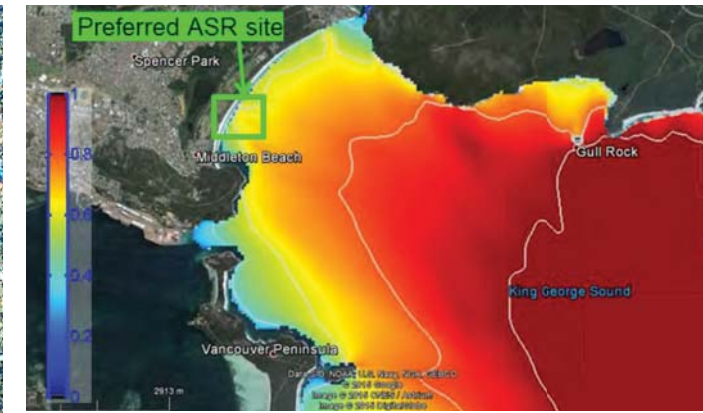
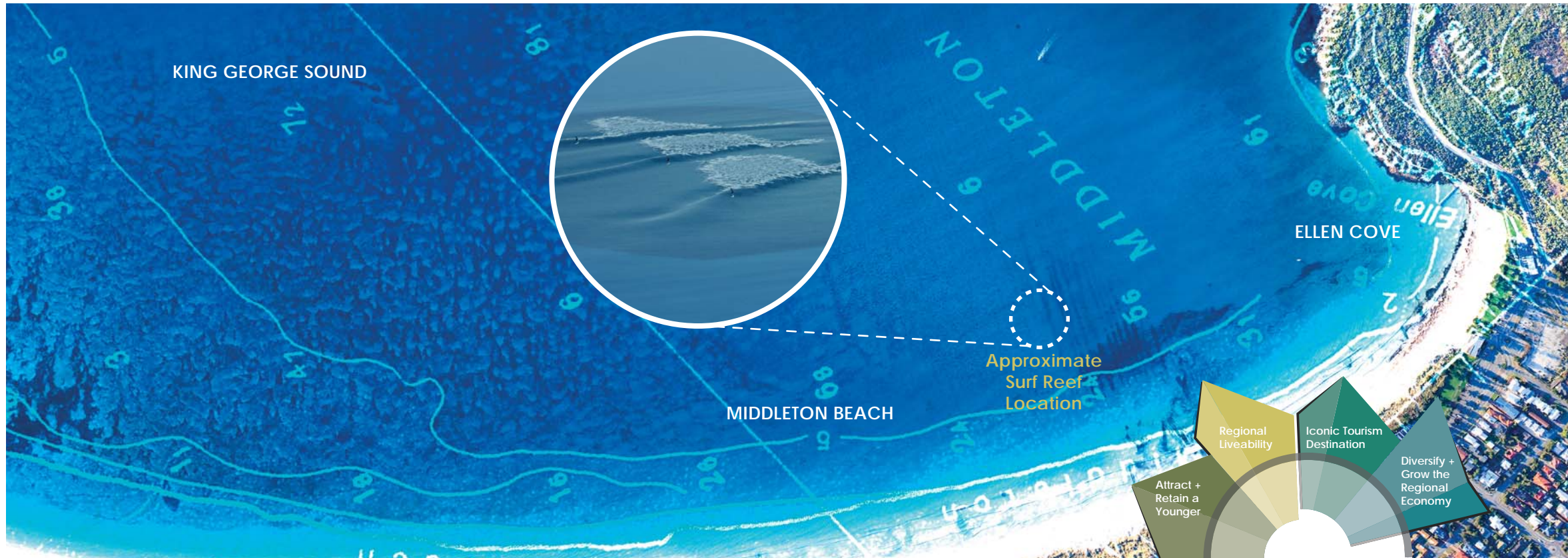




*VISION: 'To create a consistent, surfable wave central to Albany, driving benefits for the community, tourism, economic development, + the retention of the region's younger age demographic'*

