



Community Consultation Quinns Beach Long Term Coastal Management Options

Joanna Garcia-Webb

Community Information Session

- **Cardno Presentation**
- **Breakout Sessions**
- **Formal Q/A Session**
- *Community Feedback*



Study Area



Section 6

Jindalee

Spearwood Reef Ridge

Section 5

Queenscliff Park

Groyne 3

Section 4

Groyne 2

Section 3

Groyne 1

Section 2

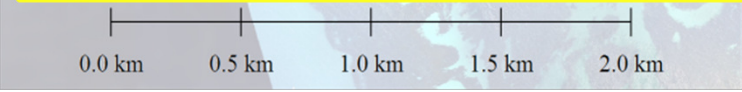
GSC Revetment

Section 1

Artificial Headland

Staggie Reef Ridge

Marmion Reef Ridge



Quinns Beach Coastal Investigation History

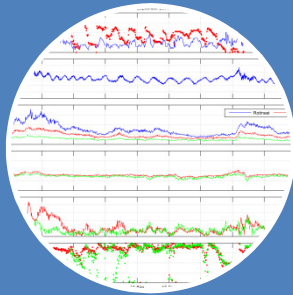
1. Initial studies & groyne construction 1999-2004
2. Coastal Management Review 2012-2014
3. Emergency Protection Works 2013-2014
4. Metocean Data Collection 2014 & 2015
5. **Quinns Beach Long Term Coastal Management Study**

Quinns Beach Long Term Coastal Management Study

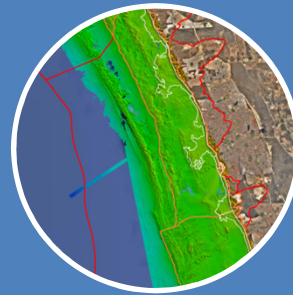
- Stage 1: Coastal Processes Assessment
- Stage 2: Coastal Management Options Assessment
 - Conceptual options assessment
 - Multi-criteria analysis
 - Community Reference Group workshops
 - Outcome: Two Preferred Options
- Stage 3: Detailed Design
- *Stage 4: Tendering and Construction*
- *Stage 5: Advice post construction*

Coastal Processes Assessment

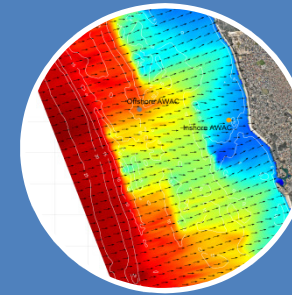
Approach and Methodology



Measured
Data



Conceptual
Model



Numerical
Model



Coastal Processes Conclusions

- Quinn's Beach experiencing erosion due to unbalanced sediment budget
- Estimated sediment deficit of 20,000 m³ annually due to loss of sand offshore during storms
- Presence of coastal structures localise impacts of storm erosion. Erosion location dependant on climatic conditions over previous seasons / months
- Similarly, coastal structures can be used to retain sand in specific locations → focus management & sand loss to lower amenity, higher resilience shorelines
- Ongoing, active coastal monitoring and management will be necessary at Quinns Beach

Conceptual Options Assessment

Conceptual Options Assessment

Assess coastal management options and identify a preferred option based on a multi-criteria analysis

- Three rounds of quantitative options assessment and refinement with review and input from the City and Department of Transport
 - 20 options assessed / modelled (including community suggestions)
- Reduced to 5 options for Multi-criteria Assessment
- Workshops with Community Reference group
 - Refinement of MCA scoring
- Top 2 scored options from MCA discussed today
- Community Feedback & Council decision on preferred option

Key Stakeholder!



Preferred Options

Preferred Coastal Management Option 1

Option 1 – Modify existing groynes (2 & 3), add new northern groyne (groyne 4) and beach renourishment.

- Aims to protect car park and dog beach areas by trapping and holding greater volume of sand.
- Longer, extended groynes will result in significant seasonal variation in beach width and may result in increased erosion north of Quinns Beach in long term.

