Mission Beach Safe Boating Infrastructure Project Presentation – Mission Beach – 29 November 2013

To improve the safety of boating conditions within Boat Bay

Introduction, The Hon. Andrew Cripps MP, Member for Hinchinbrook and Minister for Natural Resources and Mines

Stuart Pickering, Deputy Director General

Major projects Office DSDIP

- Paul Rees
- Blair Harper
- Andrew Browne

Aurecon Project Team

- Gildas Colleter, Coastal Services Technical Director
- Kim Walker, Environmental Planner

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Mission Beach Safe Boating Infrastructure Project

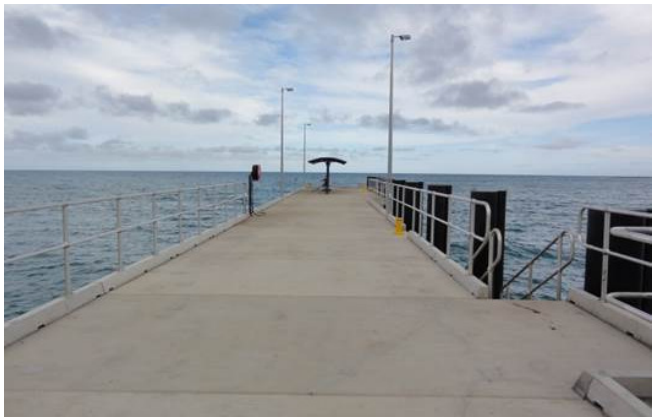
Stakeholder Presentation

Mission Beach

29 November 2013

Agenda

- Multi Criteria Analysis (MCA)
- Components investigated
- Design solutions
- Environmental and planning process
- Questions



Multi Criteria Analysis (MCA)

Purpose

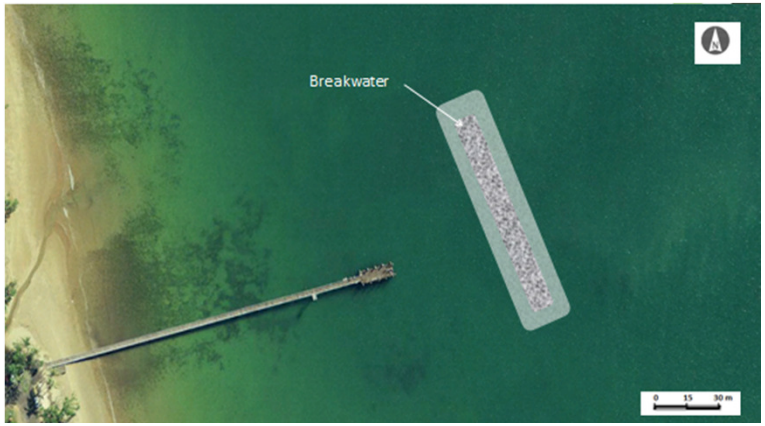
- Objective comparison of alternative solutions

Guiding principles:

- Separation of commercial and recreational facilities
- Improve tranquillity conditions
- Improve operational window at the jetty
- Minimise environmental impacts
- Safety enhancement of existing facilities
- Berthing facilities only, no moorings, no cyclone shelter
- Within available funding budget
- 5 ranking criteria
  - Impact
  - Effectiveness
  - Social values
  - Planning process
  - Economics

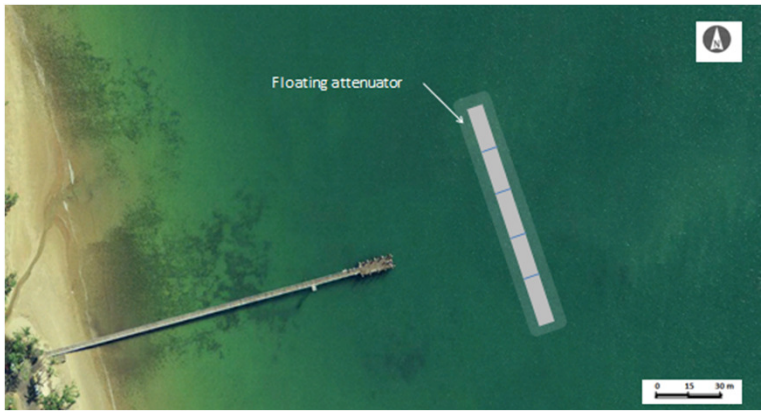
Design components

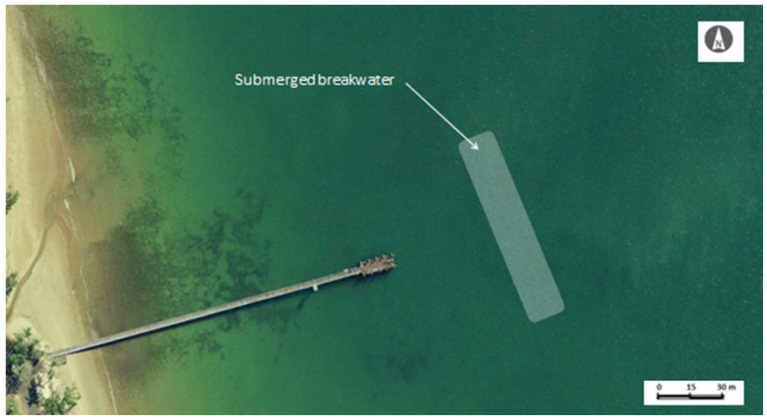
Clump Point Jetty (1/2)



Design components

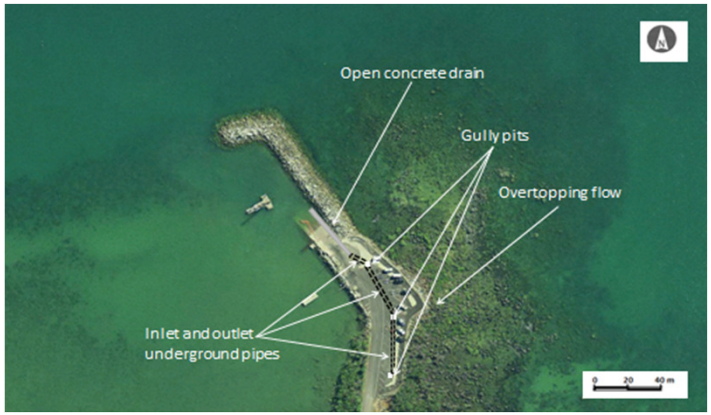
Clump Point Jetty (2/2)

