

PROJECT STATUS

This project is the result of a long and comprehensive detailed design process, funded by DPIRD. The resulting design for the Southern Ocean Surf Reef has been numerically and physically modelled to ensure its performance in the bathymetry of the site.

This project is eagerly anticipated by the community and stakeholders, with 90% support for the project and design expressed across all consultation. The design meets the needs of target users, was accurately costed, with all risks appropriately identified and completed to a standard suitable to be released to the market for construction. A complete RFT package is ready to issue.

PROJECT VALUE

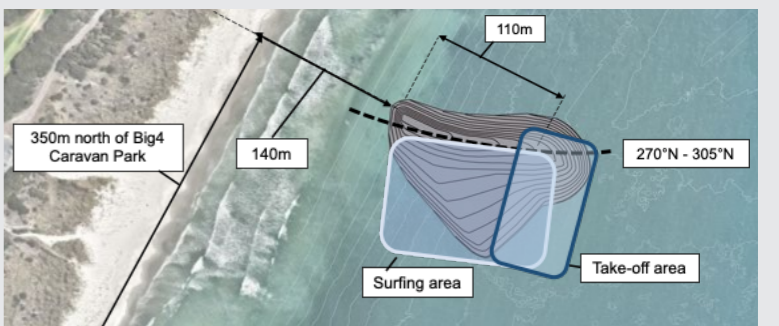
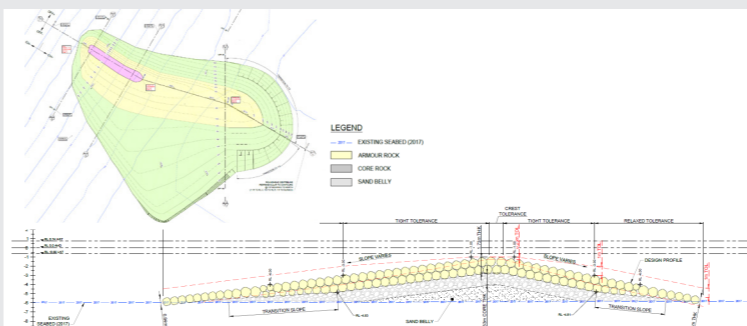
The total project value is \$11.5M

FUNDING BREAKDOWN

\$4,500,000	Dept. of Primary Industries and Regional Development
\$1,995,000	City of Albany commitment
\$5,000	Albany Boardriders
\$5,000,000	Dept. of Infrastructure, Transport, Regional Development, Communications & The Arts

SOUTHERN OCEAN SURF REEF

MIDDLETON BEACH, ALBANY, WA



PROJECT OVERVIEW

The Southern Ocean Surf Reef will create a consistent, surfable wave central to Albany, driving benefits for the community, tourism, economic development & the retention of the region's younger age demographic.

The reef will deliver an optimised 'left-hander' surfing wave in the target range for beginner and intermediate surfers, providing surfing rides of up to 100m during average conditions with surfable waves expected for 41 per cent of the year over the reef with further increased surfing opportunities inshore of the granite rock structure.

OBJECTIVES + OUTCOMES

- The facilitation of a recognised hub in Albany would provide substantial benefits, both economically and socially.
- The project will provide a significant tourism draw-card in Albany's winter season and an increase in the number of visitors and how long they stay.
- The surf reef will create a consistent, quality wave appropriate for holding events at state and national levels.
- The project will improve the social wellbeing and interaction of the regional community and foster positive cultural outcomes.
- Enhanced marine ecology in and around the reef structure; especially for snorkelling and diving activities during periods when the wind and wave conditions are less than ideal for surfing (typically coinciding with onshore winds from January to April each year).
- Analysis of the Surf Reef, indicates that the reef will have minimal impact on the shoreline.
- The project complements other initiatives in the City and will take advantage of tertiary educational opportunities, such as the overlap with marine science and courses held at UWA.

PROJECT CHALLENGES

- Continued and unpredictable escalation in construction costs.
- Window for marine based works to be undertaken between October and February, in any given year.
- Project cannot be staged or scaled.