Option 1

Extend Groynes 2 & 3,
Add new Groyne 4,
Renourishment



Option 1 - Modification of Existing Groynes



OPTION 1 - GROYNE 2 EXTENSION



Option 1 - Modification of Existing Groynes

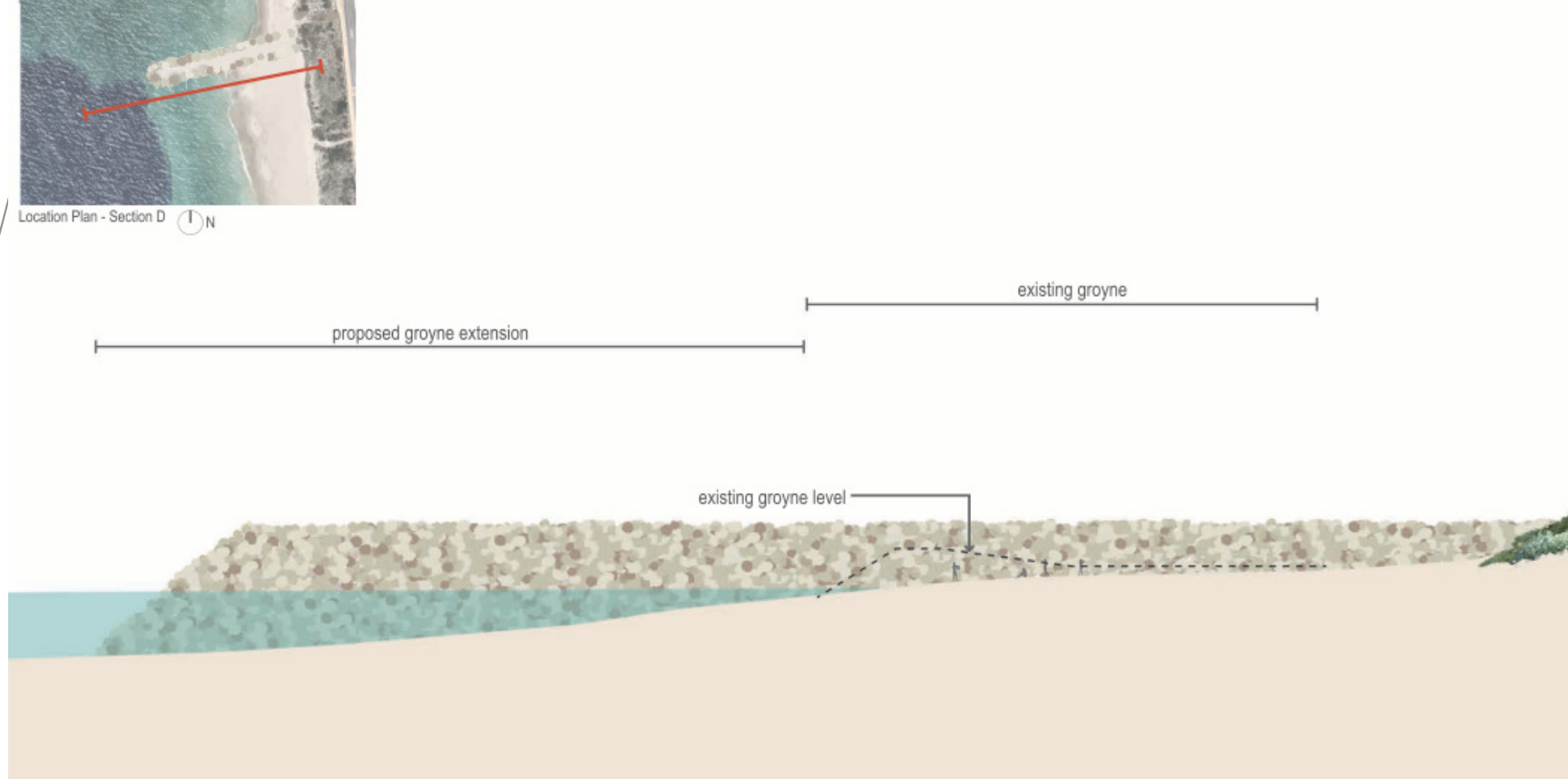


OPTION 1 - GROYNE 2 & 3 EXTENSION, GROYNE 4 & BEACH RENOURISHMENT

Option 1 - Groyne 2 Extension



Location Plan - Section D



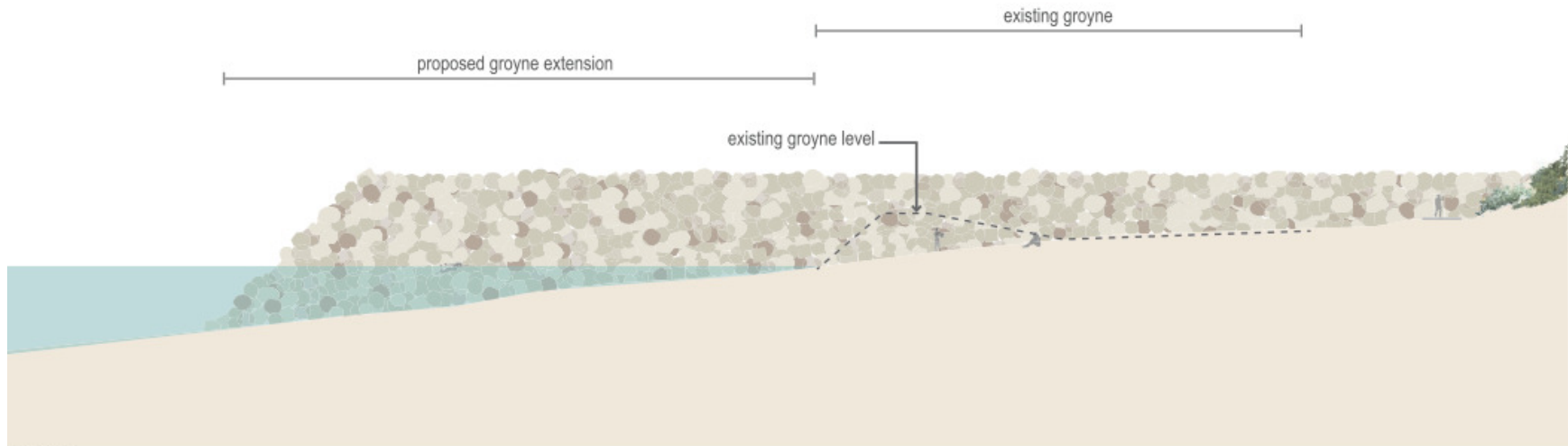
Section D

OPTION 1 - GROUYNE 2 EXTENSION

Option 1 - Groyne 3 Extension




Location Plan - Section E



Section E

Option 1 & 2 - Groyne 4



Location Plan - Section C 



Section C

