

27 Omokoroa South

27.1 Site description

The Omokoroa South shoreline is located on the southern side of Omokoroa Peninsula within the central part of Tauranga Harbour. The site consists of approximately 0.2 km of consolidated shoreline and 3.4 km of low-lying estuarine area. The site is split into 3 cells based on differences in exposure, morphology and shoreline elevation (Figure 27-1). The southern section of the site is very sheltered with an average fetch exposure of 0.5 km from the southeast. The northern section of the shoreline is slightly more exposed with an average fetch exposure of 2 km.



Figure 27-1 Location and cell extent along the Omokoroa South shoreline within the Tauranga Harbour.

The shoreline on the southern side of the railway bridge is characterised by sheltered low-lying estuarine shoreline with patches of salt marsh and mangrove vegetation (Cell 27A). On the northern side of the railway bridge there is a small section of consolidated cliffs ranging in elevation from RL 11 to 15 m (Cell 27B). The cliffs are relatively sheltered and appear stable with dense vegetation. North from the cliffs the shoreline changes to another area of low-lying estuarine shoreline which is characterised by mangroves and salt marsh vegetation (Cell 27C).



Figure 27-2 Site photos for Omokoroa South. (A, B) Low-lying estuarine shoreline (Cell 27A), (C) Well-vegetated cliffs (Cell 27B), (D) Low-lying estuarine shoreline (Cell 27C).

27.2 Geology

The geological map of the area²⁸ indicates that the site comprises:

- Matua Subgroup: Poorly to moderately sorted gravel with minor sand and silt underlying terraces; includes minor fan deposits and loess.
- Waiteariki Formation: Crystal-rich dacitic welded ignimbrite.

Field observations were in line with the published geology.

Existing slope angles for the consolidated cliffs range from 10° to 40°. The range of stable slope angles for the Omokoroa South shoreline are shown in Table 27-1 below.

The failure types observed around Omokoroa South were typically shallow surface failures. The likelihood of deep seated movement is low to moderate.

27.3 Coastal processes

The southern extent of Omokoroa South is a very sheltered environment with minimal wave exposure. Historic aerial photographs show there has been some expansion of the mangroves in the upper reaches of the estuary. While there are no mangroves along the shoreline directly south of the railway bridge, the historic aerials indicate there has been no erosion of the shoreline position. Due

²⁸ Leonard, G.S.; Begg, J.G.; Wilson, C.J.N. (compilers) 2010: *Geology of the Rotorua area*. Institute of Geological & Nuclear Sciences 1:250,000 geological map 5. 1 sheet + 102 p. Lower Hutt, New Zealand. GNS Science.

to the very sheltered environment there is likely to be no coastal erosion hazard along this section of the shoreline (Cell 27A).

On the northern side of the railway bridge, the small tidal channel within Maungawhai Bay runs close to the cliff toe within 27B. This channel may potentially contribute to some erosion, although the current shoreline appears relatively stable with patches of salt marsh along the toe. Based on regression analysis and sites of similar exposure, the long term erosion rate is estimated to range from -0.02 and -0.1 m/yr. Based on the sheltered environment the SLR response factor for Cell 27B is estimated to range from 0.1 to 0.3.

Historic aerial photographs indicate the mangroves along Cell 27C have been expanding since 1992. The mangroves are likely to dissipate most tidal and wave energy reaching the shoreline in Cell 27C.

27.4 Adopted component values

Adopted component values are presented within Table 27-1. The short term values are equal to zero for the consolidated cells as short term erosion is not applicable for consolidated shorelines (see section 4.6.2 in main report).

Table 27-1 Component values for the cells around Omokoroa South.

Site		27. Omokoroa South		
Cell		27A	27B	27C
Cell centre (NZTM)	E	1866778	1867894	1867885
	N	5827077	5827933	5828790
Morphology		Low-lying estuarine	Consolidated	Low-lying estuarine
Geology		Matua Subgroup	Matua Subgroup	Matua Subgroup
Exposure (average fetch/direction)		0.2km (SE)	0.3 km (SE)	2 km (NE)
State		Natural	Natural	Natural
Short-term (m)	Min	<i>No CEIHA (Refer to future MHWS layer in Stephens, 2019)</i>	0	<i>No CEIHA (Refer to future MHWS layer in Stephens, 2019)</i>
	Mode		0	
	Max		0	
Dune/Cliff elevation (m above toe or scarp)	Min		11	
	Mode		12	
	Max		15	
Stable angle (deg)	Min		24	
	Mode		26	
	Max		45	
Long-term (m)	Min		-0.1	
	Mode		-0.05	
	Max		-0.02	
Closure slope (beaches)/SLR response factor (cliffs)	Min	0.1		
	Mode	0.2		
	Max	0.3		

27.5 Coastal erosion hazard assessment

Coastal erosion hazard distances for Omokoroa South are presented within Table 27-2 and an overview map in Figure 27-4. Histograms of individual components and resultant erosion hazard distances using a Monte Carlo technique are shown in Appendix B. For the purpose of this assessment all coastal erosion protection structures have been ignored (refer to main report Section 4.5.4).

The erosion hazard along the cliffs within Cell 27B ranges from -19 m for current P_{66%} to -39 m for the 2130 1.6 m SLR P_{5%}. Due to the presence of salt marsh and mangroves within Cells 27A and 27C, there is likely to be no current erosion hazard for the shoreline. Inundation as a consequence of SLR is likely to be a greater hazard for the low-lying estuarine shoreline in the future.

While no active coastal erosion was identified along Cell 27A, the existing backshore slopes show evidence of a large historic landslip. There is a potential land instability hazard in this area unrelated to coastal erosion and therefore more detailed site-specific assessment may be warranted.

Table 27-2 Coastal erosion hazard widths (m) for current, 2080 and 2130 timeframes.

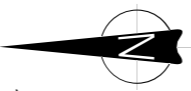
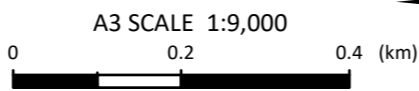
Site	Cell	Timeframe	SLR (m)	Probability of Exceedance													
				Min	P _{66%}	P _{50%}	P _{5%}	P _{1%}	Max								
Omokoroa South	27A	Current	0.03	<i>No CEIHA (Refer to future MHWS layer in Stephens, 2019)</i>													
			0.12														
			0.2														
		50yr (2080)	0.4														
			0.6														
			0.22														
			0.6														
		100yr (2130)	0.8														
			1.25														
			1.6														
			27B							Current	0.03	-12	-19	-21	-28	-30	-33
											0.12	-14	-22	-24	-31	-33	-37
	0.2			-14	-22	-24	-31	-34	-38								
	50yr (2080)	0.4		-14	-23	-25	-32	-35	-39								
		0.6		-14	-23	-25	-33	-35	-40								
		100yr (2130)		0.22	-15	-25	-27	-34	-37	-42							
				0.6	-15	-26	-28	-36	-39	-44							
	0.8			-15	-27	-29	-37	-40	-45								
	1.25			-16	-27	-30	-38	-41	-47								
	1.6	-16		-28	-30	-39	-41	-48									
	27C	Current		0.03	<i>No CEIHA (Refer to future MHWS layer in Stephens, 2019)</i>												
				0.12													
			0.2														
		50yr (2080)	0.4														
0.6																	
100yr (2130)			0.22														
	0.6																

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Notes: Aerial photograph sourced from the LINZ Data Service (dated 2015)



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Tauranga Harbour Coastal Erosion Assessment
 Erosion Hazard Overview
 Site 27: Omokoroa South

FIGURE No. Figure 27-4

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