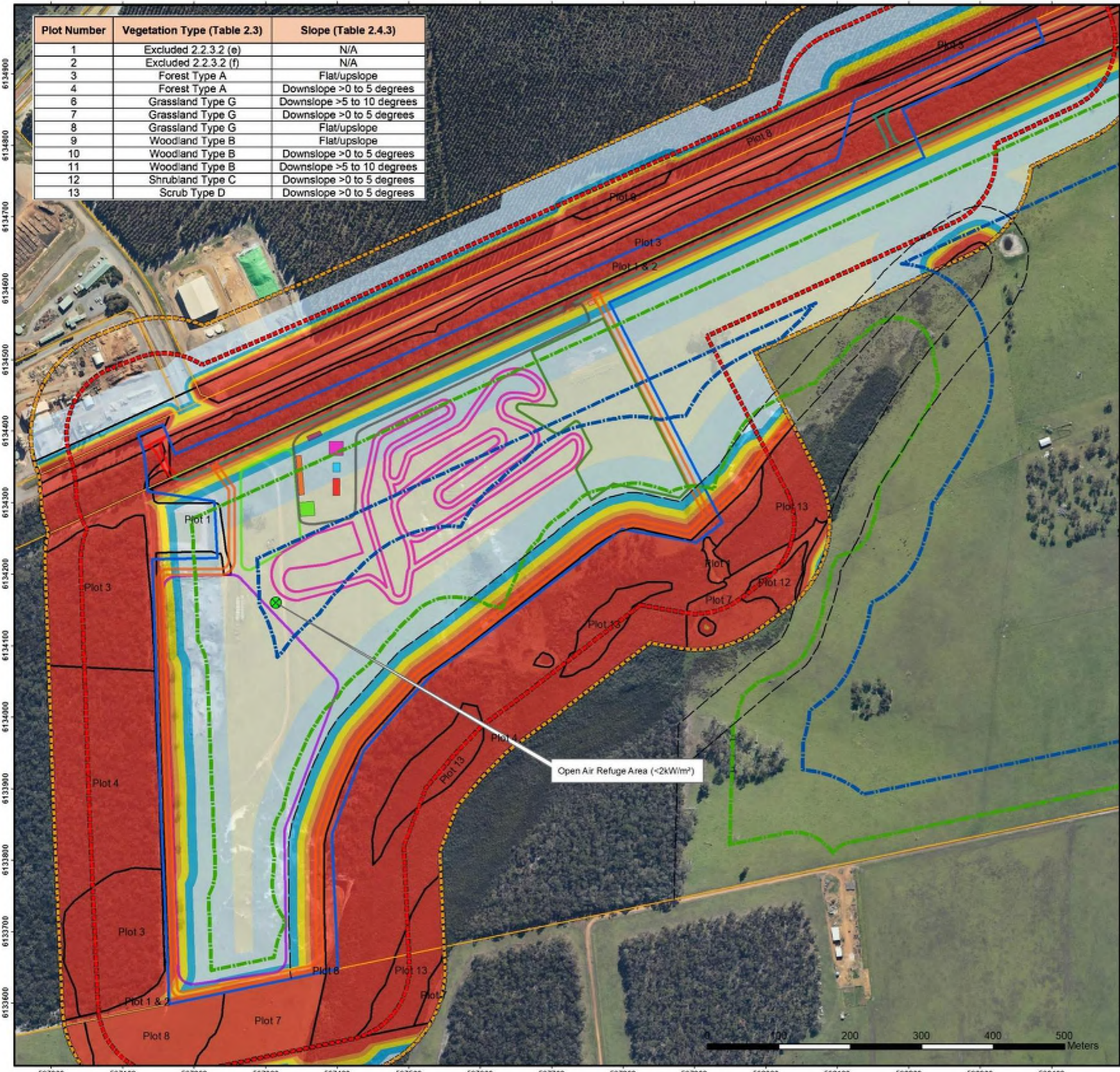
Data Sources
 Aerial Imagery: WA Now, Landgate Subscription Imagery
 Cadastre, Relief Contours and Roads: Landgate 2017
 IRIS Road Network: Main Roads Western Australia 2017
 Overview Map: World Topographic map service, ESRI 2012

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 City of Albany
 Lot 5780 Down Road
 Drome, WA 6330

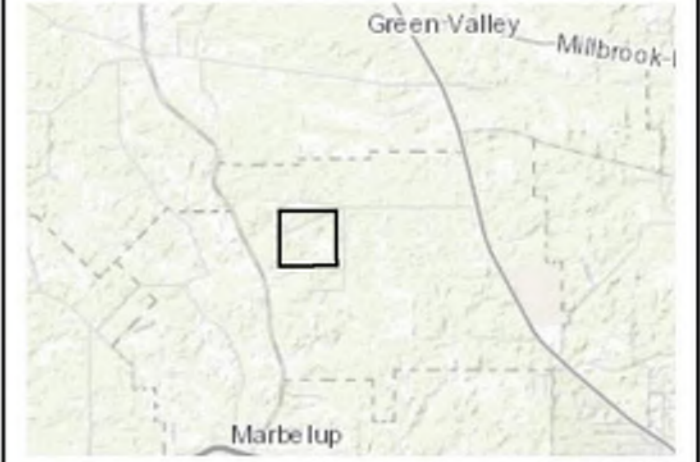
Map 1: Vegetation Classes - Stage 1A

BAL Assessor KK	QA Check KK	Drawn by BT
STATUS FINAL	FILE GHD003	DATE 01/07/2021

Plot Number	Vegetation Type (Table 2.3)	Slope (Table 2.4.3)
1	Excluded 2.2.3.2 (e)	N/A
2	Excluded 2.2.3.2 (f)	N/A
3	Forest Type A	Flat/upslope
4	Forest Type A	Downslope >0 to 5 degrees
6	Grassland Type G	Downslope >5 to 10 degrees
7	Grassland Type G	Downslope >0 to 5 degrees
8	Grassland Type G	Flat/upslope
9	Woodland Type B	Flat/upslope
10	Woodland Type B	Downslope >0 to 5 degrees
11	Woodland Type B	Downslope >5 to 10 degrees
12	Shrubland Type C	Downslope >0 to 5 degrees
13	Scrub Type D	Downslope >0 to 5 degrees



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 Esperance Office: 2A/113 Dempster Street Esperance, WA 6450



Legend

- Subject Site - Stage 1
- 100m Assessment Boundary
- 150m Assessment Boundary
- Stage 1 Facilities
 - 4WD Driver Training & ATV Precinct
 - 4m gravel fire track & 4m firebreak
 - 7m Emergency Exit
 - 7m gravel road with 4m verges
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 - Overflow parking & spectator area
 - First aid, Scrutineering & Storage
 - Future Motocross Gatehouse
 - Re-fueling & Washdown Area
 - Open Air Emergency Muster Area
 - Temporary Food Van Area
 - Transportable Toilet Zone
 - Trials Track
- Cadastre
- Open Air Refuge Area
- Low Fuel Buffer
- 2kWm Line
- 10kWm Line
- Vegetation/Plot Boundary
- BAL Contours
 - BAL-FZ
 - BAL-40
 - BAL-29
 - BAL-19
 - BAL-12.5
 - BAL-LOW

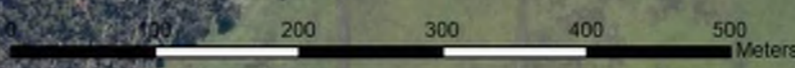
Scale 1:5,250 @ A3
 GDA MGA 94 Zone 50

Data Sources
 Aerial Imagery: WA Now, Landgate Subscription Imagery
 Cadastre, Relief Contours and Roads: Landgate 2017
 IRIS Road Network: Main Roads Western Australia 2017
 Overview Map: World Topographic map service, ESRI 2012

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 Drome, WA 6330

Map 2: BAL Contours - Stage 1A

BAL Assessor KK	QA Check KK	Drawn by BT
STATUS FINAL	FILE GHD003	DATE 23/07/2021

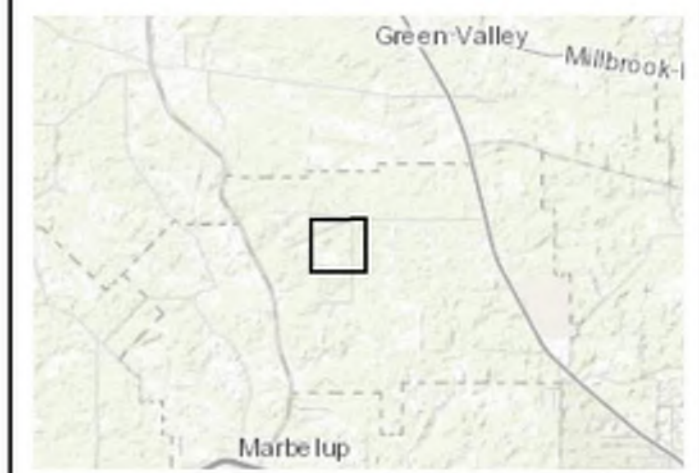




Albany Office:
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7/40 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382



Overview Map Scale 1:100,000

- Legend**
- Subject Site
 - 100m Assessment Boundary
 - Cadastre
 - Low Fuel Buffer
 - Open Air Refuge Area
- BAL Contours**
- BAL-FZ
 - BAL-40
 - BAL-29
 - BAL-19
 - BAL-12.5
 - BAL-LOW

Scale
1:5,000 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Drome, WA 6330

Map 3: BAL Contour - Stage 1B

BAL Assessor KK	QA Check KK	Drawn by BT
STATUS FINAL	FILE COA0020	DATE 23/07/2021

Appendix B:**Updated information AMP site****Updated information AMP Governance****Access to South Coast Highway****Landscape Master Plan****Protected Exclusion Zone Management Plan**

**ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL**

1. **VENUE**
Albany Motorsport Park
2. **LOCATION**
Lot 5780 Down Road, DROMIE, Western Australia
3. **LAND OWNER**
City of Albany
owns the land (LOCATION)
approving Authority for any modifications
4. **VENUE OWNER**
Albany Motorsport Venue Incorporated (AMV Inc.)
leases land from the LAND OWNER
owns and maintains the facilities and infrastructure
5. **THE BOARD**
VENUE OWNER's board of 7 Directors
responsible for management and operation of the VENUE
6. **OCCUPIER**
The VENUE OWNER
7. **AFFILIATIONS**
Confederation of Australian Motor Sport Limited, trading as Motorsport Australia
Motorcycling Australia Ltd
8. **VENUE MAP**
Albany Motorsport Park Masterplan
9. **OWNERSHIP & OPERATION**
 - Ownership of the land (The Land) is and will remain owned by the City of Albany.
 - Post construction by the City of Albany, ownership of all facilities and infrastructure (will be transferred to the Albany Motorsport Venue Incorporated (AMV Inc.) by written agreement.
 - The Land (not the Venue) will be leased by the City of Albany to the AMV Inc.
 - The AMV Inc. will be responsible for the operation, maintenance and repair of the Venue.
10. **AMV INC. BOARD GOVERNANCE**
 - AMV Inc. is to be established as a not for profit association incorporated in accordance with the Associations Incorporation Act 2015.
 - Noting it is acceptable for an association to trade with the public so long as the profits from those transactions are used to promote the objects and purposes of the association and members do not profit from the activities.
 - AMV Inc. will consist of a Board of Directors (the Board)
 - The Directors will be paid a remuneration agreed annually.
11. **THE BOARD**
 - 11.1 The Board may have up to seven (7) Directors, who shall comprise:
 - Two (2) community representatives recommended by the City of Albany for the Board's consideration.

**ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL**

- One (1) representing Motorsport Australia;
- One (1) representing Motorcycling Western Australia (MWA);
- One (1) representing 4-wheel racing clubs;
- One (1) representing 2-wheel racing (motorcycle road racing) clubs;
- One (1) representing motocross clubs;

11.2 The Chairman of the Board will be elected by the Directors.

11.3 Appointments are to be up to a two-year term, with skills determined by the Board.

11.4 The Directors shall meet monthly or on more occasions if the need dictates.

11.5 The Board to employ an Operations Manager and any other staff deemed necessary to ensure the safe and compliant Venue.

11.6 The Board shall lease the Land from the City of Albany.

11.7 A Lease Agreement shall be prepared by the City of Albany and approved by the City of Albany Council.

11.8 The Board shall be responsible for the insurance of the tracks, roads and any other permanent buildings and fixtures on the Venue.

11.9 The Board is responsible for the development of an Albany Motorsport Park Strategic Development Plan and overseeing the implementation of the strategies and supporting policies.

11.10 The Board is responsible for the development and implementation of systems to enable it to comply with its legal and policy obligations, adhering to accounting standards and ensuring the Venue assets are protected through appropriate risk management.

11.11 The Board is responsible for the marketing, management, programming and the safe use of the Venue.

12. VENUE OWNER

12.1 The Venue Owner shall carry out:

- marketing the Venue;
- hiring of facilities to various users and user groups;
- programme the hiring and events held at the Venue;
- ensure the hirer has the appropriate permit for the event being conducted;
- ensure the hirer has the appropriate event insurance in place;
- adherence to the Motorsport Australia "Track Operations Safety Guide";
- adherence to the Motorcycling Australia "Track Standards" and current "Manual of Motorcycle Sport";
- management and maintenance of the infrastructure;
- establish and maintain an ongoing maintenance (sinking) fund;
- ensure the Venue is cost-effective, that is, income is equal to or greater than expenses;
- adherence to the Bushfire Management Plan;

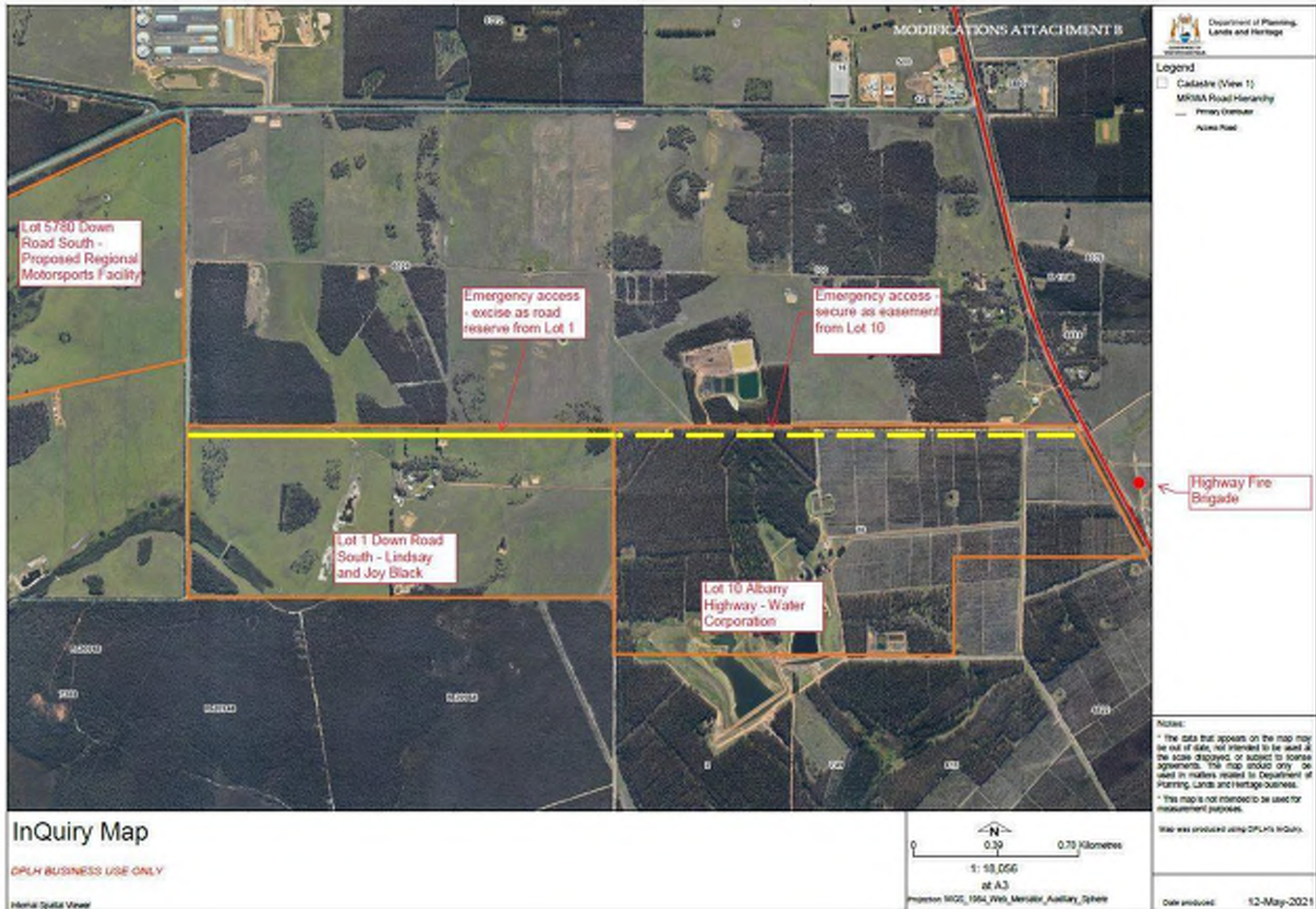
ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

- adherence to the Noise Management Plan;
 - adherence to the Water Management Plan;
 - adherence to the Hydrocarbon Management Plan;
 - adherence to the Dust Management Plan; and
 - present an annual report to the City of Albany.
- 12.2 Produce and administer a "Venue Procedures Manual".
- 12.3 Produce and administer a "Code of Conduct Manual".
- 12.4 Ensure the tracks are certified and sanctioned by Motorsport Australia and Motorcycling Australia on an annual basis.
- 12.5 Ensure users of the Venue have the appropriate training and qualifications and operate in accordance with the relevant governing motorsport organisation.
- 12.6 Purchase and have available the required safety equipment.
- 12.7 Purchase and have available the required maintenance equipment.
- 12.8 Ensure grounds maintenance is carried out by trained employees and/or trained volunteers.

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

Revision History

Author	Version Description	Date Completed
Great Southern Motorplex Group Inc.	Draft prepared for review by City of Albany	26/04/2021
City of Albany	Reviewed and marked up by City of Albany. Changes review to completed document.	27/04/2021
City of Albany / Great Southern Motorplex Group Inc.	Amended post meeting held on 4 May 2021. Agreed amended marked up in RED.	04/05/2021
City of Albany	Changes accepted	06/05/2021
City of Albany	Amendment to Item 11	13/05/2021





<p>Albany Motorsport Park Proposed Master Plan Stage 1</p>	<p>Prepared for City of Albany Western Australia</p>	<p>GHDWOODHEAD 100 Hay Street Perth WA 6000 PO Box 1000 Perth WA 6000 Tel: 08 9222 8222 ghdw@ghdwoodhead.com.au www.ghdwoodhead.com</p>	<p>JOB NO: 12562218</p>	<p>Date: July 2021</p>
			<p>Approved: J Pfeiffer</p>	<p>Scale: 1:2000 @ A1</p>
<p>Sheet NO: SK-L001</p>			<p>Rev NO: 0</p>	

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Leederville WA 6007

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Your Ref: F20219243 - RC.PJT.2
Our Ref: 105339620 / A2884
Enquiries: Miranda Hahn
Telephone: 9420 3815
Email: miranda.hahn@watercorporation.com.au

19 March 2021

Atlanta Veld
Lands Officer
City of Albany
PO BOX 484
ALBANY WA 6331
Sent by email to: Atlantav@albanv.wa.gov.au

**WATER CORPORATION FREEHOLD LAND: PORTION OF LOT 10 ON DIAGRAM 84694 /
35554 ALBANY HIGHWAY, DROME - PROPOSED EMERGENCY ACCESS EASEMENT
(PROPOSED ALBANY MOTORSPORT PARK)**

I refer to our previous correspondence in relation to the abovementioned proposal.

Water Corporation's Procurement and Property Business Unit has completed due diligence investigations into the City of Albany's request and can advise the Water Corporation is willing to provide in principle support to grant the City an easement for emergency access purposes for consideration of \$1.00 (Plus GST if applicable), conditional upon, but not limited to the following;

1. City of Albany to obtain approval from MRWA with respect to traffic safety assessment at Albany Highway intersection.
2. The easement is restricted to **ten metres wide** and is to be located along the full length and adjacent to the northern boundary of Lot 10, i.e. the proposed easement land area is identical to the existing easement land area which benefits Lot 1, No. 35552 Albany Highway.
3. The purpose of the proposed access easement is strictly limited to 'emergency use' only, i.e. only to be used for access / egress in the case of a bushfire event / fire emergencies.
4. The easement land area is not to be developed for any other purposes other than for emergency access. It is noted that portion of the proposed easement at the western edge intersects a 'P2' Public drinking water source area (PDWSA).
5. The City acknowledges there are existing interests registered across the subject land and agrees to be a shared user of the subject access track.
6. The Water Corporation to retain the right of access to the easement land at all times.

7. The City of Albany is to ensure the access track / easement land area is maintained in a proper and safe condition, and to carry out necessary repairs to ensure same at its own cost (associated with its usage).
8. The City of Albany is to indemnify Water Corporation and accepts full liability with respect to its use i.e. associated traffic over the easement land.
9. The City is to extend the existing gravel access track at the western end to ensure it is contained entirely within the agreed easement land area. The City is to submit associated design plans and works methodology to Technical Advisor, Graham Wright – telephone 9842 4230 / M: 0427 907 769 for Water Corporation's review and approval.
10. In addition to the above, the City is to meet any on ground requirements across the easement land area specified by Water Corporation's Albany Regional Office.
11. All costs associated with the proposal including but not limited to surveying requirements and the preparation, negotiation, execution and registration of a suitable Deed of Easement document (including both parties solicitors' costs) are to be met by the City of Albany.

Our preference is for Water Corporation's Solicitors to prepare the Deed of Easement document. We believe the associated costs would be in the order of \$2,500 (incl. GST) which would need to be provided upfront to cover the anticipated costs.
12. The preliminary Deposited Plan showing the extent of the easement must be submitted for review and approval by the Water Corporation prior to lodgement at Landgate.
13. All necessary consents to the proposed easement being provided by the required parties.
14. Prior to any works commencing across the easement land, all relevant permits and / or approvals must be obtained by the City including but not limited to environmental, planning, a Water Corporation clearance to work permit and "Approval to Work Near Our Assets".
15. Following any works on the easement land, the Water Corporation will inspect the land to ensure that all structures are in a safe condition and appropriate signage installed (where applicable).

If the City accepts the abovementioned conditions and wishes to proceed with formalising access arrangements over portion of the Water Corporation's Lot 10, we note that further consultation will be required. On this basis, please keep me informed of any developments.

If you require further information, please don't hesitate to contact me.

Yours sincerely



Miranda Hahn
Advisor - Property Portfolio
PROCUREMENT AND PROPERTY

Appendix G

Traffic Impact Assessment and Traffic Management Plan



Traffic & Parking Management Plan

Project: Albany Motorsport Park (AMP)
Client: City of Albany
Author: Yuyang Ke
Date: 16th April 2021
Shawmac Document #: 2103019-TPMP-001

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ISO 9001 QUALITY
Certified System



Document Status: Client Review

Version	Prepared By	Reviewed By	Approved By	Date
1	Yuyang Ke	Richard Jois	Richard Jois	16/04/2021
2	Yuyang Ke	Richard Jois	Richard Jois	26/06/2021

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File Reference: Y:\Jobs Active 2021\T&T Construction Traffic Management\GHD_Albany Motorsport Development Application Proposal_21030198.Report\Albany Motorsport Park Traffic and Parking Management Plan_Update 080721.docx



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1. Introduction

1.1. Background

The City of Albany (CoA) has engaged GHD to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Figure 1, Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long x 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia Track Operator's Safety Guide [1] and Motorcycling Australia (MA) Track Guidelines [2].
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.



1.2. Appendices

This report includes:

- Construction Traffic Management Plan for the construction of Albany Motorsport Park including earth works, car park construction, utilities installation and pavement construction.
- Event traffic management plan.
- Traffic assessment (GHD)

2. Proposed Development

2.1. Site Location

The site is in the corner of Down Road and Down Road South in Drome WA 5330 as shown in **Figure 1**.



Figure 1: Site Location

2.2. Vehicle Access and Parking Provision

Vehicle entry will be provided on Down Road, exits are provided on Down Road and Down Road South and there is an emergency exit on south east corn of the property. Approximately a total of 250 car parking spaces will be provided on-site on each parking complex (Motocross Precinct and Race Track Precinct). The site layout is shown in **Figure 2**.

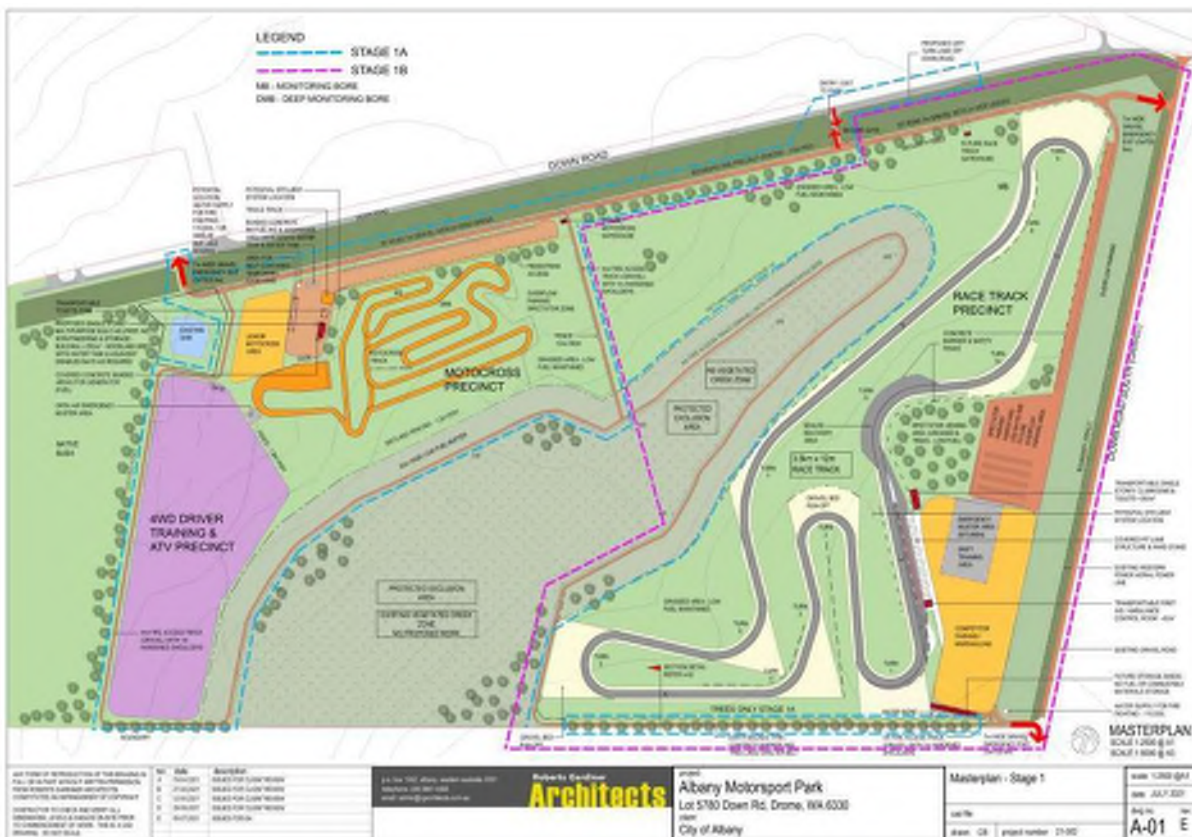


Figure 2: Site Layout





3. Traffic and Parking Assessment

3.1. City of Albany Requirements

The City of Albany Local Planning Scheme No.1 Section 4.8.1 sets out the car parking requirements for various land uses, however this does not include motorsport facilities.

3.2. Existing Road Network

Down Road is a single carriageway road approximately 9 metres wide with one lane in each direction. It is designated as an access road under the Main Roads WA Road information Mapping system, it is under the control of the City of Albany and existing speed limit is 110km/h.

Down Road South is a gravel road approximately 5.5 metres wide. It is designated as a local access road, it is under control of the City of Albany, there is no speed limit on this road. During the site inspection, it is confirmed that the road condition only suitable for speed up to 50km/h.

3.3. RAV network

Down Road forms parts of the RAV network 7 and accommodates vehicles up to 36.5m in length. Down Road accommodates RAV7 vehicles serving the CBH grain storage facility and the wood chipping facility.

3.4. Traffic Data

Traffic data has been sourced from the Main Roads WA web site and the City of Albany.

Location	Average weekday (vpd)	Trucks	Average weekend (vpd)	Trucks
Down Rd (West of Albany Hwy)	844 vpd (2017)	34%	419 vpd (2017)	40%
Albany Highway	4,950 vpd (2017)	20%	3,520 vpd (2017)	16%

The existing high percentage of trucks in Down Road reflects the truck activity associated with the woodchip and CBH facilities.

Woodchip company and CBH facilities will operate during the weekend and public holiday.

3.5. Traffic Assessment from GHD

A traffic assessment has been provided by GHD as a part of Development Application, the assessment assumes 500 spectators/competitors in total. Events with larger numbers will be subject to specific traffic management measures. The indicative use of the venue based on the business plan of Albany Motorsport Park (AMP) is shown in the figures 3 & 4 below:

Use	Level	Frequency	Duration	Entrants	Spectators
Driver training (2WD & 4WD), schools, manufacturer testing		Weekdays	Day	50	0
Car test & tune day	Club	4 week days/ month	Day	30	30
Car speed events	Club	1 weekend / month	Day	100	200 – 500
Car speed events	State	1 weekend / month	Day	100 – 200	200 – 1,000
Car speed events	National	1 weekend / year	Day	200 – 300	2,000 – 5,000
Super cars events	National	1 x 3 day weekend / year	Day	200 – 300	10,000 – 20,000
Bike test & tune day	Club	4 week days / month	Day	50	50
Bike speed events (MRCWA)	Club	1 weekend / month	Day	100	200 – 500
Bike speed events – Champions Ride Day	State	1 weekend / month	Day	100	200 – 1,000
Bike speed events	National	1 weekend / year	Day	200	1,000 – 5,000
Motocross events	Club	3 days / week training 4 single days / month	Day	100 – 200	200 – 400
Motocross events	State	1 weekend / month	Day	200 – 300	500 – 1,000
Cycling events	Club		Day		
Cycling events	State		Day		
Drifting day	Club	2 days / month	Day and Evening	30	30
Drifting day	State	1 weekend / month	Day and Evening	50	200 – 500

Figure 3: indicative event profile 1

Duration of events:

- Typical day is 8:00am – 6:00pm

Based on an overall attendance of 500 spectators, total of 250 vehicles as the assumption of the vehicles generated during the event. The assessment also assumed that 5% (13 vehicles) are heavy vehicles transporting competition vehicles.

Vehicle type	In (vph)	Out (vph)
Light vehicle	237	237
Heavy vehicle	13	13
Total	250	250

The traffic assessment provided from GHD also indicated that there are no capacity issues are therefore anticipated and It is also confirmed that each event will only allow up to 250 vehicles.



3.6. Parking Assessment

It is confirmed with the developer on site that the proposal is to create approximately 250 bays on each Precinct, only 1 precinct will be open for each event. It is assumed that up to 250 bays are required for the event. Therefore, the proposed number of bays are adequate.

If there are events with more than 500 spectators or 250 vehicles, extra measures that shall be considered include:

- Shuttle buses to a satellite parking area
- Overspill parking area
- Open parking bays from the Precinct, increase the parking capacity from 250 bays
- Traffic Management requirement at the intersection of Albany Highway and Down Road
- Coordination with City of Albany and Main Road WA



4. Construction Traffic Management

4.1. Construction Staging

Albany Motorsport Park will be constructed within 2 stages.

4.1.1. Stage 1: Motocross Precinct

Stage 1 Motocross Precinct of the entry and exit will be completed under verge works scenario with various speed reduction to on Down Road due to the Oversize vehicles and Down Road is a high-speed road. Existing speed will be reinstated once the entry and exit are completed, and symbolic truck signs will be installed for the internal works.

4.1.2. Stage 2: Race Track Precinct

Stage 2 Race Track Precinct construction will be progressed while Motocross Precinct is in operation. Down Road South exits will be constructed for construction vehicles use. Temporary traffic management with accredited Traffic controllers will be implemented for tie-in works on Down Road South.

Event Traffic Management will be in place on Motocross Precinct and there are no construction activities during the event, all signage relates to roadworks will be removed or covered.

A Traffic Management Plan (TMP) for the construction works is attached in Appendix A.



5. Parking Management Plan

5.1. Motocross Precinct On-site Parking

Based on the Indicative event profile for AMP, Motocross events will generate up to 250 vehicles during a day event between 8:00am to 6:00pm. As the event will generate up to 250 extra vehicles within an hour (in and out) on Down Road, it is considered to reduce the speed temporarily at Down Road on the approaching and past the entry and exit of the Motocross Precinct the duration of the event, due to queuing on Down Road may occur and the chance of potential rear end crash will increase. Traffic Wardens will be stationed to direct the event traffic after the entry, and event traffic management plan (TMP) for Motocross Precinct is detailed in the Appendix B. The construction of the Race Track Precinct will be postponed during the event.

5.2. Race Track Precinct On-site Parking

Based on the Indicative event profile for AMP, Racetrack events will generate up to 250 vehicles during the event. Event traffic will enter from Down Road and Exit to Down Road South, detail of traffic management for the event is attached in Appendix B. Temporary speed reduction will be imposed on Down Road on the approach and past the event site, Traffic Wardens will be stationed at the entry to the car park and exit location to direct event traffic. Temporary traffic management is detailed in the Traffic Guidance Schemes of event traffic management plan in Appendix B.



6. Implementation and Communication

Event organiser shall liaise with City of Albany to assess the event and any potential risks associated. Following the event approval guidelines and event application shall be submitted 60 days before the proposed date of the event. The event application shall include:

- Running sheet (including bump-in/bump-out and event timings)
- Public liability insurance
- Site plan
- List of approved food vendors
- Communication plan
- Traffic management plan for event
- Emergency management plan
- Risk management plan
- Evacuation plan



7. Conclusion

GHD has engaged Shawmac to prepare Traffic and Parking Management Plan based on the Traffic Assessment provided in Appendix C. In formulating the plan, various aspects that had to be considered include:

- City of Albany Town Planning Scheme
- Traffic Assessment provided by GHD
- Master Plan of the Albany Motorsport Park
- Site inspection & discussion with developer
- City of Albany Event Guideline

The following traffic and parking management measures for construction and operation of the site, including consideration of peak parking and traffic management during larger and special events have been recommended below:

- The implement temporary traffic management for:
 - 1) Construction of Albany Motorsport Park (AMP) attached in Appendix A
 - 2) Events attached in Appendix B
- Temporary speed reduction to be imposed during the construction and events.
- Symbolic truck signs shall be installed for construction vehicles entering and exiting Down Road and Down Road South.
- The traffic generated by the event has no capacity issues as per the traffic assessment attached in Appendix C, both Motocross and Race Track Precinct will not be operational at the same time.
- Liaise with stakeholders (eg. City of Albany) prior to the commencement of the construction or event.
- For events with more than 500 spectators, extra measures to be considered include:
 - 1) Shuttle buses to a satellite parking area
 - 2) Overspill parking area
 - 3) Open parking bays from the Precinct, increase the parking capacity from 250 bays
 - 4) Traffic Management requirements at the intersection of Albany Highway and Down Road
 - 5) Coordination with Main Road WA is required.



Appendix A – Construction Traffic Management Plan



WORKS ON ROADS TRAFFIC MANAGEMENT PLAN

ALBANY MOTORSPORT PARK DEVELOPMENT
PREPARED FOR

GHD



I, YUYANG KE (AUS AWTM-19-6370-02), that I have designed this Traffic Management Plan following a site inspection on 18/03/2021 The Traffic Management Plan has been prepared, subject to the variations approved, in accordance with the Main Roads Traffic Management for Works on Roads Code of Practice, Austroads Guide to Temporary Traffic Management and AS 1742.3 2019.