OPTION 1 & OPTION 2 - GROUYNE 4

Option 1 - Groyne 2 Extension



Option 1 - Groyne 2 Extension



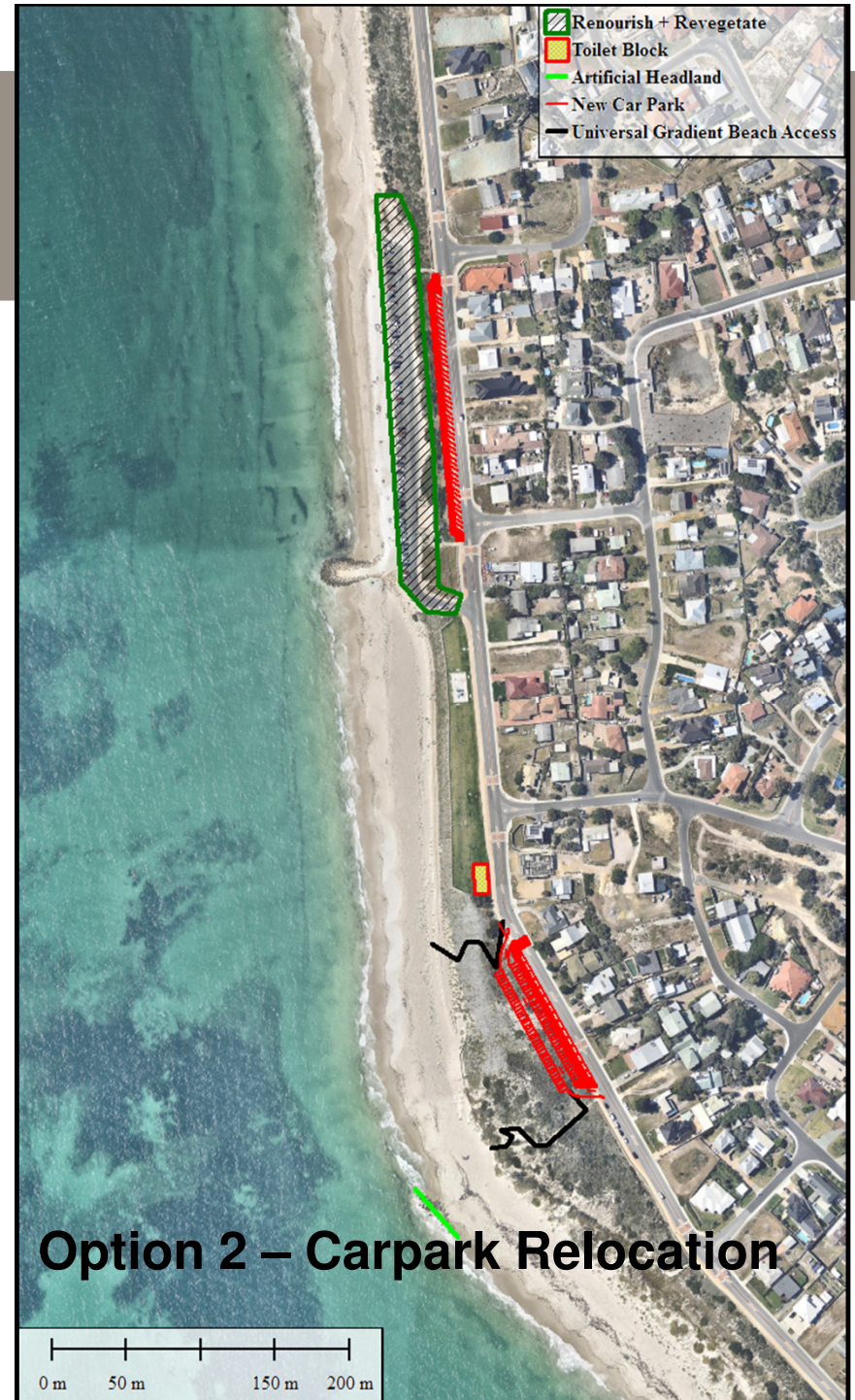
Key Stakeholders



Preferred Coastal Management Option 2

Option 2 – Relocate Quinns Beach Car Park, add new northern groyne (groyne 4) and beach renourishment.

- Removal of existing car park and dune rehabilitation will enable natural beach erosion and recovery cycles to occur without damage to infrastructure.
- Establish new car park to south with greater number of car bays, set back from beach.