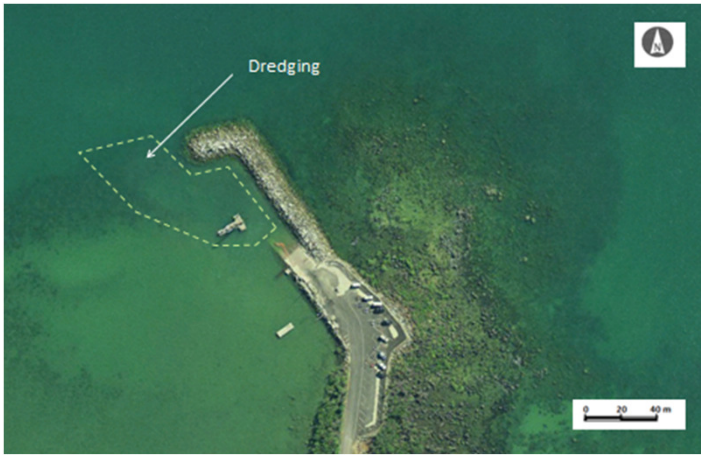


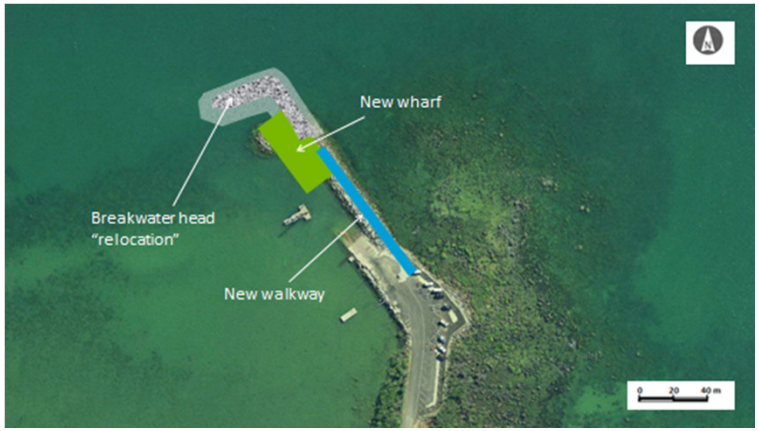


Design components

Clump Point Boat Ramp (1/3)







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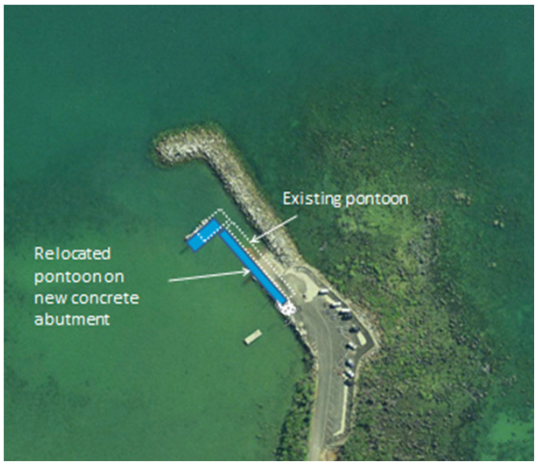
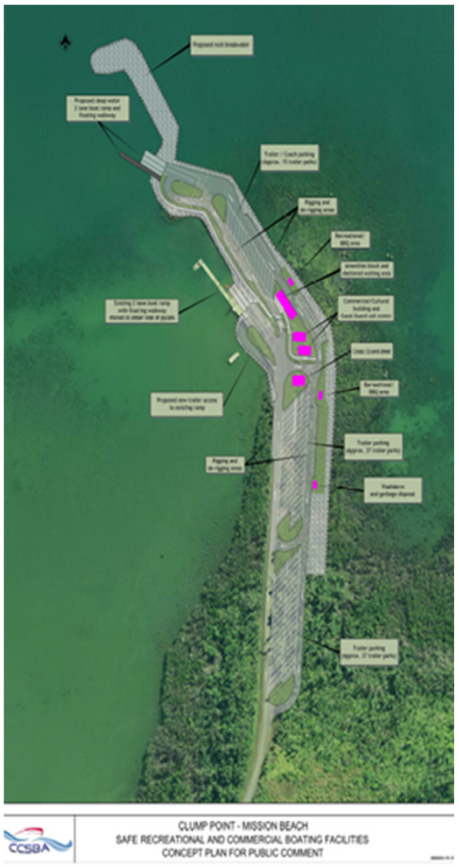
Design components

Clump Point Boat Ramp (2/3)





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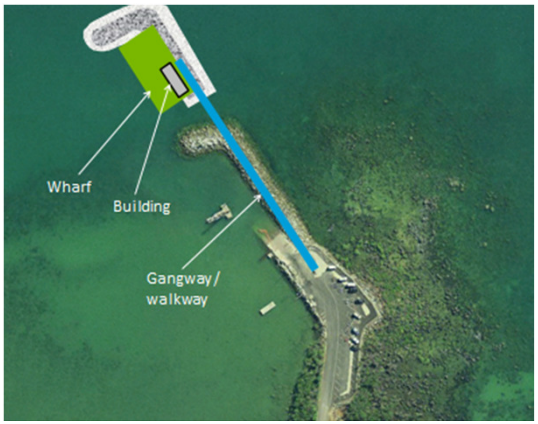
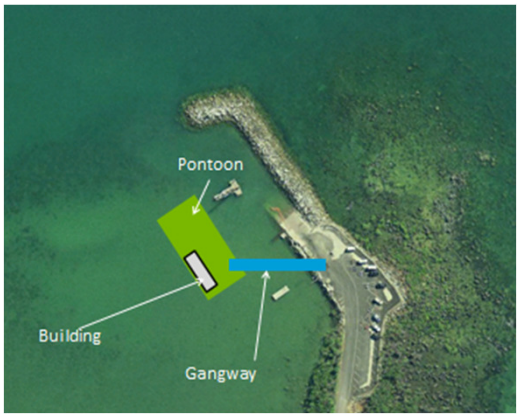
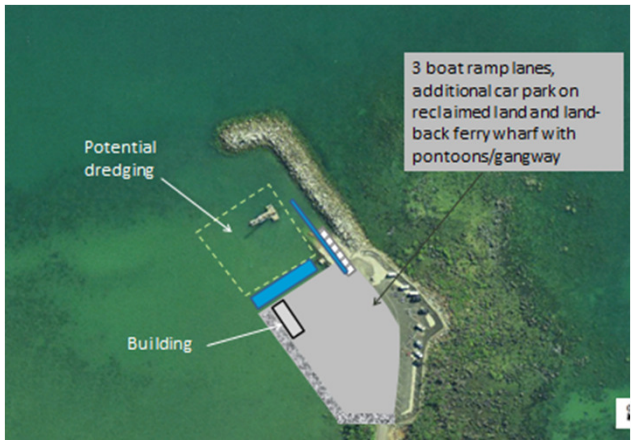
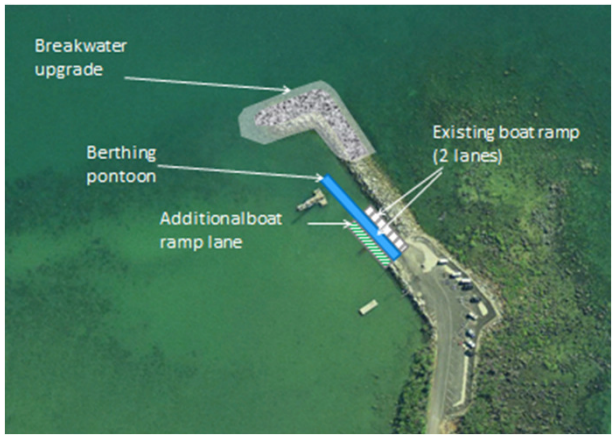
Design components

