

14 Ngawai Bay (Teal)

Description and geomorphology

Ngawai Bay is situated on the southern coast of the greater Helena Bay located approximately 35 km north of Whangarei.

The site is an embayment shoreline, which is approximately 700 m long situated between the Owai Stream to the south and Te Maurea Point in the north. Te Maurea Point comprises Greywacke rock and extends along the northern 150 m of the shoreline (cell 14A). The base of the headland is currently protected by a sand beach and dune system, which has a backshore width of approximately 10 m from the dune toe to the base of the cliff.

The site has a mixed coarse sand and gravel beach, with a higher proportion of pebble size beach sediment located above the high tide level. The central beach area has a berm width of approximately 10 m above the high tide line and a relatively steep beach. The dune is well developed with no evidence of recent erosion scarps in this area. The main species of dune vegetation is ice plant.

The backshore elevation is relatively flat ranging from RL 4m to 6m. The backshore area along the central section is developed with property located approximately 5 m to 20 m landward of the dune toe.

Local considerations

The southern end of the shoreline curves inland forming a spit feature at the mouth of the Owai Stream. The dune elevations are lower along the spit with an elevation of approximately RL 2 m to 4 m. The dune is less developed in this area with minimal dune vegetation and there is an erosion scarp along the end of the spit.

There are currently no erosion protection structures at this site.

Coastal Erosion Hazard Assessment

The site is split into four cells based on geomorphology, exposure and dune height. The coastal cells types at this site include hard cliff at the northern end and dune and soft cliff to the south.



Site Photograph A (north)



Site Photograph B (dune crest)



Site Photograph C (south)

Adopted component values are presented within Table 14-1.

Histograms of individual components and resultant CEHZ distances using a Monte Carlo technique are shown in Figure 14-1 to Figure 13-

4. Coastal Erosion Hazard Zone widths are presented within Table 14-2 and Figure 14-5. CEHZ's have been mapped in agreement with the calculated values.

Figure 14-6 shows the available historic shorelines for Ngawai Bay (Teal)

Table 14-1 Component values for Erosion Hazard Assessment

Site		14. Teal			
Cell		14A ⁴	14B	14C	14D
Cell centre (NZTM)	E	1723653	1723815	1724049	1724045
	N	6077847	6077632	6077546	6077476
Chainage, m (from N/W)		0-150	150-560	560-620	620-700
Morphology		Greywacke	Dune	Inlet	Soft Cliff
Short-term (m)	Min	0	5	2	0
	Mode	0	10	10	0
	Max	0	15	15	0
Dune/Cliff elevation (m above toe or scarp)	Min	20.0	4.2	3.4	2.5
	Mode	30.0	5.3	3.8	3.0
	Max	40.0	6.0	4.3	3.5
Stable angle (deg)	Min	30	30	30	26.6
	Mode	32	32	32	30.2
	Max	34	34	34	33.7
Long-term (m) erosion -ve accretion +ve	Min	-0.02	0.1	-0.05	-0.05
	Mode	-0.05	0.05	-0.1	-0.1
	Max	-0.1	-0.05	-0.15	-0.15
Closure slope (beaches)	Min	0.5	0.067	0.067	0.75
	Mode	0.25	0.027	0.027	0.5
	Max	0	0.01	0.01	0.25
SLR 2065 (m)	Min	0.19	0.19	0.19	0.19
	Mode	0.29	0.29	0.29	0.29
	Max	0.39	0.39	0.39	0.39
SLR 2115 (m)	Min	0.45	0.45	0.45	0.45
	Mode	0.77	0.77	0.77	0.77
	Max	1.1	1.1	1.1	1.1

⁴Has been mapped in addition to T+T (2014).

