27 Taipa beach

Description and geomorphology

Taipa Beach is located at the southern end of Doubtless Bay, approximately 22 km north-east of Kaitaia.

The north east facing shoreline forms a pocket beach embayment which is approximately 1.3 km long. Taipa Beach is a barrier spit which is attached to Otanguru Point at the western end. The Taipa River entrance is situated at the eastern end of the site.

The site has a sandy beach comprising fine to medium sand. The beach has a berm width less than 5 m above the high tide line. A small stream enters the site at the west end of the site, which does not appear to have any effect on the shoreline at this position.

The dune is well vegetated with spinifex and a foredune is developing along the open coast shoreline. The dune heights range from approximately RL 2 to 5 m along the site. The backshore is developed with the most seaward dwelling located 100 m from the dune toe.

The Taipa River mouth is located at the eastern end of the site. Some erosion is evident on the inside of the spit shoreline.

Local considerations

There are no erosion protection structures along the open coast shoreline. A timber seawall exists along the estuary shoreline.

Dune restoration has been undertaken along the open coast, resulting in a well vegetated foredune.

Coastal Erosion Hazard Assessment

The site is split into three cells based on differences in dune height and geomorphology. All three cells are characterised as non-consolidated beach type.

Adopted component values are presented within Table 27-1. Long-term trends are accretion of up to 0.3 m/year along the open beach and erosion of up to -0.1 m/year within the estuary.

Histograms of individual components and resultant CEHZ distances using a Monte Carlo technique are shown in Figure 27-1 to figure 27-3.

Site Photograph A (west)

Site Photograph B (east)

Site Photograph C (estuary)

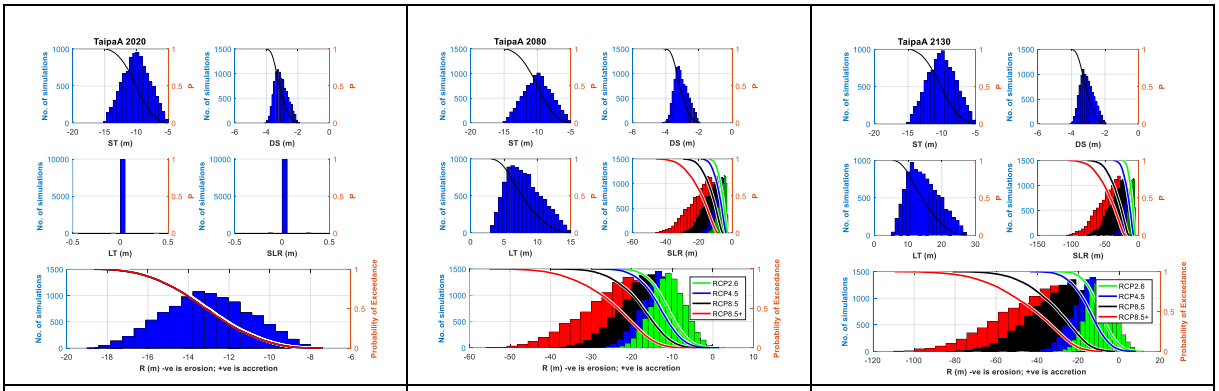
Coastal Erosion Hazard Zone widths are presented within Table 27-2 to 27-4 and Figure 27-4. CEHZ1 values range from 15 to 19 m, CEHZ2 values from 56 to 68 m and CEHZ3 values

range from 77 to 89 m. CEHZ's have been mapped in agreement with the calculated values. Note that cell 27A has experienced accretion since about 1961 along its entire length, with CEHZs offset from the accreted most recent shoreline.

Figure 27-5 shows the available historic shorelines for Taipa Beach.

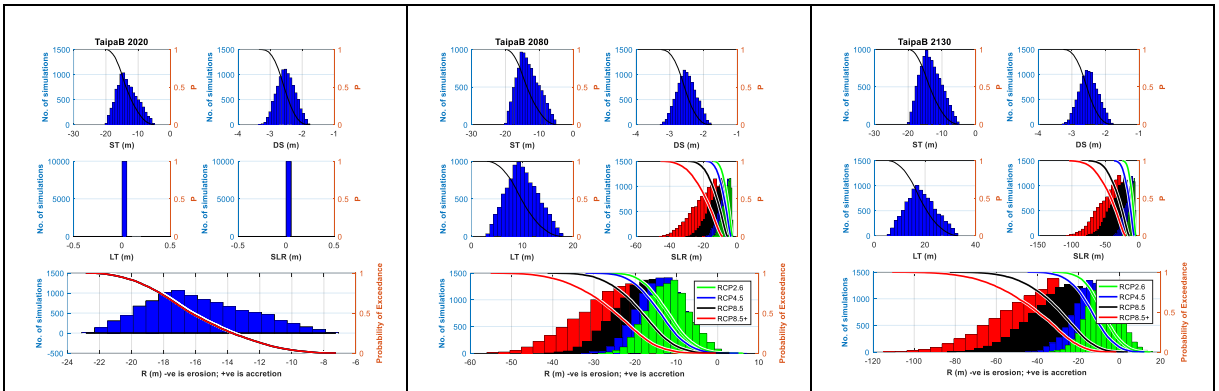
Table 27-1 Component values for Erosion Hazard Assessment