	Name/Company	Accreditation Details	Date	Signature
TMP designed by:	ANTHONY ANASTAS Shawmac Consulting Civil and Traffic Engineers	AUS AWTM-20-4573-02	14/04/2021	
TMP Reviewed by:	YUYANG KE Shawmac Consulting Civil and Traffic Engineers	AUS AWTM-19-6370-02	14/04/2021	
RTM Reviewed and Endorsed by:				
Compliance Audit to be undertaken by:				
Road Authority Review by:				
Road Authority Authorisation:	Road authority authorisation of the implementation of traffic signs and devices is given for Traffic Management Plan No. 2103019			
	Signed By: _____		Date: _____	
	Signature: _____		Position: _____	

TMP No.	2103019	Revision No.	1	Date	14/04/2021
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Glossary

Table 1: Glossary

Acronym	Definition
AGTMM	Austroroads Guide to Temporary Traffic Management
AS	Australian Standard
AS/NZS	Australian and New Zealand Standard
AWTM	Advanced Worksite Traffic Management / Manager
CoP	Traffic Management for Works on Roads Code of Practice (MRWA)
MRWA	Main Roads Western Australia
OS&H	Occupational Safety and Health
RTM	Roadworks Traffic Manager (accredited by MRWA)
SRSA	Senior Road Safety Auditor
TGS	Traffic Guidance Schemes
TMP	Traffic Management Plan
TCP	Traffic Control Plan



1. Introduction

1.1. Purpose and Scope

This Traffic Management Plan (TMP) outlines the traffic control and traffic management procedures to be implemented by the Project Manager and Project Contractors to manage potential hazards associated with the traffic environment during the project.

The proposed project is for the development of a multipurpose motorsport park in Albany on Lot 5780 Down Road, Drome.

1.2. Objectives and Strategies

The objectives of the Traffic Management Plan is to ensure:

- The safety of the road workers.
- All road users, including vulnerable road users, are safely guided around, through or past the work site.
- The performance of the road network is not unduly impacted and the disruption and inconvenience to all road users are minimised for the duration of the works.
- Impacts on users of the road reserve and adjacent properties and facilities are minimised.

In an effort to meet these objectives the Traffic Management Plan will incorporate the following strategies:

- Providing a sufficient number of traffic lanes to accommodate vehicle volumes.
- Ensuring delays are minimised.
- Ensuring all road users are managed including motorists, pedestrians, cyclists, people with disabilities and people using public transport.
- Ensuring work activities are carried out sequentially to minimise adverse impacts.
- Provision will be made for works personnel to enter the work area in a safe manner in accordance with safety procedures.
- All entry and exit movements to and from traffic streams shall be in accordance with the requirements of safe working practices.

2. Project Overview

2.1. Project Location

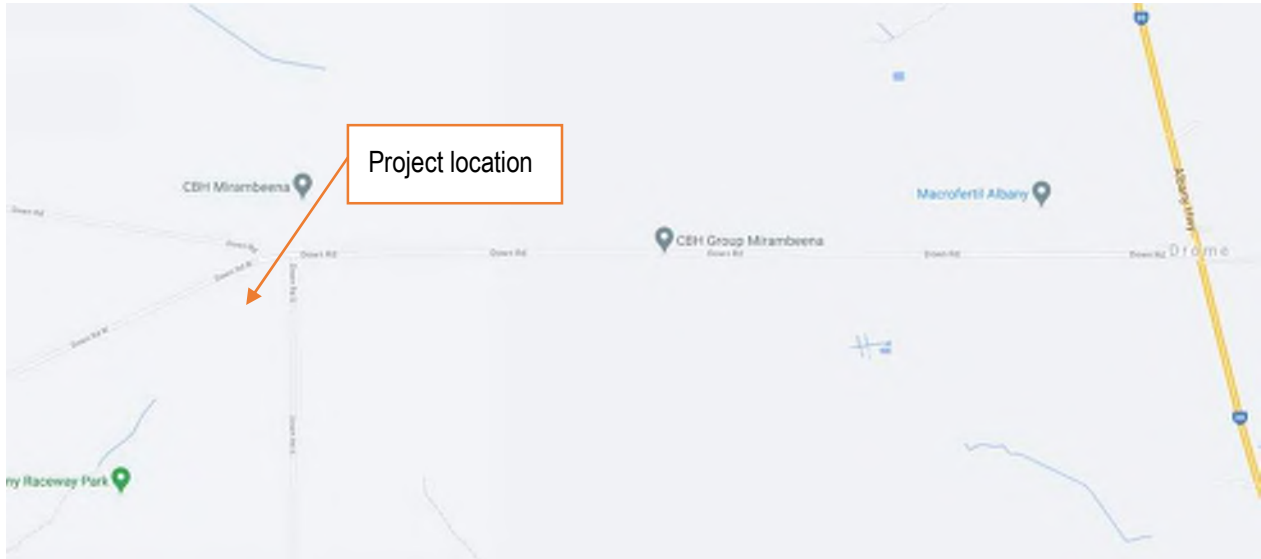


Figure 1: Location of Works

2.2. Project Details and Site Constraints/Impacts

Table 2: Project Details and Site Constraints/Impacts

Item	Description
Project Title:	Albany Motorsport Park Development
Location:	Lot 5780 Down Road, Drome, WA 6330
Road Classification & Existing Speed Limit:	Down Road – Access Road: 110km/h Down Road South - local access road (Gravel):
Road Authority:	City of Albany
Local Government:	City of Albany
Prime Contractor:	GHD
Scope of Works:	Construction of Albany Motorsport Park including earth works, car park construction, utilities installation and pavement construction.
Staging of Works:	Stage 1: western development construction Stage 2: eastern development construction
Project Date:	TBA
Hours/Days of Work:	9am to 7pm / 7 days a week
Duration of Works	8 months
Other Constraints:	Ongoing events during the construction of stage 2
Concurrent/Adjacent Works	N/A



or Projects	
-------------	--

2.3. Existing Traffic and Road Environment

Item	Description
Traffic Volume and Composition	Down Road: 844 vpd(2017) Down Road South: no data
Existing Road Configuration	Down Road: single carriageway with one lane in each direction approximately 9m wide. Down Road South: Gravel approximately 5m wide.
Existing Pedestrian / Cyclists Facilities	N/A

2.4. Overview of Proposed Temporary Traffic Management

Item	Description
Temporary Traffic Management Descriptions:	Verge works with various speed reductions depending on the clearance between edge of traffic and work site is required.
Speed Zone Dates and Times	40km/h to 80km/h speed reduction during work shift and 80km/h for after care Dates: TBC
Lane Closures Dates and Times	N/A
Road Closures Dates and Times	N/A
Signal Modifications Description	N/A
Proposed Lane Widths	Minimum 3.2m lane width is required.
Road Safety Barrier	N/A

2.5. Project Representatives

Table 3: Project Representatives

Position	Name	Contact Details
Road Authority Representative	City of Albany	Phone: (08) 6820 3000 Email: staff@albany.wa.gov.au Post: PO Box 484, ALBANY, WA 6331
Local Government	City of Albany	Phone: (08) 6820 3000 Email: staff@albany.wa.gov.au Post: PO Box 484, ALBANY, WA 6331
Project Manager / Prime Contractor	TBC	
Site Supervisor/Manager	TBC	



TMP Design	Yuyang Ke Shawmac Pty Ltd	Email: yyke@shawmac.com.au mob: 0421591428
TMP Implementation	TBC	

GHD have engaged Shawmac Pty Ltd to prepare this Traffic Management Plan and associated controls for the works.

The TMP will be implemented by TBC.



3. Risk Management

The following details the preliminary assessment of site hazards likely to be encountered, the level of risk associated with each and the control proposed. Note that the risk level is the level of assessed risk without the controls in place. The controls listed have been determined as being appropriate in reducing the risk to a level that is acceptable. The hierarchy of control has been utilised to ensure that the highest practicable level of protection and safety is selected:

- Elimination
- Substitution
- Isolation
- Engineering
- Administration
- Personal Protection Equipment

In evaluating the options, a key consideration is whether the option takes traffic around, through or past the worksite.

3.1. Risk Classification Tables

3.1.1. QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Table 4: Risk Classification Damage/Impact

Level	Consequence	Description
1	Insignificant	<ul style="list-style-type: none"> • Mid-block hourly traffic flow per lane is equal to or less than the allowable lane capacity detailed in AGTTM. No impact to the performance of the network. • Affected intersection leg operates at a Level of Service (LoS) of A or B. • No property damage.
2	Minor	<ul style="list-style-type: none"> • Mid-block hourly traffic flow per lane is greater than the allowable road capacity and less than 110% of the allowable road capacity as detailed in AGTTM. Minor impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of C. • Minor property damage.
3	Moderate	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 110% and less than 135% of allowable road capacity as detailed in AGTTM. Moderate impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of D. • Moderate property damage.
4	Major	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 135% and less than 170% of allowable road capacity as detailed in AGTTM. Major impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of E. • Major property damage.
5	Catastrophic	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 170% of allowable road capacity as detailed in AGTTM. Unacceptable impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of F. • Total property damage

3.1.2. OSH QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Table 5: Risk Classification Damage OSH



Level	Consequence	Description
1	Insignificant	No treatment required.
2	Minor	First aid treatment required.
3	Moderate	Medical treatment required or Lost Time Injury.
4	Major	Single fatality or major injuries or severe permanent disablement.
5	Catastrophic	Multiple fatalities.

3.1.3. QUALITATIVE MEASURES OF LIKELIHOOD

Table 6: Risk Classification Rarity

Level	Likelihood	Description
A	Almost certain	The event or hazard: <ul style="list-style-type: none"> is expected to occur in most circumstances, will probably occur with a frequency more than 10 times per year.
B	Likely	The event or hazard: <ul style="list-style-type: none"> will probably occur in most circumstances, will probably occur with a frequency of between 1 and 10 times per year.
C	Possible	The event or hazard: <ul style="list-style-type: none"> might occur at some time, will probably occur with a frequency of 0.1 to 1 times per year (i.e. once in 1 to 10 years).
D	Unlikely	The event or hazard: <ul style="list-style-type: none"> could occur at some time, will probably occur with a frequency of 0.02 to 0.1 times per year (i.e. once in 10 to 50 years).
E	Rare	The event or hazard: <ul style="list-style-type: none"> may occur only in exceptional circumstances, will probably occur with a frequency of less than 0.02 times per year (i.e. less than once in 50 years).

IMPORTANT NOTE: The likelihood of an event or hazard occurring shall first be assessed over the duration of the activity (i.e. “period of exposure”). For risk assessment purposes the assessed likelihood shall then be proportioned for a “period of exposure” of one year.

Example: An activity has a duration of 6 weeks (i.e. “period of exposure” = 6 weeks). The event or hazard being considered is assessed as likely to occur once every 20 times the activity occurs (i.e. likelihood or frequency = 1 event/20 times activity occurs = 0.05 times per activity). Assessed annual likelihood or frequency = 0.05 times per activity x 52 weeks/6 weeks = 0.4 times per year. Assessed likelihood = Possible.

3.1.4. QUALITATIVE RISK ANALYSIS MATRIX – RISK RATING

Table 7: Risk Classification Severity

Likelihood	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A (almost certain.)	Low 5	High 10	High 15	Very High 20	Very High 25



B (Likely)	Low 4	Medium 8	High 12	Very High 16	Very High 20
C (Possible)	Low 3	Low 6	Medium 9	High 12	High 15
D (Unlikely)	Low 2	Low 4	Low 6	Medium 8	High 10
E (Rare)	Low 1	Low 2	Low 3	Low 4	Medium 7

3.1.5. MANAGEMENT APPROACH FOR RESIDUAL RISK RATING

Table: 8: Residual Risk Rating

Residual Risk Rating	Required Treatment
Very High	Unacceptable risk. HOLD POINT. Work cannot proceed until risk has been reduced.
High	High priority, OSH MR and Roadworks Traffic Manager (RTM) must review the risk assessment and approve the treatment and endorse the TGS prior to its implementation.
Medium	Medium Risk, standard traffic control and work practices subject to review by accredited AWTM personnel prior to implementation.
Low	Managed in accordance with the approved management procedures and traffic control practices.



3.2. Risk Register

Table 9: Risk Register

Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
3.2.1 Environmental									
3.2.1.1	Sun glare causing decreased visibility of traffic control delineation and signage for motorists resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk from glare. Where traffic control is adversely affected by glare at sunset and sunrise, traffic controllers may need to assist in maintaining low traffic speeds. All changes are to be noted in the daily diary.	D	4	M8
3.2.1.2	Headlight glare from night works causing decreased visibility of traffic control delineation and signage for motorists resulting in serious injury or fatality.	Serious injury or fatality.	C	3	M9	Traffic control personnel and site supervisor to conduct site drive assessments of temporarily installed signage and delineation to ensure devices are visible for all motorists. Where traffic control is adversely affected by head light glare from night works, traffic controllers may move or angle devices. All changes are to be noted in the daily diary.	D	3	L6
3.2.1.3	Reduced motorist's visibility of worksite due to night works causing an increase of interactions between workers and live traffic resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Traffic control and workers to wear High Visibility Retroreflective Vests at all time and to use night work batons. All traffic controller signs to be Class 1 Retro-reflective material. Temporary speed zones to be implemented where required for advanced warning of the worksite. Contractor to install temporary lighting towers through poorly illuminated sections of worksite if required.	D	4	M8
3.2.1.4	Inclement weather causing hazardous environments through the worksite or	Serious injury or fatality.	C	4	H12	Where adverse weather conditions are encountered during the works, the following may	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	reduced visibility of implemented traffic control resulting in serious injury or fatality.					be implemented: 1. Signage and tapers extended by 25%. 2. 'Slippery When Wet' signs may be implemented. 3. Where the road becomes impassable work may cease and traffic control implemented. Any adjustments to the plan shall be risk assessed and approved by someone holding a WTM or AWTM accreditation.			
3.2.1.5	Crests and curves causing reduced visibility of the worksite and implemented traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Sign locations can be staggered to assist driver's visibility, in accordance with Australian Standards and under the supervision of an accredited AWTM. All signs shall be regularly inspected and re-positioned as required to reduce the effects of shadows. All changes shall be recorded in the daily diary.	D	4	M8
3.2.1.6	Vegetation causing reduced visibility of the worksite and implemented traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Where vegetation impacts on the effectiveness of the traffic management, signage may be extended by 25% or reduced by 10% in order to increase visibility. Vegetation may be pruned to increase visibility as required and approved by LGA. All signage adjustments will be recorded within the daily diary.	D	4	M8
3.2.1.7	Temporary lighting installed adjacent to residential properties causing adverse environmental impacts for locals resulting in adverse public reaction.	Adverse public reaction.	C	3	M9	Lights to be positioned where illumination doesn't adversely affect residents. Temporary lights to be used only as required to light the worksite and temporary delineation.	D	3	L6
3.2.2 Temporary Speed Zones									
3.2.2.1	Traffic speed on affected routes in traffic lanes adjacent to the worksite creating hazardous worksites and unsafe worksite access.	Potential injury or fatality to road users, project personnel or sub-contractors.	C	4	H12	Introduction of temporary speed zones will be implemented where required to reduce risk to motorists, workers and plant. Temporary speed zones and adequate delineation will be implemented as per the Traffic Guidance	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						Schemes and in accordance with AS 1742.3 and MRWA CoP.			
3.2.2.2	Traffic not adhering to proposed temporary speed zones causing an increase potential for conflicts between workers and motorists resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Repeater signage and VMS boards to be implemented through the worksite as required. Speed zones should follow the minimum and maximum lengths provided in AS1742.3 and MRWA CoP.	D	4	M8
3.2.3 Excavations									
3.2.3.1	Excavations associated with the works being inadequately protected causing an increase of property damage resulting in adverse public reaction and serious injury.	Serious injury and adverse public reaction.	B	3	H12	Delineation and devices to be provided as per the Traffic Guidance Schemes and in accordance with AGTTM and MRWA CoP. Where standard delineation cannot adequately protect the work site, close delineation or safety barrier may be required. Edge clearances and protection to be installed as per Table 6.1, Page 101 of AGTTM – Part 3.	C	3	M9
3.2.4 Traffic Control/Construction Plant & Workers/Traffic Management Design									
3.2.4.1	Incorrect implementation of temporary signage and linemarkings causing an increase of interactions between traffic control and live traffic resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Before work commences, signs and devices at approaches to the work area shall be erected in accordance with the adopted TGS, in the following order: <ol style="list-style-type: none"> 1. Advanced warning signs. 2. All intermediate advanced warning and regulatory signs and devices required in advance of the taper or start of the work area. 3. All delineating devices required to form a taper including flashing arrow signs or temporary hazard markers where required. 4. Delineation past the work area or into a side track. 5. Other warning signs or regulatory signs. Delineation devices such as cones and bollards	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						should be placed in the same sequence, i.e. those furthest in advance of the work placed first.			
3.2.4.2	Incorrect design of temporary signage and linemarkings causing an increase of speed and errant vehicles through the worksite resulting in serious injury or fatality.	Serious injury and fatality.	C	4	H12	Traffic Management Plan and associated Traffic Guidance Schemes to be designed and endorsed by suitably accredited AWTM and RTM as required for the proposed works. Plans to be reviewed and approved by relevant LGA and road authorities prior to the implementation of the works.	D	4	M8
3.2.4.3	The interaction of work personnel with through traffic may causing an increase of conflicts resulting in serious injury or fatality.	Serious injury or fatality	C	4	H12	Traffic control and delineation to be installed as per the Traffic Guidance Schemes in accordance with AS 1742.3 and MRWA CoP. Edge clearance spacing to be provided between live traffic and workers per the posted or implemented speed zones. Temporary speed zones, lane closures, road closures or reversible flow may be provided to maintain edge clearances. A TMA may be provided for where workers are within 1.2m of live traffic to protect them from oncoming vehicles. TMA's to be installed 20m prior to the work area and 40m where site entrances are required. Workers to be within 100m of TMA for protection to be affective. Daily toolbox meetings to ensure that workers are educated on the dangers of working around live traffic.	D	4	M8
3.2.4.4	Construction traffic entering and leaving the construction site causing an increase of rear end crashes through the worksite resulting in serious injury.	Serious injury.	B	3	H12	Site entry and exit points will be provided for construction traffic at strategic locations. Vehicles shall: <ol style="list-style-type: none"> 1. Decelerate slowly and signal their intention by indicator to leave the traffic stream; 2. Activate the vehicle's rotating yellow lamp, where fitted, once a speed of 20 km/h. has been reached and at least 50m prior to the 	C	3	M9



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						exit location. 3. Switch on the vehicle hazard lights once the vehicle is stationary. 4. Where risks associated with unassisted exit or entry to or from the traffic stream are high, Traffic Controllers should be used to assist entry and exit movements. Spotters may be used to assist drivers enter the traffic stream. Restrictions may be put in place to restrict truck movements entering traffic flows during periods of high traffic flows from site			
3.2.4.5	Parking of construction plant causing an increase of crashes through the worksite resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Work practices will be developed to outline provisions for: 1. Short term parking of work plant. 2. Long term parking of work plant. 3. Short term parking for workers and LV's. Construction access have been shown on the Traffic Guidance Schemes.	D	4	M8
3.2.4.6	Workmen may be hit by vehicles during the setting out of traffic management control devices resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	No work shall commence until the approved traffic management has been implemented. Traffic management to be setup prior to arrival of workers to site and taken down after they leave to avoid excessive congestion.	D	4	M8
3.2.5 Lane Closures (N/A)									
3.2.6 Reversible Flow/Stop Control/Contra-flow N/A									
3.2.7 Temporary/Existing Barrier									
3.2.8 Temporary Linemarking/Ulimate Design/Existing Road Environment									
3.2.8.1	A road user may misread the proposed temporary alignment causing through	Serious injury or fatality.	C	4	H12	Traffic planning requires traffic controls to be installed to direct traffic around the work site and	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	vehicles colliding with work personnel or work vehicles resulting in serious injury or fatality.					a reduction in the speed zone of the carriageways approaching and passing the works. Temporary alignments to be installed as per the TGS and in accordance with AS 1742.3 and MRWA CoP. Temporary controls, advanced warning and directional signage to be installed as per the TGS and in accordance with the requirements of AS 1742.3 and MRWA CoP. All lane closures to use a Flashing Arrow Boards at end of taper as per TGSs. Traffic control personnel shall conduct a drive through assessment of devices to evaluate the effectiveness following initial opening, any changes to be recorded in the daily diary. Temporary alignment to be designed to meet speed requirements.			
3.2.9 Temporary/Existing Signage and Structures									
3.2.9.1	Existing signage and structures causing reduced visibility of the worksite and temporary traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	All existing signage that is contradictory to the temporary signage implemented in the TGS's are to be covered with opaque material for the duration of the works. Regular drive throughs should ensure the integrity of the worksite and all traffic management. Where signs cannot be covered and conflict with the temporary signage, it will be removed. Temporary devices may be extended 25% to accommodate for road side structures, all changes to the signage will be recorded in the daily diary.	D	4	M8
3.2.9.2	Defective temporary signage causing inadequate advanced warning of proposed works resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Regular site inspections of signs to be conducted by Traffic Controllers and site supervisor to ensure integrity of proposed signage. All signs to be made of retroreflective material to ensure signs can be seen during night works.	D	4	M8
3.2.10 Road Closures									



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
3.2.11 Heavy Vehicles Network									
3.2.11.1	Restrictions placed on traffic lane widths and corner geometries by temporary traffic management impacting heavy haulage traffic routes resulting in adverse public reaction and property damage.	Property damage and adverse public reaction.	C	3	M9	Details and impacts to the heavy haulage route to be communicated to MRWA HVO prior to the implementation of any works. Where corner geometry or lane widths cannot accommodate heavy vehicles, detours or provisions to escort trucks through site may be provided. Where large or oversized vehicles are moving through the worksite, traffic controllers shall be used to ensure sufficient carriageway width is provided and any workers adjacent to the traffic lanes or within a hazardous area are instructed to move clear of the traffic. Temporary alignment swept paths to be checks. Existing RAV network to be accommodated where possible.	D	3	L6
3.2.12 Public Transport Authority (N/A)									
3.2.13 Emergency Services/Emergency Arrangements and Contingencies									
3.2.13.1	Restrictions and delays associated with the traffic control causing a failure to respond for emergency services resulting in an increase severity in emergency situations.	Failure to respond to emergency situations.	C	4	H12	Pre-communication to be given to all emergency services prior to the implementation of any works in the form of the Notification of Roadworks. Details to be provided for any proposed detours, predicted increases in congestion and any works that may increase delays to the emergency network. Where safe, workers and Traffic Control to respond to emergency services to facilitate an unhindered passage through or around the worksite.	D	4	M8
3.2.13.2	Dangerous goods, damage to services or failure of services causing restricted access through the worksite resulting in adverse	Adverse public reaction.	B	3	H12	Should any incident arise involving vehicles transporting dangerous goods, damage or failure of services; all work shall cease immediately, machinery and vehicles turned off	C	3	M9



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	public reaction.					and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. All site personnel shall be briefed on evacuation and control procedures.			
3.2.14 Public Interactions and Impacts									
3.2.14.1	Temporary traffic management devices restricting access to local properties and commercial premises resulting in an adverse public reaction.	Adverse public reaction	C	3	M9	Local and commercial access to be maintained where possible. Pre-communication to be provided where adverse impacts may restrict access with the associated works. Provisions including; temporary tracks, temporary closures and local access may be provided to maintain access.	D	3	L6
3.2.15 Pedestrians and Cyclists									
3.2.16 Variations to the Standards									



4. Traffic Management Planning and Assessment

4.1. Traffic Assessment and Analysis

4.1.1. Traffic and Speed data

4.1.1.1 Summarised Traffic Counts

A summary of recent traffic data is provided below:

Table 10: Summarised Traffic Volumes

Location	Average weekday (vpd)	Trucks	Average weekend (vpd)	Trucks
Down Road	844 vpd (2017)	34%	419 vpd (2017)	40%
Albany Highway	4,950 vpd (2017)	20%	3,520 vpd (2017)	16%

Volumes used in the above summary can be found in *Appendix D – Volumes*.

4.1.2. Traffic Flow Analysis

General Comments

Volumes used in this report are based on average traffic figures derived from historical counts. AGTTM - Part 2, Section 3.2.3 (refer to Table 3.1) indicates that the mid-block capacity of multi-lane roadways is 1,000 vehicles per lane per hour (vpl/ph) and 500 vehicles per hour within 200m of an intersection for each lane. These design lane capacities have been used when analysing the effects of associated with the works. Where a departure from the AGTTM regarding lane capacities is required for the works to proceed a variation form will be filled out and attached to the close of this document.

Due to expected traffic volumes (see above) it is anticipated there will only be minor delays provided the Traffic Management setup follows the instructions set out in this document.

Traffic flow should be maintained wherever possible. Traffic volumes and movements will be analysed against the requirements detailed in AGTTM - Part 2, Section 3.2.3 (refer to Table 3.1) and Section 3.3.4 (refer to table 3.4).and MRWA CoP risk tables (see section 6) to ensure levels of service are acceptable to the Road Authority. The works are expected to have very minor impacts on the impacted roads.

4.1.2.1 Traffic Impacts and Assessment:

The impact will be minor as all of the works will be completed within the verge with various speed reduction and reduced lane width on Down Road.

4.1.3. Temporary Speed Zones

A worksite speed limit of 40km/h, 60km/h and 80km/h will be implemented at Down Road due to for the property access construction.



After work hours the posted speed will be 80km/h and the road will be left clean and free of debris.

4.1.4. Existing Traffic Signals

N/A

4.1.5. Impact to Adjoining Network

There is no impact to adjoining network during the construction.

4.1.5.1 Road Closure Traffic Distribution

N/A

4.1.6. End of Queue Treatment

N/A

4.1.7. Temporary Traffic Signals

N/A

4.2. Road Users

4.2.1. Pedestrians

There are no pedestrian facilities.

4.2.2. Cyclists

There are no cyclists' facilities.

4.2.3. Public Transport

There are no public transport facilities.

4.2.4. Heavy and Oversized Vehicles

There are no impacts to the heavy and oversized vehicles.

4.2.5. Existing Parking Facilities

There are no impacts to existing parking facilities.

4.2.6. Access to Adjoining Properties/Business

There are no impacts to adjoining properties.

4.2.7. Rail Crossings

There are no impacts to railway crossings.

4.2.8. School Crossings

There are no school crossings.



4.2.9. Special Events and Other Works

There are no special event and other works.

4.2.10. Emergency Vehicle Access

Emergency vehicle access will be maintained for the duration of the works.

4.2.11. Night Work Provisions

There is no provision for night shift works.

4.2.12. Road Safety Barriers

N/A

4.3. Consultation and Communication / Notification

Contractor to liaise with stakeholders for public consultation and communication for the duration of the work shift.

4.3.1. Other Agencies

All relevant authorities to be notified prior to the commencement of any works via; email, phone or Notification of Roadworks. This includes: City of Albany, Main Roads Western Australia (MRWA), MRWA Traffic Operations Centre, MRWA Heavy Vehicle Services, Public Transport Authority.

Emergency services to be notified prior to the commencement of any works via the Notification of Roadworks.

4.3.2. Public

The public shall be notified of the works and traffic management arrangements which will affect journey times via:

- Notice to motorists in the weekend West Australian placed two weeks in advanced, one week in advance and at the commencement of works;
- Letter drop to all residents and businesses within the traffic control zone one week ahead of the scheduled works;
- VMS boards during the works; and
- Significant works may require radio advertising.



5. Site Assessment

5.1. Provision to Address Environmental Conditions

5.1.1. Adverse Weather

Weather is not expected to adversely impact on the effectiveness of the traffic control detailed on the attached TGS's. Notwithstanding this, should adverse weather conditions be encountered during the works, the following contingency plans should be activated. Note: any adjustments to the plan shall be risk assessed and approved by someone holding a WTM or AWTM accreditation. Major changes will require road authority approval.

5.1.1.1 Rain

In the event of rain, an on-site assessment shall be made and sign spacing and tapers may be extended by 25% to account for increased stopping distances. Slippery (T3-3) signs may be placed as required and all changes shall be recorded in the daily diary.

If rain occurs, Traffic Management Personnel shall inspect the site and where signage and / or devices are not clearly visible, signage may need to be adjusted to improve visibility or if necessary, provide additional signage and delineation. Where stopping distances are adversely affected by wet surfaces, spacing between signs may need to be adjusted to provide increased reaction time for drives. In cases where it is determined that the rain is so heavy that the risk is considered unacceptable, all work shall cease until rain has cleared. All changes shall be noted in the daily diary.

5.1.1.2 Floods

Should works be affected by flooding to the extent that the worksite becomes impassable or risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site and direct traffic around the flooded area (under the direction of the project manager or traffic manager). Emergency services and the Road Authority shall be notified immediately and Traffic Controllers shall remain onsite until emergency services and the Road Authority personnel arrive and take control of the site.

5.1.1.3 Other Adverse Weather (strong winds, thunder storms etc.)

Should strong winds or thunder storms occur, all signs are to be weighted down to prevent blowing over or debris entering the roadway causing hazards for motorists. Periodically site inspections to be conducted during storms to ensure integrity of all Traffic Management devices.

5.1.2. Sun Glare

Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk from glare. Additionally, in the event that traffic control is adversely affected by glare at sunset and sunrise,



traffic controllers may need to assist in maintaining low traffic speeds.

All changes are to be noted in the daily diary.

5.1.3. Fog/Dust/Smoke

Where fog, dust or smoke is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk. All changes are to be noted in the daily diary.

Should works be affected by fog, dust or smoke to the extent that risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site.

5.1.4. Road Geometry, Terrain, Vegetation and Structures

5.1.4.1 Road Geometry

There is a curve on the approaching to the project site on Down Road towards Down Road south and straight after Down Road south.

Sign locations can be staggered to assist driver's visibility, in accordance with Australian Standards and under the supervision of an accredited AWTM. All signs shall be regularly inspected and re-positioned as required to reduce the effects of shadows. All changes shall be recorded in the daily diary.

5.1.4.2 Terrain

The vertical geometry through the site is flat.

Sign locations can be staggered to assist driver's visibility, in accordance with Australian Standards and under the supervision of an accredited AWTM. All signs shall be regularly inspected and re-positioned as required to reduce the effects of shadows. All changes shall be recorded in the daily diary.

5.1.4.3 Vegetation

Where vegetation impacts on the effectiveness of the traffic management, signage may be extended by 25% or reduced by 10% in order to increase visibility. Where this occurs, it should be recorded within the daily diary.

5.1.4.4 Structures

Where structures impede on the temporary signage it should be moved to accommodate under the supervision of an accredited AWTM and recorded in the daily diary.

5.2. Existing Traffic and Adverting Signs

All existing signage that is contradictory to the temporary signage implemented in the TGS's are to be covered with opaque material for the duration of the works. Regular drive throughs should ensure the integrity of the worksite and all traffic management. Where signs cannot be covered and conflict with the temporary signage, it



is to be removed.



6. Safety Plan

6.1. Occupational Safety and Health

All persons and organisations undertaking these works or using the roadwork site have a duty of care under statute and common law to themselves, their employees and all site users, lawfully using the site, to take all reasonable measures to prevent accident or injury.

This TMP forms part of the overall project Safety Management Plan, and provides details on how all road users considered likely to pass through, past, or around the worksite will be safely and efficiently managed for the full duration of the site occupancy and works.

6.2. Roles and Responsibilities

6.2.1. Responsibilities

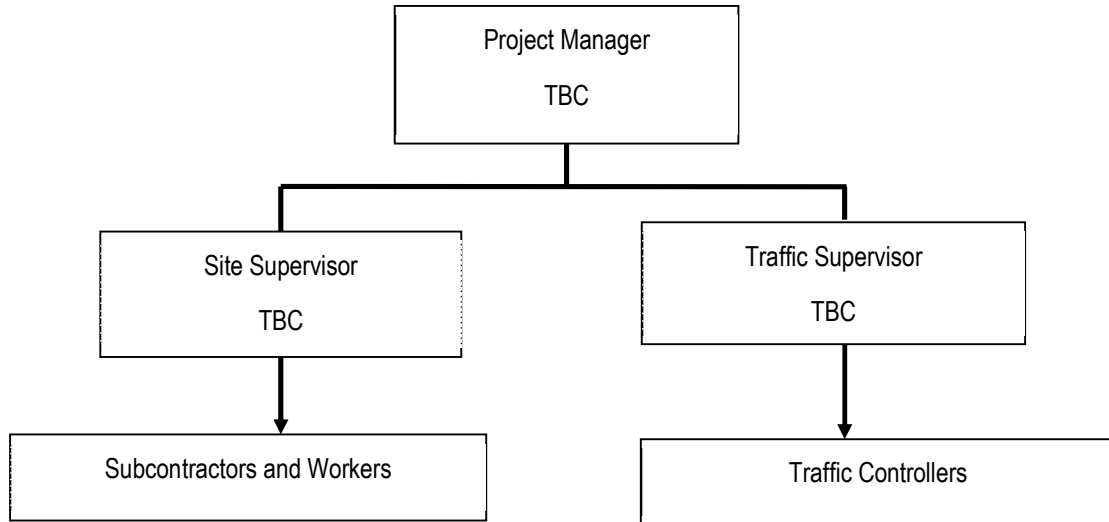
The Project Manager has the ultimate responsibility to ensure the TMP is implemented for the prevention of injury and property damage to employees, contractors, sub-contractors, road users and all members of the public. The Project Manager will ensure all site personnel are fully aware of their responsibilities, and that Traffic Controllers are appropriately trained and accredited and that sufficient controllers are available to ensure appropriate breaks are taken.

All personnel engaged in the field activities will follow the correct work practices as required by the CoP, AGTTM and AS1742.3. All personnel will not commence or continue work until all signs, devices and barricades are in place and operational in accordance with the requirements of the TMP.

All personnel responsible for temporary traffic management shall ensure that the number, type and location of signs, devices and barricades are to a standard not less than Appendix F of this plan, CoP, AGTTM and AS1742.3 (except where specifically detailed in this TMP with reasons for the variations). Should a situation arise that is not covered by this TMP, CoP, AGTTM or AS1742.3, the Road Authority Representative shall be notified.

6.2.2. Roles

The following diagram outlines the responsibility hierarchy of this contact.



6.2.2.1 Project Manager

The project manager shall:

- Ensure all traffic control measures of this TMP are placed and maintained in accordance with this plan and the relevant Acts, Codes, Standards and Guidelines
- Ensure suitable communication and consultation with the affected stakeholders is maintained at all times
- Ensure inspections of the temporary traffic management are undertaken in accordance with the TMP, and results recorded. Any variations shall be detailed together with reasons
- Review feedback from field inspections, worksite personnel and members of the public, and take action to amend the traffic control measures as appropriate following approval from the Road Authority's Representative
- Arrange and/or undertake any necessary audits and incident investigations

6.2.2.2 Site Supervisor

The site supervisor is responsible for overseeing the day-to-day activities, and is therefore responsible for the practical application of the TMP, and shall:

- Instruct workers on the relevant safety standards, including the correct wearing of high visibility safety vests
- Ensure traffic control measures are implemented and maintained in accordance with the TMP
- Undertake and submit the required inspection and evaluation reports to management
- Render assistance to road users and stakeholders when incidences arising out of the works affect the network performance or the safety of road users and workers
- Take appropriate action to correct unsafe conditions, including any necessary modifications to the TMP.

6.2.2.3 Traffic Management Personnel

- At least one person on site shall be accredited in Basic Worksite Traffic Management, and shall have the responsibility of ensuring the traffic management devices are set out in accordance with the TMP



- At least one person accredited in Advanced Worksite Traffic Management shall be available to attend the site at short notice at all times to manage variations, contingencies and emergencies, and to take overall responsibility for traffic management.

6.2.2.4 Traffic Controllers

Traffic Controllers shall be used to control road users to avoid conflict with plant, workers, traffic and pedestrians, and to stop and direct traffic in emergency situations.

Traffic Controllers shall:

- Operate in accordance with AGTTM Part 7: Traffic Controllers
- Be accredited in Basic Worksite Traffic Management
- Hold a current Traffic Controller's accreditation
- Be relieved from their duty after not more than 2 hours for a period of rest or "other duties" of at least 15 minutes as required by AGTTM and/or OS&H Regulations.
- Shall be site specific inducted (If Required)

6.2.2.5 Workers and Subcontractors

Workers and Subcontractors shall

- Correctly wear high visibility vests, in addition to other protective equipment required (e.g. footwear, eye protection, helmet sun protection etc.), at all times whilst on the worksite
- Comply with the requirements of the TMP and ensure no activity is undertaken that will endanger the safety of other workers or the general public
- Enter and leave the site by approved routes and in accordance with safe work practices

6.3. Personal Protective Equipment (PPE)

All personnel entering the work site shall correctly wear high visibility vests to AS/NZS 4602, in addition to other protective equipment required on a site-by-site basis (e.g. protective footwear, eye protection, helmet, sun protection, respiratory devices etc.) at all times whilst on the worksite.

