APPENDIX G: PRELIMINARY COST ESTIMATES

OLD BAR BEACH COASTAL PROTECTION STRUCTURE DESIGN INVESTIGATION

ROCK SEAWALL - STAGE 1 OPTION 1 (WALL CREST AT 2013 EMBANKMENT CREST)

Variables				
Wall length	450	m		
Average disturbed footprint width	60	m	Excavation, stockpile and plant track area	

Item	Description	Comments	Unit	Quantity	Rate	Amount	Item Subtotal	Item Total
1	**Site Establishment**							$ 55,000
1.1	Mobilisation of construction plant to site		LS				$ 35,000	
1.2	Establish and manage Contractors Work Area	Includes temporary services and person proof fence along the crest and down side ends to MHWM	LS				$ 20,000	
2	**Works EMP**	Includes preparation and implementation of Works EMP						$ 58,000
2.1	Condition inventory of private property assets		LS				$ 10,000	
2.2	Noise and vibration		LS				$ 8,000	
2.3	Air quality		LS				$ 5,000	
2.4	Surface drainage and water quality		LS				$ 10,000	
2.5	Traffic and pedestrian control		LS				$ 10,000	
2.6	Beach and dunal ecology	Include flora and fauna	LS				$ 10,000	
2.7	Archaeology		LS				$ 5,000	
3	**Protection of the Works from Coastal Hazards**	**Protection from storm water levels and wave action**						$ 50,000
4	**Preconstruction Survey**							$ 12,000
5	**Demolition and Earthworks**	All demolition includes disposal to licensed waste disposal facility						$ 809,000
	Assumption 1	No of private property fences affected	17					
	Assumption 2	% disturbed footprint to be cleared	80%					
	Assumption 3	% disturbed footprint with top soil	50%					
5.1	Demolition of building structure at 36 Lewis Street	Ross Keys garage	m^2	300	$ 60		$ 18,000	
5.2	Demolition of existing geotextile protection at Meridian Resort		LS				$ 5,000	
5.3	Demolition of existing timber steps at Meridian Resort		LS				$ 1,000	
5.4	Demolition of existing private property fences to provide plant access along back of new wall	Demolished 6m landward from landward edge or rock works	m	192	$ 25		$ 4,800	
5.5	Miscellaneous demolition of private property garden structures including and seaward of maintenance corridor	Excludes fences	LS				$ 5,000	
5.6	Removal of existing large trees		LS				$ 3,000	
5.7	Clearing and disposal of ground cover and minor vegetation		m^2	21,600	$ 1		$ 21,600	
5.8	Strip and stockpile top soil	Assume top 100mm	m^3	1,350	$ 20		$ 27,000	
5.9	Excavation for rock seawall	Assume all sand and gravel beds. Temporary stockpile on the beach to protect the excavation from tides and wave action	m^3	55,000	$ 7		$ 385,000	
6	Replacement of excavated material and spreading of surplus material onto the beach	Includes compaction behind seawall	m^3	56,350	$ 6		$ 338,100	
6	**Rock Works**							$ 4,281,000
	Assumption 1	Rock placement rate	250	T/day				
	Assumption 2	Dewatering costs per m^2 per day to reduce water level by 1m	$ 60					