- Construction of groyne 4 will aid in trapping and holding sand to south of structure, reducing erosion issues.
- Retention of existing groyne (1, 2 & 3) lengths will allow sand to bypass the existing structures - less likely to have negative impacts to the north of Quinns Beach in the long term.



Option 2 - Relocation of the Car Park



OPTION 2 - RELOCATED CAR PARK



Option 2 - Relocation of the Car Park



OPTION 2 - GROUYNE 4 & BEACH RENOURISHMENT

CITY OF WANNEROO QUINNS BEACH OPTIONS

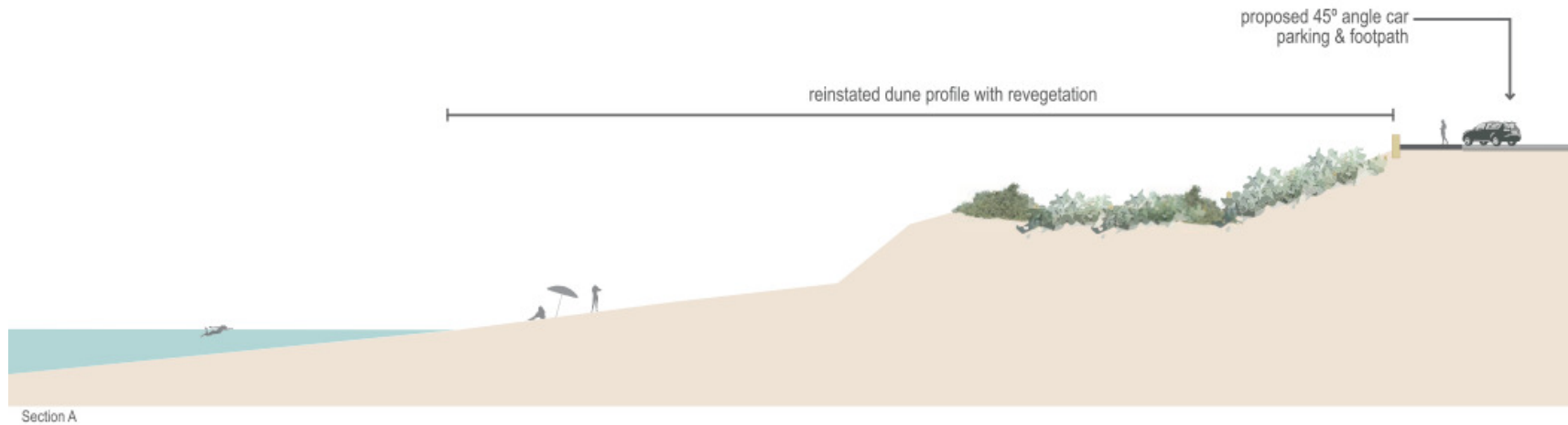
DATE	DRAWING NO	ISSUE
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Option 2 - North of Groyne 1