6.4. Plant and Equipment

All plant and equipment at the workplace shall meet statutory requirements and have the required registration, licences or certification where required. All mobile equipment shall be fitted with suitable reversing alarms. All mobile plant and vehicles shall be fitted with a pair of rotating flashing yellow lamps in accordance with AS1742.3 clause 4.14. All workers will be made aware of the safe work practice at the time of the site induction.

6.5. Trip Hazards

The worksite and its immediate surroundings shall be suitably protected and free of hazards, which could result in tripping by cyclists or pedestrians. Hazards, which cannot be removed, shall be suitably protected to prevent injury to road users, including those with sight impairment. Where level differences are significant, suitable barriers, which preclude pedestrian access shall be used.



Where works extend beyond daylight hours and adjacent lighting is insufficient to illuminate hazards to cyclists or pedestrians, appropriate temporary lighting shall be installed.

The worksite shall be kept tidy to reduce the risk to workers.



7. Implementation

7.1. Traffic Guidance Schemes

The Traffic Guidance Scheme (TGS) outlined in Appendix “F” and listed below have been provided for the following stages to demonstrate the type of controls that will be implemented throughout the term of the contract. All sign and device requirements are shown on each TGS. Should the use of additional (not shown on the TGS or listing of devices) or reduced number of devices be required due to unforeseen needs, they shall be recorded within the Daily Diary as a variation to the TMP, following prior approval.

Table 11: Traffic Guidance Scheme Register

Staging	TGS Number & Revision	Details	Construction Works
Stage 1	2103019-TGS-01	Verge works at 40km/h	Main entry construction
	2103019-TGS-02	Verge works at 40km/h	Main entry construction
	2103019-TGS-03	Verge works at 60km/h	Main entry construction
	2103019-TGS-04	Verge works at 60km/h	Main entry construction
	2103019-TGS-05	Verge works after care at 60km/h	Main entry construction
	2103019-TGS-06	Verge works after care at 60km/h	Main entry construction
	2103019-TGS-07	Verge works at 80km/h	Main entry construction
	2103019-TGS-08	Verge works at 80km/h	Main entry construction
	2103019-TGS-09	Verge works after care at 80km/h	Main entry construction
	2103019-TGS-10	Verge works after care at 80km/h	Stage 1 exit construction
	2103019-TGS-11	Verge works at 40km/h	Stage 1 exit construction
	2103019-TGS-12	Verge works at 40km/h	Stage 1 exit construction
	2103019-TGS-17	Stage 1 internal works	Stage 1 internal works
Stage 2	2103019-TGS-13	Verge works	Down Road south exit construction
	2103019-TGS-14	Verge works temporary holding traffic with traffic controllers	Down Road south exit construction
	2103019-TGS-15	Verge works after care	Down Road south exit construction
	2103019-TGS-16	Stage 2 internal works	Stage 2 internal works

7.2. Sequence and Staging

The sequence of temporary traffic management installation, work activities and temporary traffic management removal are detailed below:

Table 12: Sequence and Staging

Step	Details
Pre-start	Contact 138 111 and advise of works.
Stage 1	Implement advanced warning signage.
Stage 2	Proceed construction works



Stage 3	Finish construction works and clear roadway.
Stage 4	Install after care signs
Stage 5	Pack up of TTM

7.3. Traffic Control Devices

7.3.1. Sign Requirements

All signs used shall conform to the designs and dimensions as shown in Australian Standard AS 1742.3, AGTTM and the CoP.

Prior to installation, all signs and devices shall be checked by the Site Supervisor or a suitably qualified person to ensure that they are in good condition and meet the following requirements:

- Mechanical condition - Items that are bent, broken or have surface damage shall not be used.
- Cleanliness - Items should be free from accumulated dirt, road grime or other contamination.
- Colour of fluorescent signs - Fluorescent signs whose colour has faded to a point where they have lost their daylight impact shall be replaced.
- Retroreflectivity. - Signs for night-time use whose retroreflectivity is degraded either from long use or surface damage and does not meet the requirements of AS 1906 shall be replaced.
- Battery operated devices - shall be checked for lamp operation and battery condition.

Where signs do not conform either to the requirements of AS 1742.3, AGTTM and the CoP, or would fail to pass any of the above checks, they shall be replaced on notice.

Signs and devices shall be positioned and erected in accordance with the locations and spacing's shown on the drawings. All signs shall be positioned and erected such that:

- They are properly displayed and securely mounted;
- They are within the driver's line of sight;
- They cannot be obscured from view;
- They do not obscure other devices from the driver's line of sight;
- They do not become a possible hazard to workers or vehicles; and
- They do not deflect traffic into an undesirable path.

Signs and devices that are erected before they are required shall be covered by a suitable opaque material. The cover shall be removed immediately prior to the commencement of work.

Where there is a potential for conflict of information between existing signage and temporary signage erected for the purpose of traffic control, the existing signs shall be covered. The material covering the sign shall ensure that the sign cannot be seen under all conditions i.e. day, night and wet weather. Care will be taken to ensure existing signs are not damaged by the covering material or by adhesive tape.

7.3.2. Tolerances on Positioning of Signs and Devices

Where a specific distance for the longitudinal positioning of signs or devices with respect to other items or features is stated, for the spacing of delineating devices or for the length of tapers or markings, the following tolerances



may be applied: -

(a) Positioning of signs, length of tapers or markings:

- (i) Minimum, 10% less than the distances or lengths given.
- (ii) Maximum, 25% more than the distances or lengths given.

(b) Spacing of delineating devices:

- (i) Maximum, 10% more than the spacing shown.
- (ii) No minimum.

These tolerances shall not apply where a distance, length or spacing is already stated as a maximum, a minimum or a range.

7.3.3. Flashing Arrow Signs

Where flashing arrow signs are required to better delineate lane tapers, these signs will comprise a matrix of lamps or light emitting elements in the form of an arrow that is flashed in a cyclical manner to provide advance warning. The sign shall have a minimum dimension of 2400 mm. x 1200 mm. and conform to the requirements of AS/NZS 4192. The Project Site Supervisor shall ensure that all equipment used meets the Australian Standard.

7.3.4. Delineation

7.3.4.1 General

Cones shall be used for delineation unless other treatment is specified in the Traffic Management Plan or on the Traffic Guidance Schemes. All cones shall be at least 700 millimetres in height and constructed from fluorescent orange or red material that is resilient to impact and will not damage vehicles when hit at low speed. Cones will be fitted with suitable white retro-reflective tape placed in accordance with AS 1742.3, AS 1742.3, AGTTM and the CoP.

Cones shall be designed to be stable under reasonably expected wind conditions and air turbulence from passing traffic.

The base of the cones will be secured so that they are not dislodged by traffic. Cones will be inspected at intervals necessary to ensure any mis-alignment or displacement is identified and corrected prior to this causing disruption to traffic.

Where specified, temporary frangible or otherwise non-hazardous delineator posts or bollards may be used for edge protection and taper delineation. Posts or bollards shall have a maximum dimension of 60 millimetres when measured along the longest side of a square or rectangular section or across the diameter of a circular section. Base design shall permit easy fixing to either sealed or unsealed surfaces and not intrude into traffic lanes greater than 50 millimetres from the face of the post or bollard.

All posts or bollards shall be erected in accordance with the Traffic Guidance Schemes. Posts and bollards shall



be a minimum of 1000 mm. high, capable of being fixed to the road pavement by a suitable road adhesive or by fastening bolts or spikes. Fixing shall be in accordance with manufacturer's recommendations.

Posts and bollards shall be fitted with suitable white retro-reflective tape placed in accordance with AS 1742.3, AGTTM and the CoP.

All posts or bollards will be inspected daily and where displaced or missing made good immediately. All delineator posts are to be completely removed at the completion of all stages of construction and prior to the placement of asphalt surfacing. If adhesive is used to affix the posts this shall be completely removed from the road surface so that a flush surface is obtained.

7.3.4.2 Delineation Spacing

All cones and post type delineators shall be spaced according to Table 4.7 of AS 1742.3-2019 and the Traffic Guidance Schemes.

7.4. Site Access for Work Vehicles

Construction and/or traffic management vehicles entering and exiting the traffic stream shall be mindful of the conditions that may affect the safety of these movements.

Access points shall be noted on the TGS and traffic controllers, work personnel and suppliers notified. Traffic Controllers may assist work vehicles enter and exit the work area.

All entry and exit movements will be in accordance with the Road Traffic Code and shall be undertaken in the following manner:

Vehicles shall:

- Decelerate slowly and signal their intention by indicator to leave the traffic stream;
- Activate the vehicle's rotating yellow lamp, where fitted, once a speed of 20 km/h. has been reached and at least 50m prior to the exit location.
- Switch on the vehicle hazard lights once the vehicle is stationary.
- Where risks associated with unassisted exit or entry to or from the traffic stream are high, Traffic Controllers should be used to assist entry and exit movements.

Vehicles fitted with rotating amber lamps shall have the vehicle's rotating lamp activated prior to entering the traffic stream and shall undertake the following.

- Switch off the vehicle hazard lights;
- Indicate intention to enter the traffic stream using direction indicators;
- Ensure there is a suitable gap from oncoming traffic to allow for a safe entry manoeuvre; and,
- Turn off the rotating yellow lamp(s) once a speed of 40 km/h is reached.

Entry and exit manoeuvres shall be avoided in close proximity to intersections. Work personnel shall not cross traffic streams on foot unless absolutely necessary.

Construction or traffic management vehicles shall only be parked where indicated on the Traffic Guidance



Scheme. Vehicles shall not obstruct paths and be parked an adequate distance from intersections or driveways to ensure clear sight lines remain for all road users.

7.5. Communication TMP Requirements

Contractor to liaise with stakeholders and submit notification to City of Albany for each of the work stages.



8. Emergency Arrangements and Contingencies

8.1. Traffic Incident Procedures

In the event of an incident or accident, whether or not involving traffic or road users, all work shall cease and traffic shall be stopped as necessary to avoid further deterioration of the situation. First Aid shall be administered as necessary, and medical assistance shall be called for if required.

Road plant within the work area that may impact on any services requiring access to a crash site will be cleared from the area quickly as necessary.

8.1.1. Serious Injury or Fatality

In the case of serious injury or fatality occurring within the traffic management site all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

An Ambulance and Police shall be called on telephone number 000 where life threatening injuries are apparent.

All road workers and traffic management personnel shall preserve the scene leaving everything in situ, until direction is given by Police or WorkSafe.

A site-specific detour route and/or road closure point will be determined, signed and controlled by traffic management personnel and advised to Police, who will take charge of the site upon arrival. Detour routes will be determined so as to cater for all types of vehicles required to use them. An example of how to manage an emergency can be found in AGTTM – Part 10, Section 5.

All site personnel shall be briefed on control procedures covering incidents and crashes that result in serious injury or fatalities.

8.1.2. Minor Incident or Vehicle Break Down within Site

Broken down vehicles and vehicles involved in minor non-injury crashes shall be temporarily moved to the verge as soon as possible after details of the crash locations have been gathered and noted. Where necessary to maintain traffic flow, vehicles shall be temporarily moved into the closed section of the work area behind the cones, providing there is no risk to vehicles and their occupants or workers. Suitable recovery systems shall be used to facilitate prompt removal of broken down or crashed vehicles. Assistance shall be rendered to ensure the impact of the incident on the network is minimised.

Any traffic crash resulting in non-life threatening injury shall be reported to the WA Police Service on 131 444.

Details of all incidents and accidents shall be reported to the Site Supervisor and Project Manager using the incident report form at Appendix "C" (or similar).



8.2. Emergency Services

Emergency services shall be notified of the proposed works nature, location, date and times as well as contact details for the site supervisor.

On-site traffic controllers will be equipped with mobile communications to advise and/or liaise with emergency services to ensure a prompt response should the need arise.

8.3. Dangerous Goods

Should any incident arise involving vehicles transporting dangerous goods, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

Emergency services shall be notified of the proposed works nature, location, date and times as well as contact details for the site supervisor. All site personnel shall be briefed on evacuation and control procedures.

8.4. Damage to Services

In the event that gas services are damaged, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. The Police Service and relevant supply authority shall be called immediately. Damage to any other services shall be treated in a similar manner except machinery may remain operational and access may be maintained where it is safe to do so.

All site personnel shall be briefed on evacuation and control procedures.

8.5. Failure of Services

8.5.1. Failure of Traffic Signal

In the event that traffic signal infrastructure near the worksite is damaged or fails to operate correctly, all work shall cease immediately and Main Roads WA Road Network Operation Centre (RNOC) shall be notified immediately (phone 138 111).

8.5.2. Failure of Street Lighting

In the event that street lighting is damaged and fails to operate or operates incorrectly, Traffic Controllers (and other personnel if necessary with appropriate temporary lighting) shall be deployed immediately if the lighting failure adversely affects road user safety to control traffic movements as required. Western Power shall be notified immediately.

8.5.3. Failure of Power

In the event that power infrastructure is damaged and poses a risk through live current, Traffic Controllers (and



other personnel if necessary) shall be deployed immediately to secure the site and prevent entry to the area affected by live power. Western Power shall be notified immediately (phone 13 13 51).

8.6. Emergency Contacts

In the event of an emergency the following relevant authorities must be contacted and advised of the nature of works, location, type of emergency and contact details for the site supervisor.

Emergency Service	E-mail/Website	Phone (Emergency)
WA Police Service	State.Traffic.Intelligence.Planning.&Co-ordination.Unit@police.wa.gov.au	000
St John Ambulance	ambulanceoperations@stjohnambulance.com.au	000
DFES	dfes@dfes.wa.gov.au	000
Power	http://www.westernpower.com.au/customerservice/contactus/	13 13 51
Gas	enquiries@atcoqas.com.au	13 13 52



9. Monitoring and Measurement

9.1. Daily Inspections

Prior to works commencing the Site Supervisor shall undertake to communicate the Traffic Management Plan to all key stakeholders and affected parties.

On completion of setting out the traffic control measures, the site is to be monitored for a suitable period of time. If traffic speeds on the approaches to the work site are assessed as being above the temporary posted speed zone for the work site, the Site Supervisor is to initiate action to modify the approach signage and tapers in accordance with the requirements of AS1742.3. All such actions are to be recorded in the Daily Diary. Should road users be observed to continue to travel in excess of the posted speed limit, the police may be requested to attend the site to enforce the temporary posted speed limit.

The Advanced Worksite Traffic Management accredited supervisory person at the worksite may conditionally approve changes made to a complex traffic management plan subject to review and endorsement of the change by an RTM as soon as practicably possible.

The Traffic Management Contractor shall ensure that all temporary signs, devices and controls are maintained at all times. To achieve this, procedures in line with the requirements outlined in AGTTM Part 6 will be instituted.

The monitoring program shall incorporate inspections:

- Before the start of work activities on site,
- During the hours of work,
- Closing down at the end of the shift period, and
- After hours.

A daily record of the inspections shall be kept indicating

- When traffic controls were erected,
- When changes to controls occurred and why the changes were undertaken,
- Any significant incidents or observations associated with the traffic controls and their impacts on road users or adjacent properties.

The Traffic Management Contractor shall ensure that personnel are assigned to monitor the traffic control scheme. Inspections shall at least satisfy the following requirements.

9.1.1. Before Works Start

- Confirm TMP and TGS are suitable for the day's activities;
- Inspect all signs and devices to ensure they are undamaged, clean and comply with the requirements depicted on the TGS;
- All lamps should be checked and cleaned as necessary;
- After any adjustments have been made to the signs and devices, conduct a drive through inspection to confirm effectiveness.

9.1.2. During Work Hours



- Designate and ensure that appropriate work personnel drive through the site periodically to inspect all signs and devices and ensure they are undamaged and comply with the requirements depicted on the Traffic Guidance Schemes;
- Attend to minor problems as they occur;
- Conduct on the spot maintenance/repairs as required;
- When traffic controllers are on the job, ensure they remain in place at all times. Relieve controllers as necessary to ensure attentiveness is retained;
- During breaks or changes in work activities remove or cover any signs that do not apply (e.g. PREPARE TO STOP, Workers symbolic);
- Re-position signs and devices as required by work processes throughout the day and keep records of any changes.

9.1.3. Closing Down Each Day

- Conduct a pre-close down inspection, allowing time for any appropriate maintenance works;
- Remove any unnecessary signage (e.g. Prepare to Stop, Symbolic Workers);
- Replace any unnecessary signage with appropriate delineation;
- Install barriers and lights where required;
- Drive through site and confirm all signs and devices are operating correctly with no misleading visual cues;
- Record details of inspection and any changes made to layout.

9.1.4. After Hours

- Appoint personnel to conduct after dark checks. Replace any signs / devices not working, missing or damaged and record in diary.
- Appoint personnel to conduct checks on non-work days (e.g. weekends). Replace any signs / devices not working, missing or damaged and record in diary.
- The frequency of inspections needs to align with the amount of traffic management on site, weather conditions, vehicle types and volumes, road user behaviour and site specific risks.

9.2. TMP Audits and Inspections

One compliance audit (using the 'Compliance Audit Checklist for Traffic Management for Works on Roads' – found on the MRWA website) shall be conducted following setting up of the traffic management and prior to commencement of the works.

Audit findings, recommendations and actions taken shall be documented and copies forwarded to the Project Manager and the Road Authority's Representative

9.3. Records

A daily diary recording all inspections including variations to the approved TMP shall be kept using the Daily Diary.

The Traffic Supervisor is to record all inspections made on a daily basis and at those times prescribed by the Traffic Management Implementation Standards. Upon completion of each day the Traffic Supervisor shall provide copies of the daily diary record to the Project Manager.

The Traffic Supervisor is to record all variations made to the approved Traffic Management Plan on a daily basis



and indicate clearly the nature of the variations and the reason for the variations. Upon completion of each day the Traffic Supervisor shall provide copies of the variation record to the Project Manager.

9.4. Public Feedback

Contractor shall liaise with stakeholders for any public feedback.



10. Management Review and Approvals

10.1. TMP Review and Improvement

The Project Manager will ensure that the Traffic Management Plan is implemented and evaluated for effectiveness. The Supervisor shall inspect and monitor traffic movements around the site in conjunction with the personnel who have erected the control measures.

The Project Manager will implement a procedure that ensures comments and complaints received from the public are registered. The Supervisor shall be responsible for the monitoring of the Register on a daily basis.

TCP to be reviewed and updated every 3-6 months to ensure proposed long term Traffic Management complies with changing site environment.

10.2. Variations

There are no variations.

10.3. Approvals

Before to works commencing it is necessary to seek approval from the following:

- City of Albany;
- Utility Service Providers (e.g. Western Power, Water Corp, etc.)



Appendix A - Notification of Roadworks

To be completed by contractor



NOTIFICATION OF ROADWORKS

Notifications are to be distributed at least one (1) week in advance of works

Where the traffic management is to interfere with traffic signal operation, prior approval is required 3wks in advance via enquiries@mainroads.wa.gov.au.

Where the works will place restrictions on Oversize and/or Restricted Access Vehicles Main Roads HVS requires at least 2 weeks notice.

TMP reference		Communication plan sent to Main Roads	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>		
Anticipated start date:	Anticipated finish date:						
Daily work hours:	Is weekend work applicable?:			Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Location of works (Road/Street, Suburb):							
Description of works:							
Description of traffic management arrangements:	To accommodate the proposed works, traffic control are to install the following stages of work;						
Posted Speed Limit:		Worksite speed limit:		After hours speed limit:			
What is the anticipated effect on traffic flows?:				Will there be restricted width for oversize escorted vehicles?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Are lanes closed at signals?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Are signal loops or hardware affected?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Will signal phases need time changes?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Will signals need to revert automatically?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Date of signal 'black out':				Times of signal 'black out':			
Will Police attendance be required?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>		Dates for Police attendance :			
Are bridges located in area of works, (inc detours)?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>		Will changes to traffic flows/composition occur on bridges?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Are the works located within a School Zone?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>		Will children's crossings be altered during works?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Oversize and/or Restricted Access Vehicle Roadwork Restrictions

Location of works (include – road name, nearest intersection or marked location and SLKs)					
Road Name(s)					
Bridge number if applicable					
Nearest Intersection / marked location / SLKs					
Additional information					
Will there be a width restriction for oversize vehicles exceeding 2.5m in width?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Will there be a height restriction for oversize vehicles exceeding 4.3m in height?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If yes, what width limit is to be imposed on oversize vehicles travelling through the site?					



Will the width restrictions be in place outside the daily work hours?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If yes, what is the minimum height of the structure causing the restriction?	
Can the width restrictions be removed if operators provide prior notice?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If the width restrictions are fixed in place, are operators able to have a wider oversize combination if a 1.2m ground clearance can be achieved? Do not complete if width restrictions can be removed.	Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes, how much notice will be required? (i.e. 24/48 hours' notice).			If yes, how much notice will be required? (i.e. 24/48 hours' notice).	
Please provide the name and phone number of the best contact for further details in relation to these works.	Name: Contact number (mobile):			
Please provide the name and phone number of the contact for prior notification of movements.	Name: Contact number (mobile):			
Will the work result in a road closure that will impact on Restricted Access Vehicles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If yes, have discussions been held with Main Roads Heavy Vehicle Services (HVS) in regards to a suitably approved RAV network detour. If no, please contact HVS Route Assessments on 138 486 for assistance. Note: an assessment request for a proposed detour may take up to a week to be processed.	Yes <input type="checkbox"/> No <input type="checkbox"/>

Road Authority:			
Postal Address:			
Telephone:	Email:	Facsimile:	
Contact:			
Telephone:	Email:	Mobile:	

Construction Contractor:			
Postal Address:			
Telephone:	Email:	Facsimile:	
Contact:			
Telephone:	Email:	Mobile:	
After hours contact:	Telephone:	Mobile:	

Traffic Management Contractor:			
Postal Address:			
Telephone:	Email:	Facsimile:	
Contact:			
Telephone:	Email:	Mobile:	
After hours contact:	Telephone:	Mobile:	

Distribution List	Email/Website
WA Police State Traffic Coordination	State.Traffic.Intelligence.Planning.&Co-ordination.Unit.SMIL@police.wa.gov.au
Children's Crossing Unit	childrenscrossingunitsmail@police.wa.gov.au mailto:student.pedestrian.policy.unit@police.wa.gov.au
Main Roads Customer Information Centre	enquiries@mainroads.wa.gov.au
Main Roads Road Network Operations Centre	RNOC.Control.Room.Information.Desk@mainroads.wa.gov.au
Main Roads Heavy Vehicle Services	hvs@mainroads.wa.gov.au
Main Roads Engineer Bridge Loading	DLSEHeavyLoadsGroup@mainroads.wa.gov.au
St John Ambulance	BusinessSupportServices@stjohnwa.com.au
Fire & Emergency Services	Dfes@dfes.wa.gov.au



Public Transport Authority	transperth.servicedisruptions@pta.wa.gov.au
Arc Infrastructure	thirdparty.notifications@arcinfra.com
Main Roads Digital Communications	communications@mainroads.wa.gov.au
Local Government	

Note: the above distribution list is an example and should be modified as required. See section 4.4 of the Code of Practice



Appendix B - Variation to Standards

NOT APPLICABLE



**APPLICATION FOR APPROVAL TO VARY REQUIREMENTS OF
AS1742.3, AGTTM OR MRWA TRAFFIC MANAGEMENT CODES OF PRACTICE**

Form Instruction

1. **Section A** – Identify the Principal Agency / person commissioning the activity. (Does not include contractors, subcontractors or **traffic** management company/traffic planners etc).
2. **Section B** – Identify activity location, start / finish date and time, type of traffic management, description location of activity.
3. **Section C** – Identify the person that has prepared the Traffic Management Plan, this person shall have AWTM accreditation.
4. **Section D** – For Works undertaken on a State road or on behalf of Main Roads Western Australia the details of the risk assessment process identified in this application form must be documented and endorsed by an accredited Roadworks Traffic Manager¹.
All applications to be addressed to the applicable Main Roads Regional office. For contact information please refer to the online Application kits and guidelines to undertake works. (www.mainroads.wa.gov.au >Technical & Commercial > Working on roads > Third Party Works).
For all other applications the details of the risk assessment process identified in this application form must be documented and endorsed¹ by the person responsible for approving the traffic management plan.
Contact with the appropriate road authority should be made prior to lodgement of this application to determine its suitability and for any additional requirements.
5. **Section E** - Risk implication, identification and assessment process must be undertaken in accordance with Risk Management – Principles and Guidelines AS/NZS ISO 31000. The likelihood and consequences should be rated after the application of any additional counter measures taken utilising Tables from Annexure's 202B and 203B, Main Roads WA - Specification 202 and 203 respectively.
6. **Incomplete or applications not signed** by the RTM¹ will not be processed.

A	Applicant (Principal for the Works)					
	Postal address					
	Suburb		State		Postcode	
	Project Manager				Telephone	
	Email					

B	Anticipated start date				Anticipated finish date					
	Daily work hours; From				Weekend work applicable		Yes <input type="checkbox"/>	Sat <input type="checkbox"/>	Sun <input type="checkbox"/>	No <input type="checkbox"/>
	Location of works (Road/Street Suburb),									
	Road type (eg undivided, two lane)									
	Description of works									
	Are alterations to permanent traffic signals required?				Yes <input type="checkbox"/>		No <input type="checkbox"/>		N/A <input type="checkbox"/>	
	Posted Speed Limit				Worksite speed limit				After hours speed limit	

C	TMP Designer										
	Accreditation Number										
	Postal address		Level 1 / 908 Albany Highway								
	Suburb		East Victoria Park		State	WA	Postcode	6101			
	Email				Telephone	(08) 9355 1300		Facsimile	N/A		

¹A person with AWTM accreditation is permitted to endorse a variation of less than 135 % of the allowable lane capacity as outlined in table 4.10 of AS 1742.3. See section 4.5 of the Code of Practice.



	Endorsement Signature		Date Click here to enter a date.
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**APPLICATION FOR APPROVAL TO VARY REQUIREMENTS OF
AS1742.3, AGTTM OR MRWA TRAFFIC MANAGEMENT CODES OF PRACTICE**

D	RTM Endorsing Variation					
	Accreditation Number					
	Postal address					
	Suburb		State	Postcode		
	Email	Telephone		Facsimile		
	Endorsement signature			Date		

For Internal Use Only							
Approving Road Authority							
Approving Officer Position							
Application Approved	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If Not Why Not				
Additional Conditions							
Approved By: Signature		Title		Date		File Num	



E	Description of Variation Requested	Specify Point of Departure from Standard / Code of Practice (List section and page number)	Justification (Why is this necessary)	Additional Counter Measures to be Taken (Identify additional counter measures to be used to negate the lesser treatment)	Residual Risk*		
					L	C	RR





Appendix C - Record Forms

Daily Diary

Location: _____		Client: _____		Date: _____	
TMP No: _____		TGS No: _____		Weather Conditions: _____	
Start Time at Depot: _____		Time Arrive Onsite: _____		Commencement of Site Setup: _____	
Site Pulled Down at: _____		Time Aftercare signs setup: _____		TGS No: _____	
<input type="checkbox"/> Day Works		<input type="checkbox"/> Night Works		<input type="checkbox"/> Emergency Response	
<input type="checkbox"/> Attendance at Pre-Start Meeting		Did an incident occur (if yes complete incident report form)		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Name (Site Supervisor): _____		Signed: _____		Time left site: _____	
Drive Through Checks (Checks must be conducted at least every 2 hours)		Finish time at Depot: _____		Site Setup as per TGS <input type="checkbox"/> Yes <input type="checkbox"/> No (if not comment on next page)	
I confirm that the above times of 'setup' and 'pulldown' of traffic management signs and devices are a true and correct					
Time of check entered. Rule off and leave blank if the check does not apply to the site. Make a note of any issues on the next page.					

Traffic Management Site Checks	1	2	3	4	5	6	7	8	9	10
Time										
Are signs upright, clean, visible, level & stable										
Are taper lengths correct										
Are speed limit signs correct and doubled up										
Are sign spacings correct										
Are cone/bollard alignments straight & spaced correctly										
Are devices operating correctly										
Are pedestrians, cyclists and other vulnerable road users catered for										
Are lane widths adequate										



Are vehicle queue lengths acceptable										
Is road surface condition adequate										
Is the work area clearly defined?										
Are the travel paths for both directions of traffic clearly defined? Is the work area appropriately separated from passing traffic? Check the transition at the interface of the modified alignment.										
Are centre lines/lane lines/edge lines clear and unambiguous?										
Are sight and stopping distances adequate at works, at intersections and driveways?										
Are traffic lanes clearly delineated?										
Are lighting for night-time controls operating correctly?										
Have other risks associated with traffic management at night been catered for, e.g. placement of lighting towers										



No. of TTM Vehicles Onsite: _____

No. of TTM Personnel Onsite: _____

TTM Personnel Names & Accreditations:

Name	Accreditation Details (tick)					Time of Break from Stop/Slow (Traffic controllers must have a 15 minute break every two hours of constant stop/slow operation)							
	TC	BWTM	WTM	AWTM	OTMA	On	Off	On	Off	On	Off	On	Off
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:

Additional Comments

I confirm that the details contained herein are true and correct

Name: (TTM Leader): _____ Signed: _____



Incident Report Form.

Region:
Contract No.:

Incident Report No.:
Contractor:

Safety Incident Report No:

Major Incident Reports must be forwarded to the Superintendent within 48 hours of the incident occurring or becoming apparent.

Contractors shall use this Form for reporting of traffic Incidents on works under Contract and this form supplements the Safety Incident Report Form.

1.0	Details of Incident		Reported to:	<input type="checkbox"/> Supervisor	<input type="checkbox"/> TMR	<input type="checkbox"/> Other
Date of incident			Time of Incident			
Work Being Undertaken						
Location (include direction and lane if applicable)						
Crash Type						
Incident type	Near Miss	Property Damage	Injury	Fatality		
Atmospheric Conditions	Clear	Overcast	Raining	Fog/Smoke/Dust		
Light Conditions	Day Light		Night Time		Dawn/Dusk	
Road Surface	Unsealed			Sealed		





Date TGS Approved: _____

Date TMP Approved: _____



3.0 Descriptions of Vehicles:

Detail (make, model/ped/cyclist/VRU)	Registration No	Direction of Travel	Age of Driver
3.1 Vehicle 1			
3.2 Vehicle 2			
3.3 Vehicle 3			

Comments:

4.0 Description of Incident:

Draw the Incident including the direction of travel, traffic control signs, fixed structures and north point.



5.0 Attachments: The following copies MUST be submitted with this Incident Report.

Approved TMP Approved TGS Approvals for temporary speed restrictions Daily Diary

6.0 Police Report:

Accident reported to Police: YES NO Report made by Phone Fax Mail or E-mail

Date Report Made Day Month Year Police WA Reference Number

.....

