

8 Pataua

Description and geomorphology

Pataua North is located approximately 17 km east of Whangarei. The site includes both the open coast beach (Parauwanui Beach) and the estuary shoreline located on the either side of the Pataua River.

The open coast shoreline is approximately 2.3 km long and is situated between Kowhaitai Creek and rock reef in the north to the mouth of the Pataua River in the south. The site has a sandy beach comprising medium to coarse sand. The beach has a berm width of approximately 5 m above the high tide line. The dune is generally well vegetated with spinifex and a foredune is developing along the northern section of open coast shoreline. The dune crest elevation is relatively high ranging from approximately RL 5 to 12 m along the site.

The estuary shoreline includes approximately 830 m of shoreline on the northern side of the river and 1.5 km on the southern side of the river. The northern estuary shoreline has sections of soft cliff fronted by a fine sand and silt foreshore. The southern estuary shoreline is lower lying and comprises a grass reserve bank that has a vertical erosion scarp of less than 1 m in elevation. A medium to coarse sand, shelly beach slope fronts the bank.

Local considerations

There are no erosion protection structures located on the open coast section of the site. The northern estuary shoreline has a number of relatively short tipped rock seawalls. The southern estuary shoreline is protected by a series of timber groynes structures.

Beach nourishment has also occurred at the northern point of the southern shoreline, which has resulted in the shoreline building out in this location. A rock revetment structure is located on the southern estuary shoreline situated between the foot bridge and the boat ramp.

A boat ramp exists on both sides of the estuary shoreline, and vehicle access to the foreshore also exists at the eastern end of the southern estuary shoreline.



Site Photograph A (northern end of open coast shoreline)



Site Photograph B (northern side of estuary shoreline)



Site Photograph C (southern side of estuary shoreline)

Coastal Erosion Hazard Assessment

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

Adopted component values are presented within Table 8-1. Short-term erosion values range from 10 to 25 m on the open coast to 2 to 6 m within

the estuary. Long-term rates range from variable (-0.15 to +0.2m/year) on the open coast, slight erosion on the northern estuary shoreline (-0.02 to -0.1 m/year) and variable on the southern estuary shoreline (-0.05 to +0.1m/year).

Histograms of individual components and resultant CEHZ distances using a Monte Carlo technique are shown in Figure 8-1 to Figure 8-9. Coastal Erosion Hazard Zone widths are presented within and Figure 8-10.

CEHZ1 lines are typically 26 to 31 m on the open beach and 10 to 15 m within the estuary, although Cells F to H have been rounded from 8-

9 m to a minimum 10 m. CEHZ2 values are 56 to 66m on the open beach and 25 to 30 m within the estuary with Cells F to H being rounded to a minimum 25 m. CEHZ's have been mapped in agreement with the calculated values, although where CEHZs from the sea and estuary intersected at the southern tip of the Patau spit, the hazard zone was truncated.

Note that cell 8A and 8B have experienced some minor accretion since about 1998 over approximately 700 m, with CEHZs offset from the accreted most recent shoreline.

Figure 8-11 shows the available historic shorelines for Patau.

Table 8-1 Component values for Erosion Hazard Assessment

Site		8. Pataua								
Cell		8A	8B	8C	8D	8DD	8E	8F	8G	8H
Cell centre (NZTM)	E	1737351	1737351	1737989	1737613	1737613	1737440	1737606	1737927	1738284
	N	6047838	6047838	6046744	6046777	6046777	6046363	6046609	6046354	6046430
Chainage, m (from N/W)		0-280	280-2080	2080-2550	2550-2780	2780-3050	3050-3400	3400-3870	3870-4780	4780-5000
Morphology		Dune	Dune	Inlet	Estuary Bank	Soft Cliff	Estuary Bank	Estuary Bank	Estuary Bank	Estuary Bank
Short-term (m)	Min	10	10	10	2	0	2	2	2	2
	Mode	15	15	15	4	0	4	4	4	4
	Max	25	20	20	6	0	6	6	6	6
Dune/Cliff elevation (m above toe or scarp)	Min	5.5	6.8	4.9	3.3	2.1	0.8	1.5	1.7	1.3
	Mode	6.7	10.2	7.6	5.0	2.6	1.5	1.8	2.3	1.6
	Max	7.9	12.4	10.4	7.6	3.3	2.1	2.1	3.0	2.2
Stable angle (deg)	Min	30	30	30	30	26.6	30	30	30	32
	Mode	32	32	32	32	30.2	32	32	32	32
	Max	34	34	34	34	33.7	34	34	34	34
Long-term (m) -ve erosion +ve accretion	Min	0.2	0.1	0.1	-0.05	-0.05	-0.02	0.05	0.05	0.1
	Mode	0.1	-0.05	-0.05	-0.075	-0.075	-0.06	0	0	0
	Max	-0.1	-0.15	-0.15	-0.1	-0.1	-0.1	-0.05	-0.05	-0.05
Closure slope (beaches)	Min	0.038	0.038	0.038	0.08	0.75	0.08	0.08	0.08	0.08
	Mode	0.028	0.028	0.028	0.0715	0.5	0.0715	0.0715	0.0715	0.0715
	Max	0.024	0.024	0.02	0.063	0.25	0.063	0.063	0.063	0.063
SLR 2065 (m)	Min	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
	Mode	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
	Max	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
SLR 2115 (m)	Min	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
	Mode	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
	Max	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

