18 Bland Bay

Description and geomorphology

Bland Bay is situated on the eastern shoreline of Whangaruru Peninsula. The site shoreline is approximately 2.2 km long situated between Parerangi reef in the south and an unnamed reef to the north.

The beach comprises fine to medium sand with some shell and pebble component. The beach has a berm width of approximately 5 m above the high tide line along the northern 1 km of the site. The dune system is well developed along the northern 1 km of shoreline, with healthy spinifex vegetation present.

A small stream enters the site shoreline at the northern end, which has a minimal effect on shoreline position. The dune elevation and berm width decrease toward the southern end of the site.

Another small stream is located near the southern end of the site situated adjacent to Waitapu reef. Waitapu reef is located approximately 700 m from the southern end of the site. The beach morphology changes south of this point with a relatively flat backshore area that has as vertical erosion scarp.

The southern 150 m of the site is a cliff shoreline, which is a sedimentary melange formation.

Local considerations

There are no erosion protection structures at this site.

The southern stream meanders along behind the shoreline and the bank edge is approximately 30 m from the dune toe at the narrowest point.

Coastal Erosion Hazard Assessment

The site is split into five cells based on differences in geomorphology, dune height and shoreline movement trends.

Adopted component values are presented within Table 18-1. The beach is relatively exposed to storm waves and short-term erosion values of 5 to 20 m are adopted. The beach is generally accretional at between 0.05 and 0.3 m/year.

Site Photograph A (southern end)

Site Photograph B (centre)

Site Photograph C (northern end)

Histograms of individual components and resultant CEHZ distances using a Monte Carlo

technique are shown in Figure 18-1 to figure 18-5.

Coastal Erosion Hazard Zone widths are presented within Table 18-2 to 18-4 and Figure 18-6. CEHZ's have been mapped in agreement with the calculated values.

Note that cell 18A and 18B have experienced accretion since about 1971 over approximately 600 m, with CEHZs offset from the accreted most recent shoreline.

Figure 18-7 shows the available historic shorelines for Bland Bay.

Table 18-1 Component values for Erosion Hazard Assessment

Site		18. Bland Bay				
Cell		18A	18B	18C	18D	18E
Cell centre (NZTM)	E	1722721	1722798	1723139	1723572	1723883
	N	6088544	6088225	6087763	6087570	6087555
Chainage, m (from N/W)		0-300	300-660	660-1510	1510-1750	1750-2190
Morphology		Dune	Dune	Dune	Dune	Melange Formation mudstone
Short-term (m)	Min	5	5	5	5	0
	Mode	15	10	10	15	0
	Max	20	15	15	20	0
Dune/Cliff elevation (m above toe or scarp)	Min	6.6	5.4	3.6	2.9	3.0
	Mode	7.7	6.7	4.6	3.5	3.4
	Max	8.4	8.1	6.3	4.1	3.9
Stable angle (deg)	Min	30	30	30	30	26.6
	Mode	32	32	32	32	30.2
	Max	34	34	34	34	33.7
Long-term (m) -ve erosion +ve accretion	Min	0.3	0.3	0.15	0.05	-0.05
	Mode	0.2	0.2	0.1	0	-0.1
	Max	0.1	0.1	0.05	-0.05	-0.2
Closure slope (beaches)	Min	0.03	0.03	0.03	0.03	0.75
	Mode	0.019	0.019	0.018	0.018	0.5
	Max	0.016	0.016	0.012	0.012	0.25
SLR 2080 (m)	RCP 2.6	0.16	0.16	0.16	0.16	0.16
	RCP 4.5	0.21	0.21	0.21	0.21	0.21
	RCP 8.5M	0.33	0.33	0.33	0.33	0.33
	RCP 8.5H+	0.51	0.51	0.51	0.51	0.51
SLR 2130 (m)	RCP 2.6	0.28	0.28	0.28	0.28	0.28
	RCP 4.5	0.42	0.42	0.42	0.42	0.42
	RCP 8.5M	0.85	0.85	0.85	0.85	0.85
	RCP 8.5H+	1.17	1.17	1.17	1.17	1.17

2020	2080	2130

Figure 18-1 Histograms of parameter samples and the resultant shoreline distances for 2020, 2080 and 2130 timeframes for cell 18A

2020	2080	2130

Figure 18-2 Histograms of parameter samples and the resultant shoreline distances for 2020, 2080 and 2130 timeframes for cell 18B

2020	2080	2130

Figure 18-3 Histograms of parameter samples and the resultant shoreline distances for 2020, 2080 and 2130 timeframes for cell 18C

2020	2080	2130

Figure 18-4 Histograms of parameter samples and the resultant shoreline distances for 2020, 2080 and 2130 timeframes for cell 18D

