3 Ongare

3.1 Site description

Ongare Point is located in the northern basin of the Tauranga Harbour, approximately 4 km south-west from the Katikati Entrance. The shoreline is east-facing and consists of approximately 0.7 km of low, unconsolidated shoreline and 0.3 km of coastal cliff. The site is split into 3 cells based on differences in geomorphology and shoreline elevation (Figure 3-1).

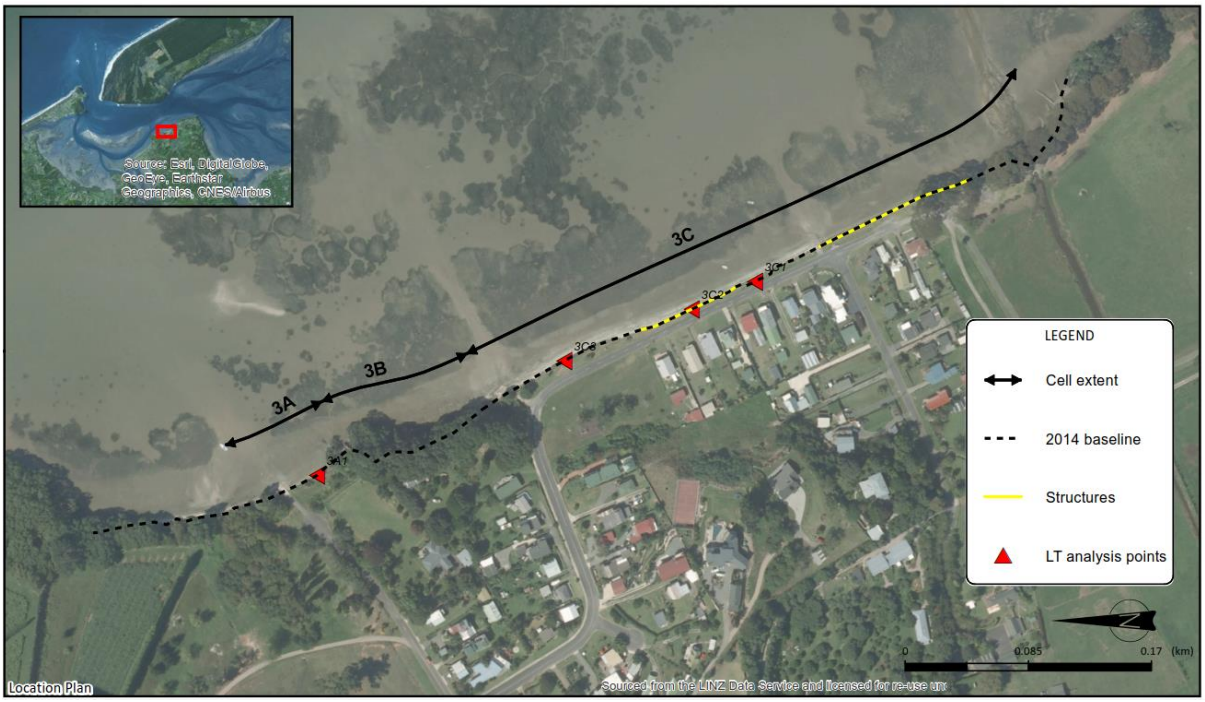


Figure 3-1 Site location and cell extent for Ongare shoreline within Tauranga Harbour.

At the northern end is a small boat ramp which extends from the end of Ongare Point Road. Surrounding the boat ramp is unprotected grass shoreline which gradually slopes on to a small, sandy, high-tide beach (Cell 3A) (Figure 3-2A). Within Cell 3B the shoreline is characterised by cliffs, elevated approximately 8 m above RL, with large pohutukawa trees overhanging (Figure 3-2B). South from the cliffs there is a low grass shoreline which runs parallel to Esplanade Road (Cell 3C) (Figure 3-2D). The shoreline lacks a high tide beach and the Esplanade Road sits approximately 400 mm above the high tide water line.

The Ongare shoreline is exposed to harbour waves from the northeast around to the south west. The average fetch across from Matakana Island is approximately 1.5 km, including several tidal channels. There is approximately 200 m of intertidal flats that extend out from the shoreline, which is likely to dampen wave energy reaching the shoreline.

Figure 3-2 Site photos for Ongare. (A) Unconsolidated shoreline (Cell 3A), (B) cliffs with overhanging pohutukawa (Cell 3B), (C) erosion of the grass bank within Cell 3C, (D) aerial view of the unconsolidated shoreline within Cell 3C.

3.2 Geology

The geological map of the area[3] 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.
- Holocene river deposits: Alluvial gravel, sand, silt, mud and clay, with local peat.

Field observations of cliff exposures are in line with the published geology.

The existing slope angles in this area are between 3° to 20° in unconsolidated areas, and between 20° to 50° in areas of banks or low cliffs. The range of stable slope angles for Ongare are shown in Table 3-1 below.