Clump Point Boat Ramp (3/3)









	Theme	(1) Impact							(2) Effectiveness					(3) Social value/community expectations				(4) Government process				(5) Economics		
	Criteria (KPI)	Marine Biodiversity (Surface of impact)	Beach & nearshore biodiversity (Surface of impact)	Terrestrial and marine impacts (sensitive location)	Env impacts beyond Clump Pt (Sedimentation, siltation)	Navigation (Increase in capacity)	Construction impact (time, month)	Non boating users (immediate increase in local road traffic)	Longevity (Design working life)	Addresses wave problem (wave transmition coefficient)	Failure consequence (Functional loss (low to high)	Technology challenges (multi-functionality, flexibility)	Cyclonic capacity (wave design standard, year ARI)	Visual Amenity (height x area from Alexander Drive)	Safe Boating (Safe Conditions)	Sense of place (typ. location of new users)	Suitability of materials (are construction material/technology already on site)	Roles and responsibilities (Number of approvals)	Compliance with coastal management objectives (complexity)	Approvals process/duration (IDAS timeframe, + prep time, Business days)	Assessment inputs (# of additional studies)	Capital cost ($)	Maintenance program (How often, year)	Lifecycle cost ($ per year over design life)
ID	Clump Point Jetty																							
1	Pontoon and connecting gangway	360	0	Unlikely	neutral	none	1	negligible	5	1	medium	Low	50	3 x 15	Adverse	similar	no	8	L	85	0	$4,082,250	1	$183,290
2	Breakwater	5500	0	Likely	tombolo	indirect	6	minor	50	0.15	low	Fair	200	2 x 120	Excellent	regional	no	8	H	115	0	$10,606,638	5	$222,739
3	Pile wave barrier	600	0	Likely	tombolo	indirect	4	minor	50	0.2	high	Fair	200	1 x 120	Excellent	regional	some	8	H	115	1	$11,081,980	1	$443,279
11	Disabled access	225	0	Unlikely	neutral	none	0.5	negligible	5	1	medium	Low	50	2 x 10	Adverse	similar	Yes	7	L	85	0	$2,147,475	1	$95,899
12	Caisson breakwater	1200	0	Likely	tombolo	indirect	2	minor	50	0.5	low	Good	200	2 x 60	Moderate	regional	some	8	H	115	1	$13,598,347	5	$285,565
13	Floating attenuator	3600	0	Unlikely	neutral	indirect	1	minor	25	0.5	high	Low	200	1 x 120	Moderate	regional	no	8	H	115	0	$14,700,000	5	$304,000
14	Overtopping breakwater	2400	0	Likely	intermediate	indirect	4	minor	50	0.3	low	Fair	200	1 x 20	Good	regional	some	8	H	115	0	$4,840,904	5	$101,659
	Clump Point Boat Ramp																							
4	Detached breakwater extension	1750	0	Likely	increased	indirect	3	negligible	50	0.15	low	Fair	200	2 x 50	Excellent	similar	yes	8	H	155	3	$4,652,766	5	$325,693
5	Flushing system	10	115	Unlikely	decreased	none	0.5	negligible	25	1	low	Low	50	0 x 0	Excellent	similar	yes	4	L	45	0	$676,448	1	$37,057
6	Dredging	2050	0	Likely	increased	none	0.5	negligible	5	0.8	medium	Low	none	0 x 0	Excellent	similar	-	9	H	155	3	$793,125	2	$428,287
7	Commercial wharf	850	240	Likely	increased	200%	9	250%	50	0.3	High	Good	200	2 x 40	Excellent	interstate	some	8	H	85	1	$16,872,464	1	$354,321
8	Re-positioning of existing pontoon	5	10	Unlikely	neutral	none	0.5	negligible	25	1	low	Low	50	1 x 10	Excellent	similar	yes	8	L	85	0	$274,600	1	$20,984
9	Third boat ramp lane	100	10	Unlikely	neutral	50%	2	30%	25	1	medium	Low	50	0.5 x 30	Excellent	local	yes	8	L	85	0	$957,103	1	$48,264
10	Additional car park	0	975	Likely	neutral	none	2	10%	25	1	medium	Low	50	0 x 0	Excellent	similar	yes	5	L	110	0	$483,788	1	$29,351
15	Offshore additional	800	500	Likely	increased	250%	9	50%	25	0.15	high	Good	200	2 x	Excellent	regional	some	11	VH	280+	6	$28,623,970	1	$601,103
16	Offshore Pontoon	1650	600	Likely	increased	200%	6	250%	25	0.15	high	Fair	200	2 x 50	Excellent	interstate	no	8	H	155	2	$12,162,714	1	$248,119
17	Commercial pontoon	420	10	Likely	neutral	200%	3	250%	25	1	high	Fair	50	2 x 10	Excellent	interstate	no	8	M	115	0	$ 8,500,000	1	$ 350,00
18	Sediment trap	2800	0	Likely	increased	none	0.5	negligible	5	0.9	medium	Low	none	0 x 0	Excellent	similar	-	11	M	115	3	$ 1,442,560	2	$ 69,24
19	Land-backed wharf	250	2000	Likely	increased	200%	4	250%	50	1	high	Fair	200	1 x 70	Excellent	interstate	no	11	VH	115	3	$ 8,178,381	1	$ 343,49
20	Berthing Pontoon	200	10	Likely	Neutral	indirect	1	negligible	25	1	medium	Good	50	1 x 40	Excellent	similar	yes	8	L	115	0	$ 7,917,430	1	$ 332,