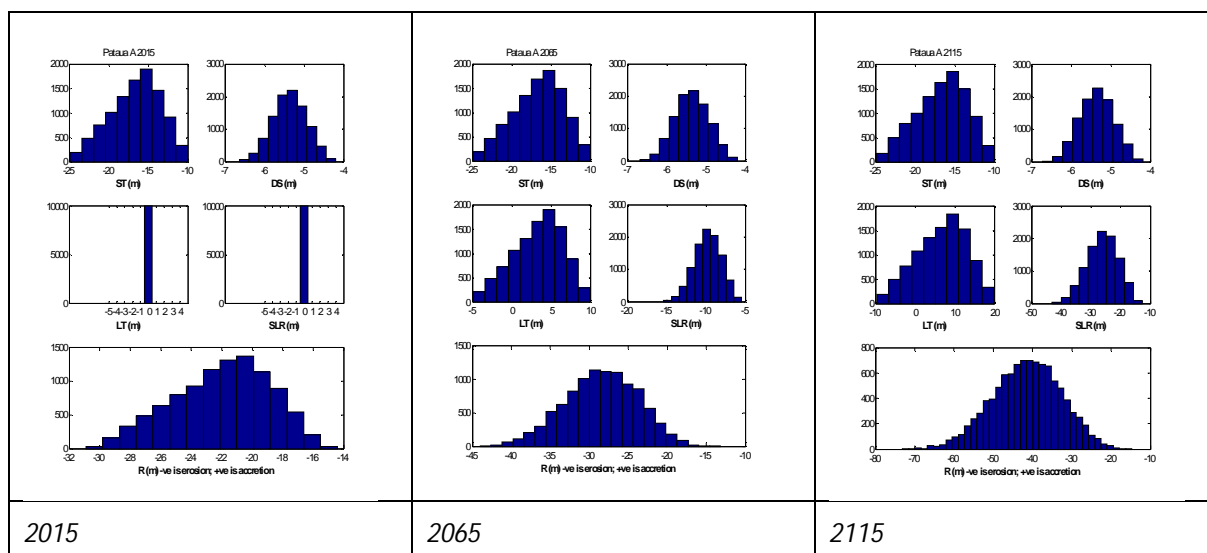


Figure 8-1 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8A

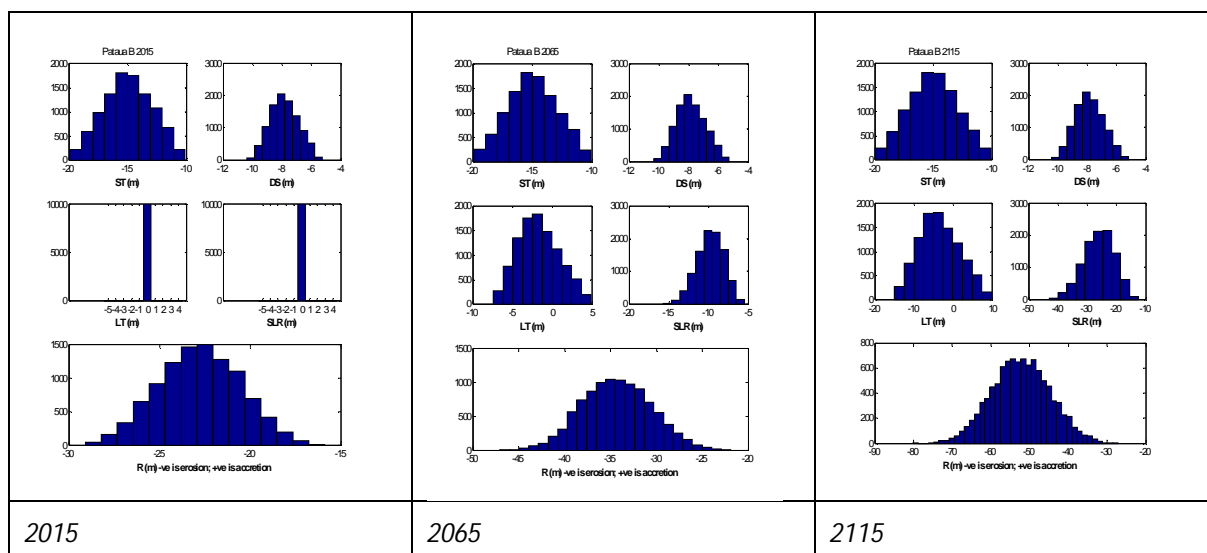


Figure 8-2 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8B