Site		27. Taipa		
Cell		27A	27B	27C
Cell centre (NZTM)	E	1642290	1642868	1642993
	N	6127693	6127644	6127560
Chainage, m (from N/W)		0-980	980-1200	1200-1320
Morphology		Dune	Dune	Estuary Bank
Short-term (m)	Min	5	5	2
	Mode	10	15	4
	Max	15	20	6
Dune/Cliff elevation (m above toe or scarp)	Min	2.5	2.3	1.8
	Mode	4.2	3.2	2.3
	Max	4.8	3.9	2.5
Stable angle (deg)	Min	30	30	30
	Mode	32	32	32
	Max	34	34	34
Long-term (m) -ve erosion +ve accretion	Min	0.25	0.3	0
	Mode	0.1	0.15	-0.05
	Max	0.05	0.05	-0.1
Closure slope (beaches)	Min	0.06	0.06	0.06
	Mode	0.018	0.018	0.018
	Max	0.011	0.011	0.011
SLR 2080 (m)	RCP 2.6	0.16	0.16	0.16
	RCP 4.5	0.21	0.21	0.21
	RCP 8.5M	0.33	0.33	0.33
	RCP 8.5H+	0.51	0.51	0.51
SLR 2130 (m)	RCP 2.6	0.28	0.28	0.28
	RCP 4.5	0.42	0.42	0.42
	RCP 8.5M	0.85	0.85	0.85
	RCP 8.5H+	1.17	1.17	1.17



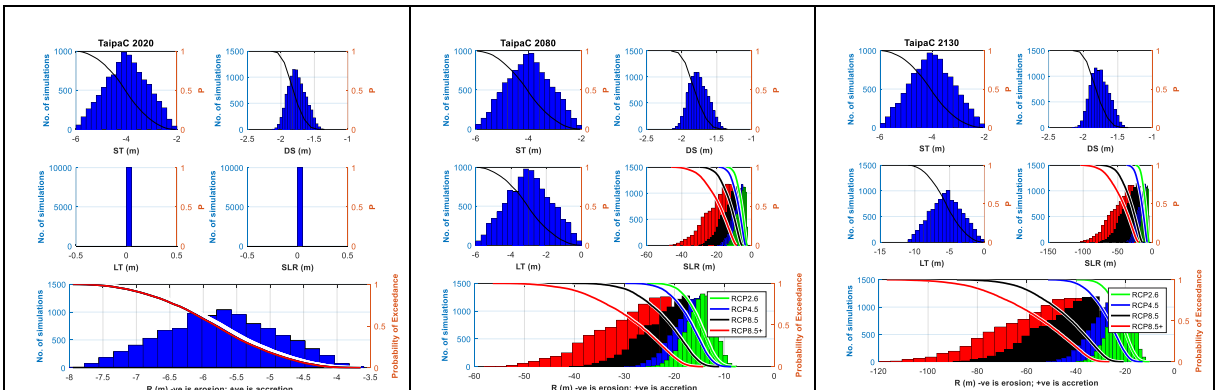
2020	2080	2130

Figure 27-1 Histograms of parameter samples and the resultant shoreline distances for 2020, 2080 and 2130 timeframes for cell 27A



2020	2080	2130

Figure 27-2 Histograms of parameter samples and the resultant shoreline distances for 2020, 2080 and 2130 timeframes for cell 27B



2020	2080	2130

Figure 27-3 Histograms of parameter samples and the resultant shoreline distances for 2020, 2080 and 2130 timeframes for cell 27C

Table 27-2 Coastal Erosion Hazard Zone Widths For 2020

Site		27. Taipa		
		A	B	C
Probability of CEHZ (m) Exceedance	Min	-7	-7	-4
	99%	-9	-9	-4
	95%	-10	-10	-4
	90%	-10	-11	-5
	80%	-11	-13	-5
	70%	-12	-14	-5
	66%	-12	-15	-5
	60%	-13	-15	-6
	50%	-13	-16	-6
	40%	-14	-17	-6
	33%	-14	-18	-6
	30%	-14	-18	-6
	20%	-15	-19	-7
	10%	-16	-20	-7
	5%	-17	-21	-7
	1%	-18	-22	-8
	Max	-19	-23	-8

