Appendix G

Quantitative Risk Assessment

Table.G.1: 2030 Quantitative Risk Analysis

Location / Management Zone	EPA No.	Shoreline Length (metres)	Chainage (metres, from Urangan Boat Harbour)	EPA Width (metres)	Number of Cadastral Parcels							Risk Category (Lots per km Coastline)	Approximate Land Value	
					Freehold	Lands Lease	National Park	Reserve	State Land	State Forest	Total		Total ($M)	$M Per km
Management Zone 1														
Burrum Heads	77	706	40,289	95	35						35	50	12.3	17.4
Beelbi Creek to Burrum Heads	78	3,930	39,584	160	53			6	1		60	15	21.0	5.3
Beelbi Creek to Burrum Heads	79	3,968	35,654	400	13		1	3			17	4	6.0	1.5
Beelbi Creek	80	252	31,685	Transition	67			1			68	270	20.4	81.0
Toogoom	81	1,340	31,433	175	87						87	65	26.1	19.5
O'Regan Creek to Beelbi Creek	82	527	30,093	Transition	37			2			39	74	11.7	22.2
O'Regan Creek to Beelbi Creek	83	4,452	29,566	125	24			4			28	6	8.4	1.9
O'Regan Creek to Beelbi Creek	84	301	25,114	Transition	1						1	3	0.3	1.0
O'Regan Creek	85	542	24,813	400			1	2			3	6	1.1	2.1
Eli Creek to O'Regan Creek	86	237	24,271	Transition				2			2	8	0.7	3.2
Eli Creek to O'Regan Creek	87	6,723	24,035	125	10			6			16	2	6.3	0.9
Management Zone 2														
Eli Creek to O'Regan Creek	88	643	17,312	Transition	2				1		3	5	1.0	1.5
Eli Creek	89	425	16,669	400	1			1	1		3	7	1.0	2.3
Point Vernon to Eli Creek	90	658	16,244	Transition	2			3	2		7	11	2.0	3.1
Point Vernon to Eli Creek	91	1,013	15,587	105	1			1	1		3	3	0.9	0.9
Point Vernon	92	6,256	14,573	70		1		5			6	1	2.0	0.3
Management Zone 3														
Mouth of Tooan Tooan Creek to Pialba	93	981	8,317	110	8			7			15	15	7.0	7.1
Mouth of Tooan Tooan Creek	94	365	7,337	155				1			1	3	0.5	1.3
Scarness Seawall to Tooan Tooan Creek	95	449	6,972	125	14			2			16	36	4.0	8.9

Location / Management Zone	EPA No.	Shoreline Length (metres)	Chainage (metres, from Urangan Boat Harbour)	EPA Width (metres)	Number of Cadastral Parcels							Risk Category (Lots per km Coastline)	Approximate Land Value	
					Freehold	Lands Lease	National Park	Reserve	State Land	State Forest	Total		Total ($M)	$M Per km
Scarness Seawall	96	517	6,523	80	3			1			4	8	1.0	2.0
Torquay Seawall to Scarness Seawall	97	2,861	6,006	105	11	6		4			21	7	6.7	2.3
Torquay Seawall	98	502	3,145	80				1			1	2	0.3	0.7
Urangan Seawall to Torquay Seawall	99	958	2,643	80				2			2	2	0.7	0.7
Urangan Seawall	100	739	1,686	80	12			1	1		14	19	4.7	6.3
Boat harbour to Urangan Seawall	101	946	946	105	2	1		3			6	6	2.0	2.1
Management Zone 4														
Boat Harbour	102	226	226	NA		2		2			4	18	1.3	5.9
Boat Harbour to River Heads	103	20,800	21,026	NA	193	11		15	15		234	191	80.0	10
River Heads	104	1,179	22,205	NA	5			2			7	6	2.6	2.2
Management Zone 5														
Maaroom	105	2,961	25,166	NA	33			2	6		41	14	11.1	3.8
Boonooroo	106	3,523	28,689	NA	134			6	4	1	145	41	34.5	9.8
Tuan	107	2,982	31,671	NA	80			1		1	82	27	35.3	11.8
Poona	108	4,588	36,259	NA	136			3		1	140	31	24.5	5.3
Tinnanbar	109	4,387	40,646	NA	12		1	3	3	1	20	5	9.0	5.7
TOTAL					**976**	**21**	**3**	**92**	**35**	**4**	***1,131***		***424.6***	

