



Appendix F

Option Detailed Costs

Working Note

Baird.

Innovation Engineered.

Project Number :	13142.401	Date :	4-Sep-22			
Staff Member :	SJG					
Title :	Eurobodalla CMP - Engineering Options Costings Development					
Summary / Description :	Summary of Costings for Engineering Concept Management Options					
File Reference :	C:\Rhelm Dropbox\J1400-J1499\J1412 - Eurobodalla CMP\4. Reports\Stages 3 and 4_CMP\CMP Appendices\Appendix F_Option Costs\13142.401.W.SJG.Rev2_EngineeringOptions_Costings.xlsx\Baird-WorkingNotes					
Task						
Develop concept level engineering design and cost estimates for proposed management options						
Inputs / Methods						
Costings are based on industry knowledge and reference cases from Caseys Beach seawall and IAG Actions of the Sea study. See summary of Caseys Seawall on tab "Benchmark", which has been escalated based on recent market conditions including contractor availability, labour rates and material costs. Input received from independent cost estimator.						
Assumptions / Constraints / Clarifications						
Conceptual level engineering detail only, focussed on dimension of structure required (length, crest height etc.). Cost estimates based on Order of Magintude unit rates (e.g. \$/length of structure type) and considered +/-50% accurate (Class 5). Relativity of structure types/costs considered representative.						
Calculations						
Site / Structure	Unit Cost (Capital)	Length / Size	Capital Cost	Class 5 Capital Cost Range		Notes
				low	high	
CH1_P Batehaven/Caseys Protection Works						
Rubble Mound	\$12,500 /m length	525 m in length	\$6,562,500	\$3,281,250	\$9,843,750	< from 2019 costing escalated to 2022
Rubble Mound w crest wall	\$15,000 /m length	525 m in length	\$7,875,000	\$3,937,500	\$11,812,500	< delta to seawall raising based on onsite casted concrete crest wall
Retrofit crest wall	\$6,500 /m length	525 m in length	\$3,412,500	\$1,706,250	\$5,118,750	< accounts for remobilisation
CH4_K CBD Inundation Protection						
Seawall Raising no crest wall	\$8,500 /m length	1200 m in length	\$10,200,000	\$5,100,000	\$15,300,000	< scaled from MTO relative to Caseys Seawall
Seawall Raising with crest wall	\$12,500 /m length	1200 m in length	\$15,000,000	\$7,500,000	\$22,500,000	< delta to seawall raising based on onsite casted concrete crest wall
Retrofit crest wall	\$5,000 /m length	1200 m in length	\$6,000,000	\$3,000,000	\$9,000,000	< accounts for remobilisation
CH1_D Long Beach Protection Works						
Rubble Mount Revetment - Stage 1	\$12,500 /m length	200 m in length	\$2,500,000	\$1,250,000	\$3,750,000	
Rubble Mount Revetment - Stage 2	\$12,500 /m length	280 m in length	\$3,500,000	\$1,750,000	\$5,250,000	
CH4_D Sursfide Flood Levee						
Sursfide Flood Berm	\$7,500 /m length	320 m total	\$2,400,000	\$1,200,000	\$3,600,000	< Stage 1 (2017) imunity. MTO of concept cross sections and unit rates for earthworks/landscaping
Surfside Flood Wall	\$8,500 /m length	300 m total	\$2,550,000	\$1,275,000	\$3,825,000	< benchmarked on NSW installs of vertical structures
CH1_ZA Surfside West Groyne						
Groyne / Culvert Extension	\$40,000 /m length	90 m in length	\$3,600,000	\$1,800,000	\$5,400,000	< scaled from MTO relative to Caseys Seawall, culvert units and marine construction
CH1_B Northcove Drive, Maloneys Protection						
Retaining structure and wave return wall	\$10,500 /m length	250 m in length	\$2,625,000	\$1,312,500	\$3,937,500	< benchmarked on NSW installs of vertical structures, plus wave crest wall
CH1_K Wharf Road Protection						
Wharf Road Stage 1	\$21,000 /m length	100 m in length	\$2,100,000	\$1,050,000	\$3,150,000	< scaled from MTO relative to Caseys Seawall plus inclusion of cutoff wall and road shoulder works
Wharf Road Stage 2	\$8,500 /m length	440 m in length	\$3,740,000	\$1,870,000	\$5,610,000	< benchmarked on NSW installs of vertical structures
Maintenance	Maintenance Rate					
Rubble Mound	1.0%					< assumes 2 x maintenance events (25% of capital cost) over 50year design life of

