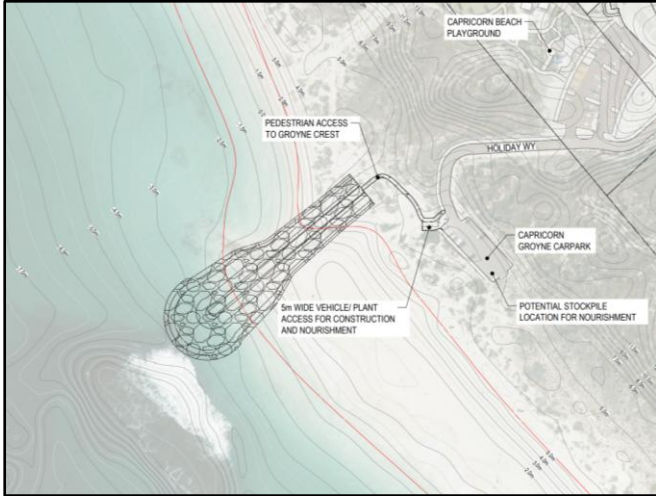


Yanchep Coastal Management Study – Options Assessment

Capricorn Groyne Extension

Extension options for Capricorn Groyne assessed, coupled with proactive beach nourishment.



Pros

- Improved beach amenity along Yanchep Beach,
- Cost effective given existing structure/material on site, and
- Opportunity for improved access and fishing amenity.

Cons

- Potential additional erosion to the north to be managed with beach nourishment as required, and
- Potential environmental and social impacts to be managed during construction.

Additional Groyne Options

Assessed the placement of an additional groyne at three separate locations along Yanchep Beach.



Pros

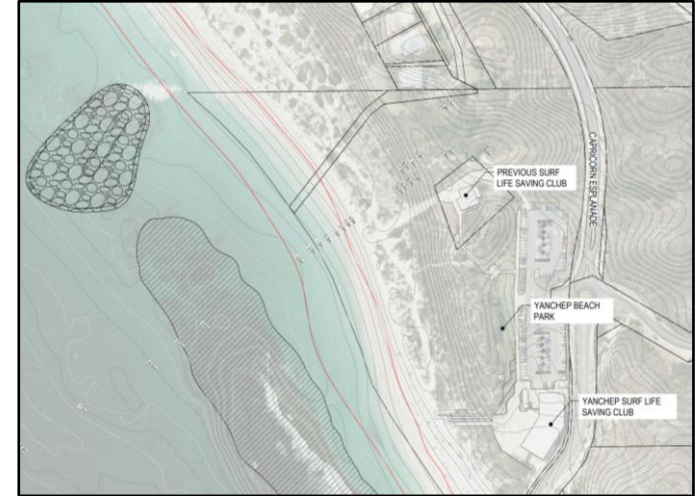
- Targeted improvement of beach amenity at Yanchep Lagoon.

Cons

- Significant capital cost for additional structure,
- Additional structure footprint and visual amenity reduction, and
- Beach erosion to the north of structures.
- Potential safety issues due to increased current speeds.

Artificial Reef Enhancement

Assessed the enhancement of existing reef structure near the entrance to the lagoon.



Pros

- Localised improvement of beach amenity at Yanchep Lagoon,
- Potential additional surfing and swimming amenity.

Cons

- Very high capital expense due to marine construction,
- Potential environmental and social impacts to be managed during construction,
- Potential impact to Aboriginal Cultural Heritage areas.
- Potential for higher than predicted shoreline growth infilling the lagoon.

Multi-Criteria Assessment included:

Function

- Effectiveness at maintaining beach amenity.
- Effectiveness at maintaining beach access.
- Adaptability to future climate change effects.

Technical Feasibility

- Technical feasibility to construct.
- Technical feasibility to maintain.

Economic Impact

- Capital expense.
- Ongoing expense.

Social Impact

- Social impact during construction.
- Ongoing social impact.
- Impact to Aboriginal cultural heritage.

Environmental Impact

- Environmental impact during construction.
- Ongoing environmental impact.

Benefit-cost Analysis

Four options analysed by UWA experts in Environmental Economics.

1. Refurbishment of Capricorn Groyne with reactive sand nourishment program – Capital cost estimate: \$1.6 million.
2. Refurbishment of Capricorn Groyne with proactive sand nourishment program – Capital cost estimate: \$1.6 million.
3. Refurbishment and extension of Capricorn Groyne with proactive sand nourishment program – Capital cost estimate: \$2.1 million.
4. Refurbishment of Capricorn Groyne, proactive sand nourishment program and construction of an artificial reef – Capital cost estimate: \$12.3 million.

Value of benefits vs cost (in present day dollars) based on a 50-year coastal management period.

Social value data specific to the Yanchep coast was collected through previous research by UWA.