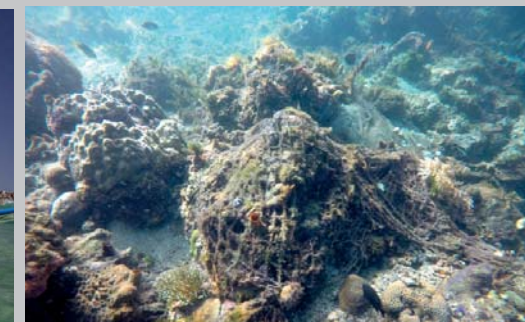
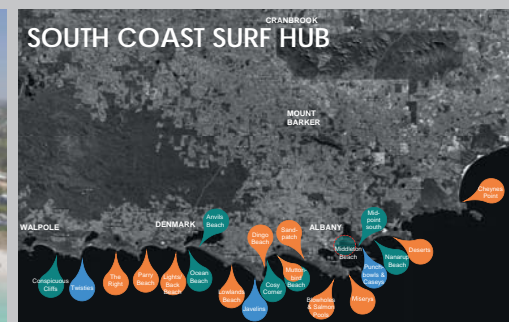
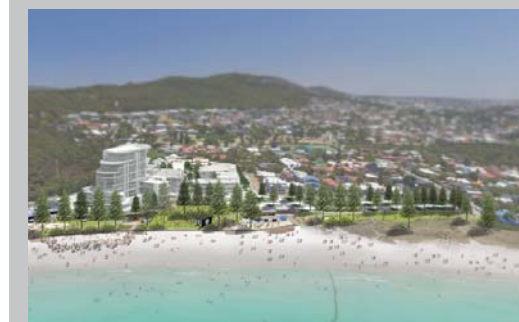
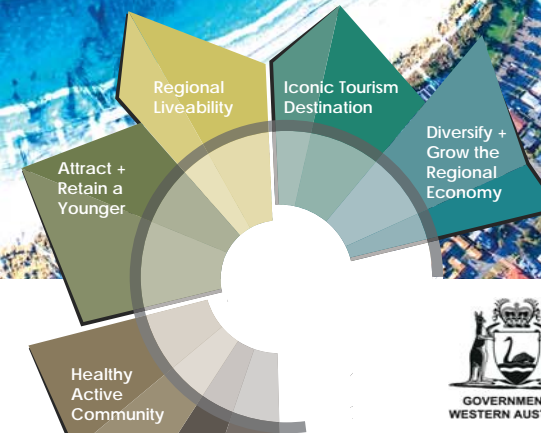


**KEY LOCAL STAKEHOLDERS**

- Lower Great Southern Economic Alliance
- Tourism WA
- Australia's South West
- Albany Chamber of Commerce & Industry
- Great Southern Development Commission
- YMCA WA
- Albany Youth Support Ass. WERC
- Dept. of Water & Environmental Regulation
- Southern Ports Authority
- Dept. of Transport
- South Coast NRM
- Middleton Beach Group
- Albany SLSC
- Albany Boardriders Inc.
- Surf Life Saving WA
- Friends of Emu Point
- Disabled Surfers Association of Australia
- Albany Granny Grommets
- Ocean Heroes
- GS Dept. Sport & Rec.

# ALBANY ARTIFICIAL SURF REEF

@ MIDDLETON BEACH, ALBANY, WESTERN AUSTRALIA



**DIVERSIFY + GROW THE REGIONAL ECONOMY**

- Cost-benefit analyses demonstrate a positive NPV of \$13.2m (BCR of 2.69), clearly deriving from the high level of community benefits that would accrue.
- The project is expected to create 34 FTE direct jobs during construction and 140 FTE jobs in the economy, and 39 sustainable long-term FTE jobs in the region.
- Further economic benefits will accrue through increased land values and the attraction of investment in new infrastructure at MB Activity Centre.

**ICONIC TOURISM DESTINATION**

- 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.
- It will create an opportunity for Albany to be recognised as a Surfing Town; a clustering of multiple recognised surfing spots in the region.
- The surf reef will create a consistent, quality wave appropriate for holding events at state, national and international levels.

**REGIONAL LIVEABILITY**

- The project will deliver a recreational outlet that contributes to Albany's liveability and reputation, providing for diversified interests in the community.
- The project also 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.
- The facilitation of a recognised hub in Albany would provide substantial benefits, both economically and socially.