7.0 Details of Person Completing this Incident Form:

Name: Contractor Name:

Position:

Date: Signature:



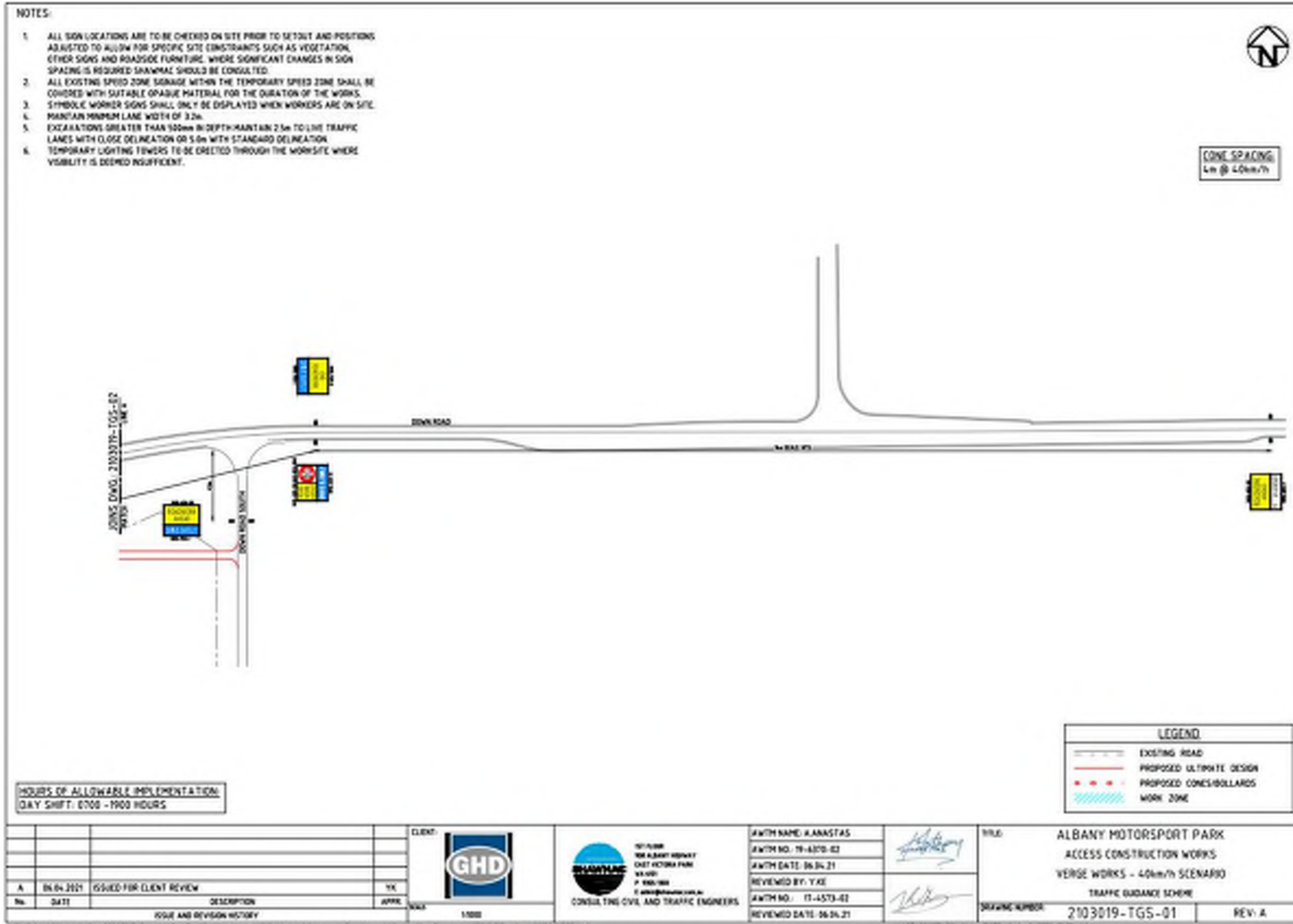
Appendix D - Traffic Analysis and Volume Counts

Volumes

Location	Average weekday (vpd)	Trucks	Average weekend (vpd)	Trucks
Down Road	844 vpd (2017)	34%	419 vpd (2017)	40%
Albany Highway	4,950 vpd (2017)	20%	3,520 vpd (2017)	16%



Appendix E - Roadway Access Authorisation Permit

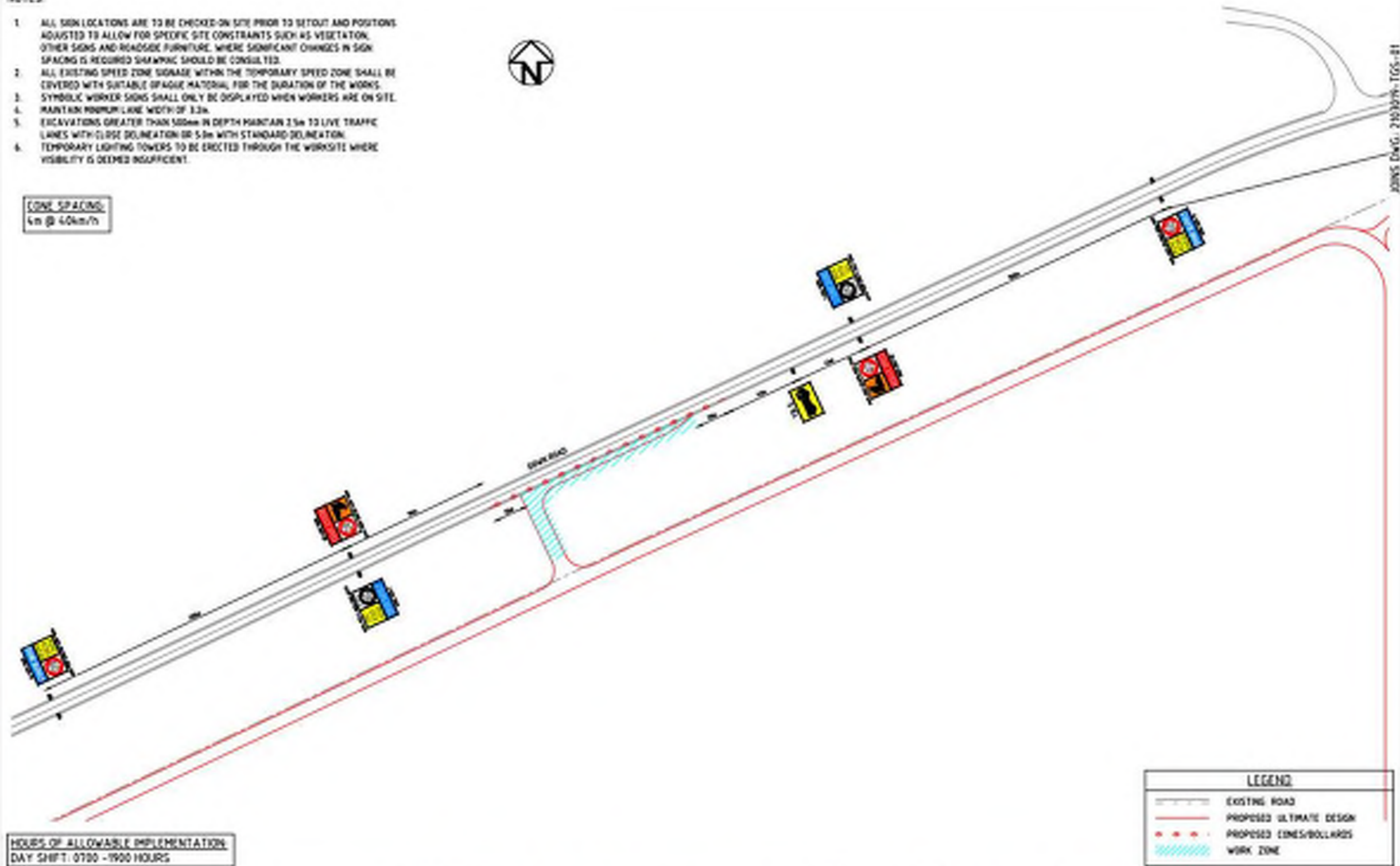


NOTES:

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE SPAGUE MATERIAL FOR THE DURATION OF THE WORKS.
3. SYMBOLIC WORKER SIGNS SHALL ONLY BE DISPLAYED WHEN WORKERS ARE ON SITE.
4. MAINTAIN MINIMUM LINE WIDTH OF 3.3m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MAINTAIN 2.5m TO LIVE TRAFFIC LINES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CONE SPACING:
1m @ 40km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

No.	DATE	DESCRIPTION	APPR.	ISSUE AND REVISION HISTORY
A	04-04-2021	ISSUED FOR CLIENT REVIEW	YR	

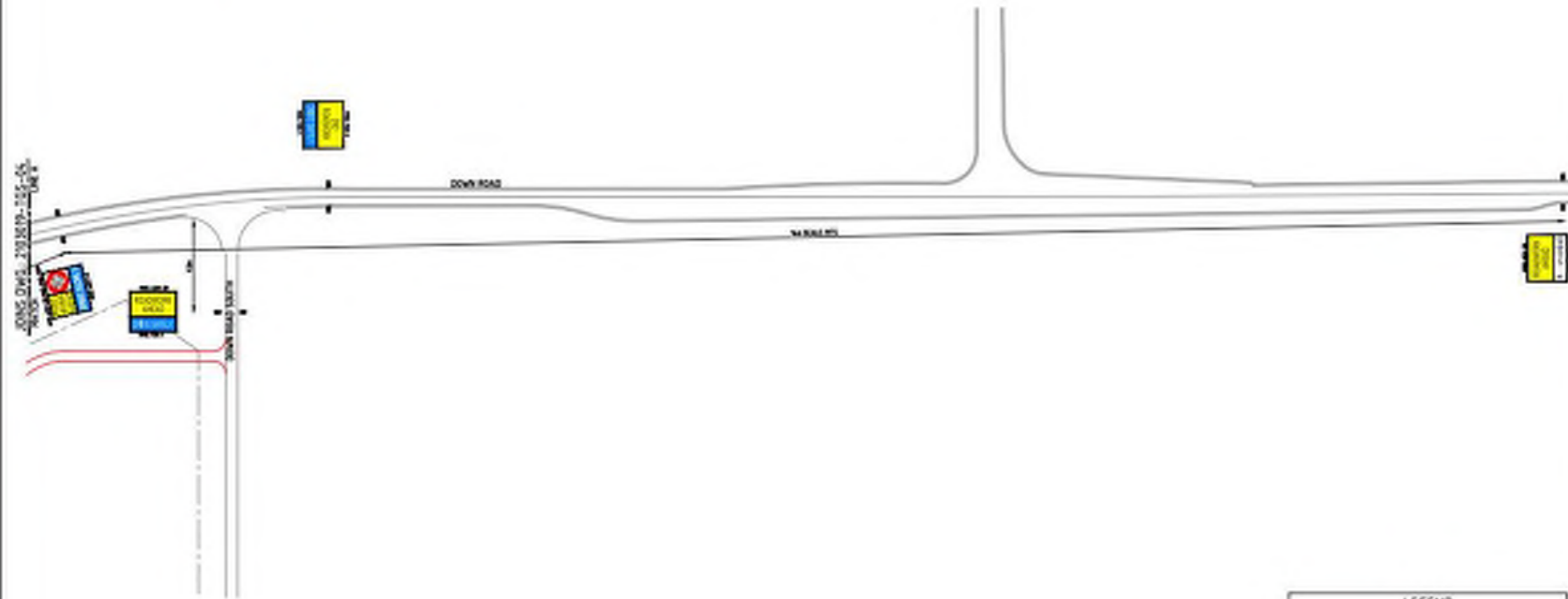
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		AMTR NO: TR-4370-02		ACCESS CONSTRUCTION WORKS
		AMTR DATE: 04-04-21		VERGE WORKS - 40km/h SCENARIO
		REVIEWED BY: YR		TRAFFIC GUIDANCE SCHEME
		AMTR NO: TR-4370-02		DRAWING NUMBER
		REVIEWED DATE: 04-04-21		2103019-TGS-02
				REV: A

NOTES

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4. MAINTAIN MINIMUM LANE WIDTH OF 3.3m.
5. EXCAVATIONS GREATER THAN 500mm IN DEPTH MUSTAIN 1.5m TO LIVE TRAFFIC LANES WITH CLOSE DELINEATION OR 5.0m WITH STANDARD DELINEATION.
6. TEMPORARY LIGHTING TOWERS TO BE ERRECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CONE SPACING:
4m @ 60km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFTS: 0730 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

<table border="1"> <thead> <tr> <th>No.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>APPR.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>04.04.2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td>YES</td> </tr> </tbody> </table>		No.	DATE	DESCRIPTION	APPR.	1	04.04.2021	ISSUED FOR CLIENT REVIEW	YES	<p>CLIENT</p>	<p>SET PLAN FOR ALBANY MOTORSPORT ACCESS CONSTRUCTION WORKS NO. 001 P. 1004 OF 1004 E: john@shawmac.com.au</p> <p>CONSULTING CIVIL AND TRAFFIC ENGINEERS</p>	<p>ANTR NAME: A. ANASTAS ANTR NO: 15-4370-02 ANTR DATE: 04.04.21 REVIEWED BY: Y. KE ANTR NO: 15-4370-02 REVIEWED DATE: 04.04.21</p>	<p>TITLE: ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VIRGE WORKS - 60km/h SCENARIO TRAFFIC GUARANTEE SCHEME</p> <p>DRAWING NUMBER: 2103019-TGS-03</p> <p>REV: A</p>
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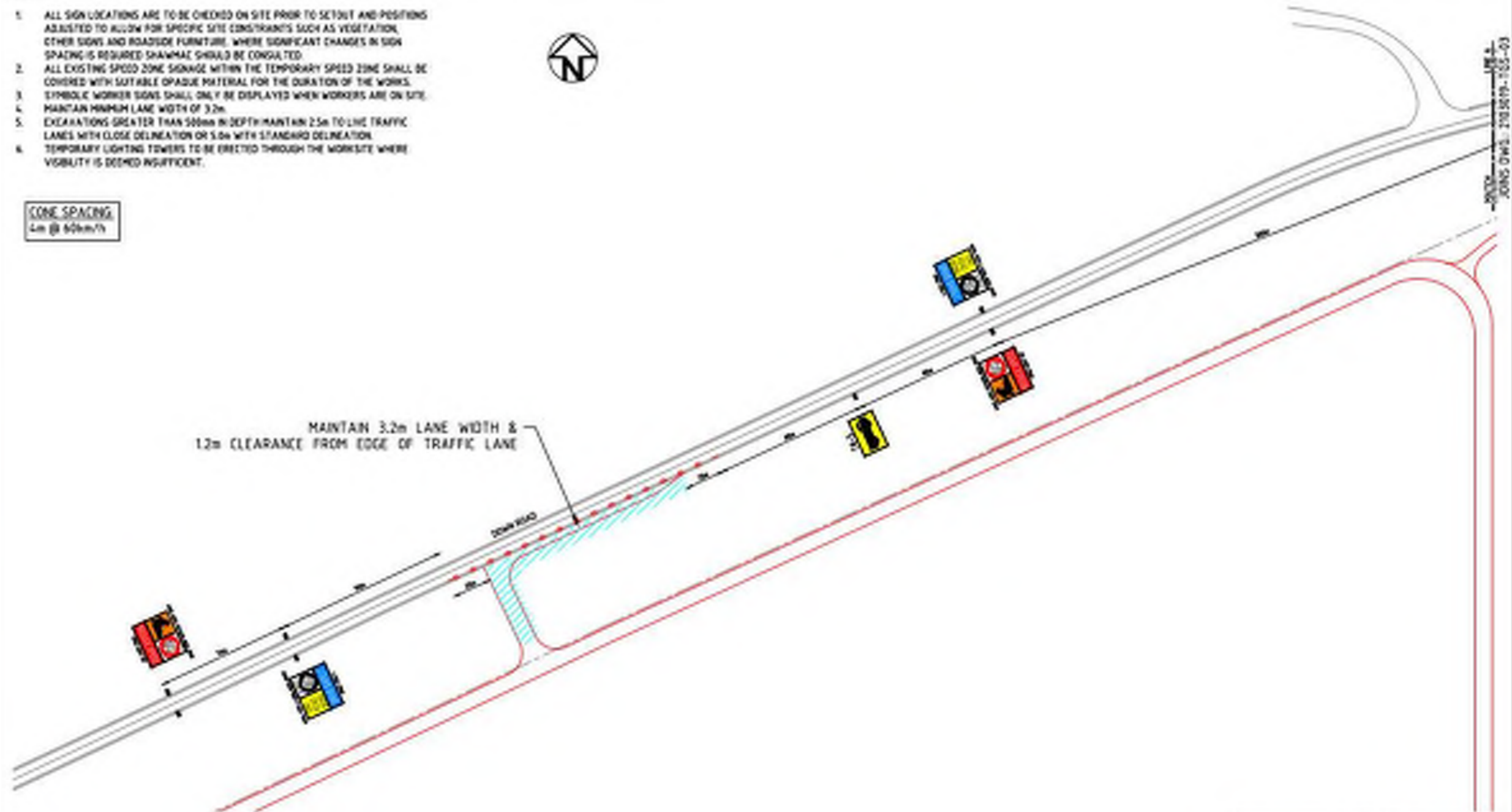
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CONE SPACING
4m @ 60km/h

MAINTAIN 3.2m LANE WIDTH &
1.2m CLEARANCE FROM EDGE OF TRAFFIC LANE



HOURS OF ALLOWABLE IMPLEMENTATION
(DAY SHIFT: 0700 - 1900 HOURS)

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONE/BOLLARDS
	WORK ZONE

<table border="1"> <thead> <tr> <th>No.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>APPD.</th> <th>CHKD.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>26.04.2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td>XX</td> <td></td> </tr> </tbody> </table>		No.	DATE	DESCRIPTION	APPD.	CHKD.	A	26.04.2021	ISSUED FOR CLIENT REVIEW	XX		<p>CLIENT</p>	<p>107/100B NEW ALBANY HIGHWAY CASTLETON NSW NSW 2868 P 0800 000 000 E info@shawmac.com.au CONSULTING CIVIL AND TRAFFIC ENGINEERS</p>	<p>AWITH NAME: A.ANASTAS</p> <p>AWITH NO.: 19-6370-02</p> <p>AWITH DATE: 26.04.21</p> <p>REVIEWED BY: YAE</p> <p>AWITH NO.: 11-1513-02</p> <p>REVIEWED DATE: 06.04.21</p>	<p>TITLE</p> <p>ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS - 60km/h SCENARIO TRAFFIC GUIDANCE SCHEME</p> <p>DRAWING NUMBER: 2103019-TGS-04</p> <p>REV: A</p>
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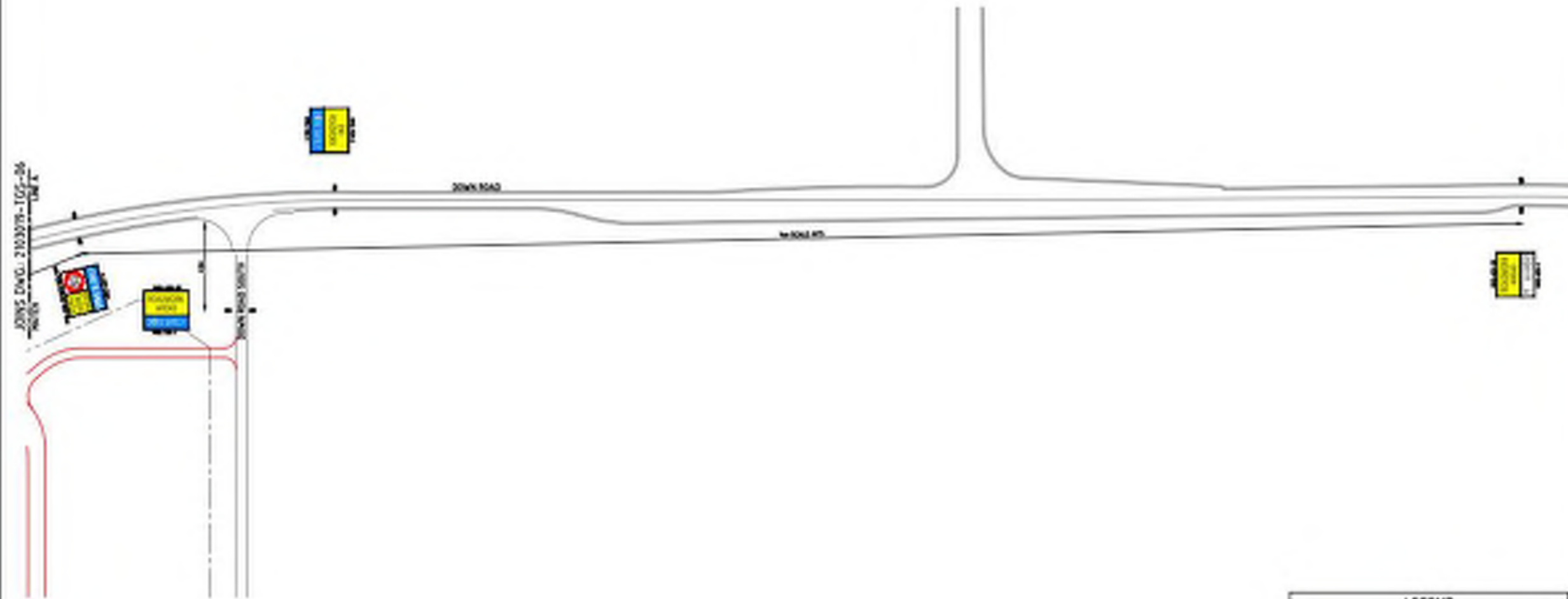
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6. TEMPORARY LIGHTING TOWERS TO BE ERRECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



CONE SPACING
4m @ 60km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0730 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED FENCES/BOLLARDS
	WORK ZONE

<table border="1"> <tr> <td>No.</td> <td>DATE</td> <td>DESCRIPTION</td> <td>APPV.</td> </tr> <tr> <td>1</td> <td>06-04-2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td>TR</td> </tr> </table>		No.	DATE	DESCRIPTION	APPV.	1	06-04-2021	ISSUED FOR CLIENT REVIEW	TR	<p>CLIENT</p>	<p>BY PLAN FOR ALBANY MOTORSPORT EAST VICTORIA PARK VIC 3100 P 1004 000 E info@shawmac.com.au</p> <p>CONSULTING CIVIL AND TRAFFIC ENGINEERS</p>	<p>AMTR NAME: A. ANASTAS AMTR NO.: TR-4370-02 AMTR DATE: 06/04/21 REVIEWED BY: T.KE AMTR NO.: TD-4370-02 REVIEWED DATE: 06/04/21</p>	<p>FILE: ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERSE WORKS AFTER CARE - 60km/h SCENARIO TRAFFIC GUIDANCE SCHEME</p>
No.	DATE	DESCRIPTION	APPV.										
1	06-04-2021	ISSUED FOR CLIENT REVIEW	TR										
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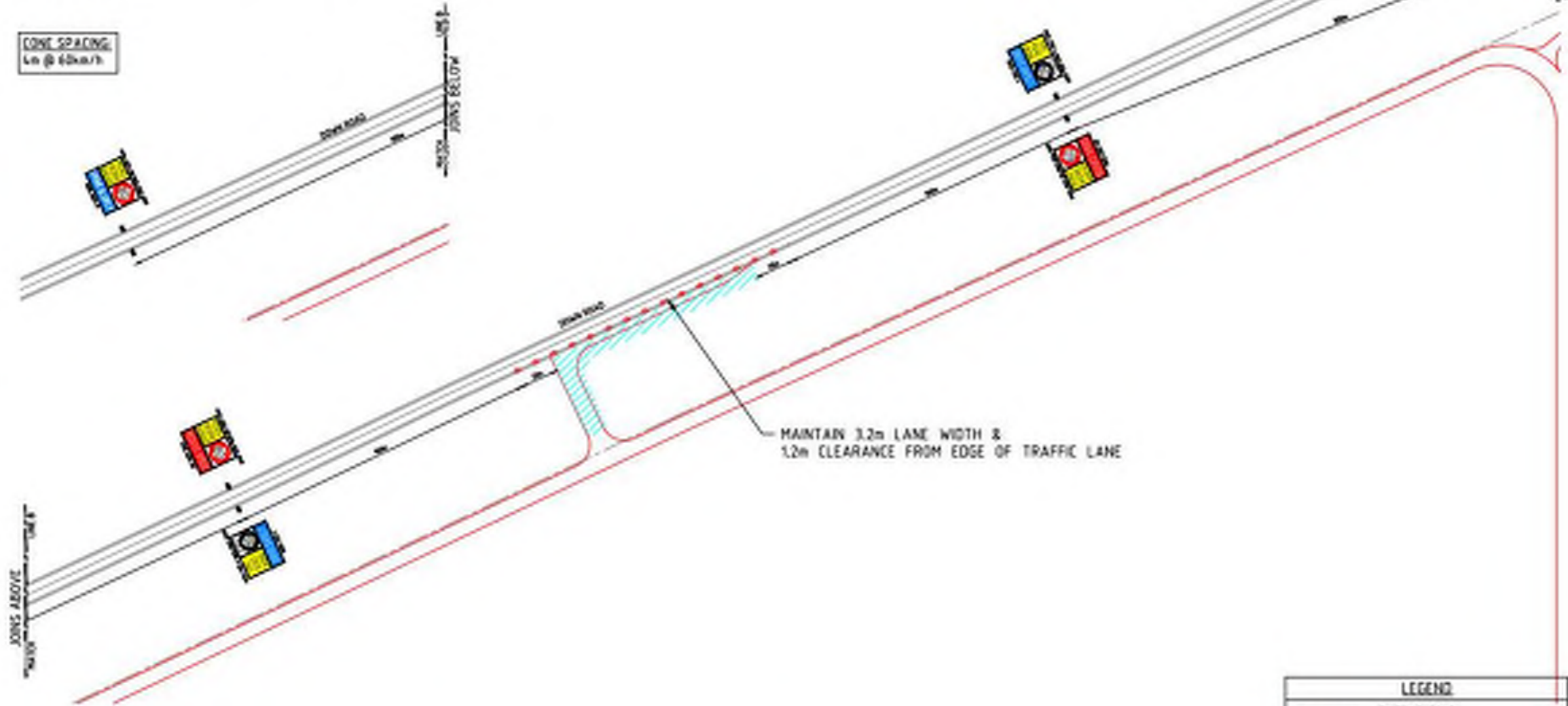
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CONE SPACING:
1m @ 60km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

No.	DATE	DESCRIPTION	APPR.
A	06-04-2021	ISSUED FOR CLIENT REVIEW	YR

CLIENT

SHAWMAC
107 FLANN
108 ALBANY MOTORSPORT
EAST VICTORIA PARK
303 400
P 1004 1000
E shawmac@shawmac.com.au

CONSULTING CIVIL AND TRAFFIC ENGINEERS

AWTR NAME: A. ANASTAS
AWTR NO: 19-0370-02
AWTR DATE: 06-04-21
REVIEWED BY: T.KE
AWTR NO: 19-0370-02
REVIEWED DATE: 06-04-21

[Signature]

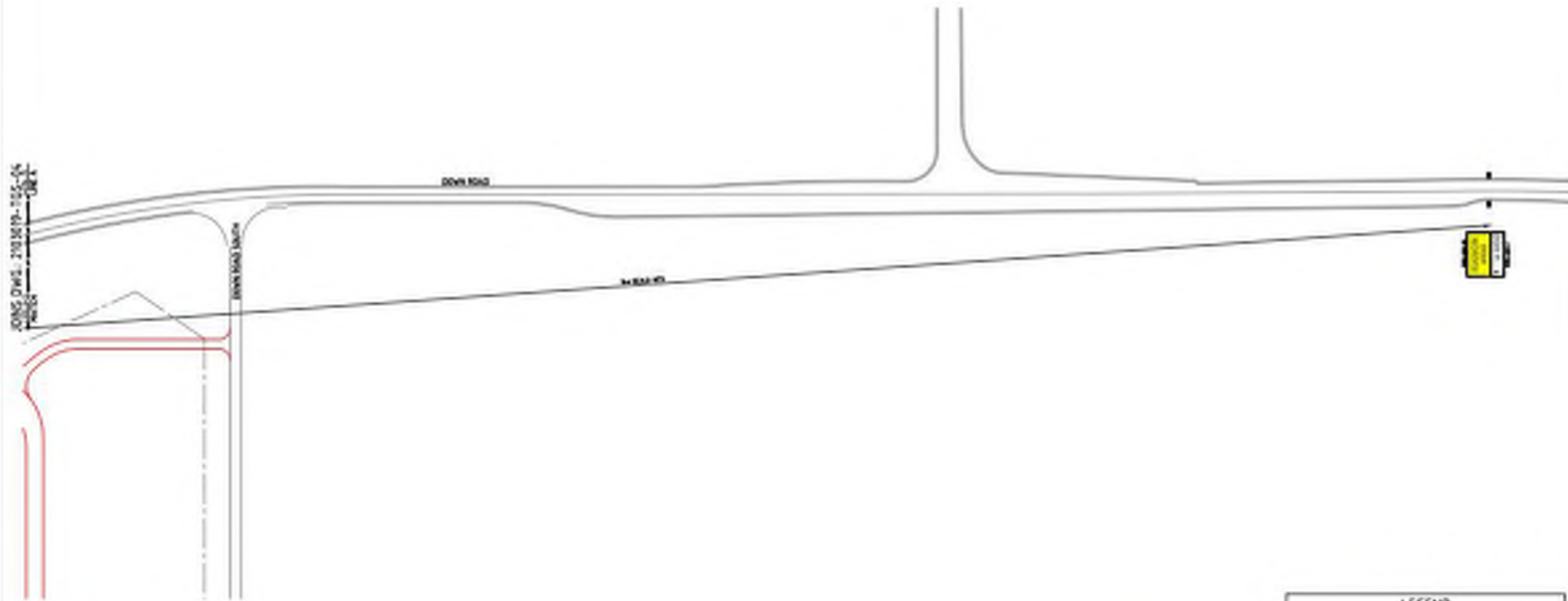
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DRAWING NUMBER	2103019-TGS-06
REV	REV. A

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CONE SPACING:
8m @ 80km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFTS: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

No.	DATE	DESCRIPTION	APPR.
A	04-04-2021	ISSUED FOR CLIENT REVIEW	YK
ISSUE AND REVISION HISTORY			

CLIENT

1000

101 FLACK
102 ALBANY MOTORSPORT
103 VERGE WORKS
104 SIGNAGE
105 ROAD SIGN
106 SIGNAGE
107 SIGNAGE
108 SIGNAGE
109 SIGNAGE
110 SIGNAGE

CONSULTING CIVIL AND TRAFFIC ENGINEERS

AWTR NAME: A. ANASTAS
AWTR NO: 15-6370-02
AWTR DATE: 04-04-21
REVIEWED BY: YK
AWTR NO: 15-6370-02
REVIEWED DATE: 04-04-21

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TITLE:	ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS - 80km/h SCENARIO TRAFFIC QUEENEE SCHEME
DRAWING NUMBER:	2103019-TGS-07
REV:	A

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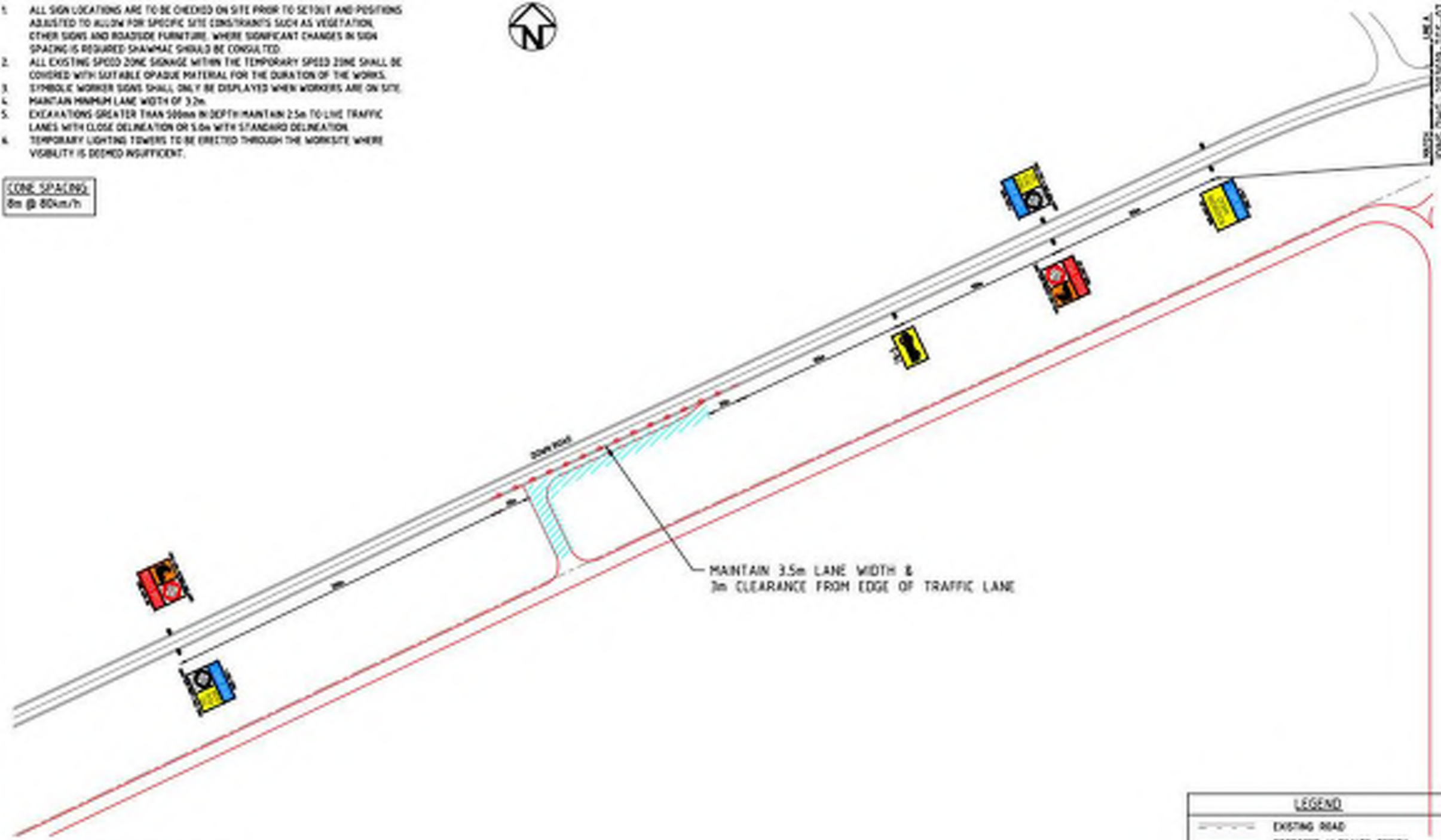
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NOTES:

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CONE SPACING
8m @ 80km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

No	DATE	DESCRIPTION	APPD	BY
A	04/04/2021	ISSUED FOR CLIENT REVIEW	YAE	

CLIENT

107/ALBANY MOTORSPORT PARK
107/ALBANY MOTORSPORT PARK
NSW 4071
P 150-100
E shawmac@shawmac.com.au
CONSULTING CIVIL AND TRAFFIC ENGINEERS

AWTH NAME: A.ANASTAS	
AWTH NO.: 19-6370-02	
AWTH DATE: 26/04/21	
REVIEWED BY: YAE	
AWTH NO.: 11-4573-02	
REVIEWED DATE: 04/04/21	

TITLE:	ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS - 80km/h SCENARIO TRAFFIC GUIDANCE SCHEME
SHEET NO./TOTAL:	2103019-TGS-08 / REV. A

As-built: 1/June/2021 Construction Traffic Management (GHD) Albany Motorsport Development Application Proposal (2103019-TGS-08) 2/21, A/rev

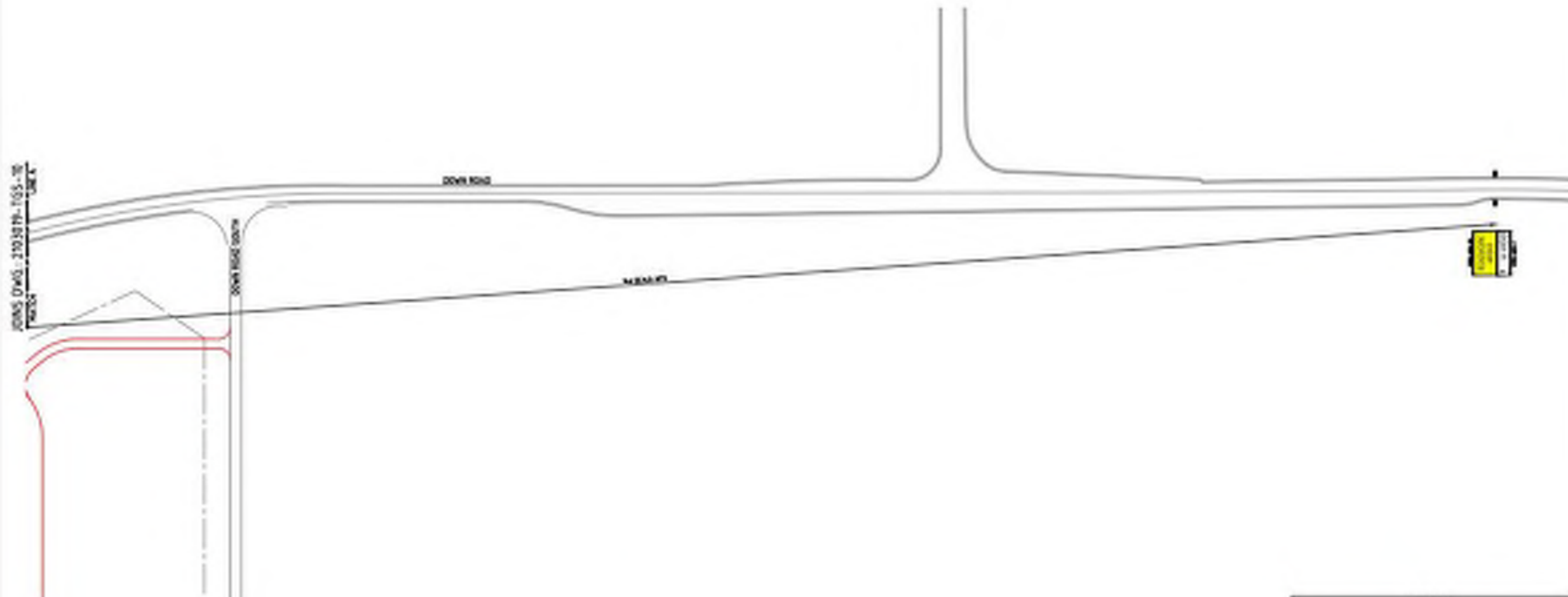
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CONE SPACING
8m @ 80km/h



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

No.	DATE	DESCRIPTION	APPR.
A	06-04-2021	ISSUED FOR CLIENT REVIEW	YR

CLIENT

BY PLAN
FOR ALBANY MOTORSPORT
EAST VICTORIA PARK
M3 800
P 1000 1000
E engineering@shawmac.com.au

CONSULTING CIVIL AND TRAFFIC ENGINEERS

AWTR NAME: A. ANASTAS	
AWTR NO: TR-4370-02	
AWTR DATE: 06-04-21	
REVIEWED BY: T. RE	
AWTR NO: TR-4370-02	
REVIEWED DATE: 06-04-21	

FILE:	ALBANY MOTORSPORT PARK ACCESS CONSTRUCTION WORKS VERGE WORKS AFTER CARE - 80km/h SCENARIO TRAFFIC GUIDANCE SCHEME
DRAWING NUMBER	2103019-TGS-09
REV:	A