Multi Criteria Analysis

Methodology

- Selection of design components (20 in total)
- Ranking and scoring along 5 themes
  - Environmental impacts
  - Effectiveness
  - Social value
  - Government process
  - Economics
- Grouping of design ‘options’ (19 options)
- Stakeholder workshop

Results

- Key messages
  - Dredging in marine park is undesirable
  - Reclamation may trigger change to marine park boundaries
  - Components with larger footprint rank poorly
  - Components which utilise existing facilities rank positively
  - Minimising lifecycle costs ranks positively

report link

Clump Point Boat Ramp

Design objective

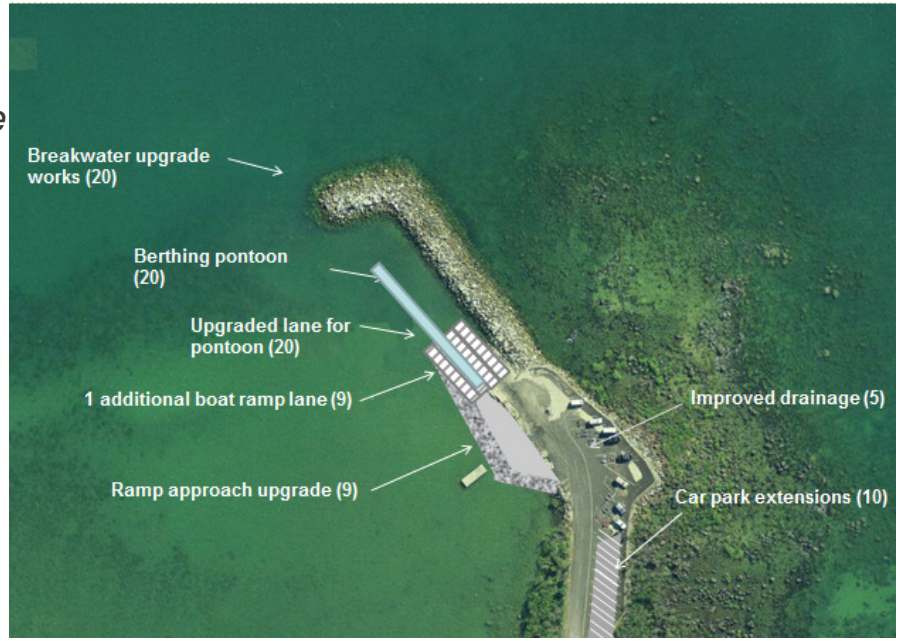
To upgrade existing facilities by enhancing safety and tranquillity conditions, and provide access for commercial operators when conditions at the jetty are unsafe

Elements

- Third boat ramp lane and approach reclamation
- Pontoon and gangway upgrade
- Breakwater and seawall upgrades
- Flushing/drainage system
- Car parking (x2)

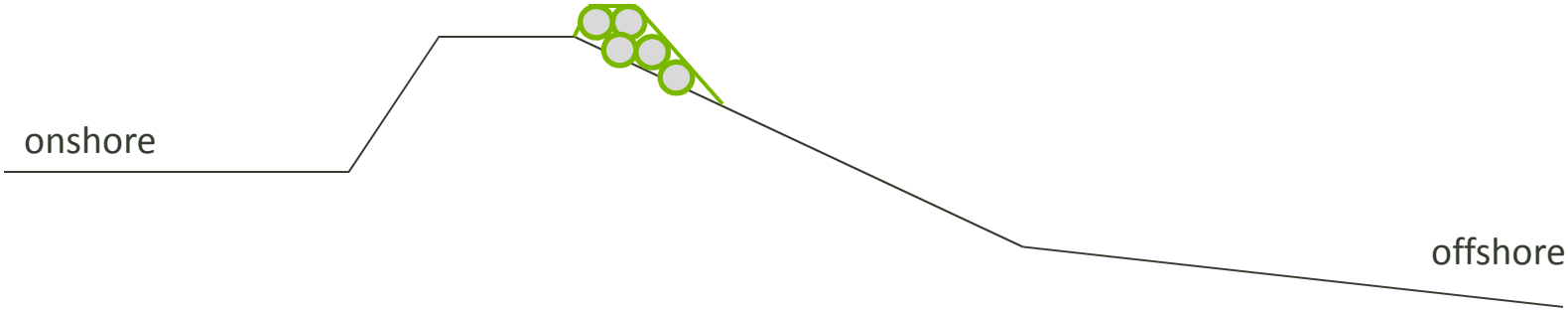
Design development

- Pontoon geometry
- Traffic safety/compliance
- 200 year cyclonic loading and 50 year design life on civil works
- 20 year design life for ramp, pontoon