Table G.2: 2050 Quantitative Risk Analysis

Location / Management Zone	EPA No.	Shoreline Length (metres)	Chainage (metres, from Urangan Boat Harbour)	EPAW (metres)	Number of Cadastral Parcels							Risk Category (Lots per km Coastline)	Approximate Land Value	
					Freehold	Lands Lease	National Park	Reserve	State Land	State Forest	Total		Total ($M)	$M Per km
Management Zone 1														
Burrum Heads	77	706	40,289	95	40						40	57	14.0	19.8
Beelbi Creek to Burrum Heads	78	3,930	39,584	160	110			10	1		121	31	42.4	10.8
Beelbi Creek to Burrum Heads	79	3,968	35,654	400	13		1	3			17	4	6.0	1.5
Beelbi Creek	80	252	31,685	Transition	67			1			68	270	20.4	81.0
Toogoom	81	1,340	31,433	175	113						113	84	33.9	25.3
O'Regan Creek to Beelbi Creek	82	527	30,093	Transition	37			2			39	74	11.7	22.2
O'Regan Creek to Beelbi Creek	83	4,452	29,566	125	56			7			63	14	18.9	4.2
O'Regan Creek to Beelbi Creek	84	301	25,114	Transition	1						1	3	0.3	1.0
O'Regan Creek	85	542	24,813	400			1	2			3	6	1.1	2.1
Eli Creek to O'Regan Creek	86	237	24,271	Transition				2			2	8	0.7	3.2
Eli Creek to O'Regan Creek	87	6,723	24,035	125	33			11			44	7	19.2	2.9
Management Zone 2														
Eli Creek to O'Regan Creek	88	643	17,312	Transition	2				1		3	5	1.0	1.5
Eli Creek	89	425	16,669	400	1			1	1		3	7	1.0	2.3
Point Vernon to Eli Creek	90	658	16,244	Transition	2			3	2		7	11	2.0	3.1
Point Vernon to Eli Creek	91	1,013	15,587	105	7			1	1		9	9	2.6	2.6
Point Vernon	92	6,256	14,573	70		1		5			6	1	2.1	0.3
Management Zone 3														
Mouth of Tooan Tooan Creek to Pialba	93	981	8,317	110	65			7			72	73	33.5	34.1
Mouth of Tooan Tooan Creek	94	365	7,337	155				1			1	3	0.5	1.3
Scarness Seawall to Tooan Tooan Creek	95	449	6,972	125	18			3			21	47	6.3	13.9

Location / Management Zone	EPA No.	Shoreline Length (metres)	Chainage (metres, from Urangan Boat Harbour)	EPAW (metres)	Number of Cadastral Parcels							Risk Category (Lots per km Coastline)	Approximate Land Value	
					Freehold	Lands Lease	National Park	Reserve	State Land	State Forest	Total		Total ($M)	$M Per km
Scarness Seawall	96	517	6,523	80	16			1			17	33	4.4	8.4
Torquay Seawall to Scarness Seawall	97	2,861	6,006	105	99	6		5			110	38	36.1	12.6
Torquay Seawall	98	502	3,145	80	10			1			11	22	3.7	7.3
Urangan Seawall to Torquay Seawall	99	958	2,643	80	8			2			10	10	3.4	3.5
Urangan Seawall	100	739	1,686	80	20			1	2		23	31	7.7	10.4
Boat harbour to Urangan Seawall	101	946	946	105	22	1		3			26	27	8.7	9.2
Management Zone 4														
Boat Harbour	102	226	226	NA		2		2			4	18	1.3	5.9
Boat Harbour to River Heads	103	20,800	21,026	NA	200	12		15	15		242	12	82.6	4.0
River Heads	104	1,179	22,205	NA	5			2			7	6	2.6	2.2
Management Zone 5														
Maaroom	105	2,961	25,166	NA	38			2	6		46	16	12.5	4.2
Boonooroo	106	3,523	28,689	NA	143			6	4	1	154	44	36.7	10.4
Tuan	107	2,982	31,671	NA	97			1		1	99	33	42.6	14.3
Poona	108	4,588	36,259	NA	154			5		1	160	35	28.0	6.1
Tinnanbar	109	4,387	40,646	NA	14		1	3	3	1	22	5	9.9	2.3
TOTAL					**1,443**	**22**	**3**	**108**	**36**	**4**	***1,616***		***497.5***	