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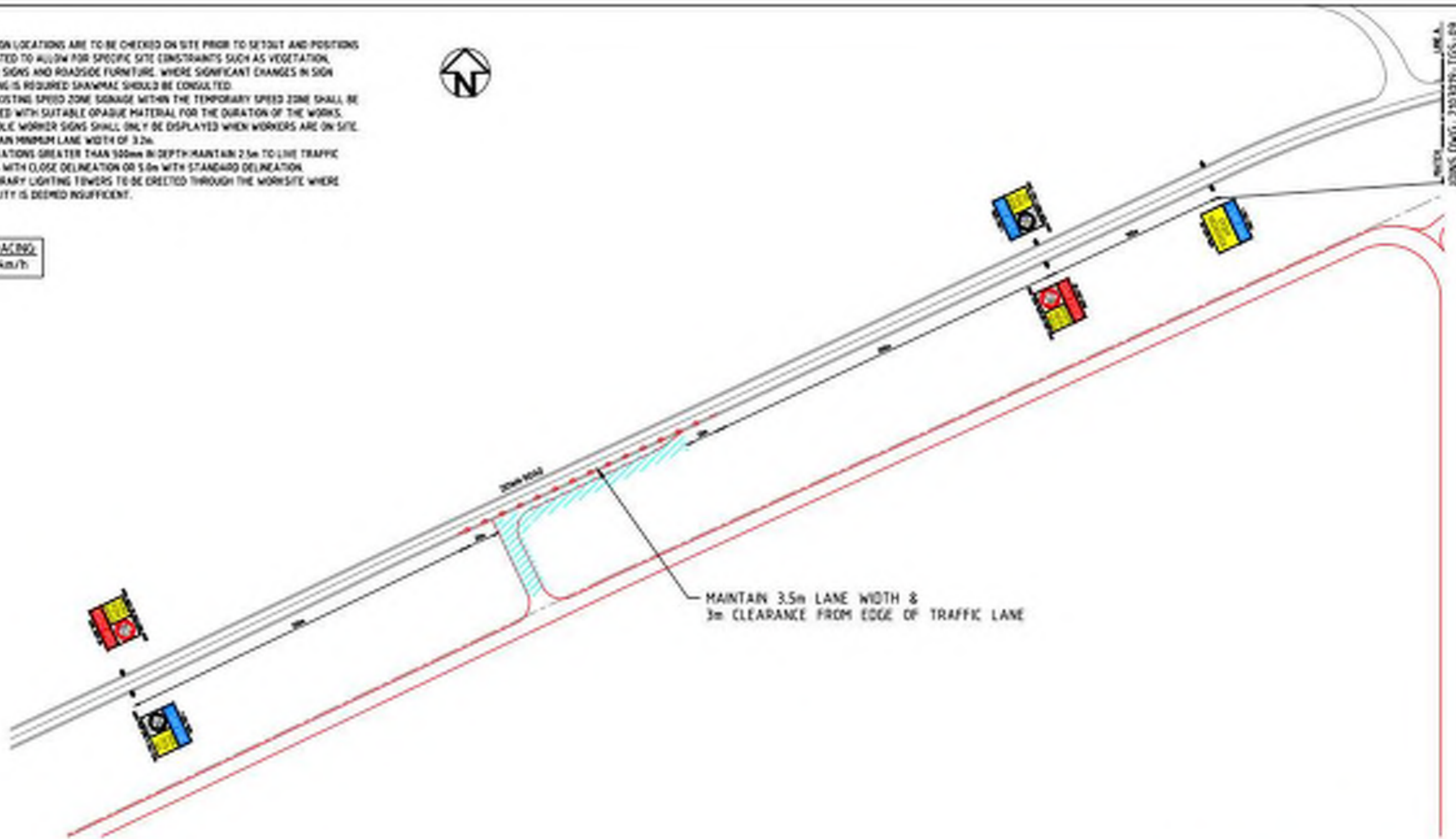
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CONE SPACING:
8m @ 80km/h



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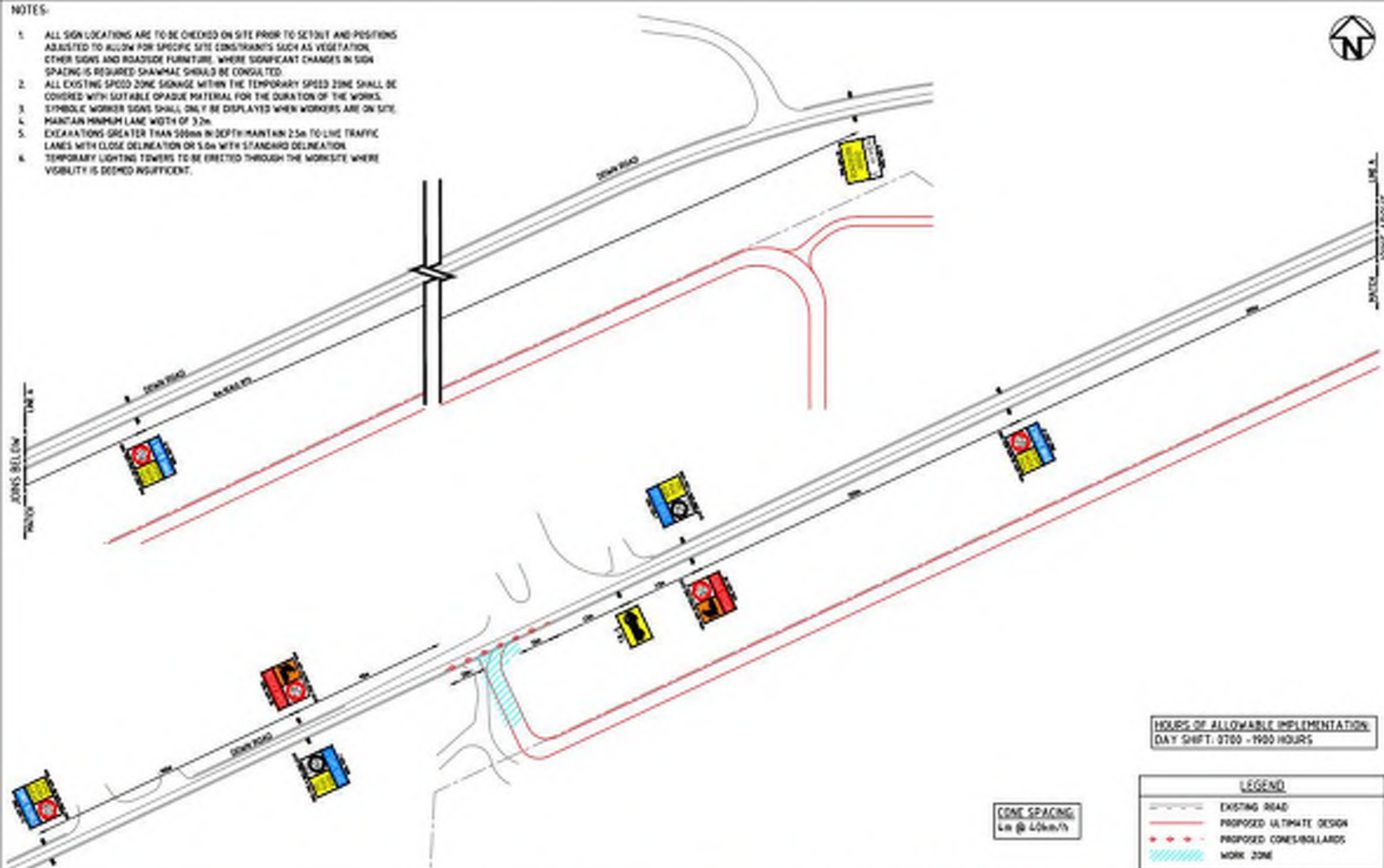
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No.	DATE	DESCRIPTION	APPROV.										
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DATE: 10/01/2021
DRAWN BY: YK
CHECKED BY: YK
DATE: 10/01/2021

DATE: 10/01/2021

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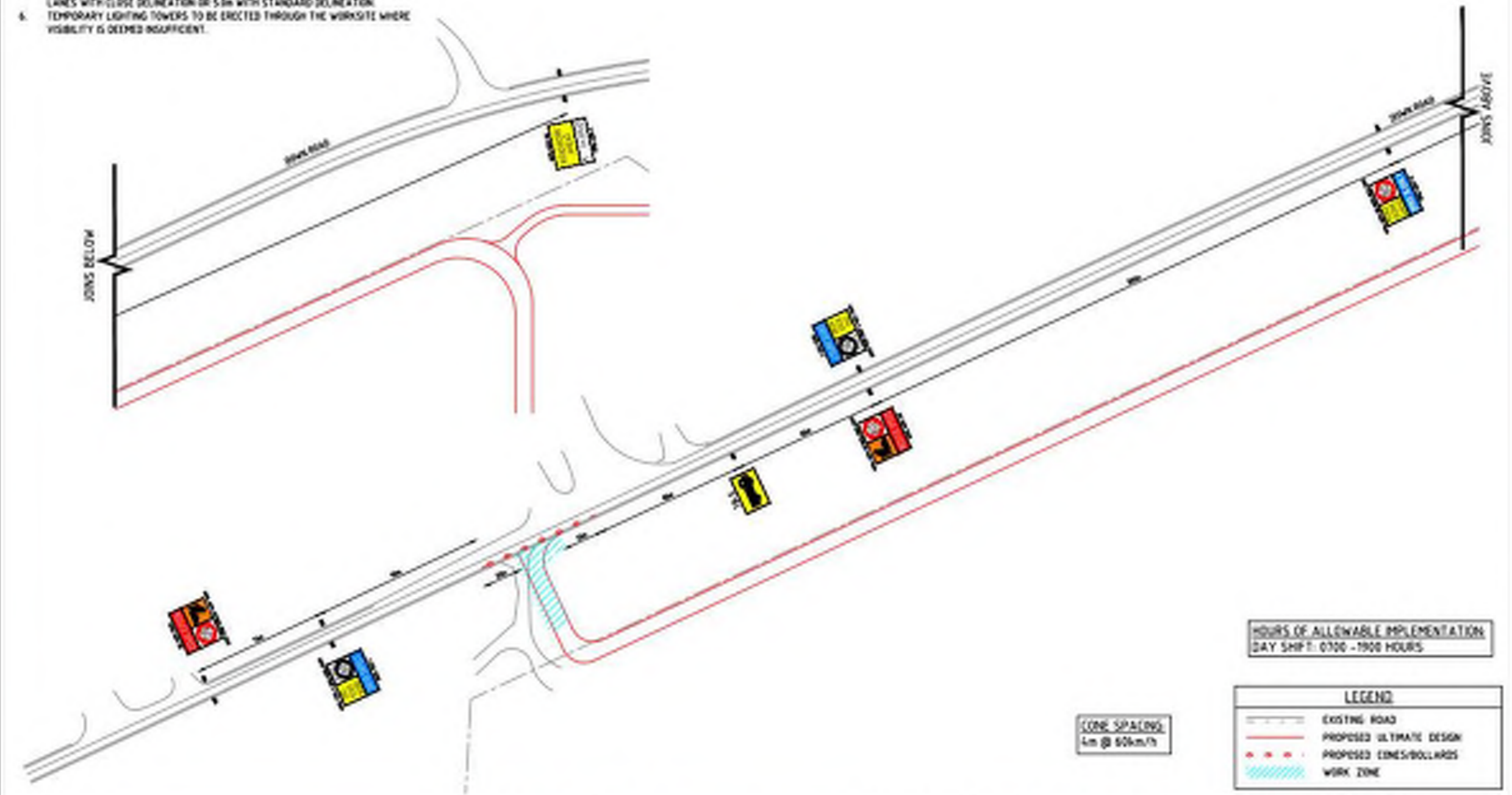
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No.	DATE	DESCRIPTION	BY										
A	04.04.2021	ISSUED FOR CLIENT REVIEW	YX										

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LAST CHECK BY: Yaxe DATE: 6 April 2021 09:51 AM

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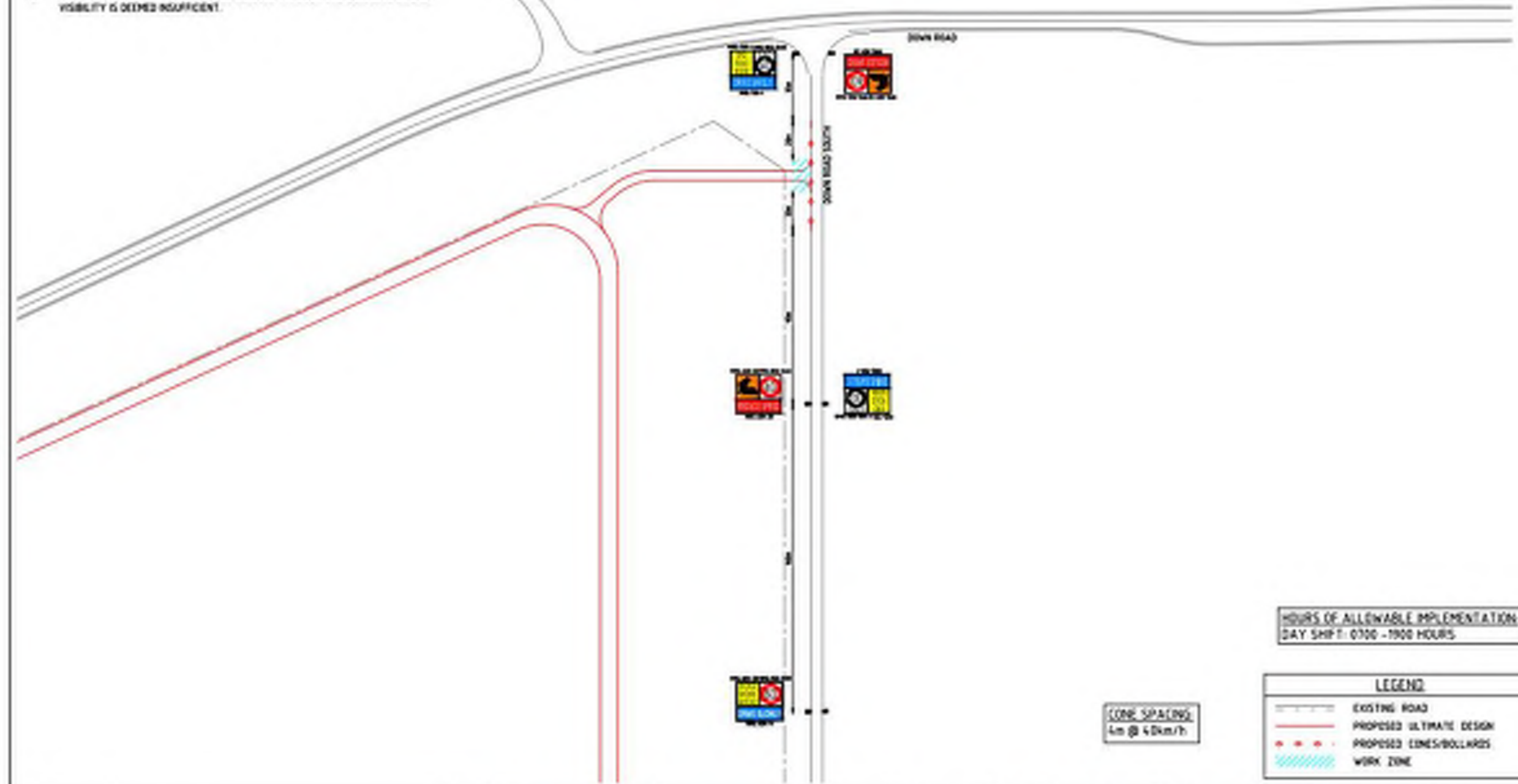
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6. TEMPORARY LIGHTING TOWERS TO BE ERECTED THROUGH THE WORKSITE WHERE VISIBILITY IS DEEMED INSUFFICIENT.



HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

CONE SPACING
4m @ 40km/h

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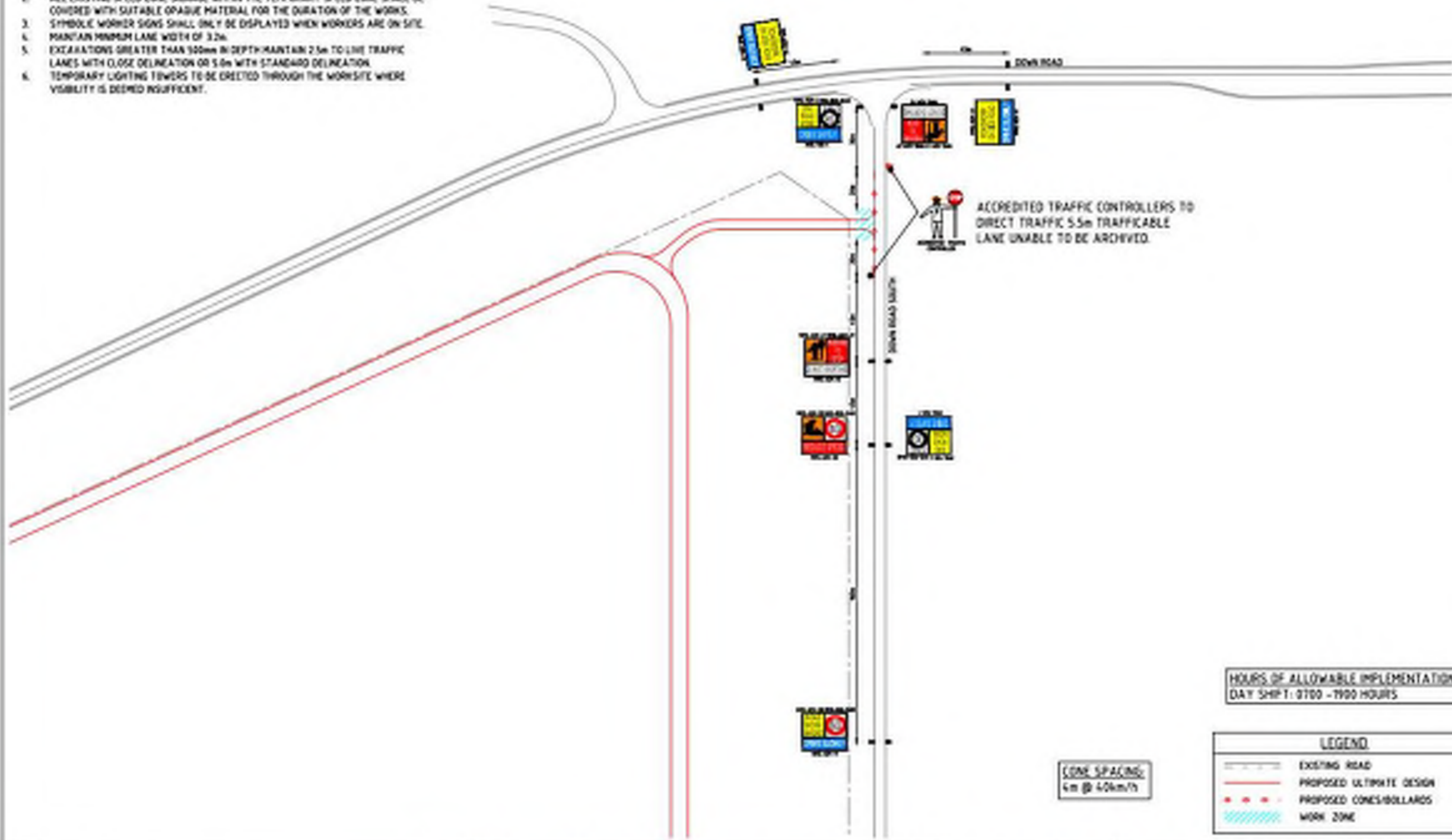
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HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

CONE SPACING
6m @ 40km/h

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

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PROJECT: ALBANY MOTORSPORT PARK
ACCESS CONSTRUCTION WORKS
TEMPORARY HOLDING TRAFFIC - 40km/h SCENARIO
TRAFFIC GUIDANCE SCHEME

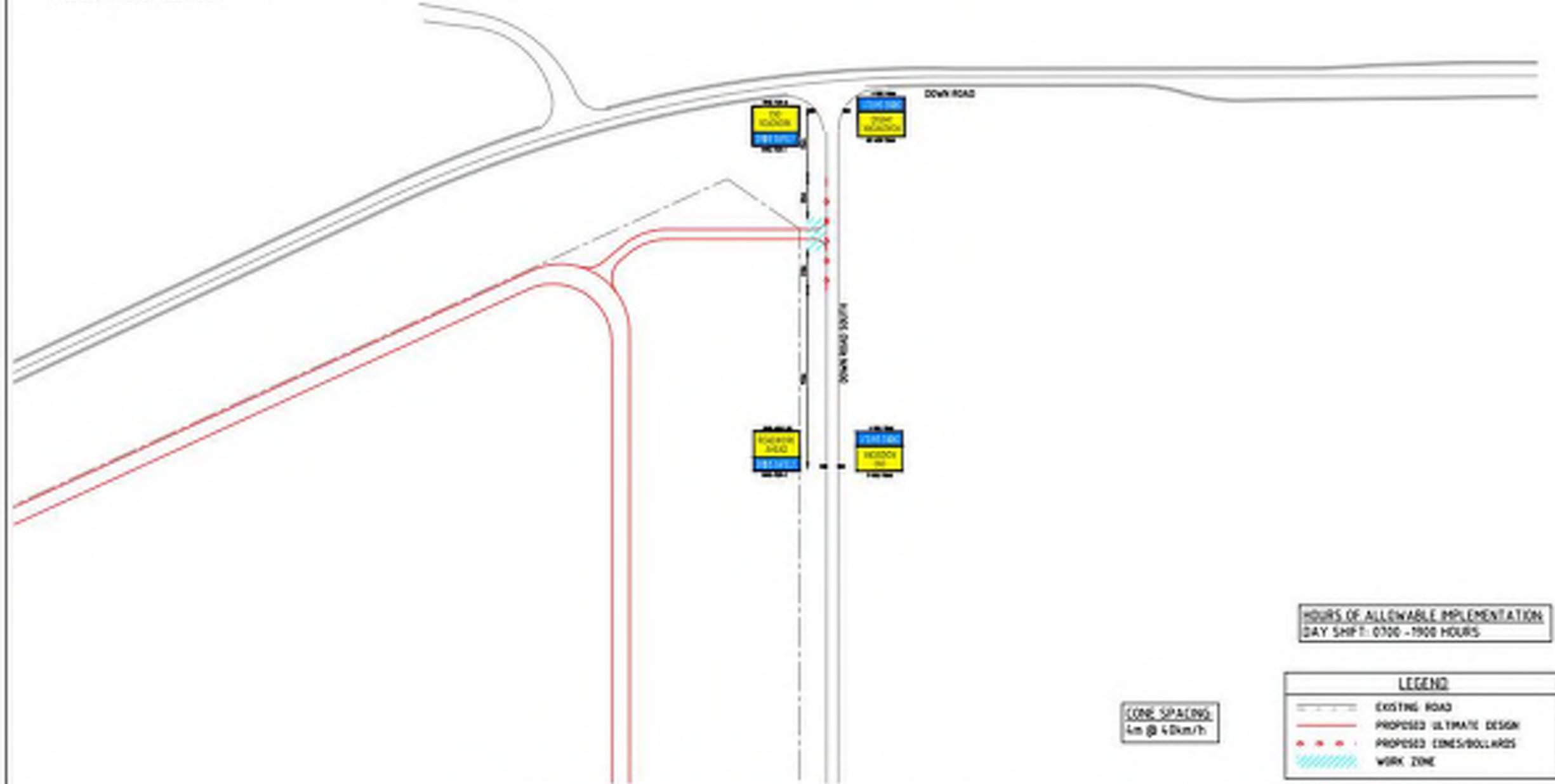
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HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFTS: 0700 - 1900 HOURS

CONE SPACING
4m @ 40km/h

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

No.	DATE	DESCRIPTION	APPR.	SCALE
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AWTR DATE: 06-04-21	
REVIEWED BY: T.KE	
AWTR NO: TR-4370-02	
REVIEWED DATE: 06-04-21	

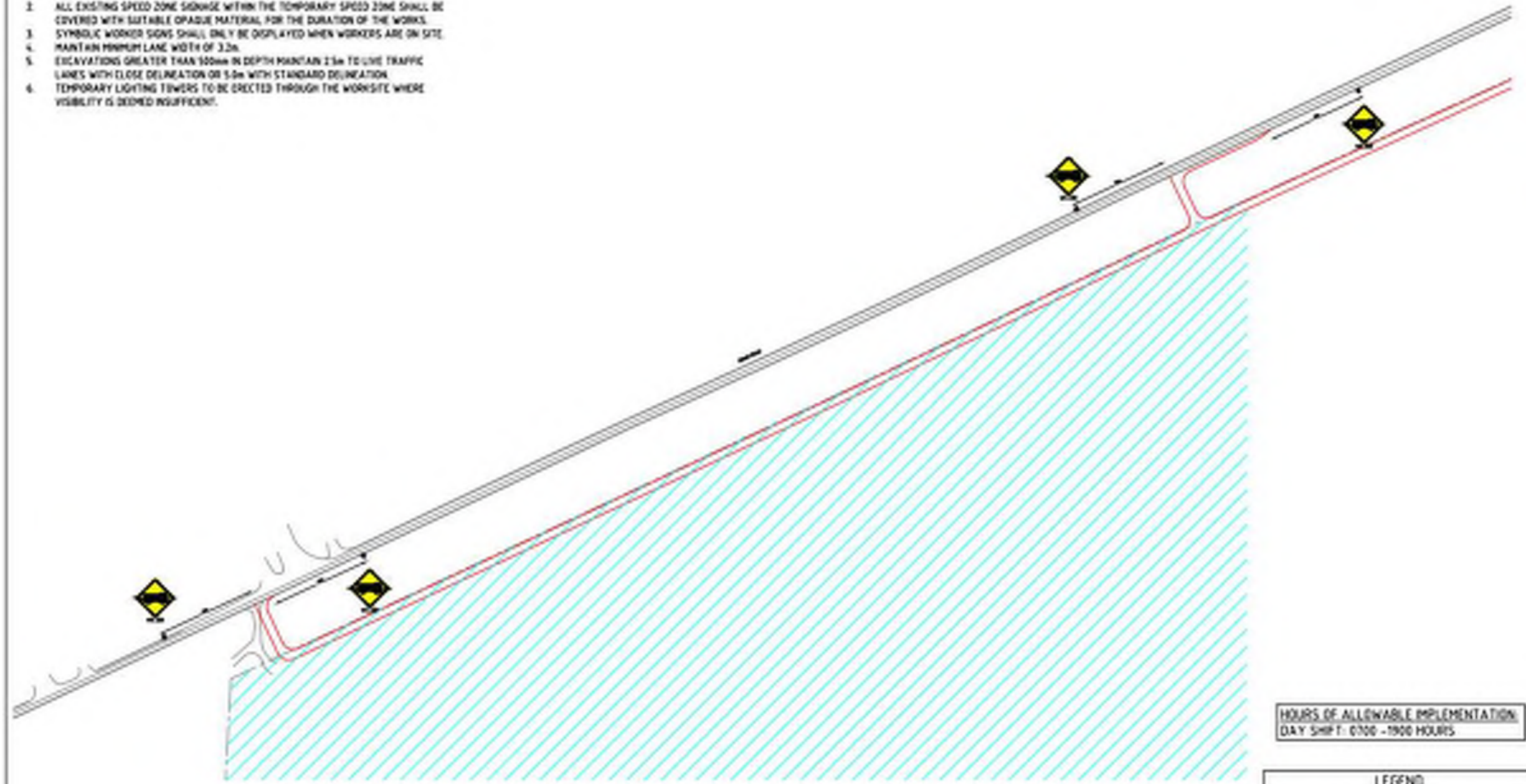
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HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1900 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	WORK ZONE

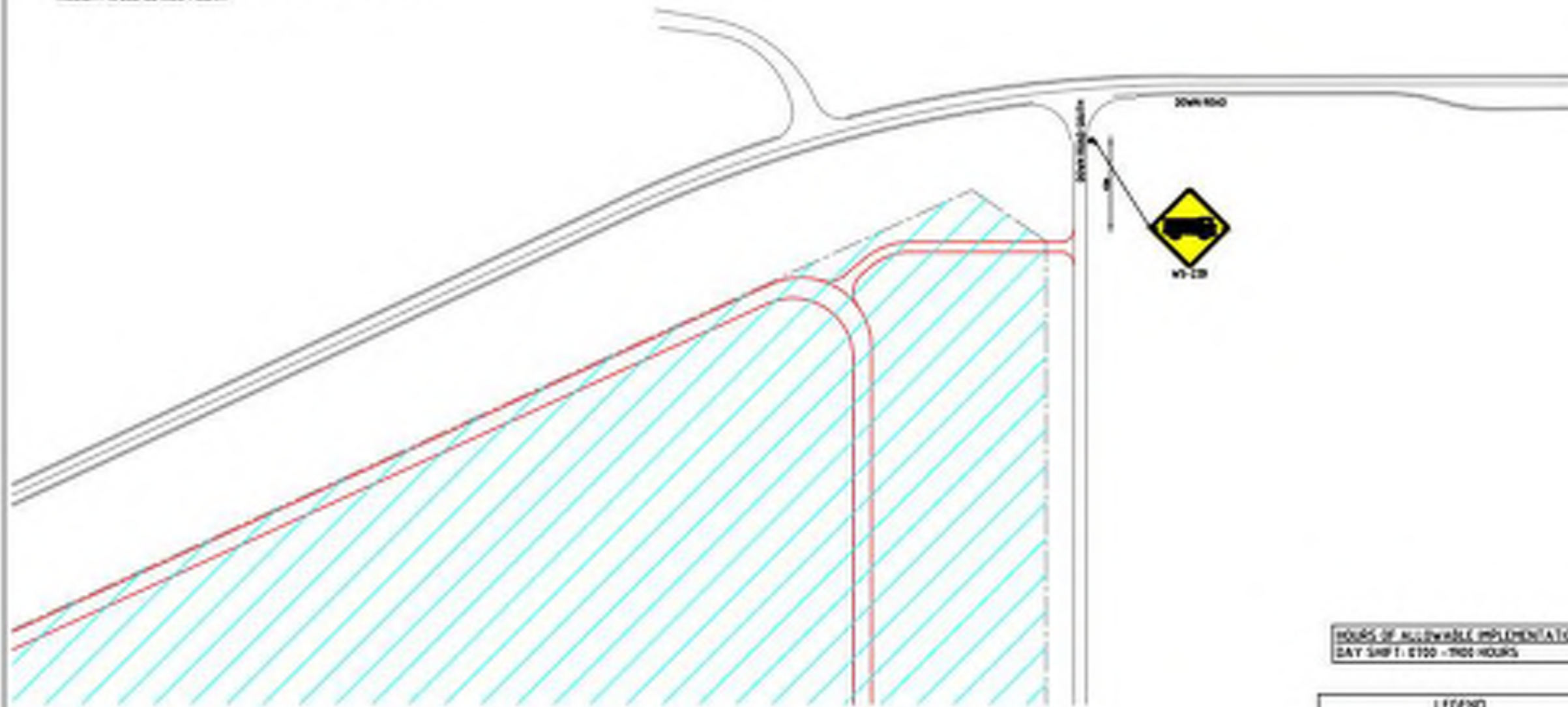
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HOURS OF ALLOWABLE IMPLEMENTATION
DAY SHIFT: 0700 - 1700 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BARRIERS
	WORK ZONE

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Appendix G – Barrier Design Sheets

N/A



Appendix H- Stakeholder Approval



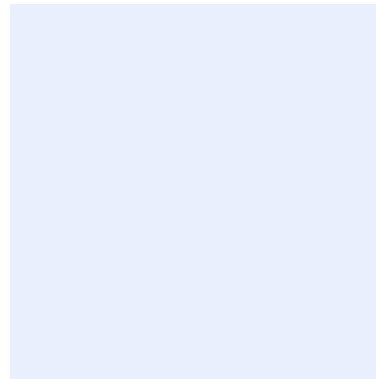
Appendix B – Event Traffic Management Plan



EVENT TRAFFIC MANAGEMENT PLAN

ALBANY MOTORSPORT PARK
MOTOR EVENTS
PREPARED FOR

EVENT ORGANISER



I, YUYANG KE (AUS AWTM-19-6370-02), declare that I have designed this Traffic Management Plan following a site inspection on 11/03/2021 The Traffic Management Plan prepared, is in accordance with the Main Roads Code of Practice (Works and/or Events), AGTTM and AS 1742.3

	Name/Company	Accreditation Details	Date	Signature
TMP designed by:	ANTHONY ANASTAS Shawmac Consulting Civil and Traffic Engineers	AUS AWTM-20-4573-02	15/04/2021	
TMP Reviewed by:	YUYANG KE Shawmac Consulting Civil and Traffic Engineers	AUS AWTM-19-6370-02	15/04/2021	
RTM Reviewed and Endorsed by:				
Road Authority Review by:				
Road Authority Authorisation:	Road authority authorisation of the implementation of traffic signs and devices is given for Traffic Management Plan No. 2103019			
	Signed By:		Date:	
	Signature:		Position:	

TMP No.	2103019	Revision No.	1	Date	15/04/2021
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Revision	Date	Prepared	Approved	Comments
1	14/04/21	A. Anastas	Yuyang Ke	Issued for client's review

Revision <1> Changes:		
Page Number	Header Reference	Description



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Figure 1: Location of Works 3

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Glossary

Acronym	Definition
AGTTM	Austroroads Guide to Temporary Traffic Management
AS	Australian Standard
AS/NZS	Australian and New Zealand Standard
AWTM	Advanced Worksite Traffic Management / Manager
CoP	Traffic Management for Works on Roads Code of Practice (MRWA)
MRWA	Main Roads Western Australia
OS&H	Occupational Safety and Health
RTM	Roadworks Traffic Manager (accredited by MRWA)
SRSA	Senior Road Safety Auditor
TGS	Traffic Guidance Schemes
TMP	Traffic Management Plan
TCP	Traffic Control Plan



1. Introduction

1.1. Purpose and Scope

This Event Traffic Management Plan (TMP) outlines the traffic control and traffic management procedures to be implemented by Event Organiser and Traffic Management Personnel to manage potential hazards associated with the traffic environment during the event.

Scope is to management motor sport event by event organiser in Albany Motorsport Park between Motocross Precinct and Race Track Precinct.

1.2. Objectives and Strategies

The objectives of the Traffic Management Plan is to ensure:

- The safety of the event participants.
- All road users, including vulnerable road users, are safely guided around, through or past the event activity.
- The performance of the road network is not unduly impacted and the disruption and inconvenience to all road users are minimised for the duration of the event.
- Impacts on users of the road reserve and adjacent properties and facilities are minimised.

In an effort to meet these objectives the Traffic Management Plan will incorporate the following strategies:

- Providing a sufficient number of traffic lanes to accommodate vehicle volumes.
- Ensuring delays are minimised.
- Ensuring all road users are managed including motorists, pedestrians, cyclists, people with disabilities and people using public transport.

2. Event Overview

2.1. Event Location

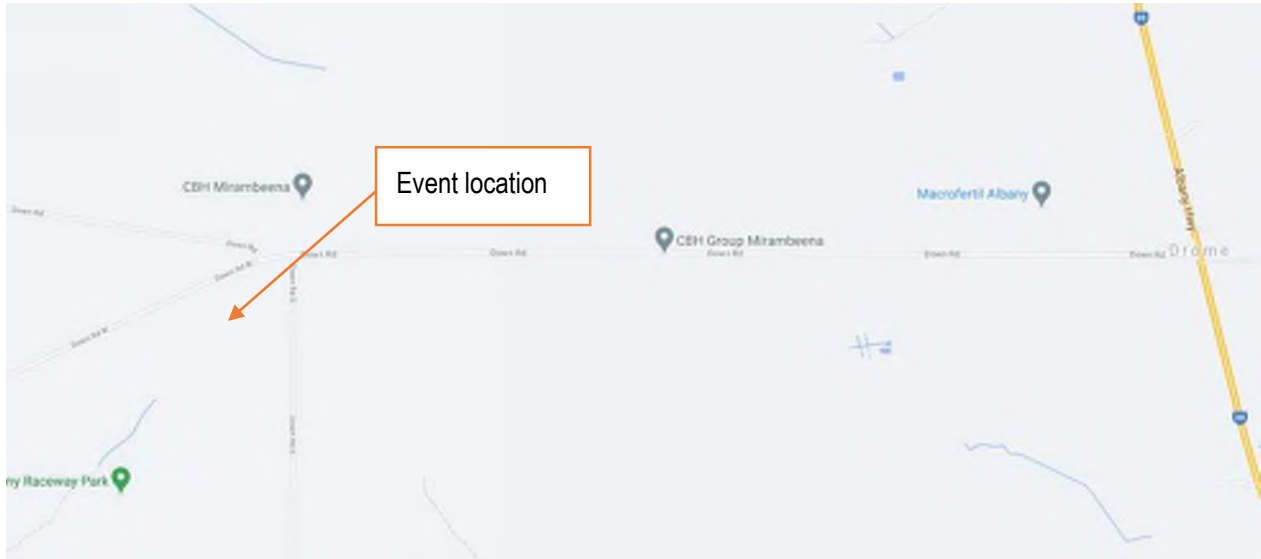


Figure 1: Location of Works

2.2. Event Details, Site Assessment and Site Constraint /Impacts

Item	Description
Event Scope:	Albany Motorsport Park event management
Event Category:	Motor sport
Location:	Lot 5780 Down Road, Drome, WA 6330
Road Classification, Existing Speed:	Down Road – Access Road: 110km/h Down Road South - local access road (Gravel)
Road Authority:	City of Albany
Local Government:	City of Albany
Event Organiser:	TBC
Details of Activity:	Traffic management for: <ul style="list-style-type: none"> • Motocross Precinct • Race Track Precinct
Staging of Event:	N/A
Date of Event:	TBC
Event Start and Finish Time:	TBC
Duration of Event:	<ul style="list-style-type: none"> • 8am to 6pm • 6pm to 10pm
Other Constraints:	N/A



Concurrent/Adjacent Works or Projects	TBC
--	-----

2.3. Existing Traffic and Road Environment

Item	Description
Traffic Volume and Composition	Down Road: 844 vpd(2017) Down Road South: no data
Existing Road Configuration	Down Road: single carriageway with one lane in each direction approximately 9m wide. Down Road South: Gravel approximately 5m wide.
Existing Pedestrian / Cyclists Facilities	N/A

2.4. Overview of Proposed Temporary Traffic Management

Item	Description
Temporary Traffic Management Descriptions:	<i>Speed reduction to 60km/h and traffic wardens to direct traffic for the duration of the event.</i>
Speed Zone Dates and Times	N/A
Lane Closures Dates and Times	N/A
Road Closures Dates and Times	N/A
Signal Modifications Description	N/A
Proposed Lane Widths	Existing lane widths to be maintained
Road Safety Barrier	N/A

2.5. Event Representatives

The event organiser has the ultimate responsibility and authority to ensure the TMP is implemented as designed. GHD has appointed Shawmac to prepare this Traffic Management Plan and associated controls for the event.