The failure types observed around Ongare were typically shallow surface failures. The likelihood of deep seated movement is low.

3.3 Coastal processes

Historic aerial photographs show that between 1982 and 2007 sections of the unconsolidated shoreline accreted, whereas over the most recent 10 years the entire unconsolidated shoreline has

[3] Edbrooke, S.W. (compiler) 2001: *Geology of the Auckland area*. Institute of Geological & Nuclear Sciences 1:250,000 geological map 3. 1 sheet + 74 p. Lower Hutt, New Zealand. Institute of Geological & Nuclear Sciences Limited.

eroded. Regression analysis based on the aerials since 1982 shows shoreline fluctuations from -0.15 to +0.05 m/yr (Cells 3A and 3B). This range of long term rates is also consistent with the average rate estimated by Opus (2015) (-0.08 m/yr).

Recent field observations indicate high tide water levels and waves are overtopping and undercutting the grass bank. Wind waves generated from the northeast around to the southeast are likely to contribute to erosion along the Ongare shoreline. Based on a 1.5 km fetch from the northeast, the theoretical significant wave height at Ongare is approximately 0.7 m. Based on model results the short term storm cut is estimated to range from 2 to 5 m.

3.4 Local considerations

At the southern end of Esplanade Road, the shoreline is protected by a sandbag seawall (Figure 3-3A). Although the seawall is generally in good condition, some of the sandbags have ripped and are in poor condition. Along a short section, south from the end of Esplanade Road, there is an old timber seawall (approximately 0.5 to 1 m high) which in poor condition. There is significant bank erosion behind the structure (Figure 3-3B). The middle section of Esplanade Road also has some patches of rip rap and rock structures, and there is evidence of undercutting of the low grass bank around the structures.

Figure 3-3 Examples of protection structures along the Ongare shoreline. (A) Sandbag seawall (Cell 3C), (B) timber seawall (Cell 3C).

3.5 Adopted component values

Adopted component values are presented within Table 3-1. 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 3-1 Component values for cells along the Ongare shoreline.

Site		**3. Ongare**		
Cell		**3A**	**3B**	**3C**
Cell centre (NZTM)	**E**	1862393	1862420	1862554
	N	5845496	5845407	5845144
Morphology		Unconsolidated	Consolidated	Unconsolidated
Geology		Holocene river deposits	Matua Subgroup	Holocene river deposits
Exposure (average fetch/direction)		1.5 km (NE)	1.5 km (NE)	1.5 km (NE)
State		Natural	Natural	Partially protected
Short-term (m)	Min	2	0	2
	Mode	3	0	3
	Max	5	0	5
Dune/Cliff elevation (m above toe or scarp)	Min	1	7	1
	Mode	2	8	1.5
	Max	2.5	8	2
Stable angle (deg)	Min	30	24	30
	Mode	32	26	32
	Max	34	50	34
Long-term (m)	Min	-0.15	-0.1	-0.15
	Mode	-0.1	-0.05	-0.1
	Max	0.05	-0.02	0.05
Closure slope (beaches)/SLR response factor (cliffs)	Min	0.05	0.1	0.05
	Mode	0.1	0.2	0.1
	Max	0.2	0.3	0.2