Table G.3: 2070 Quantitative Risk Analysis

Location / Management Zone	EPA No.	Shoreline Length (metres)	Chainage (metres, from Urangan Boat Harbour)	EPAW (metres)	Number of Cadastral Parcels							Risk Category (Lots per km Coastline)	Approximate Land Value	
					Freehold	Lands Lease	National Park	Reserve	State Land	State Forest	Total		Total ($M)	$M Per km
Management Zone 1														
Burrum Heads	77	706	40,289	95	52						52	74	18.2	25.8
Beelbi Creek to Burrum Heads	78	3,930	39,584	160	149			10	1		160	41	56.0	14.2
Beelbi Creek to Burrum Heads	79	3,968	35,654	400	13		1	3			17	4	6.0	1.5
Beelbi Creek	80	252	31,685	Transition	67			1			68	270	20.4	81.0
Toogoom	81	1,340	31,433	175	142						142	106	42.6	31.8
O'Regan Creek to Beelbi Creek	82	527	30,093	Transition	37			2			39	74	11.7	22.2
O'Regan Creek to Beelbi Creek	83	4,452	29,566	125	122			7			129	29	38.7	8.7
O'Regan Creek to Beelbi Creek	84	301	25,114	Transition	1						1	3	0.3	1.0
O'Regan Creek	85	542	24,813	400			1	2			3	6	1.1	2.1
Eli Creek to O'Regan Creek	86	237	24,271	Transition				2			2	8	0.7	3.2
Eli Creek to O'Regan Creek	87	6,723	24,035	125	105			11			116	17	46.9	7.0
Management Zone 2														
Eli Creek to O'Regan Creek	88	643	17,312	Transition	2				1		3	5	1.0	1.5
Eli Creek	89	425	16,669	400	1			1	1		3	7	1.0	2.3
Point Vernon to Eli Creek	90	658	16,244	Transition	2			3	2		7	11	2.0	3.1
Point Vernon to Eli Creek	91	1,013	15,587	105	10			1	1		12	12	3.5	3.4
Point Vernon	92	6,256	14,573	70	1	1		7			9	1	3.3	0.5
Management Zone 3														
Mouth of Tooan Tooan Creek to Pialba	93	981	8,317	110	70			7			77	79	35.8	36.5
Mouth of Tooan Tooan Creek	94	365	7,337	155	3			1			4	11	1.9	5.1
Scarness Seawall to Tooan Tooan Creek	95	449	6,972	125	22			3			25	56	7.0	15.7