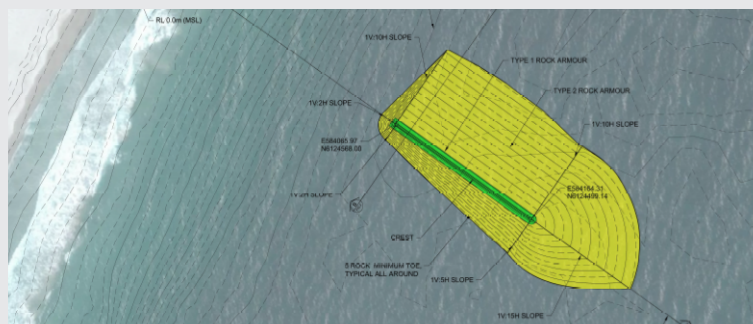
PROJECT TEAM

Design: Bluecoast Consulting Engineers
Project Management: City of Albany



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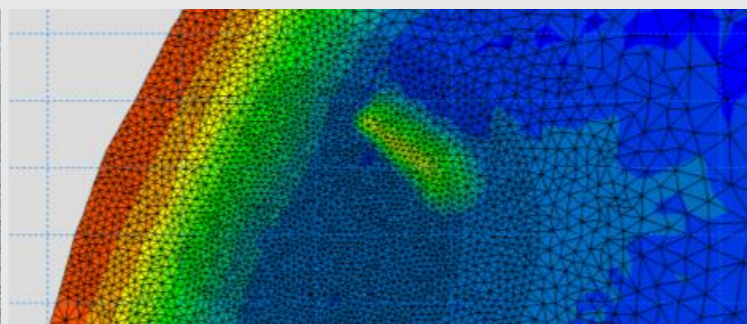
SURF REEF DETAIL DESIGN + DOCUMENTATION

- Detailed design has been produced through an extensive development program of numerical & physical modelling.
- The artificial surf reef will convert the current dumping (close out) waves to plunging and spilling waves.
- Waves will break at an average height of 0.75m to 1.3m; suitable for beginner to intermediate surfers.
- The reef will be constructed from a submerged granite rock structure with no visual effect from the beach.
- The location of the reef will be approximately 150-200m offshore, at the area known as 'Surfers'.



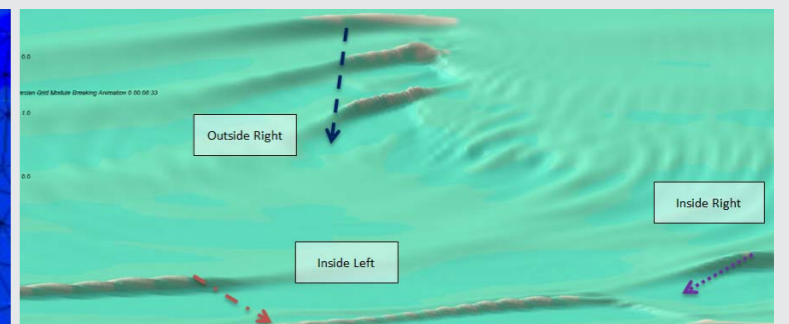
WHAT THE REEF WILL DELIVER

- A consistent surfable wave – a surfable wave will break on the reef a minimum 41% of the year; a 30-fold increase in the number of surfing days currently along Middleton Beach.
- Improved conditions for surfing inshore; Shorter and faster breaks created inside and either side of the structure that will accommodate a wide range of surfers and surf crafts.
- Enhanced marine ecology in and around the reef structure; especially for snorkelling and diving based activities during smaller to medium wave conditions.



COASTAL PROCESSES

- Desire to build structures from conventional engineering materials such as rock armour rather than experimental technologies (such as geotextiles) eliminates the safety and construction issues caused by shifting or deteriorating geotextiles.
- Structures with permeable, rough surfaces (such as rock) help to reduce wave reflection, rip currents and localised scour in and around the structure.
- Distance to shore, crest-depth and effective crest-width have been designed to ensure minimal shoreline response in the lee of the structure, maintaining natural beach amenity at Middleton Beach.



SURFING SCIENCE

- The peel angle of a wave is defined as the angle between the trail of the broken wave (white water) and the crest of the broken wave as it propagates forward. Larger peel angles suit beginner surfers and smaller peel angles are favoured by more advanced surfers.
- Waves can break with different intensities from spilling to collapsing, and is predominantly governed by the slope, permeability and the dimensions of a reef structure.
- This reef has been designed to induce a moderate breaker intensity in combination with a medium peel angle to create a desirable, unbroken, surfable wave face to cater for the largest number of wave riders