	Assumption 3	Reduction in contingency applied to rock supply	10%					
6.1	Supply of rock armour	3.9 - 6.6 T armour	T	31,000	$ 68		$ 2,092,500	
6.2	Supply of rock underlayer	400 - 700 kg	T	9,000	$ 68		$ 607,500	
6.3	Supply or other rock		T	0	$ 68		$ -	
6.4	Dewatering	Spearpoints and pumping for rock placement up to RL0 over 12m toe berm underside width assuming work confined to a rolling dewatered compartment each day	m	450	$ 750		$ 338,000	
6.5	Supply and placement of geotextile	Assume Elcomax 1200R OAE	m^2	8,800	$ 10		$ 88,000	
6.6	Placement of rock armour		T	31,000	$ 30		$ 930,000	
6.7	Placement of rock underlayer		T	9,000	$ 25		$ 225,000	
6.8	Placement of other rock		T	0	$ 20		$ -	
7	**Shareway Path**							$ 176,000
	Assumption 1	Path width including edges	2.5	m				
	Assumption 2	Path length	450	m				
7.1	Subgrade		m^3	405	$ 120		$ 48,600	
7.2	Wearing course	Bituminous concrete 25 thick on crushed rock basecourse	m^2	1,130	$ 35		$ 39,550	
7.3	Handrail	Monowills stainless	m	250	$ 350		$ 87,500	
8	**Retaining Wall above Seawall Crest**							$ 140,000
	Assumption 1	Average wall height	1.6					
	Assumption 2	Wall length	250					
8.1	Construction of retaining wall		m^2	400	$ 350		$ 140,000	
9	**Private Property Structures**							$ 161,000
	Assumption 1	No of private property entries	13					
9.1	Special return treatments at retaining wall to provide entry for steps		Entry	13	$ 2,500		$ 32,500	
9.2	Timber steps		Entry	13	$ 3,500		$ 45,500	
9.3	Lockable aluminium gate		Entry	13	$ 1,500		$ 19,500	
9.4	Guard rail / fence at crest of retaining wall	Equivalent to high quality aluminium pool fence	m	317	$ 200		$ 63,400	
10	**Ancillary Works**							$ 3,000
10.1	Signage	Warning and interpretative	LS				$ 3,000	
11	**Services**	Not applicable						$ -
12	**Work as Executed Survey**		LS					$ 8,000
13	**Site Disestablishment, Restoration and Clean up**							$ 104,300
13.1	Restoration						$ 79,300	
13.1.1	Fences	Restoration of private property fences. Assume high quality butt joint paling fence	m	153	$ 100	$ 15,300		
13.1.2	Landscaping and garden structures		Properties	16	$ 4,000	$ 64,000		
13.2	Disestablishment		LS				$ 20,000	
13.3	Clean up		LS				$ 5,000	
					SUB TOTAL			**$ 5,857,300**
Add	Contingency on construction cost		25%					$ 1,464,325
						SUB TOTAL ON CONSTRUCTION COST		**$ 7,321,625**
Add	DA preparation including Environmental Assessment	Includes concept design	Lump Sum			$ 200,000		
Add	Design development, detailed design and tender preparation		3.5%			$ 256,300		
Add	Advertising, advising on tenders, tender review and award of contract		Lump Sum			$ 20,000		
Add	Supervision and contract administration		3%			$ 219,700		$ 696,000
						TOTAL COST ESTIMATE		**$8,018,000**
						TOTAL COST PER METRE OF WALL		**$ 17,900**