Location / Management Zone	EPA No.	Shoreline Length (metres)	Chainage (metres, from Urangan Boat Harbour)	EPAW (metres)	Number of Cadastral Parcels							Risk Category (Lots per km Coastline)	Approximate Land Value	
					Freehold	Lands Lease	National Park	Reserve	State Land	State Forest	Total		Total ($M)	$M Per km
Scarness Seawall	96	517	6,523	80	38			1			39	75	10.0	19.3
Torquay Seawall to Scarness Seawall	97	2,861	6,006	105	159	6		5			170	59	55.1	19.3
Torquay Seawall	98	502	3,145	80	25			1			26	52	8.7	17.4
Urangan Seawall to Torquay Seawall	99	958	2,643	80	39			2			41	43	13.7	14.3
Urangan Seawall	100	739	1,686	80	44			1	2		47	64	15.7	21.3
Boat harbour to Urangan Seawall	101	946	946	105	40	1		3			44	46	14.7	15.6
Management Zone 4														
Boat Harbour	102	226	226	NA		2		2			4	18	1.3	11.9
Boat Harbour to River Heads	103	20,800	21,026	NA	215	12		17	15		259	12	88.4	6.5
River Heads	104	1,179	22,205	NA	5			2			7	6	2.6	2.2
Management Zone 5														
Maaroom	105	2,961	25,166	NA	68			2	7		77	26	20.9	7.0
Boonooroo	106	3,523	28,689	NA	218			6	4	1	229	65	54.5	15.5
Tuan	107	2,982	31,671	NA	120			1		1	122	41	52.5	17.6
Poona	108	4,588	36,259	NA	183			6		1	190	41	33.3	7.2
Tinnanbar	109	4,387	40,646	NA	15		1	3	3	1	23	5	10.4	2.4
TOTAL					**1,968**	**22**	**3**	**113**	**36**	**4**	***2,147***		***679.9***	

Table G.4: 2100 Quantitative Risk Analysis

Location / Management Zone	EPA No.	Shoreline Length (metres)	Chainage (metres, from Urangan Boat Harbour)	EPAW (metres)	Number of Cadastral Parcels							Risk Category (Lots per km Coastline)	Approximate Land Value	
					Freehold	Lands Lease	National Park	Reserve	State Land	State Forest	Total		Total ($M)	$M Per km
Management Zone 1														
Burrum Heads	77	706	40,289	95	65						65	92	22.8	32.2
Beelbi Creek to Burrum Heads	78	3,930	39,584	160	166			10	1		177	45	62.0	15.8
Beelbi Creek to Burrum Heads	79	3,968	35,654	400	13		1	3			17	4	6.0	1.5
Beelbi Creek	80	252	31,685	Transition	67			1			68	270	20.4	80.9
Toogoom	81	1,340	31,433	175	160						160	119	48.0	35.8
O'Regan Creek to Beelbi Creek	82	527	30,093	Transition	37			2			39	74	11.7	22.2
O'Regan Creek to Beelbi Creek	83	4,452	29,566	125	141			7			148	33	44.4	10.0
O'Regan Creek to Beelbi Creek	84	301	25,114	Transition	1						1	3	0.3	1.0
O'Regan Creek	85	542	24,813	400			1	2			3	6	1.1	2.1
Eli Creek to O'Regan Creek	86	237	24,271	Transition				2			2	8	0.7	3.2
Eli Creek to O'Regan Creek	87	6,723	24,035	125	128			11			139	21	55.8	8.3
Management Zone 2														
Eli Creek to O'Regan Creek	88	643	17,312	Transition	2				1		3	5	1.0	1.5
Eli Creek	89	425	16,669	400	1			1	1		3	7	1.0	2.3
Point Vernon to Eli Creek	90	658	16,244	Transition	2			3	2		7	11	2.0	3.1
Point Vernon to Eli Creek	91	1,013	15,587	105	19			1	1		21	21	6.1	6.0
Point Vernon	92	6,256	14,573	70	78	1		7			86	14	27.6	4.4
Management Zone 3														
Mouth of Tooan Tooan Creek to Pialba	93	981	8,317	110	76			7			83	85	38.6	39.4
Mouth of Tooan Tooan Creek	94	365	7,337	155	12			1			13	36	6.0	16.6
Scarness Seawall to Tooan Tooan Creek	95	449	6,972	125	22			3	1		26	58	6.1	13.5
Scarness Seawall	96	517	6,523	80	52			1			53	102	13.6	26.2