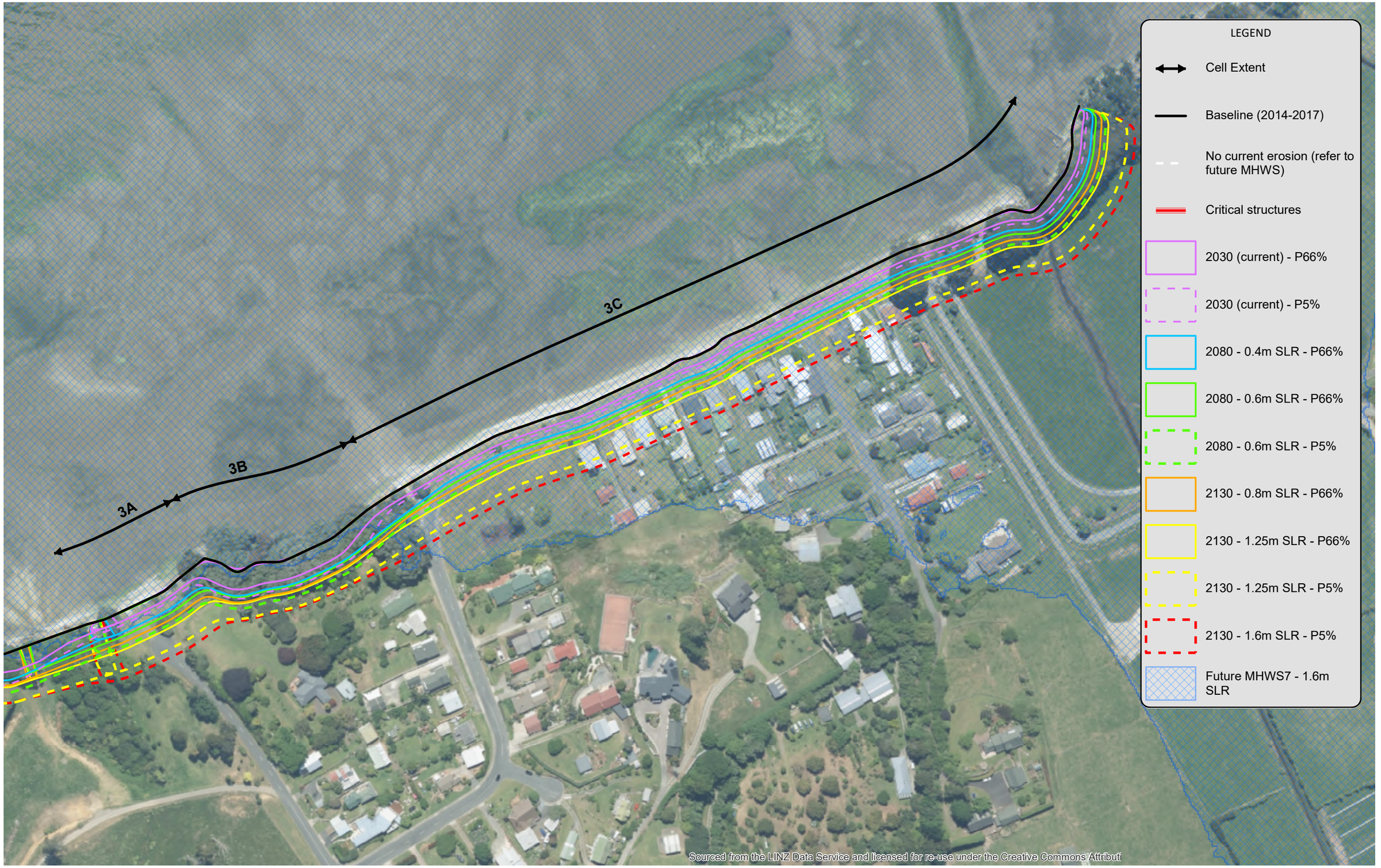
3.6 Coastal erosion hazard assessment

Coastal erosion hazard distances for Ongare are presented within Table 3-2 and an overview map in Figure 3-4. 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 current $P_{66\%}$ erosion hazard ranges from -5 m for the beaches to -11 m for the cliffs. For the future erosion hazard, the $P_{5\%}$ for 1.6 m SLR in 2130, ranges from -28 m for the cliffs to -35 m for the unconsolidated beaches.

Table 3-2 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
Ongare	3A	Current	0.03	-3	-5	-6	-7	-8	-9
		50yr (2080)	0.12	-1	-8	-9	-13	-14	-16
			0.2	-1	-9	-10	-14	-15	-16
			0.4	-3	-11	-12	-16	-17	-20
			0.6	-4	-12	-14	-18	-20	-24
		100yr (2130)	0.22	2	-11	-13	-20	-21	-23
			0.6	-1	-14	-17	-23	-25	-29
			0.8	-2	-16	-18	-26	-28	-32
			1.25	-5	-20	-22	-31	-34	-40
			1.6	-8	-23	-25	-35	-40	-47
	3B	Current	0.03	-7	-11	-12	-16	-17	-19
		50yr (2080)	0.12	-8	-13	-15	-20	-21	-23
			0.2	-8	-14	-15	-20	-21	-24
			0.4	-9	-14	-16	-21	-22	-25
			0.6	-9	-15	-16	-21	-23	-26
		100yr (2130)	0.22	-9	-16	-18	-23	-25	-28
			0.6	-10	-18	-19	-25	-27	-31
			0.8	-10	-18	-20	-26	-28	-32
			1.25	-10	-19	-20	-27	-29	-34
			1.6	-11	-19	-21	-28	-30	-35
	3C	Current	0.03	-3	-5	-6	-7	-8	-8
		50yr (2080)	0.12	0	-8	-9	-13	-14	-16
			0.2	-1	-8	-10	-14	-15	-16
			0.4	-3	-10	-12	-16	-17	-19
			0.6	-4	-12	-13	-18	-20	-23
		100yr (2130)	0.22	2	-10	-13	-19	-21	-23
			0.6	-1	-14	-16	-23	-25	-28
			0.8	-2	-16	-18	-25	-28	-32
			1.25	-4	-20	-22	-31	-34	-39
			1.6	-6	-23	-25	-35	-39	-45



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

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Tauranga Harbour Coastal Erosion Assessment

Erosion Hazard Overview

Site 3: Ongare

FIGURE No. Figure 3-4

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