OLD BAR BEACH COASTAL PROTECTION STRUCTURE DESIGN INVESTIGATION

ROCK SEAWALL - STAGE 1 OPTION 2 (MOST LANDWARD)

	Variables			
	Wall length		450	m
	Average disturbed footprint width	Excavation, stockpile and plant track area	60	m

Item	Description	Comments	Unit	Quantity	Rate	Amount	Item Subtotal	Item Total
1	**Site Establishment**							$ 55,000
1.1	Mobilisation of construction plant to site		LS				$ 35,000	
1.2	Establish and manage Contractors Work Area	Includes temporary services and person proof fence along the crest and down side ends to MHWM	LS				$ 20,000	
2	**Works EMP**	Includes preparation and implementation of Works EMP						$ 63,000
2.1	Condition inventory of private property assets		LS				$ 15,000	
2.2	Noise and vibration		LS				$ 10,000	
2.3	Air quality		LS				$ 5,000	
2.4	Surface drainage and water quality		LS				$ 10,000	
2.5	Traffic and pedestrian control		LS				$ 10,000	
2.6	Beach and dunal ecology	Include flora and fauna	LS				$ 8,000	
2.7	Archaeology		LS				$ 5,000	
3	**Protection of the Works from Coastal Hazards**	**Protection from storm water levels and wave action**						$ 50,000
4	**Preconstruction Survey**							$ 12,000
5	**Demolition and Earthworks**	All demolition includes disposal to licensed waste disposal facility						$ 1,008,000
	Assumption 1	No of private property fences affected	17					
	Assumption 2	% disturbed footprint to be cleared	80%					
	Assumption 3	% disturbed footprint with top soil	50%					
5.1	Demolition of building structure at 36 Lewis Street	Ross Keys garage	m^2	300	$ 60		$ 18,000	
5.2	Demolition of existing geotextile protection at Meridian Resort		LS				$ 5,000	
5.3	Demolition of existing timber steps at Meridian Resort		LS				$ 1,000	
5.4	Demolition of existing private property fences to provide plant access along back of new wall	Demolished 6m landward from landward edge or rock works	m	314	$ 25		$ 7,850	
5.5	Miscellaneous demolition of private property garden structures including and seaward of maintenance corridor	Excludes fences	LS				$ 5,000	
5.6	Removal of existing large trees		LS				$ 4,000	
5.7	Clearing and disposal of ground cover and minor vegetation		m^2	21,600	$ 1		$ 21,600	
5.8	Strip and stockpile top soil	Assume top 100mm	m^3	1,350	$ 20		$ 27,000	
5.9	Excavation for rock seawall	Assume all sand and gravel beds. Temporary stockpile on the beach to protect the excavation from tides and wave action	m^3	70,000	$ 7		$ 490,000	
6	Replacement of excavated material and spreading of surplus material onto the beach	Includes compaction behind seawall	m^3	71,350	$ 6		$ 428,100	
6	**Rock Works**	Includes dewatering						$ 4,281,000
	Assumption 1	Rock placement rate	250	T/day				
	Assumption 2	Dewatering costs per m^2 per day to reduce water level by 1m	$ 60					