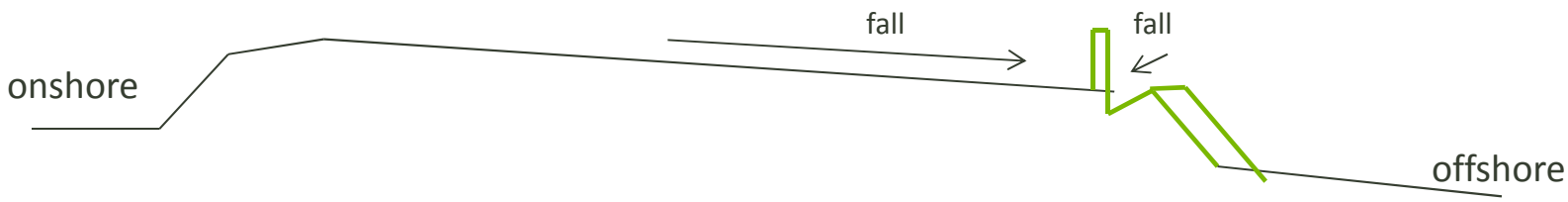


Typical cross sections

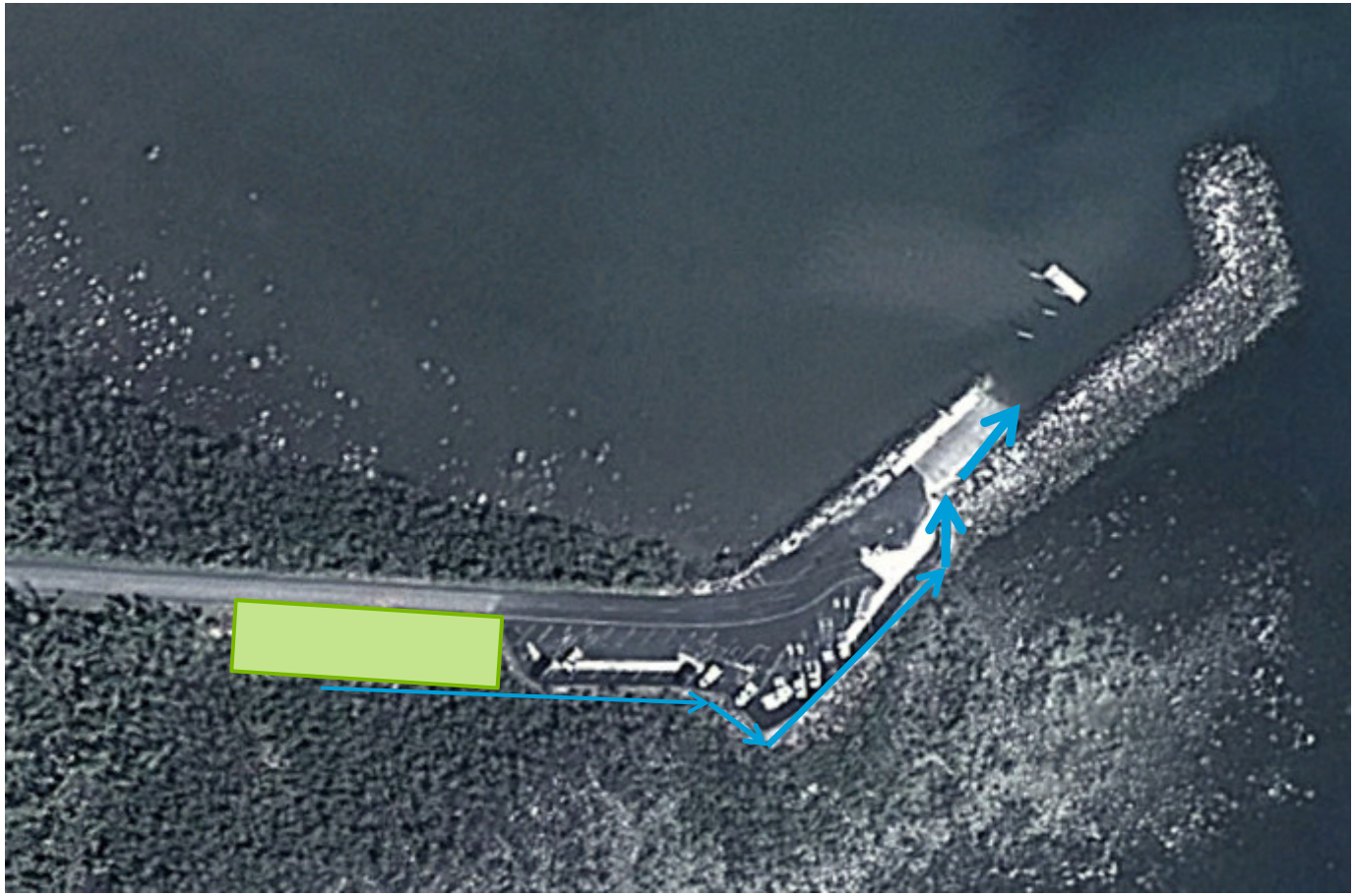
Breakwater crown - overtopping control



Reclamation edge – runoff and overtopping drain



Improved drainage



Car park extensions

“D” to “C” DTMR category

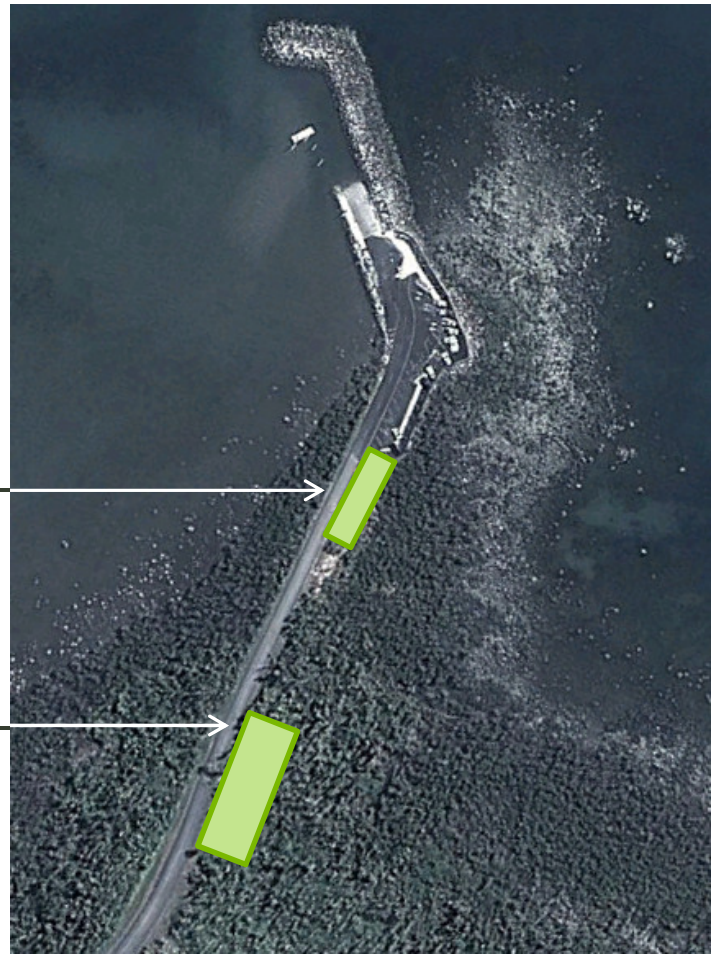
- Increase peak capacity from 15 CTU to 45 CTU

Car park 1 – 15 CTU

- Reclaimed
- Edge overtopping catch drain

Car park 2 – 15 CTU + overflow

- Road reserve
- Turning area TBC



Clump Point Jetty

Design objective

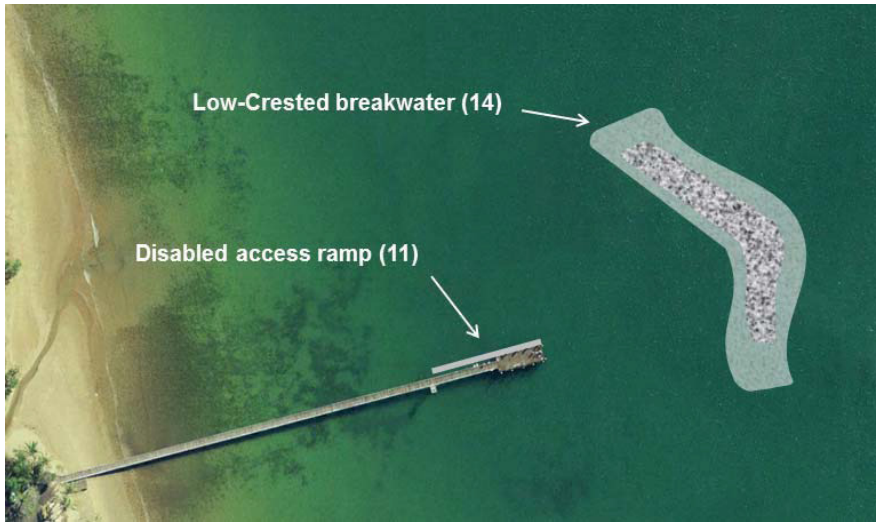
To improve the operational window for commercial operators, whilst minimising potential impacts on the marine environment and coastal processes