The TMP will be implemented by TBC

Position	Name	Contact Details
Event Organiser	TBC	
Road Authority	City of Albany	Phone: (08) 6820 3000 Email: staff@albany.wa.gov.au Post: PO Box 484, ALBANY, WA 6331
Local Government	City of Albany	Phone: (08) 6820 3000 Email: staff@albany.wa.gov.au



		Post: PO Box 484, ALBANY, WA 6331
Event Marshal	TBC	
Traffic Management Supervisor	TBC	
TMP Design	Yuyang Ke Shawmac Pty Ltd	Email: yyke@shawmac.com.au mob: 0421591428
TMP Implementation	TBC	



3. Risk Management

The following details the preliminary assessment of site hazards likely to be encountered, the level of risk associated with each and the control proposed. Note that the risk level is the level of assessed risk without the controls in place. The controls listed have been determined as being appropriate in reducing the risk to a level that is acceptable. The hierarchy of control has been utilised to ensure that the highest practicable level of protection and safety is selected:

- Elimination
- Substitution
- Isolation
- Engineering
- Administration
- Personal Protection Equipment

In evaluating the options, a key consideration is whether the option takes traffic around, through or past the worksite.

3.1. Risk Classification Tables

3.1.1. QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Consequence	Description
1	Insignificant	<ul style="list-style-type: none"> • Mid-block hourly traffic flow per lane is equal to or less than the allowable lane capacity detailed in AGTTM. No impact to the performance of the network. • Affected intersection leg operates at a Level of Service (LoS) of A or B. • No property damage.
2	Minor	<ul style="list-style-type: none"> • Mid-block hourly traffic flow per lane is greater than the allowable road capacity and less than 110% of the allowable road capacity as detailed in AGTTM. Minor impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of C. • Minor property damage.
3	Moderate	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 110% and less than 135% of allowable road capacity as detailed in AGTTM. Moderate impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of D. • Moderate property damage.
4	Major	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 135% and less than 170% of allowable road capacity as detailed in AGTTM. Major impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of E. • Major property damage.
5	Catastrophic	<ul style="list-style-type: none"> • Midblock hourly traffic flow per lane is equal to and greater than 170% of allowable road capacity as detailed in AGTTM. Unacceptable impact to the performance of the network. • Intersection performance operates at a Level of Service (LoS) of F. • Total property damage



3.1.2. OSH QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Consequence	Description
1	Insignificant	No treatment required.
2	Minor	First aid treatment required.
3	Moderate	Medical treatment required or Lost Time Injury.
4	Major	Single fatality or major injuries or severe permanent disablement.
5	Catastrophic	Multiple fatalities.

3.1.3. QUALITATIVE MEASURES OF LIKELIHOOD

Level	Likelihood	Description
A	Almost certain	The event or hazard: <ul style="list-style-type: none"> is expected to occur in most circumstances, will probably occur with a frequency more than 10 times per year.
B	Likely	The event or hazard: <ul style="list-style-type: none"> will probably occur in most circumstances, will probably occur with a frequency of between 1 and 10 times per year.
C	Possible	The event or hazard: <ul style="list-style-type: none"> might occur at some time, will probably occur with a frequency of 0.1 to 1 times per year (i.e. once in 1 to 10 years).
D	Unlikely	The event or hazard: <ul style="list-style-type: none"> could occur at some time, will probably occur with a frequency of 0.02 to 0.1 times per year (i.e. once in 10 to 50 years).
E	Rare	The event or hazard: <ul style="list-style-type: none"> may occur only in exceptional circumstances, will probably occur with a frequency of less than 0.02 times per year (i.e. less than once in 50 years).

IMPORTANT NOTE: The likelihood of an event or hazard occurring shall first be assessed over the duration of the activity (i.e. “period of exposure”). For risk assessment purposes the assessed likelihood shall then be proportioned for a “period of exposure” of one year.

Example: An activity has a duration of 6 weeks (i.e. “period of exposure” = 6 weeks). The event or hazard being considered is assessed as likely to occur once every 20 times the activity occurs (i.e. likelihood or frequency = 1 event/20 times activity occurs = 0.05 times per activity). Assessed annual likelihood or frequency = 0.05 times per activity x 52 weeks/6 weeks = 0.4 times per year. Assessed likelihood = Possible.



3.1.4. QUALITATIVE RISK ANALYSIS MATRIX – RISK RATING

Likelihood	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A (almost certain.)	Low 5	High 10	High 15	Very High 20	Very High 25
B (Likely)	Low 4	Medium 8	High 12	Very High 16	Very High 20
C (Possible)	Low 3	Low 6	Medium 9	High 12	High 15
D (Unlikely)	Low 2	Low 4	Low 6	Medium 8	High 10
E (Rare)	Low 1	Low 2	Low 3	Low 4	Medium 7

3.1.5. MANAGEMENT APPROACH FOR RESIDUAL RISK RATING

Residual Risk Rating	Required Treatment
Very High	Unacceptable risk. HOLD POINT. Work cannot proceed until risk has been reduced.
High	High priority, OSH MR and Roadworks Traffic Manager (RTM) must review the risk assessment and approve the treatment and endorse the TGS prior to its implementation.
Medium	Medium Risk, standard traffic control and work practices subject to review by accredited AWTM personnel prior to implementation.
Low	Managed in accordance with the approved management procedures and traffic control practices.



3.2. Risk Register

Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
3.2.1 Environmental									
3.2.1.1	Sun glare causing decreased visibility of traffic control delineation and signage for motorists resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk from glare. Where traffic control is adversely affected by glare at sunset and sunrise, traffic controllers may need to assist in maintaining low traffic speeds. All changes are to be noted in the daily diary.	D	4	M8
3.2.1.2	Headlight glare from night works causing decreased visibility of traffic control delineation and signage for motorists resulting in serious injury or fatality.	Serious injury or fatality.	C	3	M9	Traffic control personnel and site supervisor to conduct site drive assessments of temporarily installed signage and delineation to ensure devices are visible for all motorists. Where traffic control is adversely affected by head light glare from night works, traffic controllers may move or angle devices. All changes are to be noted in the daily diary.	D	3	L6
3.2.1.3	Reduced motorist's visibility of worksite due to night works causing an increase of interactions between workers and live traffic resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Traffic control and workers to wear High Visibility Retroreflective Vests at all time and to use night work batons. All traffic controller signs to be Class 1 Retro-reflective material. Temporary speed zones to be implemented where required for advanced warning of the worksite.	D	4	M8
3.2.1.4	Inclement weather causing hazardous environments through the worksite or reduced visibility of implemented traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Where adverse weather conditions are encountered during the works, the following may be implemented: 1. Signage and tapers extended by 25%. 2. 'Slippery When Wet' signs may be implemented.	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						3. Where the road becomes impassable work may cease and traffic control implemented. Any adjustments to the plan shall be risk assessed and approved by someone holding a WTM or AWTM accreditation.			
3.2.1.5	Crests and curves causing reduced visibility of the worksite and implemented traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Sign locations can be staggered to assist driver's visibility, in accordance with Australian Standards and under the supervision of an accredited AWTM. All signs shall be regularly inspected and re-positioned as required to reduce the effects of shadows. All changes shall be recorded in the daily diary.	D	4	M8
3.2.1.6	Vegetation causing reduced visibility of the worksite and implemented traffic control resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	Where vegetation impacts on the effectiveness of the traffic management, signage may be extended by 25% or reduced by 10% in order to increase visibility. Vegetation may be pruned to increase visibility as required and approved by LGA. All signage adjustments will be recorded within the daily diary.	D	4	M8
3.2.1.7	Temporary lighting installed adjacent to residential properties causing adverse environmental impacts for locals resulting in adverse public reaction.	Adverse public reaction.	C	3	M9	Lights to be positioned where illumination doesn't adversely affect residents. Temporary lights to be used only as required to light the worksite and temporary delineation.	D	3	L6
3.2.2 Temporary Speed Zones									
3.2.2.1	Traffic speed on affected routes in traffic lanes adjacent to the worksite creating hazardous worksites and unsafe worksite access.	Potential injury or fatality to road users, project personnel or sub-contractors.	C	4	H12	Introduction of temporary speed zones will be implemented where required to reduce risk to motorists, workers and plant. Temporary speed zones and adequate delineation will be implemented as per the Traffic Guidance Schemes and in accordance with AS 1742.3 and MRWA CoP.	D	4	M8
3.2.2.2	Traffic not adhering to proposed temporary speed zones causing an increase potential for conflicts between workers and motorists	Serious injury or fatality.	C	4	H12	Repeater signage and VMS boards to be implemented through the worksite as required. Speed zones should follow the minimum and	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	resulting in serious injury or fatality.					maximum lengths provided in AS1742.3 and MRWA CoP.			
3.2.3 Excavations									
3.2.4 Traffic Control/Construction Plant & Workers/Traffic Management Design									
3.2.4.1	Incorrect implementation of temporary signage and linemarkings causing an increase of interactions between traffic control and live traffic resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	<p>Before work commences, signs and devices at approaches to the work area shall be erected in accordance with the adopted TGS, in the following order:</p> <ol style="list-style-type: none"> 1. Advanced warning signs. 2. All intermediate advanced warning and regulatory signs and devices required in advance of the taper or start of the work area. 3. All delineating devices required to form a taper including flashing arrow signs or temporary hazard markers where required. 4. Delineation past the work area or into a side track. 5. Other warning signs or regulatory signs. <p>Delineation devices such as cones and bollards should be placed in the same sequence, i.e. those furthest in advance of the work placed first.</p>	D	4	M8
3.2.4.2	Incorrect design of temporary signage and linemarkings causing an increase of speed and errant vehicles through the worksite resulting in serious injury or fatality.	Serious injury and fatality.	C	4	H12	Traffic Management Plan and associated Traffic Guidance Schemes to be designed and endorsed by suitably accredited AWTM and RTM as required for the proposed works. Plans to be reviewed and approved by relevant LGA and road authorities prior to the implementation of the works.	D	4	M8
3.2.4.3	The interaction of work personnel with through traffic may causing an increase of	Serious injury or fatality	C	4	H12	Traffic control and delineation to be installed as per the Traffic Guidance Schemes in accordance with AS 1742.3 and MRWA CoP.	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	conflicts resulting in serious injury or fatality.					Edge clearance spacing to be provided between live traffic and workers per the posted or implemented speed zones. Temporary speed zones, lane closures, road closures or reversible flow may be provided to maintain edge clearances. A TMA may be provided for where workers are within 1.2m of live traffic to protect them from oncoming vehicles. TMA's to be installed 20m prior to the work area and 40m where site entrances are required. Workers to be within 100m of TMA for protection to be effective. Daily toolbox meetings to ensure that workers are educated on the dangers of working around live traffic.			
3.2.4.4	Construction traffic entering and leaving the construction site causing an increase of rear end crashes through the worksite resulting in serious injury.	Serious injury.	B	3	H12	<p>Site entry and exit points will be provided for construction traffic at strategic locations.</p> <p>Vehicles shall:</p> <ol style="list-style-type: none"> 1. Decelerate slowly and signal their intention by indicator to leave the traffic stream; 2. Activate the vehicle's rotating yellow lamp, where fitted, once a speed of 20 km/h. has been reached and at least 50m prior to the exit location. 3. Switch on the vehicle hazard lights once the vehicle is stationary. 4. Where risks associated with unassisted exit or entry to or from the traffic stream are high, Traffic Controllers should be used to assist entry and exit movements. <p>Spotters may be used to assist drivers enter the traffic stream. Restrictions may be put in place to restrict truck movements entering traffic flows during periods of high traffic flows from site</p>	C	3	M9
3.2.4.5	Parking of construction plant causing an increase of crashes through the worksite	Serious injury or fatality.	C	4	H12	Work practices will be developed to outline provisions for:	D	4	M8



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
	resulting in serious injury or fatality.					1. Short term parking of work plant. 2. Long term parking of work plant. 3. Short term parking for workers and LV's. Construction access have been shown on the Traffic Guidance Schemes.			
3.2.4.6	Workmen may be hit by vehicles during the setting out of traffic management control devices resulting in serious injury or fatality.	Serious injury or fatality.	C	4	H12	No work shall commence until the approved traffic management has been implemented. Traffic management to be setup prior to arrival of workers to site and taken down after they leave to avoid excessive congestion.	D	4	M8
3.2.5 Lane Closures (NA)									
3.2.6 Reversible Flow/Stop Control/Contra-flow (NA)									
3.2.7 Temporary/Existing Barrier (NA)									
3.2.8 Temporary Linemarking/Ultimate Design/Existing Road Environment (NA)									
3.2.9 Temporary/Existing Signage and Structures (NA)									
3.2.10 Road Closures (NA)									
3.2.11 Heavy Vehicles Network									
3.2.11.1	Restrictions placed on traffic lane widths and corner geometries by temporary traffic management impacting heavy haulage traffic routes resulting in adverse public reaction and property damage.	Property damage and adverse public reaction.	C	3	M9	Details and impacts to the heavy haulage route to be communicated to MRWA HVO prior to the implementation of any works. Where corner geometry or lane widths cannot accommodate heavy vehicles, detours or provisions to escort trucks through site may be provided. Where large or oversized vehicles are moving through the worksite, traffic controllers shall be used to ensure sufficient carriageway width is provided and any workers adjacent to the traffic lanes or within a hazardous area are instructed to move clear of the traffic. Temporary alignment swept paths to be checks. Existing RAV network to be	D	3	L6



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						accommodated where possible.			
3.2.11.2	Heavy vehicles in conflict with the event traffic on Down Road, increase chance of rear end.	Property damage and adverse public reaction	C	3	M9	The events are only allow within the weekend and public holidays, where the heavy vehicles will not be operating.	D	3	L6
3.2.12 Public Transport Authority (NA)									
3.2.13 Emergency Services/Emergency Arrangements and Contingencies									
3.2.13.1	Restrictions and delays associated with the traffic control causing a failure to respond for emergency services resulting in an increase severity in emergency situations.	Failure to respond to emergency situations.	C	4	H12	Pre-communication to be given to all emergency services prior to the implementation of any works in the form of the Notification of Roadworks. Details to be provided for any proposed detours, predicted increases in congestion and any works that may increase delays to the emergency network. Where safe, workers and Traffic Control to respond to emergency services to facilitate an unhindered passage through or around the worksite.	D	4	M8
3.2.13.2	Dangerous goods, damage to services or failure of services causing restricted access through the worksite resulting in adverse public reaction.	Adverse public reaction.	B	3	H12	Should any incident arise involving vehicles transporting dangerous goods, damage or failure of services; all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. All site personnel shall be briefed on evacuation and control procedures.	C	3	M9
3.2.14 Public Interactions and Impacts									
3.2.14.1	Temporary traffic management devices restricting access to local properties and commercial premises resulting in an adverse public reaction.	Adverse public reaction	C	3	M9	Local and commercial access to be maintained where possible. Pre-communication to be provided where adverse impacts may restrict access with the associated works. Provisions including; temporary tracks, temporary closures	D	3	L6



Item	Risk Event	Consequence	Pre - treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						and local access may be provided to maintain access.			
3.2.15 Pedestrians and Cyclists (NA)									
3.2.16 Variations to the Standards (NA)									



4. Traffic Management Planning and Assessment

4.1. Traffic Assessment and Analysis

4.1.1. Traffic and Speed data

A summary of recent traffic data is provided below:

Location	Average weekday (vpd)	Trucks	Average weekend (vpd)	Trucks
Down Road	844 vpd (2017)	34%	419 vpd (2017)	40%
Albany Highway	4,950 vpd (2017)	20%	3,520 vpd (2017)	16%

4.1.2. Site generated traffic

The assessment assumes 500 spectators/competitors in total. Events with larger numbers will be subject to specific traffic management measures. The indicative use of the venue based on the business plan for GSMSF is shown in Table 2.

Table 2 Indicative event profile

Use	Level	Frequency	Duration	Entrants	Spectators
Driver training (2WD & 4WD), schools, manufacturer testing		Weekdays	Day	50	0
Car test & tune day	Club	4 week days / month	Day	30	30
Car speed events	Club	1 weekend / month	Day	100	200 – 500
Car speed events	State	1 weekend / month	Day	100 – 200	200 – 1,000
Car speed events	National	1 weekend / year	Day	200 – 300	2,000 – 5,000
Super cars events	National	1 x 3 day weekend / year	Day	200 – 300	10,000 – 20,000
Bike test & tune day	Club	4 week days / month	Day	50	50
Bike speed events (MRCWA)	Club	1 weekend / month	Day	100	200 – 500
Bike speed events – Champions Ride Day	State	1 weekend / month	Day	100	200 – 1,000
Bike speed events	National	1 weekend / year	Day	200	1,000 – 5,000
Motocross events	Club	3 days / week training 4 single days / month	Day	100 – 200	200 – 400
Motocross events	State	1 weekend / month	Day	200 – 300	500 – 1,000
Cycling events	Club		Day		
Cycling events	State		Day		
Drifting day	Club	2 days / month	Day and Evening	30	30
Drifting day	State	1 weekend / month	Day and Evening	50	200 – 500



Use	Level	Frequency	Duration	Entrants	Spectators
Burnout day	Club	1 weekend / month	Day or Evening	30	30
Burnout day	State	1 x 3 day weekend / year	Day or Evening	50	1,000 – 2,000
Drag racing practice day	Club	4 week days/ month	Day	30	100
Drag racing competition	Club	1 day / month	Day and Evening	30	200 – 500
Drag racing competition	State	4 weekends / year	Day and Evening	50	500 – 1,000
Drag racing competition	National	1 weekend / year	Day or evening	50	1,000 – 5,000
Motorkhana	Club	1 day / month	Day	50	200
Tractor Pull	State	2 weekends / year	Day	50	1,000 – 2,000

Assumption of traffic generation and vehicle type

Vehicle type	In (vph)	Out (vph)
Light vehicle	237	237
Heavy vehicle	13	13
Total	250	250

4.1.3. Traffic Flow Analysis

General Comments

Volumes used in this report are based on average traffic figures derived from historical counts. AGTTM - Part 2, Section 3.2.3 (refer to Table 3.1) indicates that the mid-block capacity of multi-lane roadways is 1,000 vehicles per lane per hour (vpl/ph) and 500 vehicles per hour within 200m of an intersection for each lane. These design lane capacities have been used when analysing the effects of associated with the works. Where a departure from the AGTTM regarding lane capacities is required for the works to proceed a variation form will be filled out and attached to the close of this document.

Due to expected traffic volumes (see above) it is anticipated there will only be minor delays provided the Traffic Management setup follows the instructions set out in this document.

Traffic flow should be maintained wherever possible. Traffic volumes and movements will be analysed against the requirements detailed in AGTTM - Part 2, Section 3.2.3 (refer to Table 3.1) and Section 3.3.4 (refer to table 3.4).and MRWA CoP risk tables (see section 6) to ensure levels of service are acceptable to the Road Authority. The works are expected to have very minor impacts on the impacted roads.

4.1.3.1 Traffic Impact and Assessment:

The impact will be minor as the total is below the allowable capacity with various speed reduction and reduced



lane width on Down Road.

4.1.4. Temporary Speed Zones

An event speed limit of 60 km/h at Down Road on the approaching and past the even site.

After work hours the posted speed will be reinstated and the road will be left clean and free of debris.

4.1.5. Existing Traffic Signals

N/A

4.1.6. Impact to Adjoining Network

There is no impact to adjoining network during the construction

4.1.7. End of Queue Treatment

N/A

4.1.8. Temporary Traffic Signals

N/A

4.2. Road Users

4.2.1. Pedestrians

There are no pedestrian facilities.

4.2.2. Cyclists

There are no cyclists' facilities.

4.2.3. Public Transport

There are no public transport facilities.

4.2.4. Heavy and Oversized Vehicles

There are no impacts to the heavy and oversized vehicles.

4.2.5. Existing Parking Facilities

There are no impacts to existing parking facilities.

4.2.6. Access to Adjoining Properties/Business

There are no impacts to adjoining properties.

4.2.7. Rail Crossings

There are no impacts to railway crossings.

4.2.8. School Crossings



There are no school crossings.

4.2.9. Special Events and Other Works

TBC.

4.2.10. Emergency Vehicle Access

Emergency vehicle access will be maintained for the duration of the events.

4.3. Night Work Provisions

N/A

4.4. Road Safety Barriers

N/A

4.5. Consultation and Communication / Notification

4.5.1. Other Agencies

All relevant authorities to be notified prior to the commencement of any works via; email, phone or Notification of Roadworks. This includes: City of Albany, there are no impacts to railway crossings Main Roads Western Australia (MRWA), MRWA Traffic Operations Centre, MRWA Heavy Vehicle Services, Public Transport Authority.

Emergency services to be notified prior to the commencement of any works via the Notification of Roadworks.

4.5.2. Public

The public shall be notified of the event and traffic management arrangements which will effect journey times via:

- Notice to Motorists in the weekend West Australian placed two weeks in advance, one week in advance and at the event activity;
- Letter drop to all residents and businesses within the traffic control zone one week ahead of the scheduled event; and,
- VMS boards during the event.
- Significant events may require radio advertising.



5. Site Assessment

5.1. Provision to Address Environmental Conditions

5.1.1. Adverse Weather

Weather is not expected to adversely impact on the effectiveness of the traffic control detailed on the attached TGS's. Notwithstanding this, should adverse weather conditions be encountered during the event, the following contingency plans should be activated. Note: any adjustments to the plan shall be risk assessed and approved by someone holding a WTM or AWTM accreditation. Major changes will require road authority approval.

5.1.1.1 Rain

In the event of rain, an on-site assessment shall be made and sign spacing and tapers may be extended by 25% to account for increased stopping distances. Slippery (T3-3) signs may be placed as required and all changes shall be recorded in the daily diary.

If rain occurs, Traffic Management Personnel shall inspect the site and where signage and / or devices are not clearly visible, signage may need to be adjusted to improve visibility or if necessary provide additional signage and delineation. Where stopping distances are adversely affected by wet surfaces, spacing between signs may need to be adjusted to provide increased reaction time for drivers. In cases where it is determined that the rain is so heavy that the risk is considered unacceptable, the event shall cease until rain has cleared. All changes shall be noted in the daily diary.

5.1.1.2 Floods

Should flooding occur to the extent that the event becomes impassable or risk is considered unacceptable, the event shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site and direct traffic around the flooded area. Emergency services and the Road Authority shall be notified immediately and Traffic Controllers shall remain onsite until emergency services and the Road Authority personnel arrive and take control of the site.

5.1.1.3 Other Adverse Weather (strong winds, thunder storms etc.)

Should strong winds or thunder storms occur, all signs are to be weighted down to prevent blowing over or debris entering the roadway causing hazards for motorists. Periodically site inspections to be conducted during storms to ensure integrity of all Traffic Management devices.

5.1.2. Sun Glare

Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk from glare. Additionally, in the event that traffic control is adversely affected by glare at sunset and sunrise, traffic controllers may need to assist in maintaining low traffic speeds.



All changes are to be noted in the daily diary.

5.1.3. Fog/Dust/Smoke

Where fog, dust or smoke is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk. All changes are to be noted in the daily diary.

Should the event be affected by fog, dust or smoke to the extent that risk is considered unacceptable, all event shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site.

5.1.4. Road Geometry, Terrain, Vegetation and Structures

There is a curve on the approaching to the project site on Down Road towards Down Road south and straight after Down Road south.

The vertical geometry through the site is flat.

5.2. Existing Traffic and Adverting Signs

All existing signage that is contradictory to the temporary signage implemented in the TGS's are to be covered with opaque material for the duration of the works. Regular drive throughs should ensure the integrity of the worksite and all traffic management. Where signs cannot be covered and conflict with the temporary signage, it is to be removed.



6. Statutory Requirements

6.1. Road Traffic Act and Regulations

The motor sport event will not affect any road traffic act and regulations, event organiser shall organise Traffic implementation company to implement traffic management devices as per the Traffic Guidance Scheme shown in Appendix F.

6.2. Occupational Safety and Health

The Event Organiser has a duty of care under statute and common law to themselves, their employees and all event participants, to take all reasonable measures to prevent accident or injury.

This TMP forms part of the overall Event Management Plan and provides details on how all road users considered likely to pass through, past, or around the event site will be safely and efficiently managed for the full duration of the event.

6.3. Roles and Responsibilities

6.3.1. Responsibilities

The Event Organisers has the ultimate responsibility to ensure the TMP is implemented for the prevention of injury and property damage to event participants, road users and all members of the public.

The Event Organiser will ensure all site personnel are fully aware of their responsibilities, and that Traffic Controllers are appropriately trained and accredited and that sufficient controllers are available to ensure appropriate breaks are taken.

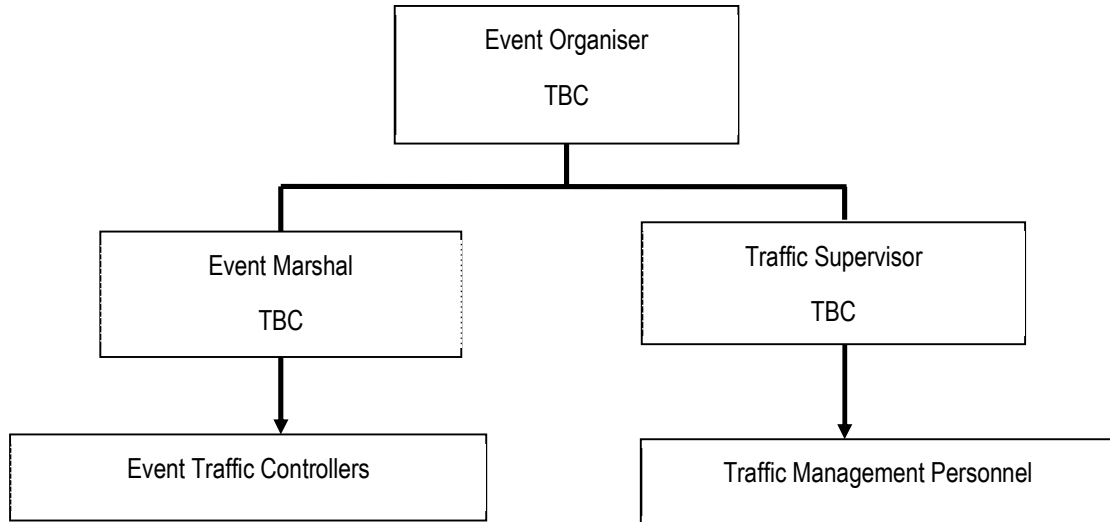
All personnel engaged in the traffic management activities will follow the correct work practices as required by the CoP, AGTTM and AS1742.3.

The event activities will not commence until all signs, devices and barricades are in place and operational in accordance with the requirements of the TMP.

All personnel responsible for temporary traffic management shall ensure that the number, type and location of signs, devices and barricades are to a standard not less than Appendix F of this plan, CoP, AGTTM and AS1742.3. Should a situation arise that is not covered by this TMP, CoP, AGTTM or AS1742.3, the Road Authority Representative shall be notified.

6.3.2. Roles

The following diagram outlines the responsibility hierarchy of this contact.



6.3.2.1 Event Organiser

The event organiser has appointed TBC as the traffic management representatives for the event activities and to assume the following responsibilities. The Traffic Management Supervisor shall:

- Ensure all traffic control measures for this TMP are placed and maintained in accordance with this plan and the relevant Acts, Codes, Standards and Guidelines.
- Ensure suitable communication and consultation with the affected residents is maintained at all times.
- Ensure inspections of the traffic control devices are undertaken in accordance with the TMP, and results recorded. Any variations shall be detailed together with reasons.
- Arrange and/or undertake any necessary audits and incident investigations.
- Instruct event personnel on the relevant safety standards, including the correct wearing of high visibility safety vests, and other equipment as required.
- Render assistance to road users and stakeholders (residents) when incidents arising out of the event activities affect the network performance or the safety of road users and event participants.
- Take appropriate action to correct unsafe conditions, including any necessary modifications to the TMP.

6.3.2.2 Traffic Management Personnel

- At least one person on site shall be accredited in Basic Worksite Traffic Management, and shall have the responsibility of ensuring the traffic management devices are set out in accordance with the TMP
- At least one person accredited in Advanced Worksite Traffic Management shall be available to attend the site at short notice at all times to manage variations, contingencies and emergencies, and to take overall responsibility for traffic management.

6.3.2.3 Traffic Controllers

Traffic Controllers shall be used to control road users to avoid conflict with event participants, traffic and pedestrians, and to stop and direct traffic in emergency situations.

Traffic Controllers shall:

- Operate in accordance with AGTTM Part 7: Traffic Controllers
- Be accredited in Basic Worksite Traffic Management
- Hold a current Traffic Controller's accreditation



-
- Be relieved from their duty after not more than 2 hours for a period of rest or “other duties” of at least 15 minutes as required by AGTTM and/or OS&H Regulations.

6.3.2.4 Event Marshals

The event organiser shall ensure that event personnel engaged as marshals are provided with training to ensure such personnel are aware of the limits of their responsibilities and can undertake their activities safely.

6.3.2.1 Event Traffic Controllers and Marshalls

Event Traffic Controllers and Marshalls shall:

- Correctly wear high visibility vests, in addition to other protective equipment required (e.g. footwear, sun protection etc.), at all times whilst at the event site.
- Comply with the requirements of the TMP and ensure no activity is undertaken that will endanger the safety of other event personnel, event participants or the general public.
- Enter and leave the event site by approved routes and in accordance with safe practices.

Event Traffic Controllers shall be accredited and shall only undertake tasks in accordance with the Event CoP.

6.4. Personal Protective Equipment (PPE)

All personnel entering the event site shall correctly wear high visibility vests to AS/NZS 4602, in addition to other protective equipment required on a site-by-site basis (e.g. protective footwear, eye protection, helmet, sun protection, respiratory devices etc.) at all times whilst on at the event.



7. Implementation

7.1. Traffic Guidance Schemes

The Traffic Guidance Scheme (TGS) outlined in Appendix F and listed below have been provided for the following stages to demonstrate the type of controls that will be implemented throughout the term of the event. All sign and device requirements are shown on each TGS. Should the use of additional (not shown on the TGS or listing of devices) or reduced number of devices be required due to unforeseen needs, they shall be recorded within the Daily Diary as a variation to the TMP, following prior approval.

Staging	TGS Number & Revision	Details
Stage 1	AMP-EVE-01	Motocross Precinct Event Traffic Management
	AMP-EVE-02	
	AMP-EVE-03	
Stage 2	AMP-EVE-04	Race Track Precinct Event Traffic Management
	AMP-EVE-05	

7.2. Sequence and Staging

The sequence of temporary traffic management installation, event activities and temporary traffic management removal are detailed below:

Step	Details
Pre-start	Contact City of Albany and advise of works.
Stage 1	Implement advanced warning signage.
Stage 2	Manage event
Stage 3	Pack up of TTM

7.3. Traffic Control Devices

7.3.1. Sign Requirements

All signs used shall conform to the designs and dimensions as shown in Australian Standard AS 1742.3, the CoP and/or Main Roads specifications

Prior to installation, all signs and devices shall be checked by the Site Supervisor or a suitably qualified person to ensure that they are in good condition and meet the following requirements:-

- Mechanical condition - Items that are bent, broken or have surface damage shall not be used.
- Cleanliness - Items should be free from accumulated dirt, road grime or other contamination.
- Colour of fluorescent signs - Fluorescent signs whose colour has faded to a point where they have lost their daylight impact shall be replaced.



- Retroreflectivity. - Signs used for night-time or low light conditions whose retroreflectivity is degraded either from long use or surface damage and does not meet the requirements of AS 1906 shall be replaced.
- Battery operated devices - shall be checked for lamp operation and battery condition.

Where signs do not conform either to the requirements of AS 1742.3 or would fail to pass any of the above checks, they shall be replaced on notice.

Signs and devices shall be positioned and erected in accordance with the locations and spacing's shown on the drawings. All signs shall be positioned and erected such that:

- They are properly displayed and securely mounted;
- They are within the driver's line of sight;
- They cannot be obscured from view;
- They do not obscure other devices from the driver's line of sight;
- They do not become a possible hazard to event participants or vehicles; and
- They do not deflect traffic into an undesirable path.

Signs and devices that are erected before they are required shall be covered by a suitable opaque material. The cover shall be removed immediately prior to the commencement of the event.

Where there is a potential for conflict of information between existing signage and temporary signage erected for the purpose of traffic control, the existing signs shall be covered. The material covering the sign shall ensure that the sign cannot be seen under all conditions i.e. day, night and wet weather. Care will be taken to ensure existing signs are not damaged by the covering material or by adhesive tape.

7.3.2. Tolerances on Positioning of Signs and Devices

Where a specific distance for the longitudinal positioning of signs or devices with respect to other items or features is stated, for the spacing of delineating devices or for the length of tapers or markings, the following tolerances may be applied: -

(a) Positioning of signs, length of tapers or markings:

- (i) Minimum, 10% less than the distances or lengths given.
- (ii) Maximum, 25% more than the distances or lengths given.

(b) Spacing of delineating devices:

- (i) Maximum, 10% more than the spacing shown.
- (ii) No minimum.

These tolerances shall not apply where a distance, length or spacing is already stated as a maximum, a minimum



or a range.

7.3.3. Flashing Arrow Signs

Where flashing arrow signs are required to better delineate lane tapers, these signs will comprise a matrix of lamps or light emitting elements in the form of an arrow that is flashed in a cyclical manner to provide advance warning. The sign shall have a minimum dimension of 2400 mm. x 1200 mm. and conform to the requirements of AS/NZS 4192. The Project Site Supervisor shall ensure that all equipment used meets the Australian Standard.

7.3.4. Delineation

Cones shall be used for delineation unless other treatment is specified in the Traffic Management Plan or on the Traffic Guidance Schemes. All cones shall be at least 700 millimetres in height and constructed from fluorescent orange or red material that is resilient to impact and will not damage vehicles when hit at low speed. Cones will be fitted with suitable white retro-reflective tape placed in accordance with AS 1742.3, AGTTM and the CoP.

Cones shall be designed to be stable under reasonably expected wind conditions and air turbulence from passing traffic. The base of the cones will be secured so that they are not dislodged by traffic. Cones will be inspected at intervals necessary to ensure any mis-alignment or displacement is identified and corrected prior to this causing disruption to traffic.

Where specified, temporary frangible or otherwise non-hazardous delineator posts or bollards may be used for edge protection and taper delineation. Posts or bollards shall have a maximum dimension of 60 millimetres when measured along the longest side of a square or rectangular section or across the diameter of a circular section. Base design shall permit easy fixing to either sealed or unsealed surfaces and not intrude into traffic lanes greater than 50 millimetres from the face of the post or bollard.

All posts or bollards shall be erected in accordance with the Traffic Guidance Schemes. Posts and bollards shall be a minimum of 1000 mm. high, capable of being fixed to the road pavement by a suitable road adhesive or by fastening bolts or spikes. Fixing shall be in accordance with manufacturer's recommendations.

Posts and bollards shall be fitted with suitable white retro-reflective tape placed in accordance with AS 1742.3, AGTTM and the CoP. All posts or bollards will be inspected daily and where displaced or missing made good immediately. All delineator posts are to be completely removed at the completion of all stages of construction and prior to the placement of asphalt surfacing. If adhesive is used to affix the posts this shall be completely removed from the road surface so that a flush surface is obtained.