	Assumption 3	Reduction in contingency applied to rock supply	10%					
6.1	Supply of rock armour	3.9 - 6.6 T armour	T	31,000	$ 68		$ 2,092,500	
6.2	Supply of rock underlayer	400 - 700 kg	T	9,000	$ 68		$ 607,500	
6.3	Supply or other rock		T	0	$ 68		$ -	
6.4	Dewatering	Spearpoints and pumping for rock placement up to RL0 over 12m toe berm underside width assuming work confined to a rolling dewatered compartment each day	m	450	$ 750		$ 338,000	
6.5	Supply and placement of geotextile	Assume Elcomax 1200R OAE	m^2	8,800	$ 10		$ 88,000	
6.6	Placement of rock armour		T	31,000	$ 30		$ 930,000	
6.7	Placement of rock underlayer		T	9,000	$ 25		$ 225,000	
6.8	Placement of other rock		T	0	$ 20		$ -	
7	**Shareway Path**							$ 176,000
	Assumption 1	Path width including edges	2.5	m				
	Assumption 2	Path length	450	m				
7.1	Subgrade		m^3	405	$ 120		$ 48,600	
7.2	Wearing course	Bituminous concrete 25 thick on crushed rock basecourse	m^2	1,130	$ 35		$ 39,550	
7.3	Handrail	Monowills stainless	m	250	$ 350		$ 87,500	
8	**Retaining Wall above Seawall Crest**							$ 140,000
	Assumption 1	Average wall height	1.6					
	Assumption 2	Wall length	250					
8.1	Construction of retaining wall		m^2	400	$ 350		$ 140,000	
9	**Private Property Structures**							$ 161,000
	Assumption 1	No of private property entries	13					
9.1	Special return treatments at retaining wall to provide entry for steps		Entry	13	$ 2,500		$ 32,500	
9.2	Timber steps		Entry	13	$ 3,500		$ 45,500	
9.3	Lockable aluminium gate		Entry	13	$ 1,500		$ 19,500	
9.4	Guard rail / fence at crest of retaining wall	Equivalent to high quality aluminium pool fence	m	317	$ 200		$ 63,400	
10	**Ancillary Works**							$ 3,000
10.1	Signage	Warning and interpretative	LS				$ 3,000	
11	**Services**	Not applicable						$ -
12	**Work as Executed Survey**		LS					$ 8,000
13	**Site Disestablishment, Restoration and Clean up**							$ 104,300
13.1	Restoration						$ 79,300	
13.1.1	Fences	Restoration of private property fences. Assume high quality butt joint paling fence	m	153	$ 100	$ 15,300		
13.1.2	Landscaping and garden structures		Properties	16	$ 4,000	$ 64,000		
13.2	Disestablishment		LS				$ 20,000	
13.3	Clean up		LS				$ 5,000	
					SUB TOTAL			**$ 6,061,300**
Add	Contingency on construction cost		25%					$ 1,515,325
						SUB TOTAL ON CONSTRUCTION COST		**$ 7,576,625**
Add	DA preparation including Environmental Assessment	Includes concept design	Lump Sum			$ 200,000		`
Add	Design development, detailed design and tender preparation		3.5%			$ 265,200		
Add	Advertising, advising on tenders, tender review and award of contract		Lump Sum			$ 20,000		
Add	Supervision and contract administration		3%			$ 227,300		$ 712,500
						TOTAL COST ESTIMATE		**$ 8,290,000**
						TOTAL COST PER METRE OF WALL		**$ 18,500**