Location Plan - Section A



proposed 45° angle car parking & footpath

reinstated dune profile with revegetation

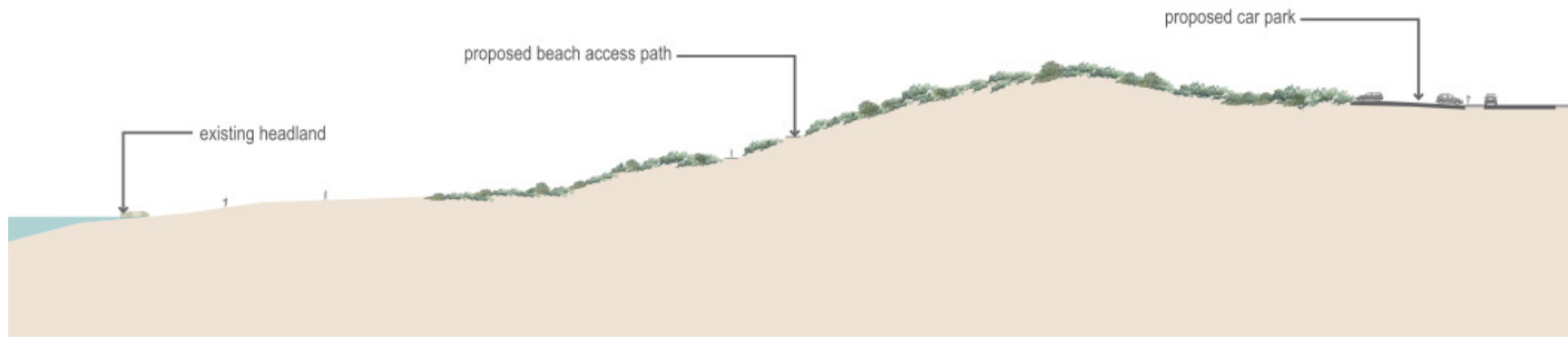
Section A

OPTION 2 - RELOCATE CAR PARK, NORTH

Option 2 – New Car Park




Location Plan - Section B



Section B

Option 1 & 2 - Groyne 4



Location Plan - Section C 



Section C

OPTION 1 & OPTION 2 - GROUYNE 4

Multi-Criteria Analysis

Pros & Cons of the Two Preferred Options

Multi-Criteria Assessment

- Public perception
- Environmental impacts / impact on adjacent coastline
- Likely effectiveness
- Capital cost
- Maintenance cost
- Safety
- Adaptability for climate change