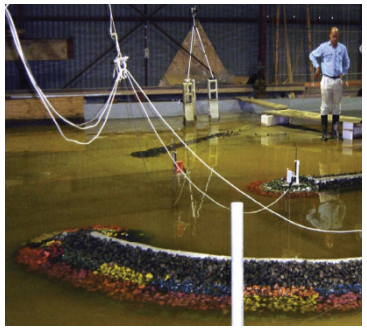
Elements

- Disabled access
- 'Overtopping' breakwater
  - Improve substantially operational wave climate at the jetty head
  - Minimise visual impact
  - Mitigate beach impact

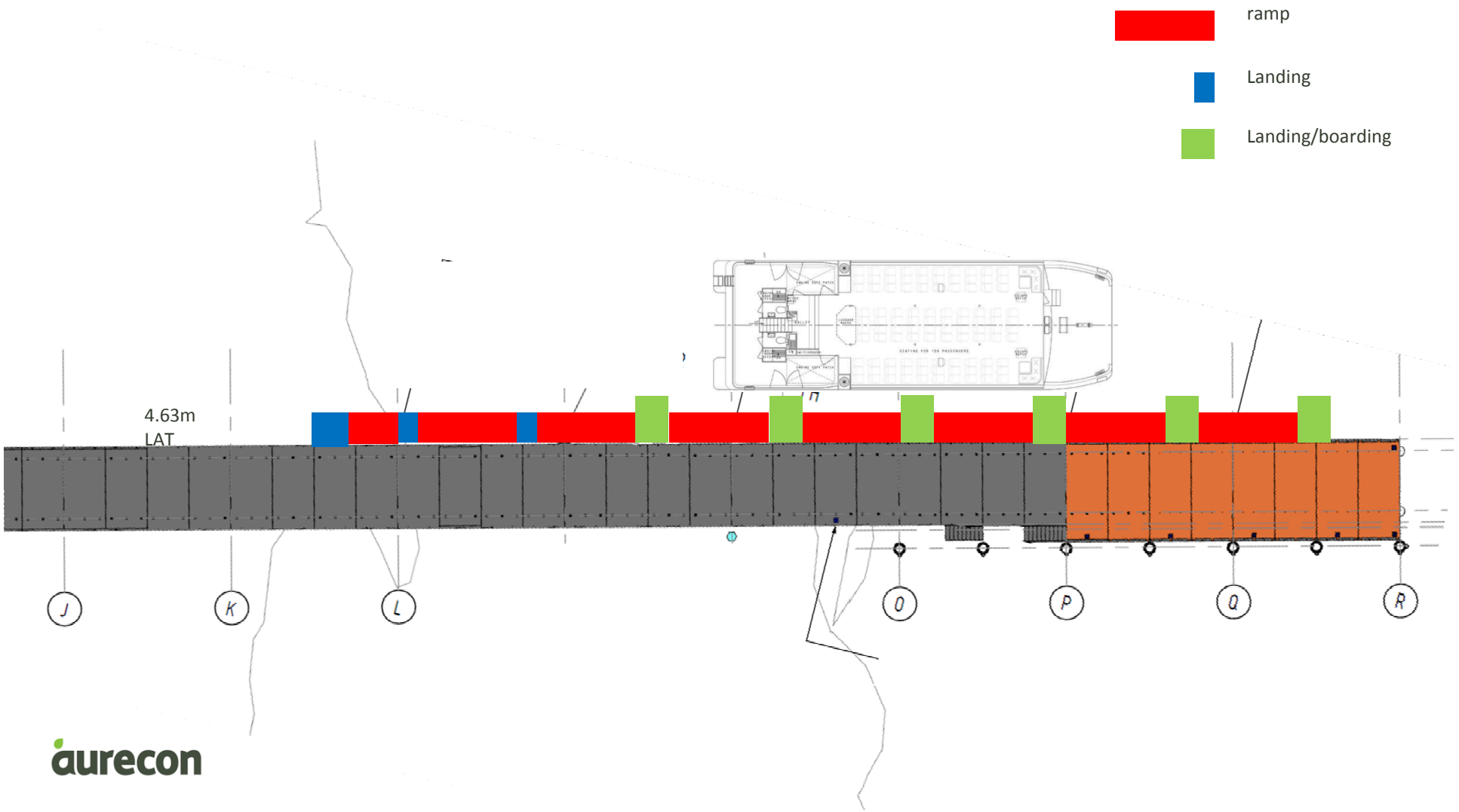
Design development

- Geotechnical investigations
- 3D Physical testing, including movable bed
- Marine surveys
- Numerical modelling