OLD BAR BEACH COASTAL PROTECTION STRUCTURE DESIGN INVESTIGATION

ROCK SEAWALL - STAGE 2

Variables				
Wall length		425	m	
Average disturbed footprint width	Excavation, stockpile and plant track area	50	m	

Item	Description	Comments	Unit	Quantity	Rate	Amount	Item Subtotal	Item Total
1	**Site Establishment**							$ 54,000
1.1	Mobilisation of construction plant to site		LS				$ 35,000	
1.2	Establish and manage Contractors Work Area	Includes temporary services and person proof fence along the crest and down side ends to MHWM	LS				$ 19,000	
2	**Works EMP**	Includes preparation and implementation of Works EMP						$ 45,000
2.1	Condition inventory of private property assets		LS				$ -	
2.2	Noise and vibration		LS				$ 5,000	
2.3	Air quality		LS				$ 5,000	
2.4	Surface drainage and water quality		LS				$ 10,000	
2.5	Traffic and pedestrian control		LS				$ 10,000	
2.6	Beach and dunal ecology	Include flora and fauna	LS				$ 10,000	
2.7	Archaeology		LS				$ 5,000	
3	**Protection of the Works from Coastal Hazards**	**Protection from storm water levels and wave action**						$ 50,000
4	**Preconstruction Survey**							$ 8,000
5	**Demolition and Earthworks**	All demolition includes disposal to licensed waste disposal facility						$ 613,000
	Assumption 1	No of private property fences affected	0					
	Assumption 2	% disturbed footprint to be cleared	90%					
	Assumption 3	% disturbed footprint with top soil	20%					
5.1	Removal of existing large trees		LS				$ 8,000	
5.2	Clearing and disposal of ground cover and minor vegetation		m^2	19,200	$ 1		$ 19,200	
5.3	Strip and stockpile top soil	Assume top 100mm	m^3	425	$ 20		$ 8,500	
5.4	Excavation for rock seawall	Assume all sand and gravel beds. Temporary stockpile on the beach to protect the excavation from tides and wave action	m^3	44,200	$ 7		$ 309,400	
5.5	Replacement of excavated material and spreading of surplus material onto the beach	Includes compaction behind seawall	m^3	44,625	$ 6		$ 267,750	
6	**Rock Works**							$ 4,348,000
	Assumption 1	Rock placement rate	250	T/day				
	Assumption 2	Dewatering costs per m^2 per day to reduce water level by 1m	$ 60					
	Assumption 3	Reduction in contingency applied to rock supply	10%					
6.1	Supply of rock armour	3.9 - 6.6 T armour	T	29,000	$ 75		$ 2,175,000	
6.2	Supply of rock underlayer	400 - 700 kg	T	9,000	$ 75		$ 675,000	
6.3	Supply or other rock		T	0	$ 75		$ -	
6.4	Dewatering	Spearpoints and pumping for rock placement up to RL0 over 12m toe berm underside width assuming work confined to a rolling dewatered compartment each day	m	425	$ 750		$ 319,000	