Pros & Cons

	Advantages	Disadvantages
Option 1	<ul style="list-style-type: none"> ▪ Provides protection and improved storm erosion resilience to the car park, dog beach and adjacent public and private infrastructure. ▪ Maintains beach amenity near existing car park. ▪ Maintains current access for beach and coastal structure maintenance at the existing car park location. ▪ Longer groynes may allow for improvements to informal recreational activities (i.e. fishing). ▪ Likely to have a quicker approval process (no DA requirements). ▪ No significant removal of dune vegetation. 	<ul style="list-style-type: none"> ▪ Significant seasonal variation in beach width adjacent to extended groynes (summer - wide beach to the south and narrow beach to the north, winter - narrow beach to the south and wide beach to the north). ▪ May increase beach erosion further north, resulting in higher levels of renourishment or additional work. ▪ Longer and higher groynes may have a negative impact on visual amenity. ▪ All options are reliant on regular beach monitoring and annual maintenance. Maintenance requirements are dependent on the intensity of winter storms and beach erosion. ▪ Existing car park does not meet current safety standards. Unsafe pedestrian crossing at existing car park entrance due to steep access road.
Option 2	<ul style="list-style-type: none"> ▪ Allows for natural beach erosion and recovery cycles to occur at the existing car park location without damage to infrastructure. ▪ Reduces the exposure of the car park to waves and sediment transport. New car park and toilet block will be easier and safer to access than existing facilities. ▪ Existing sandbag revetment provides erosion protection to the new car park. ▪ Short groynes allow bypassing of sand resulting in less impact to the north of Quinns. ▪ Improved beach amenity and access to beach in front of new car park (south end of Fred Stubbs Park). ▪ Additional visibility of car park may reduce potential for anti-social behaviour. Improved safety of pedestrian crossings at car park entrance due to improved visibility and level with road. ▪ Rehabilitation of dune at car park location. 	<ul style="list-style-type: none"> ▪ Risk of continued erosion at existing car park location resulting in ongoing renourishment and/or additional work. ▪ New access will be required for beach and coastal structure maintenance at the existing car park location. ▪ New car park construction will require the removal of established dune vegetation and associated clearing permits. Loss of this vegetation is permanent and the value of this land has not been accounted for. ▪ Approval processes are likely to take longer due to replacement of facilities. ▪ All options are reliant on regular beach monitoring and annual maintenance. Maintenance requirements are dependent on the intensity of winter storms and beach erosion.

Capital & Maintenance Costs

	Initial Capital Cost	Initial Capital Cost Breakdown	Net Present Value (50 year timeframe)
Option 1	▪ \$5.4M	<ul style="list-style-type: none"> ▪ \$2.1M Groyne 2 extension ▪ \$1.0M Groyne 3 extension ▪ \$1.1M Groyne 4 ▪ \$1.2M Beach Re-nourishment 	<ul style="list-style-type: none"> ▪ \$13.0M ▪ Includes capital cost, annual beach re-nourishment and maintenance of groyne 1 (every 6 years), groynes 2 to 4 (at 20 years then every 10 years)
Option 2	▪ \$3.7M	<ul style="list-style-type: none"> ▪ \$1.1M New Car park ▪ \$0.3M Removal of old car park and dune rehab ▪ \$1.1M Groyne 4 ▪ \$1.2 Beach Re-nourishment 	<ul style="list-style-type: none"> ▪ \$9.8M ▪ Includes capital cost, annual beach re-nourishment and maintenance of groynes 1 to 3 (every 6 years) and groyne 4 (at 20 years then every 10 years)

Where to from here?

Where to from here?

- **Community Feedback**
- **Council Meeting**
- **Detailed Design**
- **Approvals and Tender**
- **Staged Construction**

Community Information Session

- **Cardno Presentation**
- **Breakout Sessions**
- **Formal Q/A Session**
- **Community Feedback**



QUINNS BEACH LONG TERM COASTAL MANAGEMENT OPTIONS

The City of Wanneroo is currently considering coastal engineering options for the long term management of the Quinns Rocks coastline. To ensure the chosen option aligns with community needs and expectations, please select your preferred option for further consideration in the detailed design stage of the Quinns Beach Long Term Coastal Management Study.

Community Information Sessions will be held at 10:30am and 6:30pm Wednesday 27 April 2016 at the Gumblossom Community Centre Sports Hall.

Refer to the City's website for further information:
<http://www.wanneroo.wa.gov.au/coastalmanagement>

Which coastal management option do you prefer?

Option 1 (Modification of Existing Groynes and Additional Groyne)

Option 2 (Relocation of Carpark and Additional Groyne)

Please tick () the relevant box*

Details of each option are provided on the attached information sheet.

Any comments you wish to make in support or otherwise are welcomed below:

Additional comments/information can be attached to this Comment Sheet.

Name(s)*: _____

Address/Suburb*: _____

Email/Phone: _____

(*) Required Fields

Please note that the City of Wanneroo will not be publishing any individual's details within any reporting that is presented in relation to this project. If you have provided contact details, the City will notify you of the date this matter will be considered by Council.

This comment sheet can also be completed online via the following link:
<https://www.surveymonkey.com/r/QuinnsCoastal>

Please return this Comment Sheet to the City at the Community Information Sessions, via the online survey or via the attached reply paid envelope no later than **29 April 2016**.

Please feel free to pass on copies of this Comment Sheet to other interested parties.

THANK YOU FOR YOUR FEEDBACK

THANK YOU!