All cones and post type delineators shall be spaced according to Table 4.7 of AS 1742.3-2019 and the Traffic Guidance Schemes.

TABLE 4.7 of AS 1742.3 Recommended Maximum Spacing of Cones and Bollards		
Purpose and Usage	Traffic Speed, km/h (see Clause 1.3.16)	Recommended Maximum Spacing, m
At divide road crossovers to transfer traffic to the opposing roadway.	All speeds	2
Protecting freshly painted lines	≤ 75	24
	≥ 76	60 ^a
All purposes	≤ 55	4
	56 to 75	12



**TABLE 4.7 of AS 1742.3
Recommended Maximum Spacing of Cones and Bollards**

Purpose and Usage	Traffic Speed, km/h (see Clause 1.3.16)	Recommended Maximum Spacing, m
	≥ 76	18
All purposes	≤ 50	4
^a This spacing may need to be reduced on curves or crests, or if the row of cones is not clearly defined at night.		

7.4. Communication TMP Requirements

The Traffic Management Plan will be discussed at the prestart meeting between the event organiser as well as the TM crew on site. Any variations to the planned works will be consulted with via a current AWTM holder.

7.5. Temporary Traffic Signal Modification

N/A



8. Emergency Arrangements and Contingencies

8.1. Traffic Incident Procedures

In the event of an incident or accident, whether or not involving traffic or road users, First Aid shall be administered as necessary, and medical assistance shall be called for if required.

8.1.1. Serious Injury or Fatality

In the case of serious injury or fatality occurring an Ambulance and Police shall be called on telephone number 000 where life threatening injuries are apparent.

Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area as well as assist emergency vehicles required to access and/or travel through the event site.

The scene shall be preserved leaving everything in situ, until direction is given by Police or WorkSafe.

Traffic management shall find the nearest plausible detour and implement as soon as possible to move traffic around the incident.

Once on site traffic management crew are to follow the directions of Police and/or Worksafe.

8.1.2. Minor Incident or Vehicle Break Down within Site

Broken down vehicles and vehicles involved in minor non-injury crashes shall be temporarily moved to the verge as soon as possible after details of the crash locations have been gathered and noted.

Any traffic crash resulting in non-life threatening injury shall be reported to the WA Police Service on 131 444.

Details of all incidents and accidents shall be reported to the Site Supervisor and Event Organiser using the incident report form at Appendix "C" (or similar).

8.2. Emergency Services

Emergency services shall be notified of the proposed works nature, location, date and times as well as contact details for the site supervisor.

On-site traffic controllers will be equipped with mobile communications to advise and/or liaise with emergency services to ensure a prompt response should the need arise.

8.3. Dangerous Goods

Should any incident arise involving vehicles transporting dangerous goods, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

Emergency services shall be notified of the proposed works nature, location, date and times as well as contact details for the site supervisor. All site personnel shall be briefed on evacuation and control procedures.



8.4. Emergency Contacts

In the event of an emergency the following relevant authorities must be contacted and advised of the nature of works, location, type of emergency and contact details for the site supervisor.

Emergency Service	E-mail/Website	Phone (Emergency)
WA Police Service	State.Traffic.Intelligence.Planning.&.Co-ordination.Unit@police.wa.gov.au	000
St John Ambulance	ambulanceoperations@stjohnambulance.com.au	000
DFES	dfes@dfes.wa.gov.au	000
Power	http://www.westernpower.com.au/customerservice/contactus/	13 13 51
Gas	enquiries@atcogas.com.au	13 13 52

8.5. Hostile Vehicle Mitigation

Hostile Vehicle Mitigation (HVM) is to be developed in consultation with key stakeholders, including WA Police, relevant road authorities and the event organisers, and documented in a separate HVM Plan. This plan is to be to the satisfaction of all key stakeholders and under the management of strict document control and distribution measures. HVM locations are to be referenced on the Event TMP TGS's.



9. Monitoring and Measurement

9.1. Daily Inspections

Prior to the event commencing the Traffic Management Plan shall be communicated to all key stakeholders and affected parties.

On completion of setting out the traffic control measures, the site is to be monitored for a suitable period of time.

The Event Organiser will ensure that the Traffic Management Plan is implemented and evaluated for effectiveness. Inspections shall be undertaken as required and at a minimum on the following occasions:

- Before the start of event activities on site,
- During the hours of the event,
- Closing down at the end of the event period, and

A daily record of the inspections shall be kept indicating

- When traffic controls were erected,
- When changes to controls occurred and why the changes were undertaken,
- Any significant incidents or observations associated with the traffic controls and their impacts on road users or adjacent properties.

The Traffic Management Company shall ensure that personnel are assigned to monitor the traffic control scheme. Inspections shall at least satisfy the following requirements.

9.1.1. Before Works Start

- Confirm TMP and TGS are suitable for the event activities;
- Inspect all signs and devices to ensure they are undamaged, clean and comply with the requirements depicted on the TGS;
- After any adjustments have been made to the signs and devices, conduct a drive through inspection to confirm effectiveness.

9.1.2. During Work Hours

- Designate and ensure that appropriate personnel drive through the site periodically to inspect all signs and devices and ensure they are undamaged and comply with the requirements depicted on the Traffic Guidance Schemes;
- Attend to minor problems as they occur;
- Conduct on the spot maintenance/repairs as required;
- When traffic controllers are on the job, ensure they remain in place at all times. Relieve controllers as necessary to ensure attentiveness is retained;
- Re-position signs and devices as required throughout the day and keep records of any changes.

9.1.3. Closing Down Each Day

- Conduct a pre-close down inspection,
- Remove all unnecessary signage;
- Drive through site and confirm all signs and devices have been safely removed;
- Record details of inspection and any changes made to layout.

9.1.4. After Hours



-
- Appoint personnel to conduct after dark checks. Replace any signs / devices not working, missing or damaged and record in diary.
 - Appoint personnel to conduct checks on non-work days (e.g. weekends). Replace any signs / devices not working, missing or damaged and record in diary.
 - The frequency of inspections needs to align with the amount of traffic management on site, weather conditions, vehicle types and volumes, road user behaviour and site specific risks.

9.2. TMP Audits and Inspections

One compliance audit (using the 'Compliance Audit Checklist for Traffic Management for Works on Roads' – found on the MRWA website) shall be conducted following setting up of the traffic management and prior to commencement of the event.

Audit findings, recommendations and actions taken shall be documented and copies forwarded to the Event Organiser and the Road Authority's Representative.

9.3. Records

A daily diary recording all inspections including variations to the approved TMP shall be kept using the Daily Diary.

A record of all inspections shall be made at those times prescribed by the Traffic Management Implementation Standards.

All variations made to the approved Traffic Management Plan shall be recorded and the nature of the variations and the reason for the variations clearly stated. Upon completion of each day the Traffic Supervisor shall provide copies of the variation record to the Event Organiser.

9.4. Public Feedback

Any public feedback is to be reported to EVENT ORGANISER who will in turn forward them through to City of Albany for consultation and /or to action accordingly.



10. Management Review and Approvals

10.1. TMP Review and Improvement

The Project Manager will ensure that the Traffic Management Plan is implemented and evaluated for effectiveness. The Supervisor shall inspect and monitor traffic movements around the site in conjunction with the personnel who have erected the control measures.

The Project Manager will implement a procedure that ensures comments and complaints received from the public are registered. The Supervisor shall be responsible for the monitoring of the Register on a daily basis.

TCP to be reviewed and updated every 3-6 months to ensure proposed long term Traffic Management complies with changing site environment.

10.2. Variations

Any proposed changes to the Plan shall be communicated to and approved by the RTM. In emergency situations requiring urgent changes, the RTM shall be consulted as soon as practicable.

10.3. Approvals

Before the event commences it is necessary to seek approval from the following:

- Local Government Authority
- WA Police



Appendix A - Notification of Event

To be completed by Event Organiser



NOTIFICATION OF EVENT

Notifications are to be distributed at least one (1) week in advance of the event
Where Police attendance is required at least three (3) week's notice shall be given (except in an emergency)

TMP reference		Communication plan sent to Main Roads	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>		
Anticipated Start Date:		Anticipated Finish Date:					
Anticipated Start Time:		Anticipated Finish Time:					
Location of works (Road/Street, Suburb):							
Description of Event:							
Description of traffic management arrangements:	To accommodate the proposed event, traffic control are to install the following:						
Posted Speed Limit:		Worksite speed limit:		After hours speed limit:			
What is the anticipated effect on traffic flows?:				Will there be restricted width for oversize escorted vehicles?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Are lanes closed at signals?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Are signal loops or hardware affected?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Will signal phases need time changes?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Will signals need to revert automatically?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Date of signal 'black out':				Times of signal 'black out':			
Will Police attendance be required?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Dates for Police attendance :				
Road Authority:							
Postal Address:							
Telephone:		Email:		Facsimile:			
Contact:							
Telephone:		Email:		Mobile:			
Event Organiser:							
Postal Address:							
Telephone:		Email:		Facsimile:			
Contact:							
Telephone:		Email:		Mobile:			
After hours contact:		Telephone:		Mobile:			
Traffic Management Contractor:							
Postal Address:							
Telephone:		Email:		Facsimile:			
Contact:							
Telephone:		Email:		Mobile:			
After hours contact:		Telephone:		Mobile:			



Distribution List	Email/Website
WA Police State Traffic Coordination	State.Traffic.Intelligence.Planning.&.Co-ordination.Unit.SMIL@police.wa.gov.au
Main Roads Customer Information Centre	enquiries@mainroads.wa.gov.au
Main Roads WA Event Coordinator	event.coordinator@mainroads.wa.gov.au
Main Roads Road Network Operations Centre	RNOC.Control.Room.Information.Desk@mainroads.wa.gov.au
Main Roads WA Real Time Media	dltocpacs@mainroads.wa.gov.au
Main Roads Heavy Vehicle Services	hvs@mainroads.wa.gov.au
St John Ambulance	BusinessSupportServices@stjohnwa.com.au
Fire & Emergency Services	Dfes@dfes.wa.gov.au
Public Transport Authority	transperth.servicedisruptions@pta.wa.gov.au
Main Roads Digital Communications	communications@mainroads.wa.gov.au
Local Government	



Appendix B - Variation to Standards

NOT APPLICABLE



**APPLICATION FOR APPROVAL TO VARY REQUIREMENTS OF
AS1742.3, AGTMM OR MRWA TRAFFIC MANAGEMENT CODES OF PRACTICE**

Form Instruction

1. **Section A** – Identify the Principal Agency / person commissioning the activity. (Does not include contractors, subcontractors or **traffic** management company/traffic planners etc).
2. **Section B** – Identify activity location, start / finish date and time, type of traffic management, description location of activity.
3. **Section C** – Identify the person that has prepared the Traffic Management Plan, this person shall have AWTM accreditation.
4. **Section D** – For Works undertaken on a State road or on behalf of Main Roads Western Australia the details of the risk assessment process identified in this application form must be documented and endorsed by an accredited Roadworks Traffic Manager¹.
All applications to be addressed to the applicable Main Roads Regional office. For contact information please refer to the online Application kits and guidelines to undertake works. (www.mainroads.wa.gov.au > Technical & Commercial > Working on roads > Third Party Works).
For all other applications the details of the risk assessment process identified in this application form must be documented and endorsed¹ by the person responsible for approving the traffic management plan.
Contact with the appropriate road authority should be made prior to lodgement of this application to determine its suitability and for any additional requirements.
5. **Section E** - Risk implication, identification and assessment process must be undertaken in accordance with Risk Management – Principles and Guidelines AS/NZS ISO 31000. The likelihood and consequences should be rated after the application of any additional counter measures taken utilising Tables from Annexure's 202B and 203B, Main Roads WA - Specification 202 and 203 respectively.
6. **Incomplete or applications not signed** by the RTM¹ will not be processed.

A	Applicant (Principal for the Works)					
	Postal address					
	Suburb		State		Postcode	
	Project Manager				Telephone	
	Email					

B	Anticipated start date				Anticipated finish date				
	Daily work hours; From			Weekend work applicable	Yes <input type="checkbox"/>	Sat <input type="checkbox"/>	Sun <input type="checkbox"/>	No <input type="checkbox"/>	
	Location of works (Road/Street Suburb),								
	Road type (eg undivided, two lane)								
	Description of works								
	Are alterations to permanent traffic signals required?			Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>			
	Posted Speed Limit			Worksite speed limit			After hours speed limit		

C	TMP Designer								
	Accreditation Number								
	Postal address	Level 1 / 908 Albany Highway							
	Suburb	East Victoria Park	State	WA	Postcode	6101			
	Email			Telephone	(08) 9355 1300		Facsimile	N/A	

¹A person with AWTM accreditation is permitted to endorse a variation of less than 135 % of the allowable lane capacity as outlined in table 4.10 of AS 1742.3. See section 4.5 of the Code of Practice.



	Endorsement Signature	Date	Click here to enter a date.
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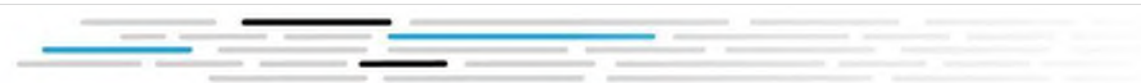
**APPLICATION FOR APPROVAL TO VARY REQUIREMENTS OF
AS1742.3, AGTTM OR MRWA TRAFFIC MANAGEMENT CODES OF PRACTICE**

D	RTM Endorsing Variation					
	Accreditation Number					
	Postal address					
	Suburb		State	Postcode		
	Email	Telephone		Facsimile		
	Endorsement signature		Date			

For Internal Use Only							
Approving Road Authority							
Approving Officer Position							
Application Approved	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If Not Why Not				
Additional Conditions							
Approved By: Signature		Title		Date		File Num	



E	Description of Variation Requested	Specify Point of Departure from Standard / Code of Practice (List section and page number)	Justification (Why is this necessary)	Additional Counter Measures to be Taken (Identify additional counter measures to be used to negate the lesser treatment)	Residual Risk*		
					L	C	RR





Appendix C - Record Forms

Daily Diary

Location: _____		Client: _____		Date: _____	
TMP No: _____		TGS No: _____		Weather Conditions: _____	
Start Time at Depot: _____		Time Arrive Onsite: _____		Commencement of Site Setup: _____	
Site Pulled Down at: _____		Time Aftercare signs setup: _____		TGS No: _____	
<input type="checkbox"/> Day Works		<input type="checkbox"/> Night Works		<input type="checkbox"/> Emergency Response	
<input type="checkbox"/> Attendance at Pre-Start Meeting		Did an incident occur (if yes complete incident report form) <input type="checkbox"/> Yes <input type="checkbox"/> No		Time left site: _____	
				Finish time at Depot: _____	
I confirm that the above times of 'setup' and 'pulldown' of traffic management signs and devices are a true and correct					
Name (Site Supervisor): _____		Signed: _____			
Drive Through Checks (Checks must be conducted at least every 2 hours)					
Time of check entered. Rule off and leave blank if the check does not apply to the site. Make a note of any issues on the next page.					

Traffic Management Site Checks	1	2	3	4	5	6	7	8	9	10
Time										
Are signs upright, clean, visible, level & stable										
Are taper lengths correct										
Are speed limit signs correct and doubled up										
Are sign spacings correct										
Are cone/bollard alignments straight & spaced correctly										
Are devices operating correctly										
Are pedestrians, cyclists and other vulnerable road users catered for										
Are lane widths adequate										



Are vehicle queue lengths acceptable											
Is road surface condition adequate											
Is the work area clearly defined?											
Are the travel paths for both directions of traffic clearly defined? Is the work area appropriately separated from passing traffic? Check the transition at the interface of the modified alignment.											
Are centre lines/lane lines/edge lines clear and unambiguous?											
Are sight and stopping distances adequate at works, at intersections and driveways?											
Are traffic lanes clearly delineated?											
Are lighting for night-time controls operating correctly?											
Have other risks associated with traffic management at night been catered for, e.g. placement of lighting towers											





No. of TTM Vehicles Onsite: _____

No. of TTM Personnel Onsite: _____

TTM Personnel Names & Accreditations:

Name	Accreditation Details (tick)					Time of Break from Stop/Slow (Traffic controllers must have a 15 minute break every two hours of constant stop/slow operation)							
	TC	BWTM	WTM	AWTM	OTMA	On	Off	On	Off	On	Off	On	Off
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:
						:	:	:	:	:	:	:	:

Additional Comments

I confirm that the details contained herein are true and correct

Name: (TTM Leader): _____ Signed: _____



Incident Report Form.

Region:
Contract No.:

Incident Report No.:
Contractor:

Safety Incident Report No:

Major Incident Reports must be forwarded to the Superintendent within 48 hours of the incident occurring or becoming apparent.

Contractors shall use this Form for reporting of traffic Incidents on works under Contract and this form supplements the Safety Incident Report Form.

1.0 Details of Incident	Reported to:	<input type="checkbox"/> Supervisor	<input type="checkbox"/> TMR	<input type="checkbox"/> Other
Date of incident		Time of Incident		
Work Being Undertaken				
Location (include direction and lane if applicable)				
Crash Type				
Incident type	Near Miss	Property Damage	Injury	Fatality
Atmospheric Conditions	Clear	Overcast	Raining	Fog/Smoke/Dust
Light Conditions	Day Light		Night Time	Dawn/Dusk
Road Surface	Unsealed		Sealed	





--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

5.0 Attachments: The following copies MUST be submitted with this Incident Report.

Approved TMP Approved TGS Approvals for temporary speed restrictions Daily Diary

6.0 Police Report:

Accident reported to Police: YES NO Report made by Phone Fax Mail or E-mail

Date Report Made Day Month Year Police WA Reference Number

.....

7.0 Details of Person Completing this Incident Form:

Name: _____ Contractor Name: _____

Position: _____

Date: _____ Signature: _____

.....





Appendix D - Traffic Analysis and Volume Counts

Volumes

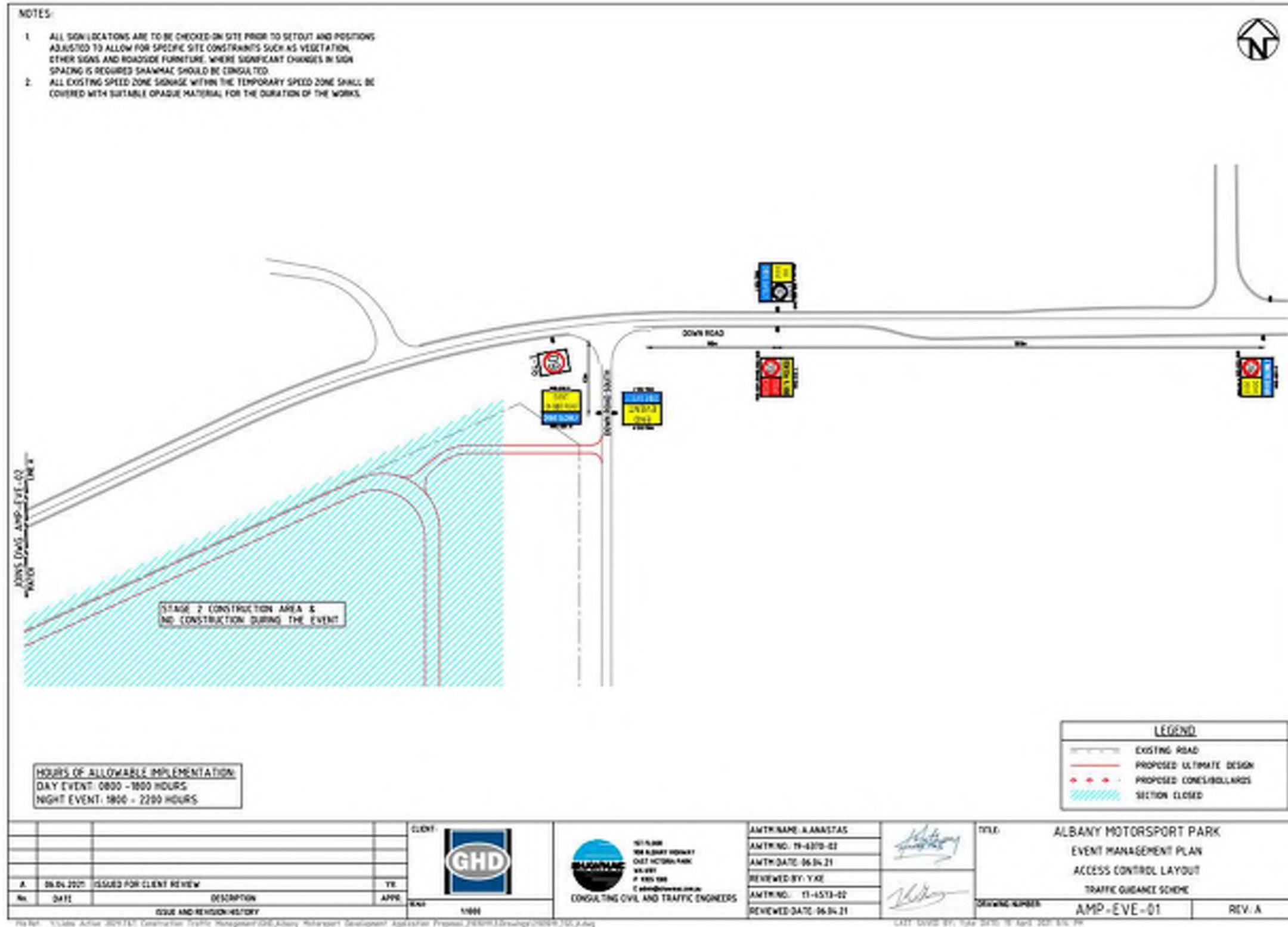
Location	Average weekday (vpd)	Trucks	Average weekend (vpd)	Trucks
Down Road	844 vpd (2017)	34%	419 vpd (2017)	40%
Albany Highway	4,950 vpd (2017)	20%	3,520 vpd (2017)	16%



Appendix E - Roadway Access Authorisation Permit



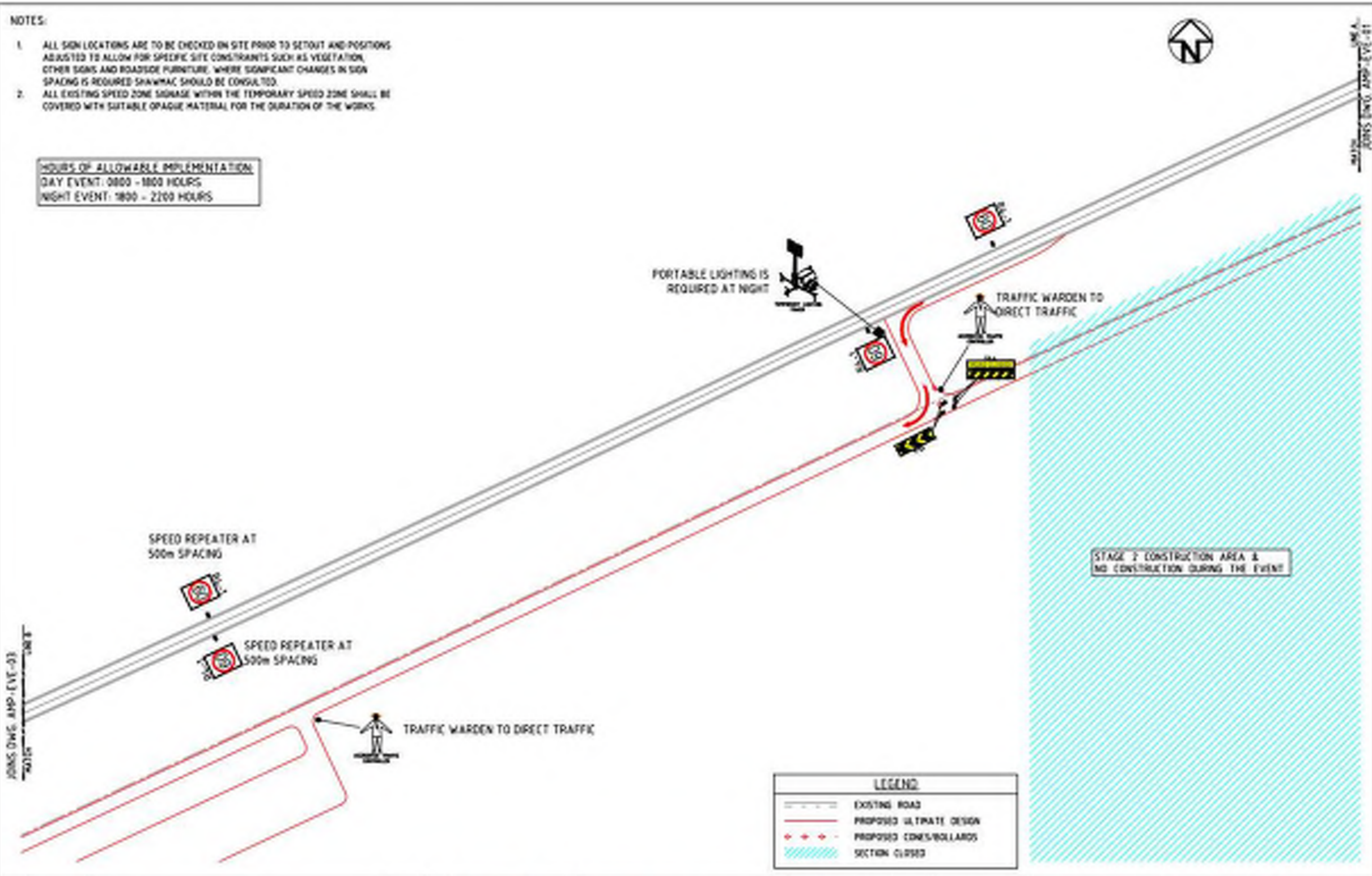
Appendix F - Traffic Guidance Schemes



NOTES:

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
2. ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE WORKS.

HOURS OF ALLOWABLE IMPLEMENTATION:
 DAY EVENT: 0800 - 1800 HOURS
 NIGHT EVENT: 1800 - 2200 HOURS



No.	DATE	DESCRIPTION	ISSUED BY	APPROVED BY
A	04-04-2021	ISSUED FOR CLIENT REVIEW	TK	APPC
ISSUE AND REVISION HISTORY				

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 DRAWING DATE: 04.04.21
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 DRAWING NO.: 10-4370-02
 REVIEWED DATE: 04.04.21

PROJECT: ALBANY MOTORSPORT PARK
 EVENT MANAGEMENT PLAN
 ACCESS CONTROL LAYOUT
 TRAFFIC GUIDANCE SCHEME

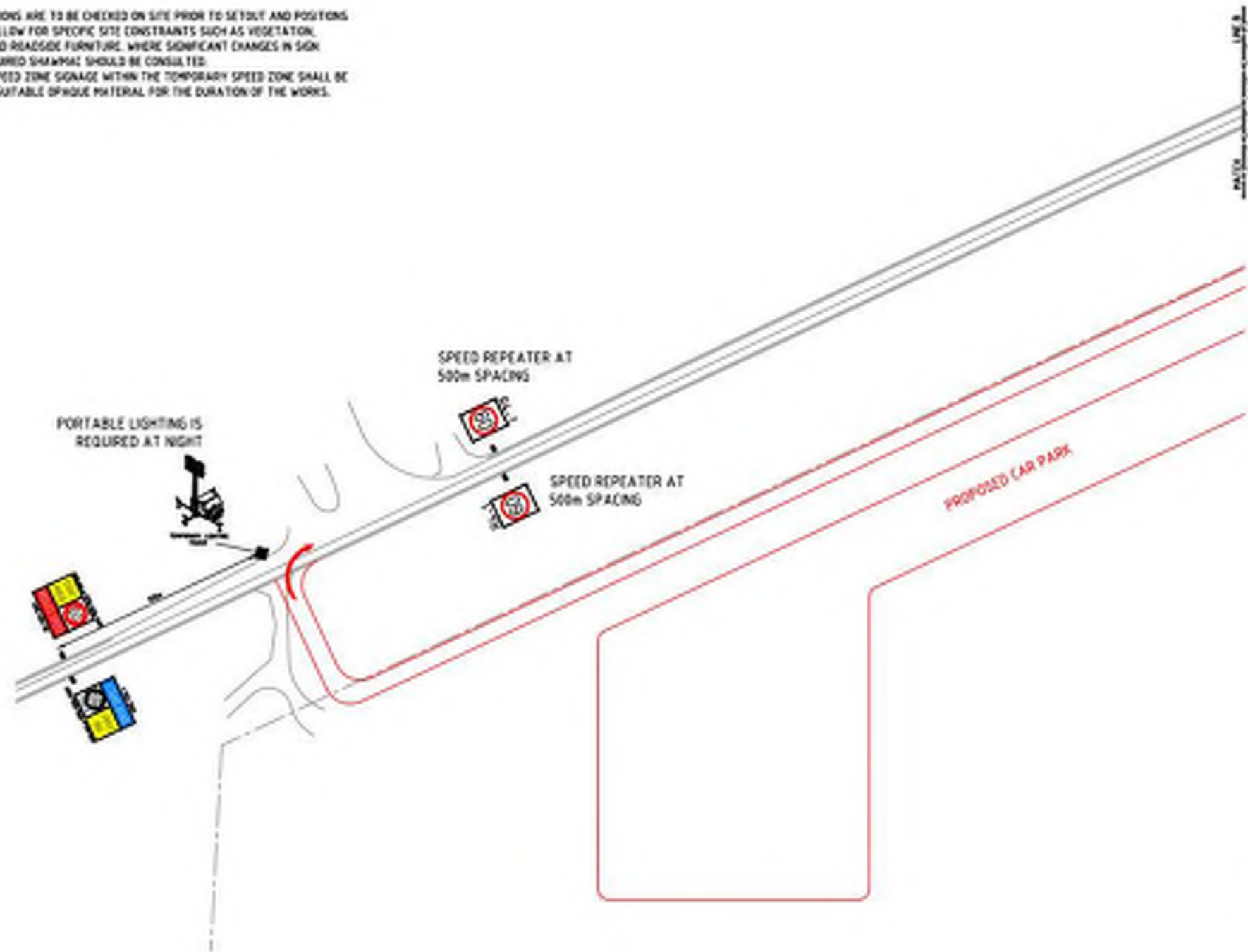
DRAWING NUMBER: AMP-EVE-02
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NOTES

1. ALL SIGN LOCATIONS ARE TO BE CHECKED ON SITE PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS AND ROADSIDE FURNITURE. WHERE SIGNIFICANT CHANGES IN SIGN SPACING IS REQUIRED SHAWMAC SHOULD BE CONSULTED.
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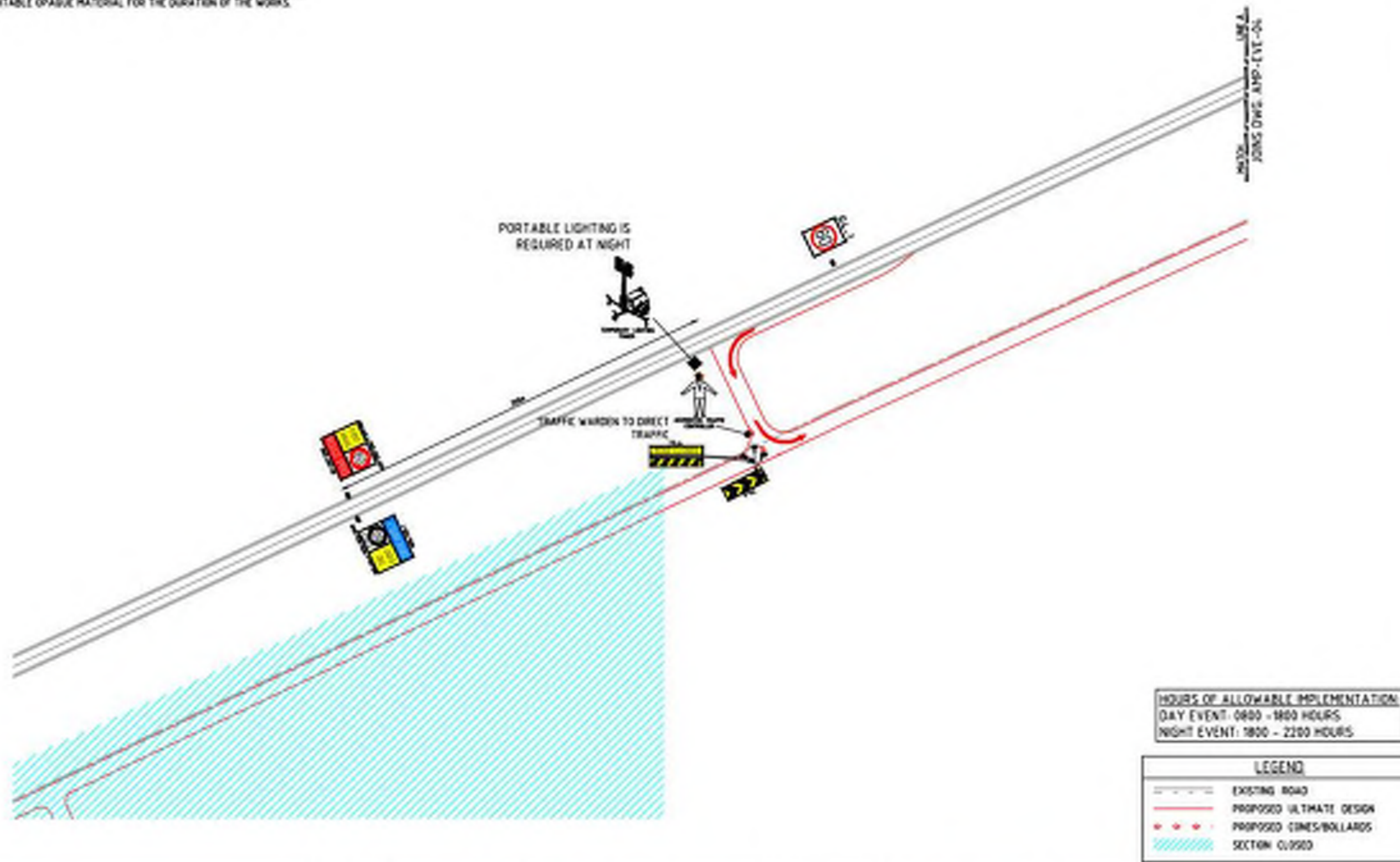
HOURS OF ALLOWABLE IMPLEMENTATION
 DAY EVENT: 0800 - 1800 HOURS
 NIGHT EVENT: 1800 - 2200 HOURS

LEGEND	
	EXISTING ROAD
	PROPOSED ULTIMATE DESIGN
	PROPOSED CONES/BOLLARDS
	SECTION CLOSED

		CLIENT		 67 FLOR 100 ALBANY HIGHWAY EAST VICTORIA PARK WA 6157 P 100 1000 E info@shawmac.com.au CONSULTING CIVIL AND TRAFFIC ENGINEERS	RWTH NAME: A. KRISTAS RWTH NO.: 10-4370-02 RWTH DATE: 04.04.21 REVIEWED BY: Y. KE RWTH NO.: 10-4370-02 REVIEWED DATE: 04.04.21	 	TITLE: ALBANY MOTORSPORT PARK EVENT MANAGEMENT PLAN ACCESS CONTROL LAYOUT TRAFFIC GUIDANCE SCHEME DRAWING NUMBER: AMP-EVE-03 REV: A							
<table border="1"> <thead> <tr> <th>No.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>04.04.2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td>TK</td> </tr> </tbody> </table>		No.	DATE	DESCRIPTION	APPROVED	A	04.04.2021	ISSUED FOR CLIENT REVIEW	TK	ISSUE AND REVISION HISTORY 1800				
No.	DATE	DESCRIPTION	APPROVED											
A	04.04.2021	ISSUED FOR CLIENT REVIEW	TK											

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<table border="1"> <tr> <td>No.</td> <td>DATE</td> <td>DESCRIPTION</td> <td>ISSUE AND REVISION HISTORY</td> </tr> <tr> <td>A</td> <td>04-04-2021</td> <td>ISSUED FOR CLIENT REVIEW</td> <td></td> </tr> </table>			No.	DATE	DESCRIPTION	ISSUE AND REVISION HISTORY	A	04-04-2021	ISSUED FOR CLIENT REVIEW		<p>CLIENT</p> <p>1000</p>	<p>107 FLOOR 100 ALBANY MOTORSPORT PARK 1401 VE TORRA PARK NSW 2071 P 6102 0000 E www.shawmac.com.au</p> <p>CONSULTING CIVIL AND TRAFFIC ENGINEERS</p>	<p>KWTH NAME: A.KRASKIS</p> <p>KWTH NO.: 10-4370-02</p> <p>KWTH DATE: 04.04.21</p> <p>REVIEWED BY: Y.RZ</p> <p>KWTH NO.: 10-4375-02</p> <p>REVIEWED DATE: 04.04.21</p>	<p>TITLE: ALBANY MOTORSPORT PARK EVENT MANAGEMENT PLAN ACCESS CONTROL LAYOUT TRAFFIC GUIDANCE SCHEME</p> <p>DRAWING NUMBER: AMP-EVE-05</p> <p>REV: A</p>
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Appendix C – Traffic Assessment (GHD)



Albany Motorsport Park – Development Application

Transport Impact Assessment

City of Albany

27 July 2021

→ **The Power of Commitment**



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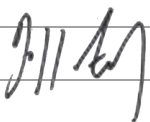

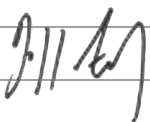
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Client name	City of Albany
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Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
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Appendices

Appendix A	Masterplan
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1. Introduction

The City of Albany (CoA) has engaged GHD to prepare an Application for Planning Approval for the staged construction of the Albany Motorsport Park (AMP) at Lot 5780 (No. 54) Down Road South, Drome (the Site) (Appendix A). The project Proponent is the Great Southern Motorplex Group Inc. (GSMG).