Jetty Disabled Access Ramp- concept design



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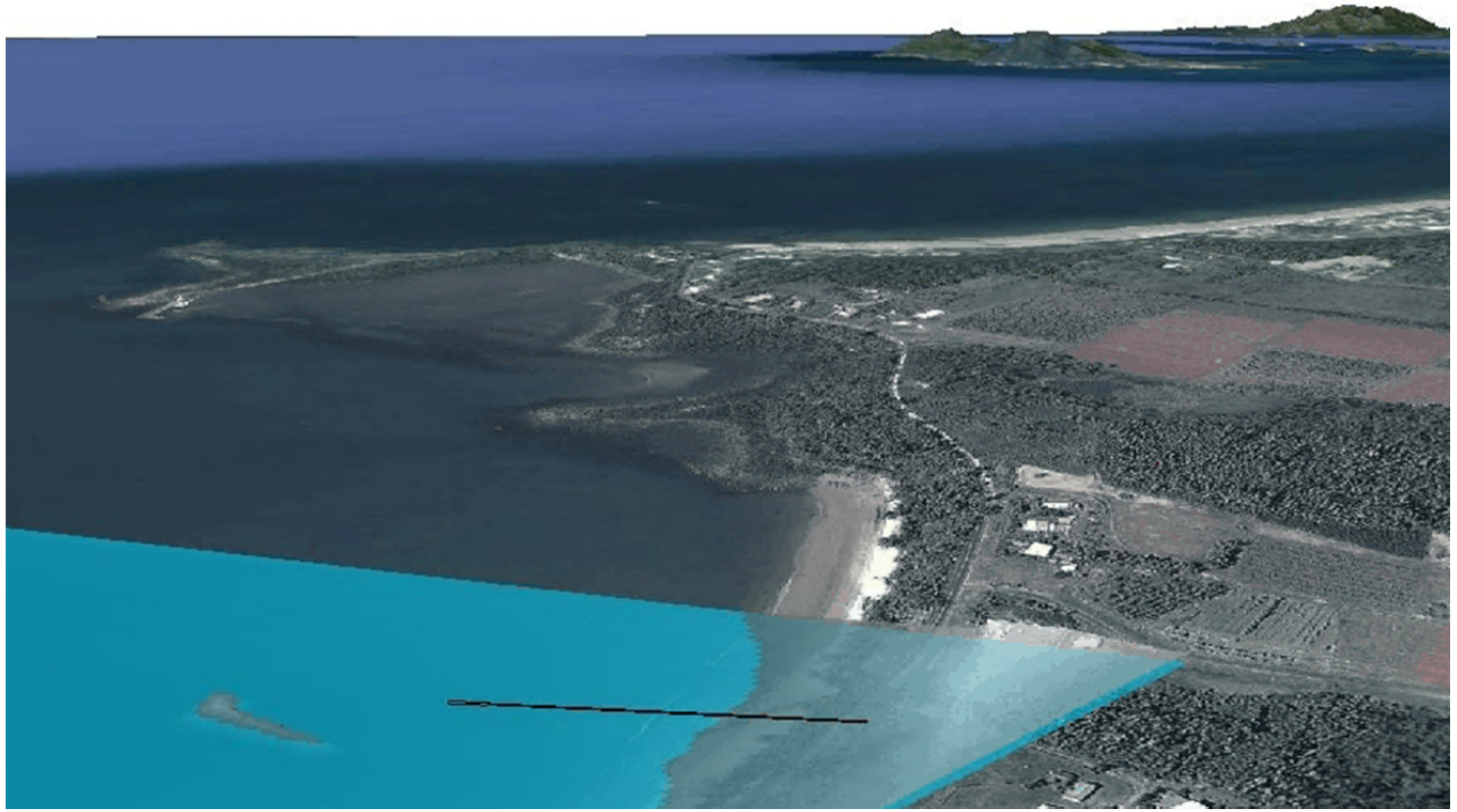
Overtopping breakwater



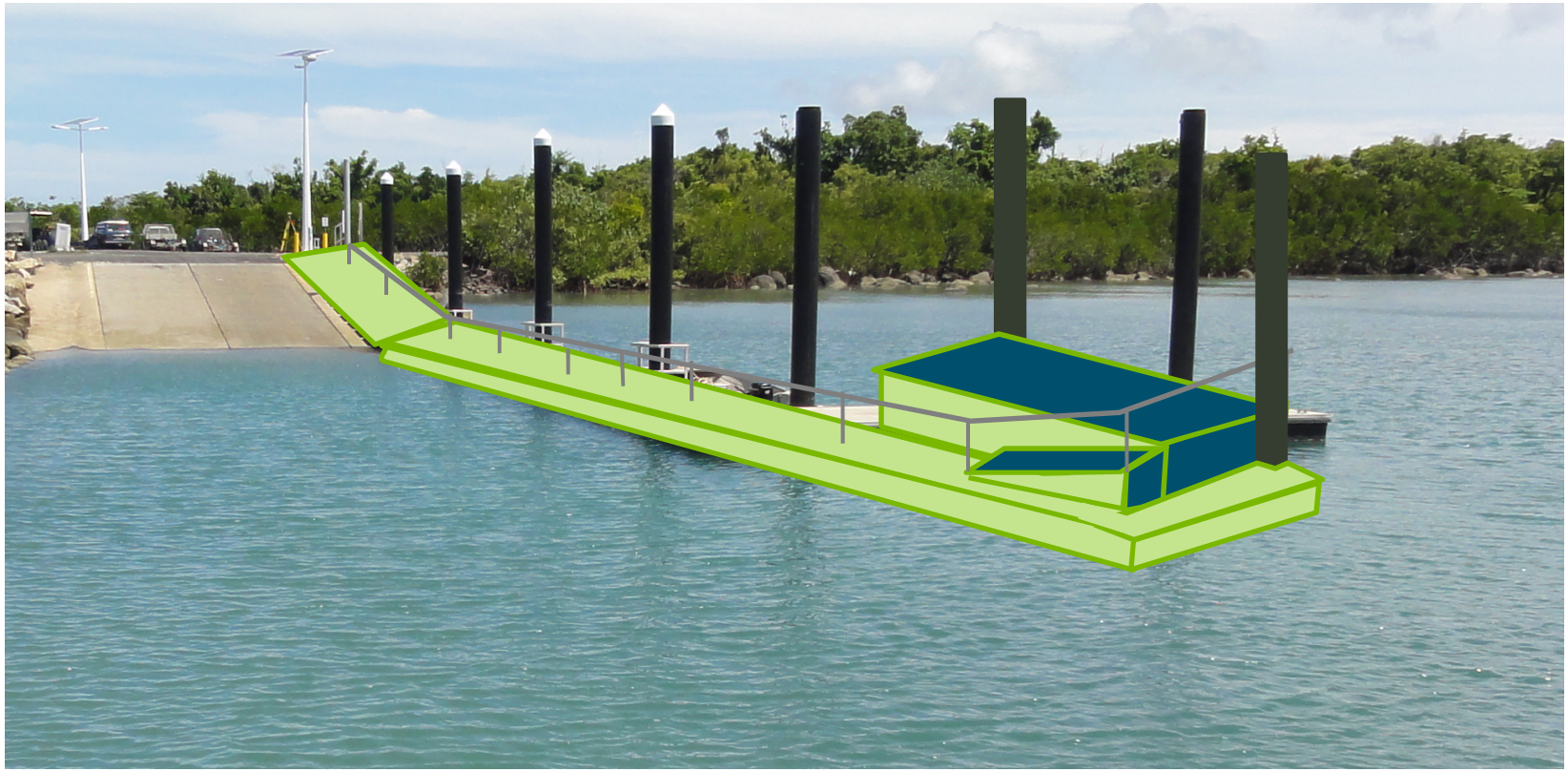
Standard breakwater rendering

Close up

Overtopping breakwater rendering

Close up

Pontoon



Environment and cultural heritage

Protected areas

- Great Barrier Reef Marine Park, National and World Heritage Area
- Cultural heritage sites and artefacts