2020	2080	2130

Figure 18-5 Histograms of parameter samples and the resultant shoreline distances for 2020, 2080 and 2130 timeframes for cell 18E

Table 18-2 Coastal Erosion Hazard Zone Widths for 2020

Site		18. Bland				
Probability of CEHZ (m) Exceedance		A	B	C	D	E
	Min	-11	-10	-8	-8	-5
	99%	-12	-11	-9	-9	-5
	95%	-14	-12	-10	-11	-5
	90%	-15	-13	-11	-12	-5
	80%	-16	-14	-12	-13	-5
	70%	-18	-14	-13	-15	-6
	66%	-18	-14	-13	-15	-6
	60%	-19	-15	-13	-16	-6
	50%	-20	-15	-14	-16	-6
	40%	-20	-16	-14	-17	-6
	33%	-21	-16	-15	-18	-6
	30%	-21	-17	-15	-18	-6
	20%	-22	-17	-16	-19	-6
	10%	-23	-18	-17	-20	-7
	5%	-24	-19	-17	-21	-7
	1%	-25	-20	-18	-22	-7
	Max	-26	-21	-20	-23	-8

Table 18-3 Coastal Erosion Hazard Zone Widths Projected for 2080

Site		18. Bland																			
Cell		18A				18B				18C				18D				18E			
RCP scenario		2.6	4.6	8.5	8.5+	2.6	4.6	8.5	8.5+	2.6	4.6	8.5	8.5+	2.6	4.6	8.5	8.5+	2.6	4.6	8.5	8.5+
Probability of CEHZ (m) Exceedance	Min	-1	-3	-7	-14	1	0	-4	-11	-7	-9	-14	-20	-12	-14	-18	-25	-9	-9	-10	-10
	99%	-5	-7	-13	-20	-3	-5	-10	-17	-10	-12	-17	-23	-16	-18	-23	-30	-10	-11	-12	-13
	95%	-8	-10	-15	-23	-5	-8	-13	-20	-12	-14	-19	-26	-18	-20	-25	-33	-11	-12	-13	-15
	90%	-9	-12	-17	-25	-6	-9	-14	-21	-13	-15	-20	-27	-19	-22	-27	-35	-12	-12	-14	-16
	80%	-11	-14	-19	-27	-8	-10	-16	-23	-14	-16	-22	-29	-21	-24	-29	-37	-12	-13	-15	-17
	70%	-13	-15	-21	-29	-9	-11	-17	-25	-15	-17	-23	-31	-23	-25	-31	-39	-13	-14	-16	-19
	66%	-13	-16	-21	-29	-10	-12	-17	-26	-15	-17	-23	-32	-23	-25	-31	-40	-13	-14	-17	-19
	60%	-14	-16	-22	-30	-10	-12	-18	-26	-15	-18	-24	-33	-24	-26	-32	-41	-14	-15	-17	-20
	50%	-15	-17	-23	-31	-11	-13	-19	-28	-16	-19	-25	-34	-25	-27	-33	-42	-14	-16	-18	-21
	40%	-16	-18	-24	-33	-12	-14	-20	-29	-17	-20	-26	-36	-26	-28	-34	-44	-15	-16	-19	-22
	33%	-17	-19	-25	-34	-12	-15	-21	-30	-17	-20	-27	-37	-26	-29	-35	-45	-16	-17	-20	-23
	30%	-17	-20	-25	-34	-13	-15	-21	-30	-18	-20	-27	-37	-27	-29	-36	-46	-16	-17	-20	-24
	20%	-18	-21	-27	-36	-14	-16	-22	-31	-19	-21	-28	-39	-28	-30	-37	-48	-17	-18	-22	-26
	10%	-20	-23	-29	-38	-15	-18	-24	-33	-20	-23	-30	-42	-29	-32	-39	-50	-18	-20	-24	-29
	5%	-21	-24	-30	-40	-16	-19	-25	-35	-21	-24	-32	-44	-30	-33	-41	-53	-19	-21	-25	-31
	1%	-24	-26	-33	-43	-18	-21	-27	-37	-23	-26	-35	-48	-33	-36	-44	-57	-20	-23	-28	-35
	Max	-29	-32	-40	-51	-21	-24	-31	-41	-27	-31	-40	-54	-36	-40	-49	-63	-23	-26	-34	-44
	CEHZ1	-21				-17				-23				-31				-17			