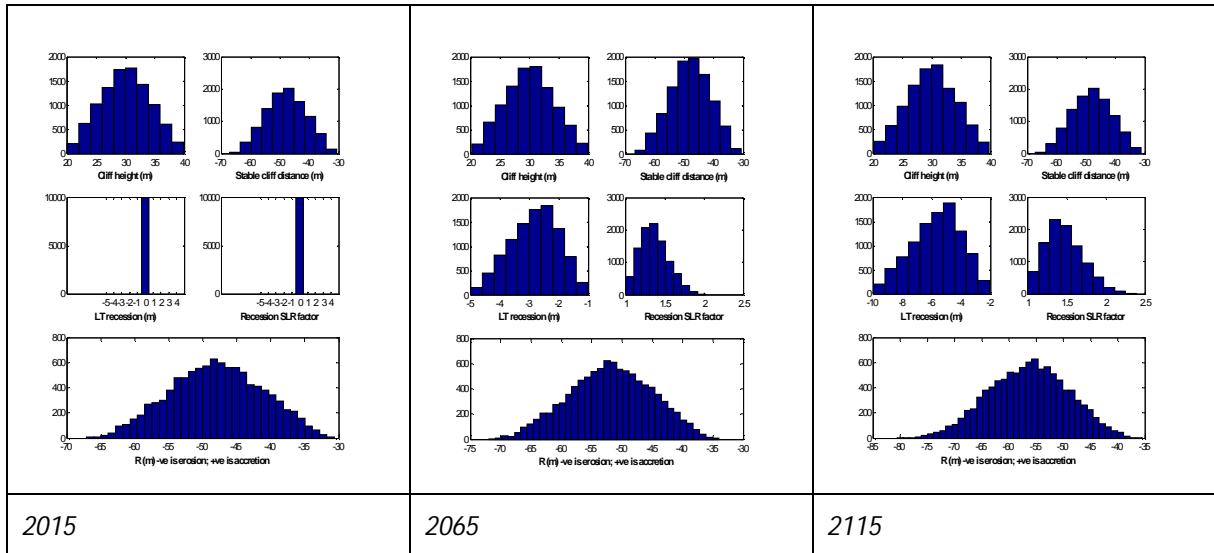


Figure 14-1 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 14A

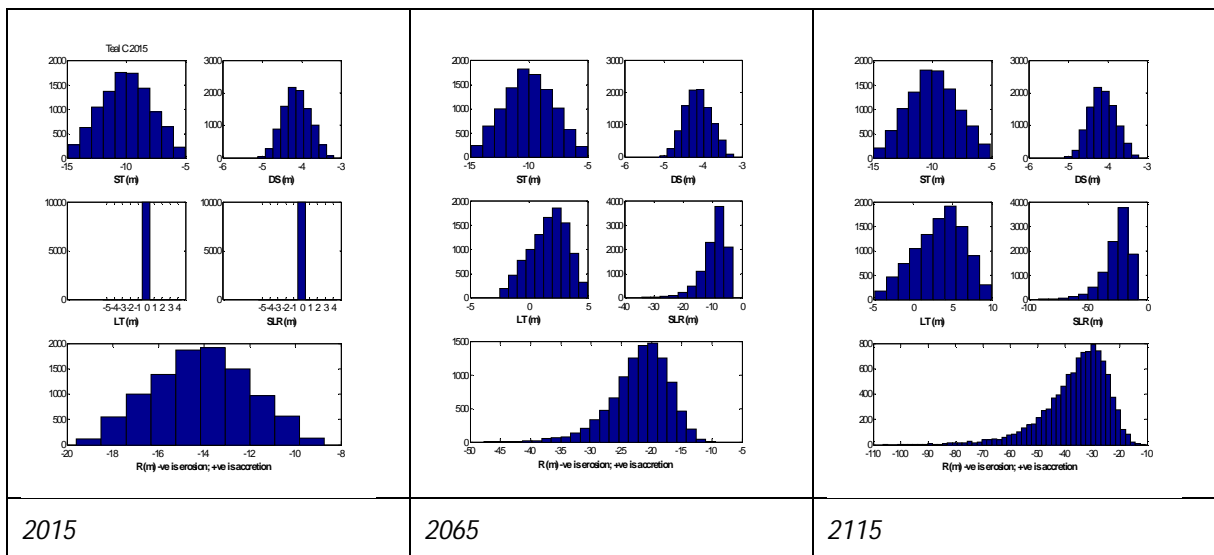


Figure 14-2 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 14B

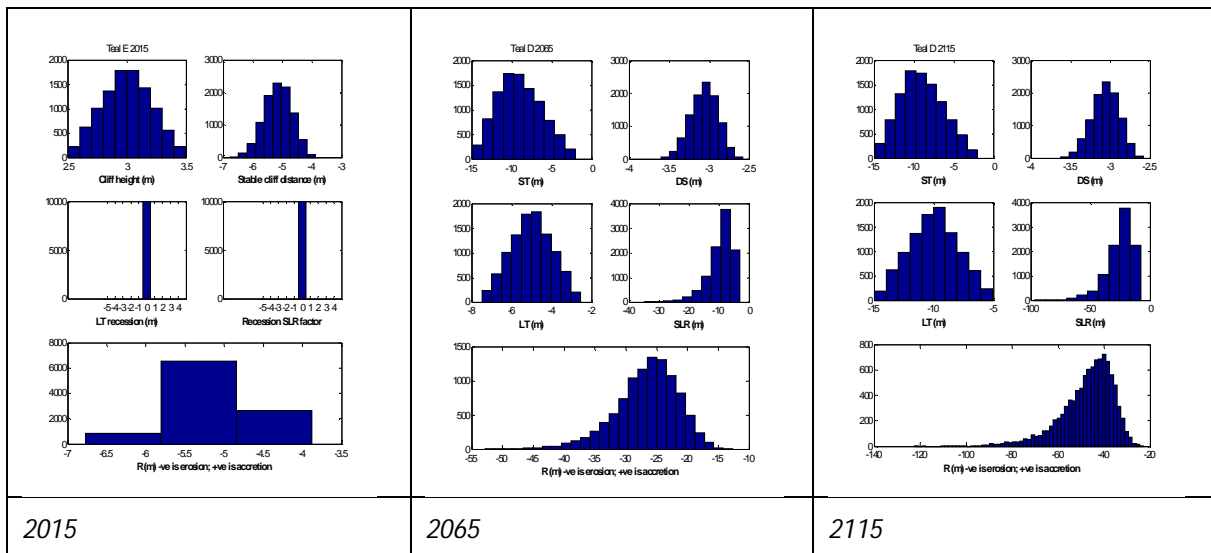


Figure 14-3 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 14C

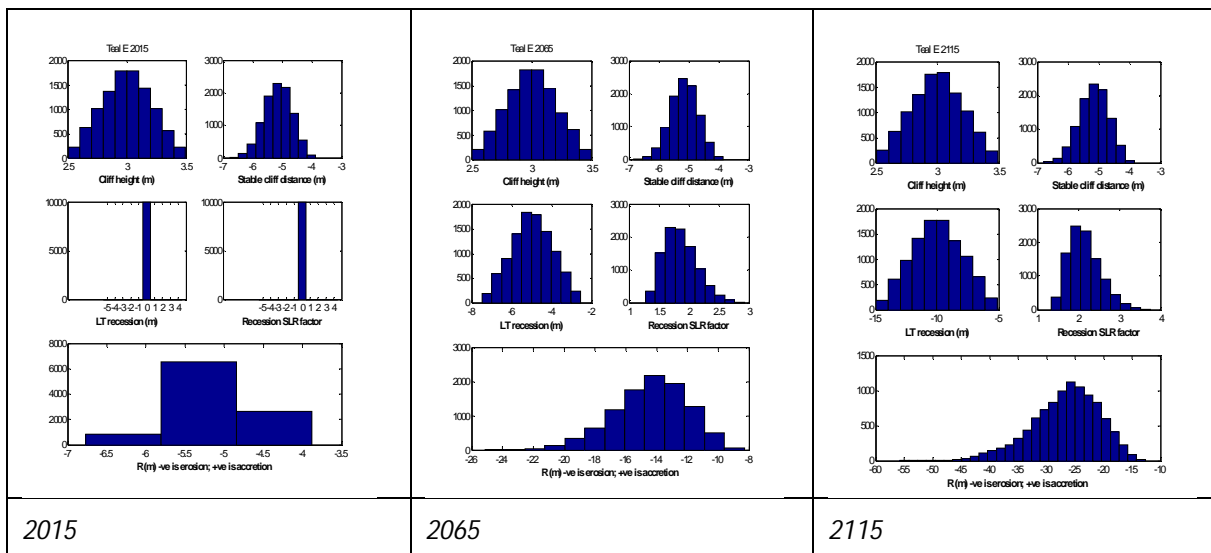


Figure 14-4 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 14D

Table 14-2 Coastal Erosion Hazard Zone Widths

Site		14. Teal											
Cell		14A			14B			14C			14D		
Time		2015	2065	2115	2015	2065	2115	2015	2065	2115	2015	2065	2115
Probability of CEHZ (m) Exceedance	Min	-31	-34	-35	-9	-9	-11	-5	-13	-23	-4	-8	-13
	99%	-34	-38	-41	-10	-13	-18	-6	-17	-29	-4	-10	-16
	95%	-37	-41	-45	-11	-15	-22	-7	-19	-33	-4	-11	-18
	90%	-39	-43	-47	-11	-16	-24	-8	-21	-35	-5	-11	-20
	80%	-42	-46	-50	-12	-18	-27	-10	-22	-38	-5	-12	-22
	70%	-44	-48	-52	-13	-19	-29	-11	-24	-40	-5	-13	-23