6.5	Supply and placement of geotextile	Assume Elcomax 1200R OAE	m^2	8,400	$ 10		$ 84,000	
6.6	Placement of rock armour		T	29,000	$ 30		$ 870,000	
6.7	Placement of rock underlayer		T	9,000	$ 25		$ 225,000	
6.8	Placement of other rock		T	0	$ 20		$ -	
7	**Shareway Path**							$ -
	Assumption 1	Path width including edges	2.5	m				
	Assumption 2	Path length	0	m				
7.1	Subgrade		m^3	0	$ 120		$ -	
7.2	Wearing course	Bituminous concrete 25 thick on crushed rock basecourse	m^2	0	$ 35		$ -	
7.3	Handrail	Minowills stainless	m	0	$ 350		$ -	
8	**Retaining Wall above Seawall Crest**							$ -
	Assumption 1	Average wall height	1.6					
	Assumption 2	Wall length	0					
8.1	Construction of retaining wall		m^2	0	$ 350		$ -	
9	**Private Property Structures**							$ -
	Assumption 1	No of private property entries	0					
9.1	Special return treatments at retaining wall to provide entry for steps		Entry	0	$ 2,500		$ -	
9.2	Timber steps		Entry	0	$ 3,500		$ -	
9.3	Lockable aluminium gate		Entry	0	$ 1,500		$ -	
9.4	Guard rail / fence at crest of retaining wall	Equivalent to high quality aluminium pool fence	m	0	$ 200		$ -	
10	**Ancillary Works**							$ 3,000
10.1	Signage	Warning and interpretative	LS				$ 3,000	
11	**Services**	Not applicable						$ -
12	**Work as Executed Survey**		LS					$ 8,000
13	**Site Disestablishment, Restoration and Clean up**							$ 25,000
13.1	Restoration						$ -	
13.1.1	Fences	Restoration of private property fences. Assume high quality butt joint paling fence	m	0	$ 100	$ -		
13.1.2	Landscaping and garden structures		Properties	0	$ 4,000	$ -		
13.2	Disestablishment		LS				$ 20,000	
13.3	Clean up		LS				$ 5,000	
					SUB TOTAL			**$ 5,154,000**
Add	Contingency on construction cost		25%					$ 1,288,500
		SUB TOTAL ON CONSTRUCTION COST						**$ 6,442,500**
Add	DA preparation including Environmental Assessment	Includes concept design	Lump Sum			$ 100,000		
Add	Design development, detailed design and tender preparation		3.5%			$ 225,500		
Add	Advertising, advising on tenders, tender review and award of contract		Lump Sum			$ 20,000		
Add	Supervision and contract administration		3%			$ 193,300		$ 538,800
					TOTAL COST ESTIMATE			**$6,982,000**
					TOTAL COST PER METRE OF WALL			**$ 16,500**

OLD BAR BEACH COASTAL PROTECTION STRUCTURE DESIGN INVESTIGATION

ROCK SEAWALL - STAGE 3N

Variables				
Wall length		525	m	
Average disturbed footprint width	Excavation, stockpile and plant track area	60	m	