Location / Management Zone	EPA No.	Shoreline Length (metres)	Chainage (metres, from Urangan Boat Harbour)	EPAW (metres)	Number of Cadastral Parcels							Risk Category (Lots per km Coastline)	Approximate Land Value	
					Freehold	Lands Lease	National Park	Reserve	State Land	State Forest	Total		Total ($M)	$M Per km
Torquay Seawall to Scarness Seawall	97	2,861	6,006	105	334	6		5			345	121	112.2	39.2
Torquay Seawall	98	502	3,145	80	54			1			55	110	18.8	37.5
Urangan Seawall to Torquay Seawall	99	958	2,643	80	52			2			54	56	18.1	18.9
Urangan Seawall	100	739	1,686	80	51			1	2		54	73	18.1	24.5
Boat harbour to Urangan Seawall	101	946	946	105	62	1		3			66	70	22.1	23.4
Management Zone 4														
Boat Harbour	102	226	226	NA	4	2		2			8	35	2.7	11.9
Boat Harbour to River Heads	103	20,800	21,026	NA	344	13		19	21		397	19	136.1	6.5
River Heads	104	1,179	22,205	NA	5			2			7	6	2.6	2.2
Management Zone 5														
Maaroom	105	2,961	25,166	NA	95			2	7		104	35	18.4	6.2
Boonooroo	106	3,523	28,689	NA	264			6	4	1	275	78	63.3	18.0
Tuan	107	2,982	31,671	NA	135			1		1	137	46	50.3	16.9
Poona	108	4,588	36,259	NA	260			8		1	269	59	29.4	6.4
Tinnanbar	109	4,387	40,646	NA	53		1	3	3	1	61	14	9.9	2.3
FINAL TOTAL					**2,755**	**23**	**3**	**117**	**44**	**4**	***2,946***		***877.0***	

Table G.5: Infrastructure within Erosion Prone Areas - Management Zone 1: Burrum Heads to Eli Waters

Infrastructure	2030	2050	2070	2100
Critical Infrastructure				
Roads				
Length Road Centreline:	15.63 km	16.62 km	18.1 km	19.95 km
Length Road Footpath	0.63 km	0.94 km	1.215 km	1.89 km
Stormwater				
No. Pipe Beach Outlets	5	5	5	5
Length Drainage Pipes	0.44 km	1.08 km	1.39 km	1.72 km
Drainage SQID (GPTs)	0	0	0	0
Wastewater				
No. Sewer Pumping Stations	0	0	1	4
Length Rising Mains	-	0.58 km	1.28 km	1.28 km
Length Gravity Mains	0.21 km	1.11 km	2.61 km	4.83 km
No. House Connections	10	12	60	109
Length Sewer Effluent Main	-	-	-	-
No. Sewer Treatment Plants	-	-	-	-
No. Sewer Effluent Pumping Stations	-	-	-	-
Other Infrastructure				
No. Buildings	353	461	609	825
No. Beach Access Points	0	0	0	0

Table G.6: Infrastructure within Erosion Prone Areas - Management Zone 2: Point Vernon

Infrastructure	2030	2050	2070	2100
Critical Infrastructure				
Roads				
Length Road Centreline	2.43 km	2.65 km	4.14 km	7.78 km
Length Road Footpath	-	0.84 km	1.78 km	2.92 km
Stormwater				
No. Pipe Beach Outlets	3	3	3	5
Length Drainage Pipes	0.33 km	0.41 km	0.62 km	1.06 km
Drainage SQID (GPTs)	0	0	0	0
Wastewater				
No. Sewer Pumping Stations	1	1	1	4
Length Rising Mains	-	-	-	0.19 km
Length Gravity Mains	0.004 km	0.58 km	1.09 km	2.67 km
No. House Connections	-	-	1	10
Length Sewer Effluent Main	-	-	-	-
No. Sewer Treatment Plants	-	-	-	-
No. Sewer Effluent Pumping Stations	-	-	-	-
Gas Mains*				