Ecology

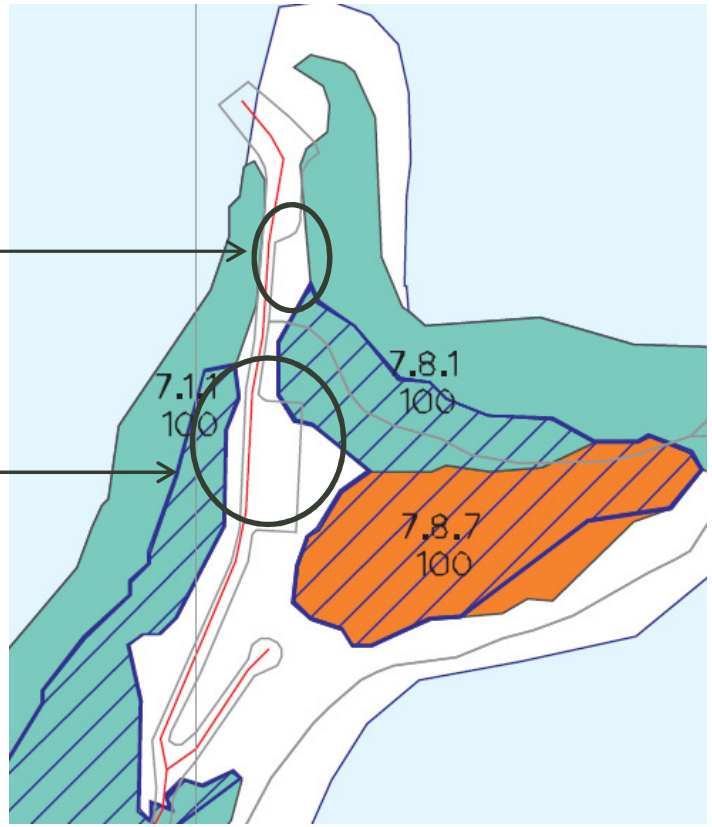
- Remnant vegetation
- Marine flora/fauna
- Threatened species and habitat (e.g. Cassowary)

Studies

- Baseline marine survey
- Terrestrial ecology survey

Design mitigation

- Overtopping breakwater designed to mitigate shoreline impacts (e.g. tombolo, sediment build -up)
- Physical modelling and geophysical testing



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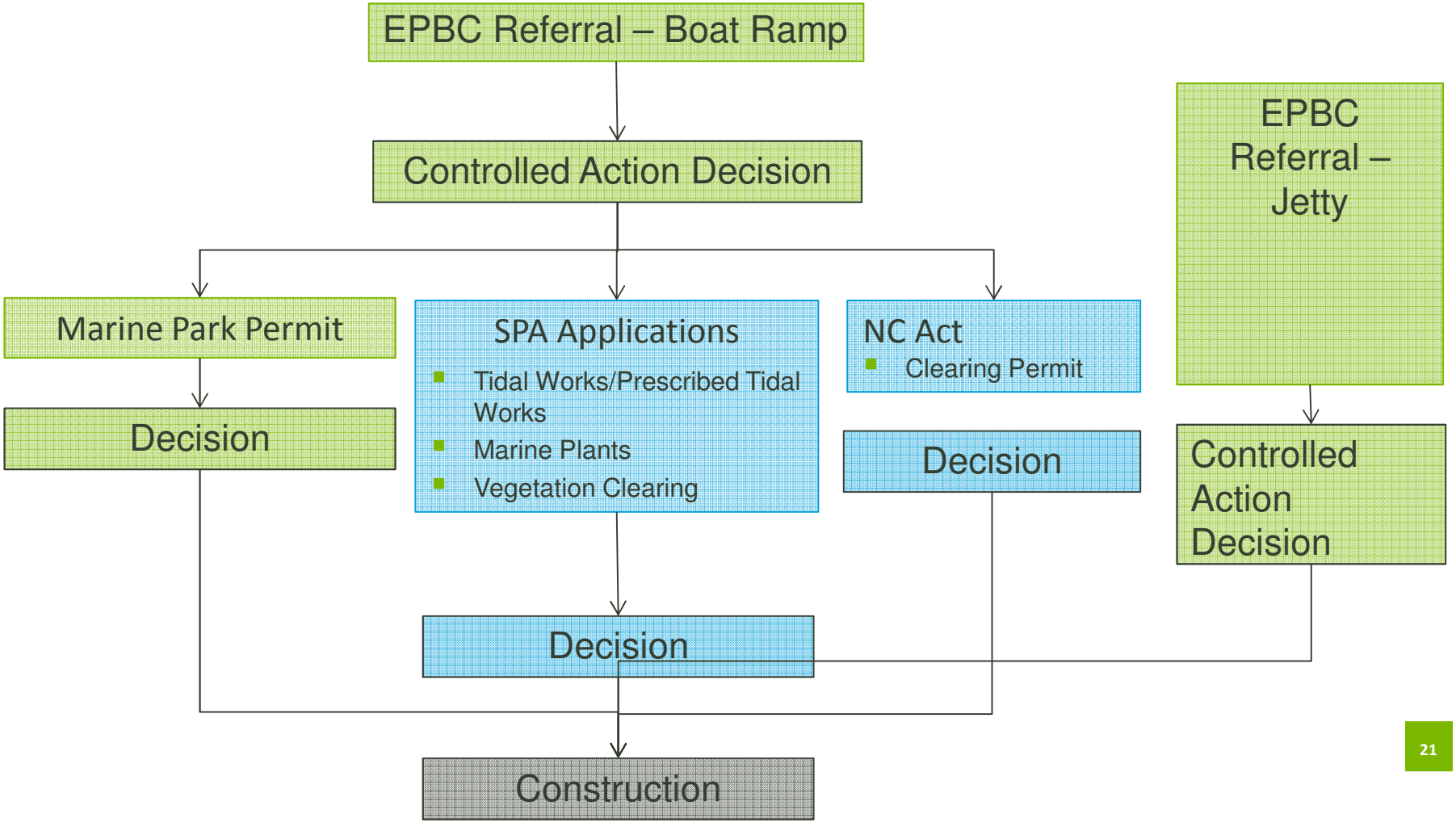
Approvals process



Project milestones

Final design

- Boat Ramp – Late December 2013
- Jetty – February 2014

Approvals Applications

- EPBC Referral to Department of Environment – mid December 2013
- Marine Park Permit application – GBRMPA – March 2014
- Development Approvals application – Cassowary Coast Regional Council – April 2014

Envisaged construction

- Commencement after Easter 2014
- Complete - December 2014