**ATTRACT + RETAIN A YOUNGER GENERATION**

- There is a critical need to retain young populations in the regions into the future through initiatives that aim to revitalise regional cities and towns and cater for young interests, needs and desires.
- Enabling surfing and water sports to be undertaken at Middleton Beach will improve safety through increased monitoring and proximity to the Albany SLSC and will be accessible by walking, riding or public transport.

**HEALTHY ACTIVE COMMUNITY**

- Prevention, including access to sport, recreation and open spaces, is identified as having the most impact and beneficial approach to the obesity epidemic.
- Considered particularly popular amongst all generations, surfing offers a significant recreational outlet that will engage the community, get them outdoors and active.
- The project will improve the social wellbeing and interaction of the regional community and foster positive cultural outcomes with a strong sense of place.

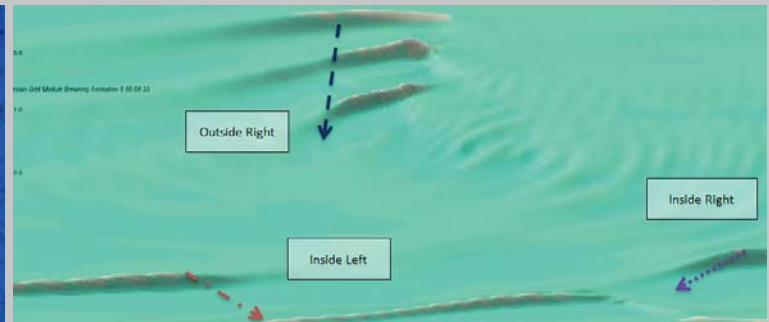
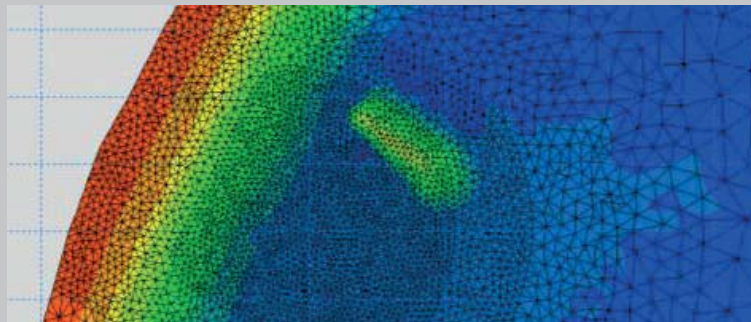
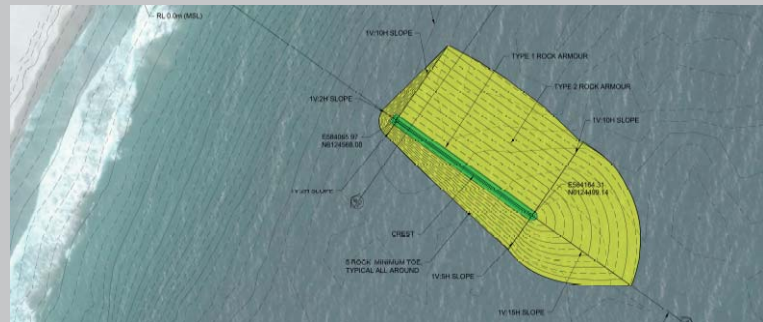
**LONG-TERM SUSTAINABLE INFRASTRUCTURE INVESTMENT**

- Enhanced marine ecology in and around the reef structure; especially for snorkelling, diving and fishing based activities especially 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, indicate that the reef has the potential to increase marine ecology and will have minimal impact on the shoreline.



# ALBANY ARTIFICIAL SURF REEF

@ MIDDLETON BEACH, ALBANY, WESTERN AUSTRALIA



### SURF REEF DETAIL DESIGN + DOCUMENTATION

- The detailed design phase will refine the design solution, cost and manage risk to enable investment to be sought with confidence for the projects potential implementation.
- 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 200-280m 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 50% 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.
- Facilitate fishing based activities, especially 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).

### 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