Item	Description	Comments	Unit	Quantity	Rate	Amount	Item Subtotal	Item Total
1	**Site Establishment**							$ 52,500
1.1	Mobilisation of construction plant to site		LS				$ 35,000	
1.2	Establish and manage Contractors Work Area	Includes temporary services and person proof fence along the crest and down side ends to MHWM	LS				$ 17,500	
2	**Works EMP**	Includes preparation and implementation of Works EMP						$ 50,500
2.1	Condition inventory of private property assets		LS				$ -	
2.2	Noise and vibration		LS				$ 3,000	
2.3	Air quality		LS				$ 5,000	
2.4	Surface drainage and water quality		LS				$ 10,000	
2.5	Traffic and pedestrian control		LS				$ 7,500	
2.6	Beach and dunal ecology	Include flora and fauna	LS				$ 15,000	
2.7	Archaeology		LS				$ 10,000	
3	**Protection of the Works from Coastal Hazards**	**Protection from storm water levels and wave action**						$ 50,000
4	**Preconstruction Survey**							$ 12,000
5	**Demolition and Earthworks**	All demolition includes disposal to licensed waste disposal facility						$ 884,000
	Assumption 1	No of private property fences affected	0					
	Assumption 2	% disturbed footprint to be cleared	100%					
	Assumption 3	% disturbed footprint with top soil	95%					
5.1	Removal of existing large trees		LS				$ 20,000	
5.2	Clearing and disposal of ground cover and minor vegetation		m^2	31,500	$ 1		$ 31,500	
5.3	Strip and stockpile top soil	Assume top 100mm	m^3	2,993	$ 20		$ 59,850	
5.4	Excavation for rock seawall	Assume all sand and gravel beds. Temporary stockpile on the beach to protect the excavation from tides and wave action	m^3	58,000	$ 7		$ 406,000	
5.5	Replacement of excavated material and spreading of surplus material onto the beach	Includes compaction behind seawall	m^3	60,993	$ 6		$ 365,955	
6	**Rock Works**							$ 5,377,000
	Assumption 1	Rock placement rate	250	T/day				
	Assumption 2	Dewatering costs per m^2 per day to reduce water level by 1m	$ 60					
	Assumption 3	Reduction in contingency applied to rock supply	10%					
6.1	Supply of rock armour	3.9 - 6.6 T armour	T	36,000	$ 75		$ 2,700,000	
6.2	Supply of rock underlayer	400 - 700 kg	T	11,000	$ 75		$ 825,000	
6.3	Supply or other rock		T	0	$ 75		$ -	
6.4	Dewatering	Spearpoints and pumping for rock placement up to RL0 over 12m toe berm underside width assuming work confined to a rolling dewatered compartment each day	m	525	$ 750		$ 394,000	
6.5	Supply and placement of geotextile	Assume Elcomax 1200R OAE	m^2	10,300	$ 10		$ 103,000	
6.6	Placement of rock armour		T	36,000	$ 30		$ 1,080,000	
6.7	Placement of rock underlayer		T	11,000	$ 25		$ 275,000	
6.8	Placement of other rock		T	0	$ 20		$ -	
7	**Shareway Path**							$ 103,000
	Assumption 1	Path width including edges	2.5	m				
	Assumption 2	Path length	525	m				
7.1	Subgrade		m^3	473	$ 120		$ 56,700	
7.2	Wearing course	Bituminous concrete 25 thick on crushed rock basecourse	m^2	1,320	$ 35		$ 46,200	
7.3	Handrail	Minowills stainless	m	0	$ 350		$ -	
8	**Retaining Wall above Seawall Crest**							$ -
	Assumption 1	Average wall height	1.6					
	Assumption 2	Wall length	0					
8.1	Construction of retaining wall		m^2	0	$ 350		$ -	
9	**Private Property Structures**							$ -
	Assumption 1	No of private property entries	0					
9.1	Special return treatments at retaining wall to provide entry for steps		Entry	0	$ 2,500		$ -	
9.2	Timber steps		Entry	0	$ 3,500		$ -	
9.3	Lockable aluminium gate		Entry	0	$ 1,500		$ -	
9.4	Guard rail / fence at crest of retaining wall	Equivalent to high quality aluminium pool fence	m	0	$ 200		$ -	
10	**Ancillary Works**							$ 3,000
10.1	Signage	Warning and interpretative	LS				$ 3,000	
11	**Services**	Not applicable						$ -
12	**Work as Executed Survey**		LS					$ 8,000
13	**Site Disestablishment, Restoration and Clean up**							$ 25,000
13.1	Restoration						$ -	
13.1.1	Fences	Restoration of private property fences. Assume high quality butt joint paling fence	m	0	$ 100	$ -		
13.1.2	Landscaping and garden structures		Properties	0	$ 4,000	$ -		
13.2	Disestablishment		LS				$ 20,000	
13.3	Clean up		LS				$ 5,000	
					SUB TOTAL			**$ 6,565,000**
Add	Contingency on construction cost		25%					$ 1,641,250
		SUB TOTAL ON CONSTRUCTION COST						**$ 8,206,250**
Add	DA preparation including Environmental Assessment	Includes concept design. Costs shared with Stage 3S	Lump Sum			$ 75,000		
Add	Design development, detailed design and tender preparation		3.5%			$ 287,300		
Add	Advertising, advising on tenders, tender review and award of contract		Lump Sum			$ 20,000		
Add	Supervision and contract administration		3%			$ 246,200		$ 628,500
						TOTAL COST ESTIMATE		**$ 8,835,000**
						TOTAL COST PER METRE OF WALL		**$ 16,900**