Infrastructure	2030	2050	2070	2100
No. Medium Pressure Pipes	Absent	Absent	Present	Present
Other Infrastructure				
No. Buildings	2	9	18	38
No. Beach Access Points	15	23	23	23

**Due to insufficient information, Gas mains were calculated on the basis if they were present or absent within each EPA.*

Table G.7: Infrastructure within Erosion Prone Areas - Management Zone 3: Pialba to Urangan

Infrastructure	2030	2050	2070	2100
Critical Infrastructure				
Roads				
Length Road Centreline	3.1 km	5.36 km	7.43 km	7.98 km
Length Road Footpath	5.8 km	9.6 km	12.7 km	15.4 km
Stormwater				
No. Pipe Beach Outlets	30	31	31	31
Length Drainage Pipes	2.2 km	3.8 km	4.9 km	6.0 km
Drainage SQID (GPTs)	4	4	4	4
Wastewater				
No. Sewer Pumping Stations	2	3	3	4
Length Rising Mains	0.8 km	0.95 km	2.4 km	3.3 km
Length Gravity Mains	1.6 km	3.3 km	4.5 km	6.4 km
No. House Connections	5	5	13	28
Length Sewer Effluent Main	-	-	-	-
No. Sewer Treatment Plants	-	-	-	-
No. Sewer Effluent Pumping Stations	-	-	-	-
Gas Mains*				
No. Medium Pressure Pipes	Present	Present	Present	Present
Other Infrastructure				
No. Buildings	46	113	200	396
No. Beach Access Points	75	78	78	78

**Due to insufficient information, Gas mains were calculated on the basis if they were present or absent within each EPA.*

Table G.8: Infrastructure within Erosion Prone Areas - Management Zone 4: Urangan Boat Harbour to River Heads

Infrastructure	2030	2050	2070	2100
Critical Infrastructure				
Roads				
Length Road Centreline	7.1 km	7.1 km	7.6 km	11.7 km
Length Road Footpath	0.35 km	0.35 km	0.35 km	1.09 km
Stormwater				
No. Pipe Beach Outlets	7	7	7	7

Infrastructure	2030	2050	2070	2100
Length Drainage Pipes	1.02 km	1.02 km	1.46 km	3.0 km
Drainage SQID (GPTs)	-	-	-	-
Wastewater				
No. Sewer Pumping Stations	3	3	3	3
Length Rising Mains	-	-	-	-
Length Gravity Mains	1.25 km	1.25 km	1.6 km	3.16 km
No. House Connections	4	4	5	10
Length Sewer Effluent Main	0.67km	0.67km	0.67km	0.83km
No. Sewer Treatment Plants	-	-	-	-
No. Sewer Effluent Pumping Stations	-	-	-	-
Other Infrastructure				
No. Buildings	78	83	94	207
No. Beach Access Points	7	7	9	10

Table G.9: Infrastructure within Erosion Prone Areas - Management Zone 5: Boonooroo to Tinnanbar*

Infrastructure	2030	2050	2070	2100
Critical Infrastructure				
Roads				
Length Road Centreline	11.2 km	12.3 km	19.8 km	22.8km
Length Road Footpath	-	-	-	-
Stormwater				
No. Pipe Beach Outlets	-	-	-	-
Length Drainage Pipes	-	-	-	-
Drainage SQID (GPTs)	-	-	-	-
Wastewater				
No. Sewer Pumping Stations	-	-	-	-
Length Rising Mains	-	-	-	-
Length Gravity Mains	-	-	-	-
No. House Connections	-	-	-	-
Length Sewer Effluent Main	-	-	-	-
No. Sewer Treatment Plants	-	-	-	-
No. Sewer Effluent Pumping Stations	-	-	-	-
Other Infrastructure				
No. Buildings	-	-	-	-
No. Beach Access Points	-	-	-	-

**GIS Datasets provided did not include information on most assets in Zone 5.*