At full development, the proposed AMP will consist of:

- Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with Motorsport Australia *Track Operator's Safety Guide*^[1] and Motorcycling Australia (MA) *Track Guidelines*^[2].
 - To be licensed by Motorsport Australia for Fédération Internationalé de l'Automobile (FIA) Grade 2 and Fédération Internationalé Motocyclisme (FIM) Grade B (i.e. up to second-tier international motor racing).
- A motocross circuit designed and constructed in association with MA guidelines.
- An off-road four-wheel drive (4WD) and all-terrain vehicle (ATV) training area.
- Associated buildings and infrastructure.

Due to the scale and nature of the proposed development, the construction works have been broken down into two key stages which comprise of the following:

- Stage 1 (this Development Application):
 - Stage 1A: Construction of motocross track, 4WD driver training area, all-terrain vehicle (ATV) area and associated infrastructure.
 - Stage 1B: Construction of racetrack and associated infrastructure (subject to funding).
- Future Development: Construction and replacement of final permanent structures to support the function of the motorsports complex (subject to funding). Stage 2 will be addressed as a separate Development Application.

1.1 Site location

Lot 5780 Down Road South, Drome is located approximately 20 km to the north of the Albany CBD and is 192.34 ha in size. The AMP comprises 141.7 ha (including 0.2 ha for crossovers) in the eastern portion of the Site. Two areas within Lot 5780 are excluded from the AMP development and include 49.47 ha at the western end of the Site which is covered with native vegetation and a dam area (1.37 ha) on the northern boundary which is subleased to Plantation Energy.

The Site is bounded by Down Road West to the north, Down Road South to the east, Lot 5781 Down Road South to the south (privately owned) and a local road reserve and the Avon-Albany rail reserve to the west. The Site is located adjacent to the Mirambeena Timber Processing Precinct and sits within the industrial buffer area.

A Master Plan, which illustrates the various aspects of the Site and staging areas, has been developed by the GSMG and CoA to support the Development Application for the AMP (Appendix A).

1.2 Purpose of this report

A transport impact assessment for the proposed AMP at Lot 5780, Down Road South, Drome (north of Albany, WA) is required. This report provides the transport assessment input.

¹ CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

² MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

1.3 Scope of work

The transport impact assessment scope is as follows:

- Liaise with the CoA regarding any transport issues or concerns and obtain available traffic count data.
- Liaise with Main Roads WA regarding the intersection of Down Road / Albany Highway and adequacy to accommodate the proposed use.
- Undertake a crash analysis of the above intersection and along Down Road.
- Confirm speed limit and road hierarchy of Down Road.
- Assess peak hour traffic at the Down Road / Albany Highway intersection for the peak operational time of the AMP.
- Review concept plan in relation to site access.
- Review likely traffic generation for the AMP, based on information from the CoA and the Great Southern Motorplex Group (GSMG). Assess the potential impact to the road network.

1.4 Disclaimer

This report has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and the City of Albany as set out in this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Assessment of surrounding road network

2.1 Adjacent roads

The site is bounded by Down Road to the north and Down Road South to the east.

2.1.1 Down Road

Down Road connects with Albany Highway to the east. It is a single carriageway road, approximately nine metres (m) wide with one lane in each direction. It is designated as an Access Road under the Main Roads WA Road Information Mapping system and is under the control of the CoA. A speed limit of 110 kilometres per hour (km/h) applies.

The western end of the AMP site is located opposite the exit from a woodchip facility.

2.1.2 Albany Highway

Albany Highway is under the control of Main Roads WA and is designated a Primary Distributor. A speed limit of 110 km/h applies.

The intersection of Down Road/Albany Highway has been upgraded to accommodate traffic associated with CBH's Mirambeena Storage Facility and includes a right and left turn lane in Albany Highway; a continuous left turn lane from Down Road into Albany Highway; and an acceleration lane for right-turning vehicles from Down Road onto Albany Highway.

2.2 Restricted Access Vehicle network

Down Road forms part of the Restricted Access Vehicle (RAV) network 7 and accommodates multi-combination vehicles up to 36.5 m in length. Down Road accommodates RAVs serving the CBH grain storage facility, Plantation Energy and the APEC wood chipping facility.

Albany Highway forms part of the RAV network 7 and accommodates multi combination vehicles up to 36.5 m in length.

2.3 Traffic data

Traffic data has been sourced from the Main Roads WA web site and the CoA and the data in Table 2.1 is the latest as at March 2021.

Table 2.1 Average weekday and weekend traffic volumes – existing vehicles per day (vpd)

Location	Average weekday (vpd)	Trucks	Average weekend (vpd)	Trucks
Down Road	844 (2017)	34%	419 (2017)	40%
Albany Highway	4,950 (2017)	20%	3,520 (2017)	16%

Source: Main Roads WA Traffic Map

The existing high percentage of trucks in Down Road reflects the activity associated with the timber processing precinct and CBH facility.

2.4 Crash data

Crash data has been reviewed for the period 1 January 2015 to 31 December 2019.

2.4.1 Albany Highway/Down Road

A review of the Main Roads WA crash analysis reporting system (CARS) indicates one reported crash in 2018. The intersection has been upgraded recently.

2.4.2 Down Road (Albany Highway to end SLK 5.05)

There have been no reported crashes along Down Road in the five-year period. The crash assessment indicates there are no current reported safety issues at the Albany Highway/Down Road intersection or along Down Road.

3. Proposed development

3.1 Site generated traffic

The assessment assumes 500 spectators/competitors in total. Events with larger numbers will be subject to specific traffic management measures. The indicative use of the venue based on the business plan for Albany Motorsport Park is shown in Table 3.1.

Table 3.1 Indicative event profile

Use	Level	Frequency	Duration	Entrants	Spectators
Driver training (2WD & 4WD), schools, manufacturer testing	-	Weekdays	Day	50	0
Car test & tune day	Club	4 weekdays / month	Day	30	30
Car speed events	Club	1 weekend / month	Day	100	200 – 500
Car speed events	State	1 weekend / month	Day	100 – 200	200 – 1,000
Car speed events	National	1 weekend / year	Day	200 – 300	2,000 – 5,000
Super cars events	National	1 x 3-day weekend / year	Day	200 – 300	10,000 – 20,000
Bike test & tune day	Club	4 weekdays / month	Day	50	50
Bike speed events (MCRCA)	Club	1 weekend / month	Day	100	200 – 500
Bike speed events – Champions Ride Day	State	1 weekend / month	Day	100	200 – 1,000
Bike speed events	National	1 weekend / year	Day	200	1,000 – 5,000
Motocross events	Club	3 days / week training 4 single days / month	Day	100 – 200	200 – 400
Motocross events	State	1 weekend / month	Day	200 – 300	500 – 1,000
Drifting day	Club	2 days / month	Day and Evening	30	30
Drifting day	State	1 weekend / month	Day and Evening	50	200 – 500

3.1.1 Duration of events

– Typical day is 8:00 am – 6:00 pm.

Based on an overall attendance of 500 people, it is assumed an average of two people per vehicle so 250 vehicles in and 250 vehicles out, of which, 5% (13) are heavy vehicles transporting competition vehicles.

A capacity assessment of Down Road using Highway Capacity Software (HCS7) indicates a level of service B, assuming AMP and peak hour traffic movement occur at the same time. No capacity issues are therefore anticipated.

The intersection of Albany Highway/Down Road has been upgraded to accommodate CBH traffic and no further upgrade is anticipated to be required for general use of the AMP. Analysis has been undertaken assuming the AMP exit traffic occurs at the same time as the pm peak hour of the intersection and confirms no forecast delay or congestion.

Table 3.2 Down Road Albany Highway Existing + Site Traffic AM – Give way/Yield (Two way)

Down Road Albany Hwy Existing + Site Traffic AM Give way / Yield (Two-Way)											
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total	HV				Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Albany Hwy											
1	L2	160	10.0	0.119	9.6	LOS A	0.5	3.8	0.28	0.62	63.9
2	T1	161	20.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.00	109.9
Approach		321	15.0	0.119	4.8	LOS A	0.5	3.8	0.14	0.31	80.8
North: Albany Hwy											
8	T1	156	16.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.00	109.9
9	R2	160	10.0	0.110	9.1	LOS A	0.5	3.9	0.31	0.63	67.6
Approach		316	13.0	0.110	4.6	NA	0.5	3.9	0.15	0.32	82.1
West: Down Road											
10	L2	5	10.0	0.003	9.4	LOS A	0.0	0.0	0.00	0.64	69.1
12	R2	4	10.0	0.009	13.7	LOS B	0.0	0.2	0.57	0.73	59.4
Approach		9	10.0	0.009	11.3	LOS B	0.0	0.2	0.25	0.68	64.8
All Vehicles		646	13.9	0.119	4.8	NA	0.5	3.9	0.15	0.32	81.1

Table 3.3 Down Road Albany Highway Existing + Site Traffic PM – Give way/Yield (Two way)

Down Road Albany Hwy Existing + Site Traffic PM Give Way / Yield (Two-Way)											
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total	HV				Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Albany Hwy											
1	L2	20	10.0	0.013	9.1	LOS A	0.1	0.4	0.08	0.62	65.1
2	T1	187	20.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	109.9
Approach		207	19.0	0.109	0.9	LOS A	0.1	0.4	0.01	0.06	103.0
North: Albany Hwy											
8	T1	294	16.0	0.166	0.0	LOS A	0.0	0.0	0.00	0.00	109.9
9	R2	20	10.0	0.014	9.1	LOS A	0.1	0.5	0.31	0.61	67.6
Approach		314	15.6	0.166	0.6	NA	0.1	0.5	0.02	0.04	105.1
West: Down Road											
10	L2	145	10.0	0.084	9.4	LOS A	0.0	0.0	0.00	0.64	69.2
12	R2	145	10.0	0.306	15.4	LOS C	1.4	10.5	0.64	0.90	57.6
Approach		291	10.0	0.306	12.4	LOS B	1.4	10.5	0.32	0.77	63.3
All Vehicles		812	14.5	0.306	4.9	NA	1.4	10.5	0.12	0.31	83.9

Further analysis has been undertaken assuming a 1% growth rate on Albany Highway for ten years and the results indicate all levels of service remain the same for both the am and pm peak periods.

3.2 Site access

One access point is proposed to serve the Site from Down Road. Entry to the AMP would be via the eastern entry point only. The western entry point is for separate access (by another leaseholder) to the small dam in the north-west corner of the site. Gated emergency access will be available to Down Road at the west end of the Site, east end of the Site and at the south east corner of the Site as indicated on the Master Plan in Appendix A.

Traffic volumes on Down Road are approximately 840 vpd, of which approximately 34% are trucks (large multi combination vehicles). To minimise the impacts on large trucks using Down Road during weekdays, a left turn lane in Down Road should be provided at the access location. *Austrroads Guide to Road Design* indicates the length of the turn lane should be 180 m at 110 km/h or 120 m if a posted speed of 80 km/h is adopted (Table 3.4).

The speed limit on Down Road is 110 km/h. It is considered that this is too high in view of the likely activity associated with the proposed AMP and it should be considered to be reduced to a maximum of 80 km/h. Main Roads WA will need to be consulted regarding this matter, noting that at the time of writing, Main Roads WA is not supportive of reducing the speed limit.

Site access should be constructed to accommodate construction traffic prior to the site construction phase.

Table 3.4 Deceleration lane lengths (Austrroads)

Design speed of approach	Length of deceleration D – including diverge taper T									
	Stop condition1		Design speed of exit curve (km/h)2							
Road (km/h)	0	0	20	30	40	50	60	70	80	90
	Comf. 2.5 m/s ²	Max. 3.5 m/s ²	Comfortable average rate of deceleration 2.5m/s ²							
50	40	30	30	25	15					
60	55	40	50	40	30	15				
70	75	55	70	60	50	40	20			
80	100	70	95	85	75	60	45	25		
90	125	90	120	110	100	85	70	50	25	
100	155	110	150	140	130	115	100	80	55	30
110	185	135	180	175	160	150	130	110	90	60

Assuming a posted speed of 80 km/h on Down Road, the sight distance at the access location will require 5 m x 214 m. If 110 km/h is maintained, then 5 m x 285 m is required. Adequate clearing will need to be undertaken if required (Figure 3.1 and Table 3.5).

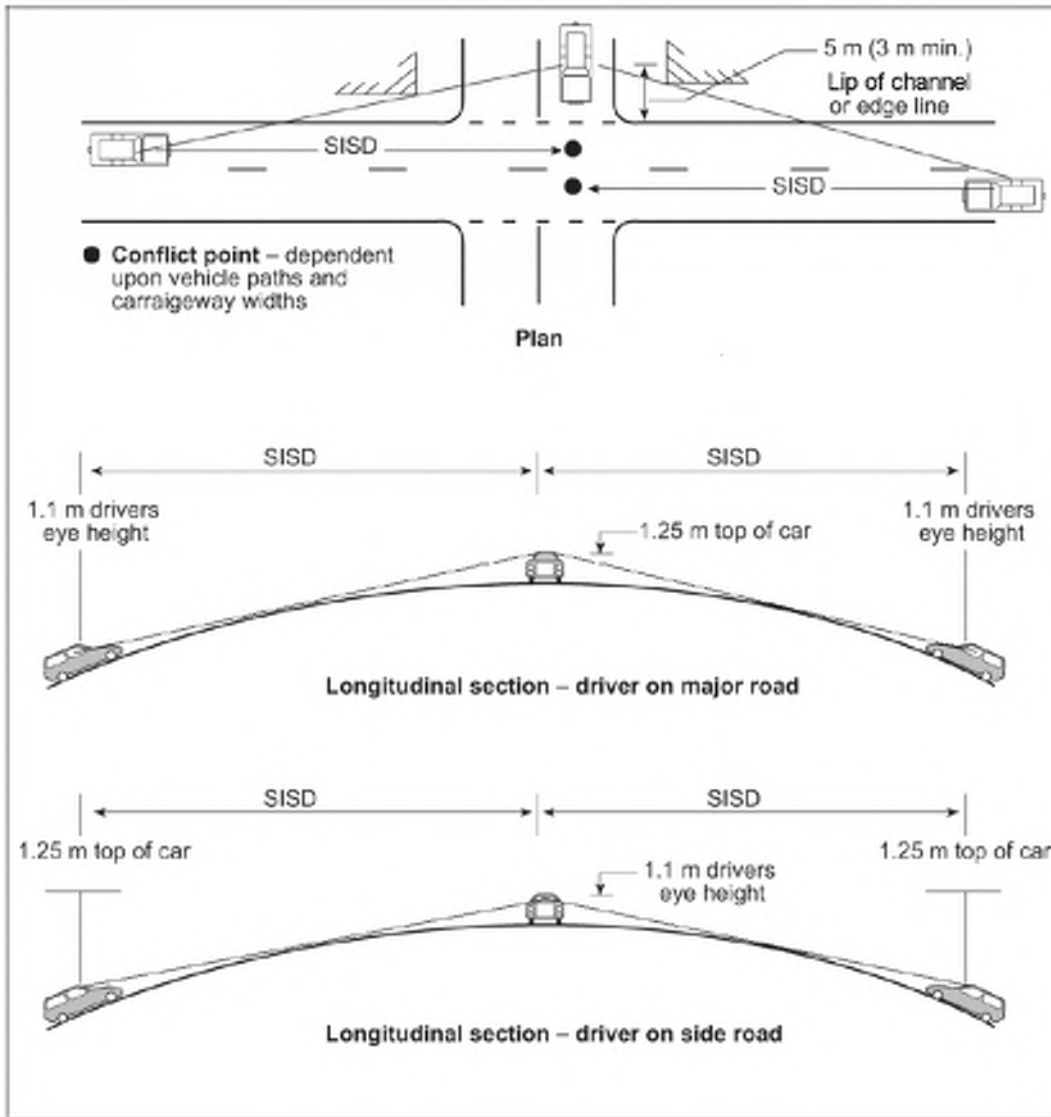


Figure 3.1 Safe intersection sight distance

Table 3.5 Safe intersection sight distance based on design speed

Design speed (km/h)	Based on safe intersection sight distance for cars ¹ h ₁ = 1.1; h ₂ = 1.25, d = 0.362; Observation time = 3 s					
	R _T = 1.5s ³		R _T = 2.0s		R _T = 2.5s	
	SISD (m)	K	SISD (m)	K	SISD (m)	K
40	67	4.9	73	6	-	-
50	90	8.6	97	10	-	-
60	114	14	123	16	-	-
70	141	22	151	25	-	-
80	170	31	181	35	-	-
90	201	43	214	49	226	55
100	234	59	248	66	262	74
110	-	-	285	87	300	97
120	-	-	324	112	341	124
130	-	-	365	143	383	157

If a speed limit of 110 km/h is maintained, a review of aerial photography would indicate a suitable location for the eastern access is approximately 240 m west of Down Road north or ~200 m if the speed limit is reduced to 80 km/h.

3.3 Parking

The Masterplan shows approx. 250-bay parking areas at the multi-use racetrack and motocross track. Competitors will have separate competitor parking and marshalling areas, as shown on the Masterplan. Parking for approximately 200 cars will be detailed at the motocross club house area.

Based on 500 spectators/competitors, an overall provision of 250-300 bays is forecast to be required. All parking demand will be contained within the site. A separate Traffic and Parking Management Plan for large events has also been developed.

3.4 Construction

Site construction activities should include the construction of suitable site access prior to the works. The access should be designed for the designated construction vehicle.

The number of trucks associated with the construction process should be determined and checked against any capacity constraints or time limit constraints. Activities may need to be planned to avoid peak activity from surrounding businesses and peak movement on the road network. Truck routes to and from the site during construction should be agreed with City of Albany and Main Roads WA.

If any oversize over mass (OSOM) vehicles are planned, appropriate approval will be required from Main Roads WA together with any necessary traffic management.

3.5 Traffic management for larger events

For larger events, careful planning will be required to accommodate the safe and orderly entry, exit and parking for competitors and spectators. This is subject to a separate report and hence, this report does not cover detailed traffic management planning however, the planning will need to include:

- Consultation with Main Roads WA regarding requirements for the Albany Highway/Down Road intersection
- Consultation with the CoA
- Consultation with the Department of Fire and Emergency Services and WA Police
- Consultation with adjacent businesses in Down Road
- Variable message sign (VMS) requirements on Albany Highway
- Directional signage to parking areas
- Illumination of access and parking areas
- Community notices, radio, newspaper, social media, etc.
- Speed limits and traffic control in Down Road
- Emergency access requirements
- Requirements for satellite parking and bus transfers

Note: There are likely to be other considerations in addition to the above list.

3.6 Main Roads WA input

Several queries were raised with Main Roads WA and their response is highlighted as follows.

Query - In view of the access points to the AMP, woodchip facility and CBH facility being in close proximity, would Main Roads WA consider reducing the speed limit on Down Road from 110 km/h to 80 km/h?

Response – The CoA to follow up with Main Roads WA, however at the time of writing their response is as follows:

It is very unlikely that Main Roads would reduce the speed limit on this section of road due to events occasionally generating increased traffic volumes. The environment is rural with good road geometry.

Main Roads WA suggests the following alternatives:

- **Traffic management for events process.**
- **Ensure all accesses to the AMP has safe intersection sight distances and appropriate turn treatments.**

Query - Does Main Roads have any issue or concern with the existing Down Road/Albany Highway intersection noting it has recently been upgraded? Analysis indicates it will operate to a good level of service if AMP is developed.

Response – No, the existing Down Road/Albany Highway intersection does not require additional treatments.

Query - Are there any other land use or infrastructure proposals that MRWA is aware of that could significantly affect the AMP?

Response - No.

Query - Specific traffic management will be required for large events. Does Main Roads WA have any concerns?

Response - MRWA has no concerns about specific traffic management for large events at the Down Road/Albany Highway intersection. (Great Southern Motorsports Group advice: The venue operations manual to include traffic management procedures during events including signage and traffic wardens).

3.7 City of Albany input

Query - Is the City supportive of reducing the speed limit on Down Road from 110 km/h?

Response - Yes, from a point west of the CBH site entry. However, note that Main Roads WA is not supportive. City to follow up with Main Roads WA.

Query - Does the City have preferred locations for the access points to the site?

Response - Entry to the AMP should be via the eastern entry point only. The western entry point is for separate access (by another leaseholder) to the small dam in the north-west corner.

Query - Are there restrictions to clearing trees for access/sight distance?

Response - Just normal DWER clearing permit applies. CoA will handle this separately as part of the environmental impact assessment. Clearing permits not required as covered during the DA process and listed under the clearing exemptions of the EP Act.

Query - How many constructed parking bays are required by the City, assuming 500 spectators/competitors. Is 250-300 considered to be sufficient?

Response – The Masterplan shows a 250-bay parking area at the multi-use racetrack. Competitors will have a competitor parking and marshalling area adjacent to the pits area as shown on the Masterplan. Parking for approximately 200 cars will be provided at the motocross club house area.

Query - Are there any other land use or infrastructure proposals that the City is aware of that could significantly impact the AMP or traffic in Down Road?

Response - No.

Query - Left turn lanes are likely to be required in Down Road at the access points, is the City supportive?

Response - Yes.

3.8 Traffic safety assessment – Albany Highway emergency access way

An emergency access road is proposed from the site to Albany Highway. The access road will be located along the full length and adjacent to the northern boundaries of Lot 1 (excised road reserve) and Lot 10 (easement).

The location is shown on Figure 3.2.

Access to Albany Highway is located approximately 1,540 m south of the Down Road/Albany Highway intersection, via a 10 m wide easement through Water Corporation land (Lot 10 Down Road) and 20 m wide excision through private property (Lot 1 Down Road). The easement will be restricted to 10 m wide and the purpose of the proposed access easement is strictly limited to 'emergency use' only (i.e. only to be used for access / egress in the case of a bushfire event / fire emergencies).



Figure 3.2 Emergency access way

3.8.1 Emergency access and safety issues

Certain operation and maintenance issues associated with the emergency access will need to be addressed by GSMG and/or CoA. These include the following:

- The access road shall need to be well maintained and kept clear for vehicular access at all times, to include vegetation clearing, overhanging tree canopy clearing and access road surface maintenance.
- Parking of vehicles within the emergency access shall be prohibited at all times.
- Suitable signage shall need to be installed at each end to confirm its status as an emergency access only.
- A sealed section should be constructed at the eastern end of the emergency access road to ensure loose material is not transferred onto Albany Highway.
- Sight distances at its intersection with Albany Highway should be maintained at all times commensurate with the design speed of Albany Highway (110 km/h) (i.e. 5 m x 285 m). Clearing should be suitable to achieve the necessary sight distances. Figure 3.1 refers.
- The intersection with Albany Highway shall be designed to accommodate the design vehicle.
- Protocols for use of the emergency access shall be adopted to include traffic management and chain of responsibility commensurate with Bushfire Management Plan (BMP) requirements.
- The City of Albany acknowledges there are existing interests registered across the subject land and agrees to be a shared user of the subject access track.

It is considered that subject to suitable management and control the emergency access as proposed could be supported from a traffic and safety perspective.

4. Summary and recommendations

4.1 Summary

The reported crash history does not indicate a safety issue on Down Road or its intersection with Albany Highway. Assuming competitor/spectator numbers of 500, the site is anticipated to generate 250 vph in and 250 vph out at the start and finish of events. No adverse impacts are anticipated for Down Road or its intersection with Albany Highway.

It is considered that the speed limit on Down Road near the site should be reduced from 110 km/h to a maximum of 80 km/h (west of the CBH entry) and should be considered by Main Roads WA and the City of Albany. At the time of writing, it is noted that Main Roads is not supportive of reducing the speed limit, complimentary directional signage on Down Road should be installed for the AMP to assist in causing drivers to slow down.

If a speed limit of 110 km/h is maintained, a review of aerial photography would indicate a suitable location for the eastern access is approximately 240 m west of Down Road north or ~200 m if an 80 km/h speed limit is adopted.

Site access should include a deceleration lane (200 m) suitable for the posted speed limit.

Traffic management as required will need to be planned and undertaken for events with competitor/spectator numbers in excess of 500 in consultation with the CoA and Main Roads WA.

All parking should be contained on site and should be clearly signed for users.

Emergency access to Albany Highway shall be designed suitable for the design vehicle and maintained for use at all times.

4.2 Recommendations

It is recommended that:

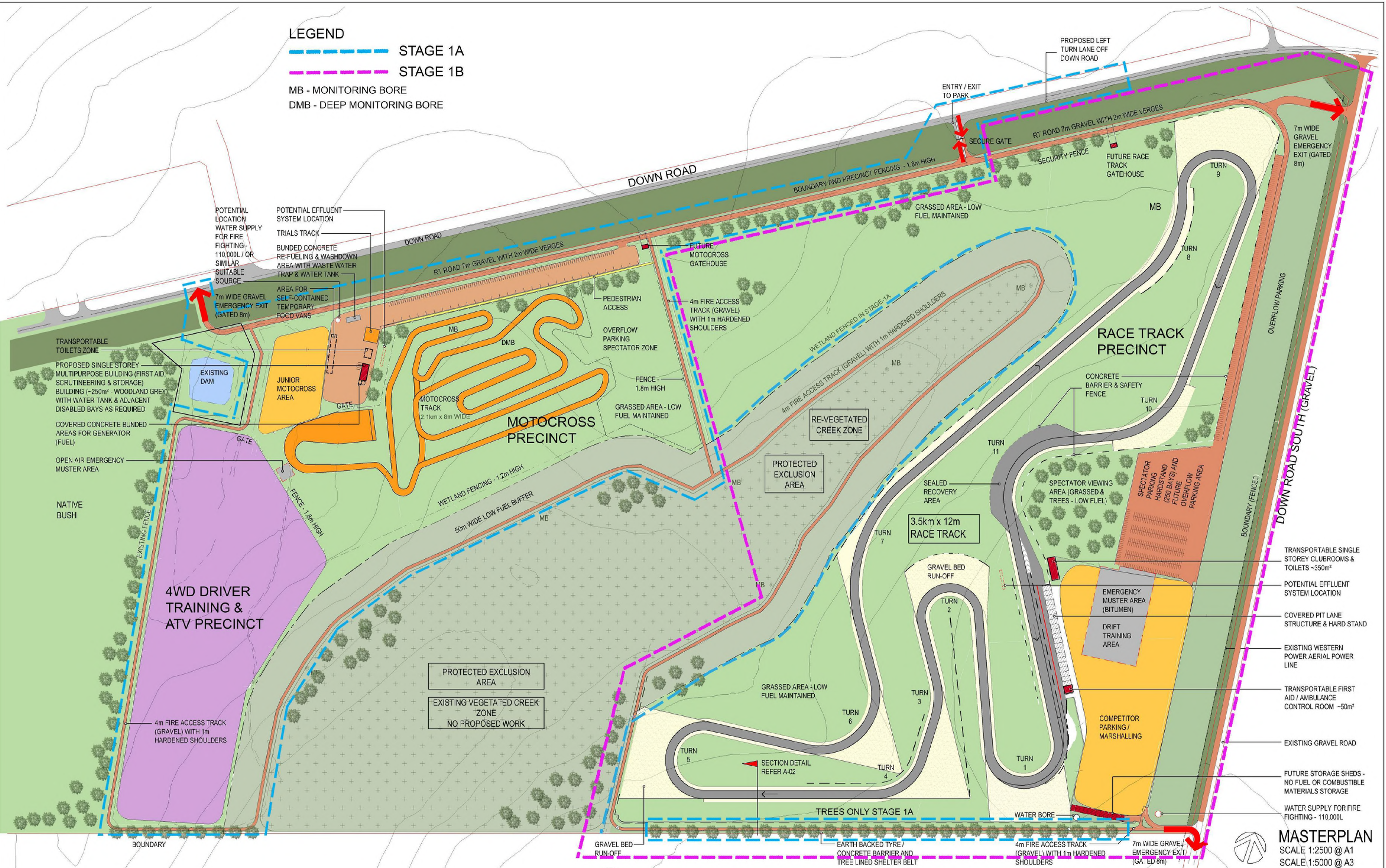
- The speed limit in Down Road near the site (west of CBH entry) is considered for reduction from 110 km/h to a maximum of 80 km/h and this should be followed up with Main Roads WA and the CoA.
- Complementary directional signage on Down Road should be installed for the AMP to assist in causing drivers to slow down.
- A left turn lane should be constructed at the access location in Down Road, commensurate with the posted speed limit (a 200 m length is recommended).
- Site accesses are located based on sight distance requirements for the adopted speed limit (either 80 km/h or 110 km/h).
- Traffic management planning for large events should be developed with the CoA and Main Roads WA.
- Regular consultation should be undertaken with CBH, the woodchip facility and other businesses in Down Road to advise when large events are planned.
- Emergency access to Albany Highway should be designed suitable for the design vehicle and maintained for use at all times.

Appendix A

Masterplan

LEGEND

- STAGE 1A
- STAGE 1B
- MB - MONITORING BORE
- DMB - DEEP MONITORING BORE



MASTERPLAN
 SCALE 1:2500 @ A1
 SCALE 1:5000 @ A3

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rev	date	description
A	15-04-2021	ISSUED FOR CLIENT REVIEW
B	27-04-2021	ISSUED FOR CLIENT REVIEW
C	12-05-2021	ISSUED FOR CLIENT REVIEW
D	26-05-2021	ISSUED FOR CLIENT REVIEW
E	05-07-2021	ISSUED FOR DA

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project
Albany Motorsport Park
 Lot 5780 Down Rd, Drome, WA 6330
 client
 City of Albany

Masterplan - Stage 1

cad file

drawn CB project number 21-002

scale 1:2500 @A1
 date JULY 2021
 dwg no. **A-01** rev. **E**



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Appendix H

**Albany Motorsport Park Draft Governance
Model**

ALBANY MOTORSPORT PARK

DRAFT GOVERNANCE MODEL

1. **VENUE**
Albany Motorsport Park
2. **LOCATION**
Lot 5780 Down Road, DROME, Western Australia
3. **LAND OWNER**
City of Albany
owns the land (LOCATION)
approving Authority for any modifications
4. **VENUE OWNER**
Albany Motorsport Venue Incorporated (AMV Inc.)
leases land from the LAND OWNER
owns and maintains the facilities and infrastructure
5. **THE BOARD**
VENUE OWNER's board of 7 Directors
responsible for management and operation of the VENUE
6. **OCCUPIER**
The VENUE OWNER
7. **AFFILIATIONS**
Confederation of Australian Motor Sport Limited, trading as Motorsport Australia
Motorcycling Australia Ltd
8. **VENUE MAP**
Albany Motorsport Park Masterplan
9. **OWNERSHIP & OPERATION**
 - Ownership of the land (The Land) is and will remain owned by the City of Albany.
 - Post construction by the City of Albany, ownership of all facilities and infrastructure (will be transferred to the Albany Motorsport Venue Incorporated (AMV Inc.) by written agreement.
 - The Land (not the Venue) will be leased by the City of Albany to the AMV Inc.
 - The AMV Inc. will be responsible for the operation, maintenance and repair of the Venue.
10. **AMV INC. BOARD GOVERNANCE**
 - AMV Inc. is to be established as a not for profit association incorporated in accordance with the Associations Incorporation Act 2015.
 - Noting it is acceptable for an association to trade with the public so long as the profits from those transactions are used to promote the objects and purposes of the association and members do not profit from the activities.
 - AMV Inc. will consist of a Board of Directors (the **Board**).
 - The Directors will be paid a remuneration agreed annually.
11. **THE BOARD**
 - 11.1 The Board may have up to seven (7) Directors, who shall comprise:
 - Two (2) community representatives recommended by the City of Albany for the Board's consideration.

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

- One (1) representing Motorsport Australia;
- One (1) representing Motorcycling Western Australia (MWA);
- One (1) representing 4-wheel racing clubs;
- One (1) representing 2-wheel racing (motorcycle road racing) clubs;
- One (1) representing motocross clubs;

11.2 The Chairman of the Board will be elected by the Directors.

11.3 Appointments are to be up to a two-year term, with skills determined by the Board.

11.4 The Directors shall meet monthly or on more occasions if the need dictates.

11.5 The Board to employ an Operations Manager and any other staff deemed necessary to ensure the safe and compliant Venue.

11.6 The Board shall lease the Land from the City of Albany.

11.7 A Lease Agreement shall be prepared by the City of Albany and approved by the City of Albany Council.

11.8 The Board shall be responsible for the insurance of the tracks, roads and any other permanent buildings and fixtures on the Venue.

11.9 The Board is responsible for the development of an Albany Motorsport Park Strategic Development Plan and overseeing the implementation of the strategies and supporting policies.

11.10 The Board is responsible for the development and implementation of systems to enable it to comply with its legal and policy obligations, adhering to accounting standards and ensuring the Venue assets are protected through appropriate risk management.

11.11 The Board is responsible for the marketing, management, programming and the safe use of the Venue.

12. VENUE OWNER

12.1 The Venue Owner shall carry out:

- marketing the Venue;
- hiring of facilities to various users and user groups;
- programme the hiring and events held at the Venue;
- ensure the hirer has the appropriate permit for the event being conducted;
- ensure the hirer has the appropriate event insurance in place;
- adherence to the Motorsport Australia “Track Operations Safety Guide”;
- adherence to the Motorcycling Australia “Track Standards” and current “Manual of Motorcycle Sport”;
- management and maintenance of the infrastructure;
- establish and maintain an ongoing maintenance (sinking) fund;
- ensure the Venue is cost-effective, that is, income is equal to or greater than expenses;
- adherence to the Bushfire Management Plan;

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- adherence to the Noise Management Plan;
 - adherence to the Water Management Plan;
 - adherence to the Hydrocarbon Management Plan;
 - adherence to the Dust Management Plan; and
 - present an annual report to the City of Albany.
- 12.2 Produce and administer a “Venue Procedures Manual”.
- 12.3 Produce and administer a “Code of Conduct Manual”.
- 12.4 Ensure the tracks are certified and sanctioned by Motorsport Australia and Motorcycling Australia on an annual basis.
- 12.5 Ensure users of the Venue have the appropriate training and qualifications and operate in accordance with the relevant governing motorsport organisation.
- 12.6 Purchase and have available the required safety equipment.
- 12.7 Purchase and have available the required maintenance equipment.
- 12.8 Ensure grounds maintenance is carried out by trained employees and/or trained volunteers.

ALBANY MOTORSPORT PARK
DRAFT GOVERNANCE MODEL

Revision History

Author	Version Description	Date Completed
Great Southern Motorplex Group Inc.	Draft prepared for review by City of Albany	26/04/2021
City of Albany	Reviewed and marked up by City of Albany. Changes review to compared document.	27/04/2021
City of Albany / Great Southern Motorplex Group Inc.	Amended post meeting held on 4 May 2021. Agreed amended marked up in RED.	04/05/2021
City of Albany	Changes accepted	06/05/2021
City of Albany	Amendment to Item 11	13/05/2021



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