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Task

Estimate escalation in capital cost estimate of the Caseys Seawall to 2022, based on inflation and current market conditions (contractor availability, labour rates and material costs).

Inputs / Methods

Design for Caseys Seawall was developed by Aurecon in 2019.

Design sections and cost estimate breakdown below (from 505471-000-LET-LA-0001A.pdf, dated 24/09/2019).

525m of seawall for a total capital cost of \$5.3M = ~\$10k/metre of seawall

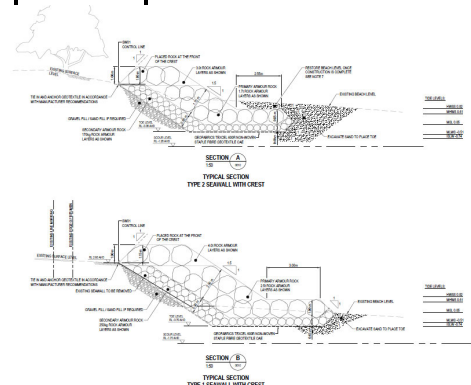
Calculations

Table 1 Estimated seawall construction costs

Description	Unit	Quantity	Rate (AUD)	Cost (AUD)
Preliminaries				\$1,333,147.80
Preliminaries	%	1	10%	\$266,629.56
Traffic management	%	1	15%	\$399,944.34
Erosion and sediment control	%	1	5%	\$133,314.78
Mobilisation and demobilisation	%	1	20%	\$533,259.12
Contractor overheads and indirects				\$746,562.77
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Contractor risk pricing and margins				\$559,922.08
Contractor risk pricing and margins	%	1	15%	\$559,922.08
Earthworks				\$2,660,795.61
Removal of existing seawall and disposal off site of armour rock	tonnes	1178	35	\$41,020.02
Clearing and grubbing	m2	8645	1	\$8,645.06
Stripping of topsoil	m3	865	16	\$13,832.09
Excavation, all materials	m2	7443	20	\$148,852.08
Supply and placement of gravel/sand fill on upper slope	m3	120	17	\$2,044.76
Supply and installation of Geofabrics Texcel 600R nonwoven staple fibre geotextile OAE	m2	7702	20	\$154,043.84
Replaced beach sand	m3	692	17	\$11,760.18
Supply and installation of secondary armour rock, 170 kg	tonnes	2642	105	\$278,605.34
Supply and installation of primary armour rock, 1.7 tonne	tonnes	5220	105	\$550,507.12
Supply and installation of secondary armour rock, 250 kg	tonnes	4110	105	\$433,460.36
Supply and installation of primary armour rock, 2.5 tonne	tonnes	7578	105	\$799,138.91
Supply and installation of crest armour rock, 2.5 tonne	tonnes	420	105	\$44,291.29
Supply and installation of crest armour rock, 4.0 tonne	tonnes	1656	105	\$174,594.57
Road furniture				\$5,500.00
Supply and erection of regulatory, warning, hazard, direction and information signs	lump sum	10	550	\$5,500.00
TOTAL COST				\$5,305,928.26

Escalation Est.

\$ 1,466,463	10% increase in preliminaries/mobilisation (CPI between 2019 and 2022)
\$ 1,045,188	40% increase in overheads/indirects (market conditions)
\$ 783,891	40% increase in risk pricing and margins (market conditions, inflation outlook)
\$ 3,192,955	



\$ 6,050	10% increase in road furniture (CPI between 2019 and 2022)
\$ 6,494,546	22%
\$ 12,370.56	per m cost