Table 27-3 Coastal Erosion Hazard Zone Widths Projected for 2080

Site		27. Taipa											
Cell		27A				27B				27C			
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+
Probability of CEHZ (m) Exceedance	Min	2	2	-1	-4	6	5	3	0	-8	-9	-11	-14
	99%	-2	-3	-6	-10	0	-2	-5	-9	-10	-11	-13	-17
	95%	-5	-6	-9	-13	-4	-5	-8	-13	-11	-12	-15	-19
	90%	-6	-7	-11	-15	-5	-7	-10	-15	-12	-13	-16	-20
	80%	-8	-9	-13	-18	-8	-9	-13	-18	-13	-14	-17	-22
	70%	-9	-11	-14	-20	-9	-11	-15	-20	-13	-15	-18	-23
	66%	-9	-11	-15	-20	-10	-12	-16	-21	-14	-15	-19	-24
	60%	-10	-12	-16	-21	-11	-13	-17	-23	-14	-16	-19	-25
	50%	-11	-13	-17	-23	-12	-14	-18	-25	-15	-16	-21	-27
	40%	-12	-14	-19	-26	-13	-15	-20	-27	-15	-17	-22	-29
	33%	-13	-15	-20	-27	-14	-16	-21	-29	-16	-18	-23	-31
	30%	-13	-15	-20	-28	-15	-17	-22	-30	-16	-18	-24	-32
	20%	-15	-17	-23	-32	-16	-19	-24	-33	-17	-20	-26	-35
	10%	-16	-19	-26	-36	-19	-21	-27	-38	-19	-22	-29	-39
	5%	-18	-21	-28	-40	-20	-23	-30	-41	-20	-23	-31	-43
	1%	-21	-24	-33	-46	-23	-26	-34	-47	-22	-26	-35	-49
	Max	-26	-30	-40	-55	-28	-32	-41	-55	-25	-30	-40	-56
	CEHZ1	-15				-16				-19			

Table 27-4 Coastal Erosion Hazard Zone Widths Projected for 2130

Site		27. Taipa											
Cell		27A				27B				27C			
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+
Probability of CEHZ (m) Exceedance	Min	12	8	-2	-8	15	12	4	-2	-10	-13	-21	-26
	99%	5	2	-7	-14	9	6	-4	-11	-13	-16	-25	-31
	95%	1	-2	-13	-20	5	1	-10	-17	-15	-18	-28	-34
	90%	-1	-5	-16	-23	2	-2	-13	-21	-16	-20	-30	-37
	80%	-4	-8	-20	-28	-2	-6	-18	-26	-18	-22	-33	-41
	70%	-6	-10	-23	-32	-4	-9	-22	-31	-19	-23	-36	-45
	66%	-7	-11	-24	-34	-5	-10	-23	-32	-20	-24	-37	-46
	60%	-8	-12	-26	-36	-6	-11	-25	-35	-20	-25	-39	-49
	50%	-9	-14	-29	-41	-8	-13	-29	-40	-22	-27	-42	-53
	40%	-11	-16	-33	-46	-10	-16	-32	-45	-23	-28	-46	-59
	33%	-12	-18	-36	-50	-12	-17	-35	-49	-24	-30	-49	-63
	30%	-13	-18	-38	-52	-12	-18	-37	-51	-24	-31	-50	-64
	20%	-15	-21	-43	-59	-15	-21	-42	-58	-26	-33	-55	-72
	10%	-18	-25	-50	-69	-18	-25	-50	-68	-29	-37	-62	-81
	5%	-20	-28	-56	-76	-21	-29	-56	-77	-31	-39	-68	-88
	1%	-24	-34	-67	-91	-26	-35	-67	-90	-34	-45	-78	-102
	Max	-31	-43	-81	-109	-33	-45	-83	-111	-40	-51	-88	-117
	CEHZ2	-56				-56				-68			
	CEHZ3	-76				-77				-88			

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

A4 SCALE 1:5,000

0 0.1 0.2 (km)

Tonkin+Taylor
105 Carlton Gore Rd, Newmarket, Auckland
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PROJECT No.	1012360	

NORTHLAND REGIONAL COUNCIL

Coastal Erosion Hazard Assessment

Taipa Beach

Site: 27

FIGURE No. Figure 27-4

Rev. 1

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

A4 SCALE 1:5,000

0 0.1 0.2 (km)

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ARCFILE	1012360_Historicv2.mxd	
SCALE (AT A4 SIZE)	1:5,000	
PROJECT No.	1012360	

NORTHLAND REGIONAL COUNCIL

Historic Shorelines
Taipa Beach
Site: 27

FIGURE No. Figure 27-5

Rev. 1

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