	66%	-45	-49	-53	-13	-20	-30	-11	-24	-41	-5	-13	-24
	60%	-46	-50	-54	-14	-20	-32	-12	-25	-43	-5	-14	-25
	50%	-48	-52	-56	-14	-21	-34	-12	-26	-45	-5	-14	-26
	40%	-50	-54	-58	-15	-23	-37	-13	-27	-48	-5	-15	-28
	33%	-51	-55	-60	-15	-23	-39	-13	-28	-50	-5	-15	-29
	30%	-52	-56	-60	-15	-24	-40	-14	-29	-51	-5	-16	-29
	20%	-54	-58	-63	-16	-25	-44	-14	-30	-56	-6	-16	-31
	10%	-57	-61	-66	-17	-28	-52	-16	-33	-63	-6	-18	-35
	5%	-59	-64	-69	-18	-31	-59	-16	-36	-70	-6	-19	-38
	1%	-63	-67	-73	-19	-37	-75	-17	-42	-85	-6	-21	-42
	Max	-67	-72	-81	-20	-48	-106	-18	-53	-122	-7	-25	-56
	CEHZ1	-49			-20			-24			-13		
	CEHZ2	-69			-59			-70			-38		

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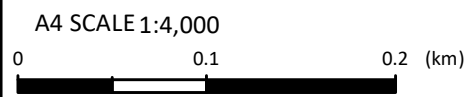
LEGEND

- 2013 - 2014 shoreline
- Erosion Protection Structures
- ↔ Cell Extent

Coastal Erosion Hazard Zone

- CEHZ0 (protected by structure)
- CEHZ1 (2065 CEHZ)
- CEHZ2 (2115 CEHZ)

Notes: Dashed CEHZ indicates greater uncertainty around stream mouths and backshore topography. Northland 0.1m Rural Aerial Photos (2014-2015).



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DRAWN	PPK	Dec.17
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SCALE (AT A4 SIZE) 1:4,000		
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 Coastal Erosion Hazard Assessment
 Ngawai Bay (Teal Bay)
 Site: 14

FIGURE No. **Figure 14-5**

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, Aero IG, and the GIS User Community

Notes: Dashed CEZ indicates greater uncertainty around stream mouths and backshore topography.
Northland 0.1m Rural Aerial Photos (2014-2015).

A4 SCALE 1:4,000

0 0.1 0.2 (km)

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Historic shorelines
Ngawai Bay (Teal Bay)
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FIGURE No. Figure 14-6

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