OLD BAR BEACH COASTAL PROTECTION STRUCTURE DESIGN INVESTIGATION

ROCK SEAWALL - STAGE 3S

Variables				
Wall length		1600	m	
Average disturbed footprint width	Excavation, stockpile and plant track area	50	m	

Item	Description	Comments	Unit	Quantity	Rate	Amount	Item Subtotal	Item Total
1	**Site Establishment**							$ 75,000
1.1	Mobilisation of construction plant to site		LS				$ 35,000	
1.2	Establish and manage Contractors Work Area	Includes temporary services and person proof fence along the crest and down side ends to MHWM	LS				$ 40,000	
2	**Works EMP**	Includes preparation and implementation of Works EMP						$ 49,000
2.1	Condition inventory of private property assets		LS				$ -	
2.2	Noise and vibration		LS				$ -	
2.3	Air quality		LS				$ 2,000	
2.4	Surface drainage and water quality		LS				$ 10,000	
2.5	Traffic and pedestrian control		LS				$ 2,000	
2.6	Beach and dunal ecology	Include flora and fauna	LS				$ 20,000	
2.7	Archaeology		LS				$ 15,000	
3	**Protection of the Works from Coastal Hazards**	**Protection from storm water levels and wave action**						$ 75,000
4	**Preconstruction Survey**							$ 20,000
5	**Demolition and Earthworks**	All demolition includes disposal to licensed waste disposal facility						$ 2,479,000
	Assumption 1	No of private property fences affected	0					
	Assumption 2	% disturbed footprint to be cleared	100%					
	Assumption 3	% disturbed footprint with top soil	95%					
5.1	Removal of existing large trees		LS				$ 30,000	
5.2	Clearing and disposal of ground cover and minor vegetation		m^2	80,000	$ 1		$ 80,000	
5.3	Strip and stockpile top soil	Assume top 100mm	m^3	7,600	$ 20		$ 152,000	
5.4	Excavation for rock seawall	Assume all sand and gravel beds. Temporary stockpile on the beach to protect the excavation from tides and wave action	m^3	167,000	$ 7		$ 1,169,000	
5.5	Replacement of excavated material and spreading of surplus material onto the beach	Includes compaction behind seawall	m^3	174,600	$ 6		$ 1,047,600	
6	**Rock Works**							$ 15,003,000
	Assumption 1	Rock placement rate	250	T/day				
	Assumption 2	Dewatering costs per m^2 per day to reduce water level by 1m	$ 60					
	Assumption 3	Reduction in contingency applied to rock supply	10%					
6.1	Supply of rock armour	3.9 - 6.6 T armour.	T	108,000	$ 68		$ 7,290,000	
6.2	Supply of rock underlayer	400 - 700 kg	T	32,000	$ 68		$ 2,160,000	
6.3	Supply or other rock		T	0	$ 68		$ -	
6.4	Dewatering	Spearpoints and pumping for rock placement up to RL0 over 12m toe berm underside width assuming work confined to a rolling dewatered compartment each day	m	1,600	$ 750		$ 1,200,000	
6.5	Supply and placement of geotextile	Assume Elcomax 1200R OAE	m^2	31,300	$ 10		$ 313,000	
6.6	Placement of rock armour		T	108,000	$ 30		$ 3,240,000	
6.7	Placement of rock underlayer		T	32,000	$ 25		$ 800,000	
6.8	Placement of other rock		T	0	$ 20		$ -	
7	**Shareway Path**							$ 313,000
	Assumption 1	Path width including edges	2.5	m				
	Assumption 2	Path length	1600	m				
7.1	Subgrade		m^3	1,440	$ 120		$ 172,800	
7.2	Wearing course	Bituminous concrete 25 thick on crushed rock basecourse	m^2	4,000	$ 35		$ 140,000	
7.3	Handrail	Minowills stainless	m	0	$ 350		$ -	
8	**Retaining Wall above Seawall Crest**							$ -
	Assumption 1	Average wall height	1.6					
	Assumption 2	Wall length	0					
8.1	Construction of retaining wall		m^2	0	$ 350		$ -	
9	**Private Property Structures**							$ -
	Assumption 1	No of private property entries	0					
9.1	Special return treatments at retaining wall to provide entry for steps		Entry	0	$ 2,500		$ -	
9.2	Timber steps		Entry	0	$ 3,500		$ -	
9.3	Lockable aluminium gate		Entry	0	$ 1,500		$ -	
9.4	Guard rail / fence at crest of retaining wall	Equivalent to high quality aluminium pool fence	m	0	$ 200		$ -	
10	**Ancillary Works**							$ 3,000
10.1	Signage	Warning and interpretative	LS				$ 3,000	
11	**Services**	Not applicable						$ -
12	**Work as Executed Survey**		LS					$ 17,500
13	**Site Disestablishment, Restoration and Clean up**							$ 30,000
13.1	Restoration						$ -	
13.1.1	Fences	Restoration of private property fences. Assume high quality butt joint paling fence	m	0	$ 100	$ -		
13.1.2	Landscaping and garden structures		Properties	0	$ 4,000	$ -		
13.2	Disestablishment		LS				$ 20,000	
13.3	Clean up		LS				$ 10,000	
					SUB TOTAL			**$ 18,064,500**
Add	Contingency on construction cost		25%					$ 4,516,125
		SUB TOTAL ON CONSTRUCTION COST						**$ 22,580,625**
Add	DA preparation including Environmental Assessment	Includes concept design. Costs shared with Stage 3N	Lump Sum			$ 200,000		
Add	Design development, detailed design and tender preparation		3.5%			$ 790,400		
Add	Advertising, advising on tenders, tender review and award of contract		Lump Sum			$ 20,000		
Add	Supervision and contract administration		3%			$ 677,500		$ 1,687,900
					TOTAL COST ESTIMATE			**$24,269,000**
					TOTAL COST PER METRE OF WALL			**$ 15,200**