Table 18-4 Coastal Erosion Hazard Zone Widths Projected for 2130

Site		18. Bland																			
Cell		18A				18B				18C				18D				18E			
RCP scenario		2.6	4.6	8.5	8.5+	2.6	4.6	8.5	8.5+	2.6	4.6	8.5	8.5+	2.6	4.6	8.5	8.5+	2.6	4.6	8.5	8.5+
Probability of CEHZ (m) Exceedance	Min	9	4	-11	-23	9	4	-12	-23	-4	-9	-24	-35	-15	-20	-36	-47	-12	-13	-15	-15
	99%	3	-3	-20	-32	5	-1	-17	-29	-8	-14	-30	-42	-20	-25	-42	-54	-14	-15	-18	-20
	95%	-1	-7	-25	-37	2	-4	-21	-34	-11	-17	-34	-46	-23	-29	-46	-59	-15	-17	-21	-23
	90%	-3	-9	-27	-40	0	-6	-24	-37	-12	-18	-36	-48	-25	-31	-49	-62	-16	-19	-23	-26
	80%	-6	-12	-31	-44	-2	-8	-27	-41	-14	-20	-39	-53	-27	-33	-52	-66	-18	-20	-26	-29
	70%	-8	-14	-33	-47	-4	-10	-29	-43	-15	-22	-42	-56	-28	-35	-54	-69	-19	-22	-28	-32
	66%	-8	-15	-34	-48	-4	-11	-30	-44	-16	-22	-43	-58	-29	-35	-55	-70	-19	-22	-29	-33
	60%	-9	-16	-35	-50	-5	-12	-31	-46	-16	-23	-44	-60	-29	-36	-57	-72	-20	-23	-30	-35
	50%	-11	-17	-37	-53	-7	-13	-33	-48	-17	-24	-46	-63	-31	-38	-59	-75	-21	-25	-32	-37
	40%	-12	-19	-40	-55	-8	-15	-35	-51	-18	-26	-49	-66	-32	-39	-62	-79	-22	-26	-35	-40
	33%	-13	-20	-41	-57	-9	-16	-37	-53	-19	-27	-50	-68	-33	-40	-64	-81	-23	-27	-37	-42
	30%	-14	-21	-42	-58	-9	-16	-37	-53	-20	-27	-51	-69	-33	-41	-64	-82	-24	-28	-38	-43
	20%	-16	-22	-44	-61	-11	-18	-40	-56	-21	-29	-54	-74	-34	-42	-68	-87	-26	-30	-41	-47
	10%	-18	-25	-48	-65	-13	-20	-43	-60	-23	-32	-59	-80	-37	-45	-72	-93	-28	-33	-46	-53
	5%	-20	-27	-50	-68	-15	-22	-45	-63	-24	-34	-63	-85	-38	-47	-76	-98	-29	-35	-50	-59
	1%	-24	-31	-55	-73	-18	-26	-50	-68	-27	-37	-69	-93	-42	-52	-83	-107	-32	-38	-56	-68
	Max	-29	-38	-64	-84	-22	-30	-57	-77	-33	-44	-79	-104	-49	-60	-95	-121	-35	-44	-69	-86
	CEHZ2	-50				-45				-63				-76				-50			
	CEHZ3	-68				-63				-85				-98				-59			

Notes: Dashed CEHZ indicates greater uncertainty around stream mouths and backshore topography.
Northland 0.4m Rural Aerial Photos (2014-2016).

A4 SCALE 1:8,000

0 0.1 0.2 0.3 0.4 (km)

Tonkin+Taylor
105 Carlton Gore Rd, Newmarket, Auckland
www.tonkintaylor.co.nz

DRAWN	JJOU	May.20
CHECKED		
APPROVED		
ARCFILE 1012360_CEHZ001_v2.mxd		
SCALE (AT A4 SIZE) 1:8,000		
PROJECT No. 1012360		

NORTHLAND REGIONAL COUNCIL

Coastal Erosion Hazard Assessment

Bland Bay

Site: 18

FIGURE No. Figure 18-6

Rev. 1

Path: P:\1012360\WorkingMaterial\GIS\CEHZ maps\1012360_CEHZ001_v2.mxd Date: 29/05/2020 Time: 6:08:50 am

Notes: Dashed CEHZ indicates greater uncertainty around stream mouths and backshore topography.
Northland 0.4m Rural Aerial Photos (2014-2016).

A4 SCALE 1:8,000

0 0.1 0.2 0.3 0.4 (km)

Tonkin+Taylor
105 Carlton Gore Rd, Newmarket, Auckland
www.tonkintaylor.co.nz

DRAWN	JJOU	Jun.20
CHECKED		
APPROVED		
ARCFILE 1012360_Historicv2.mxd		
SCALE (AT A4 SIZE) 1:8,000		
PROJECT No. 1012360		

NORTHLAND REGIONAL COUNCIL

Historic Shorelines

Bland Bay

Site: 18

FIGURE No. Figure 18-7

Rev. 1

Path: P:\1012360\WorkingMaterial\GIS\CEHZ maps\1012360_Historicv2.mxd Date: 9/06/2020 Time: 9:26:13 AM