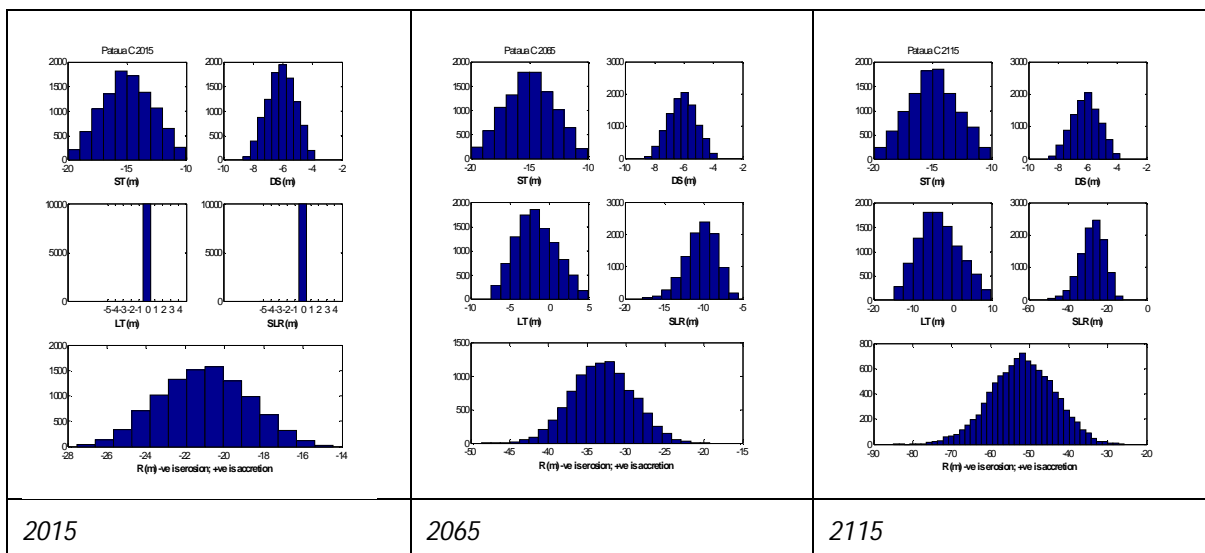


Figure 8-3 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8C

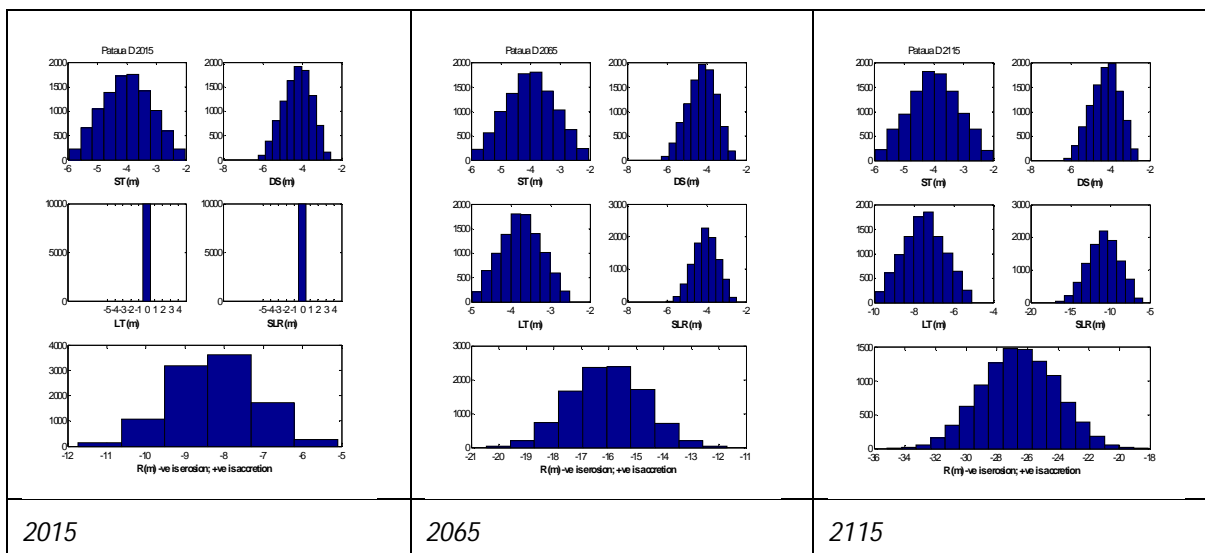


Figure 8-4 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8D

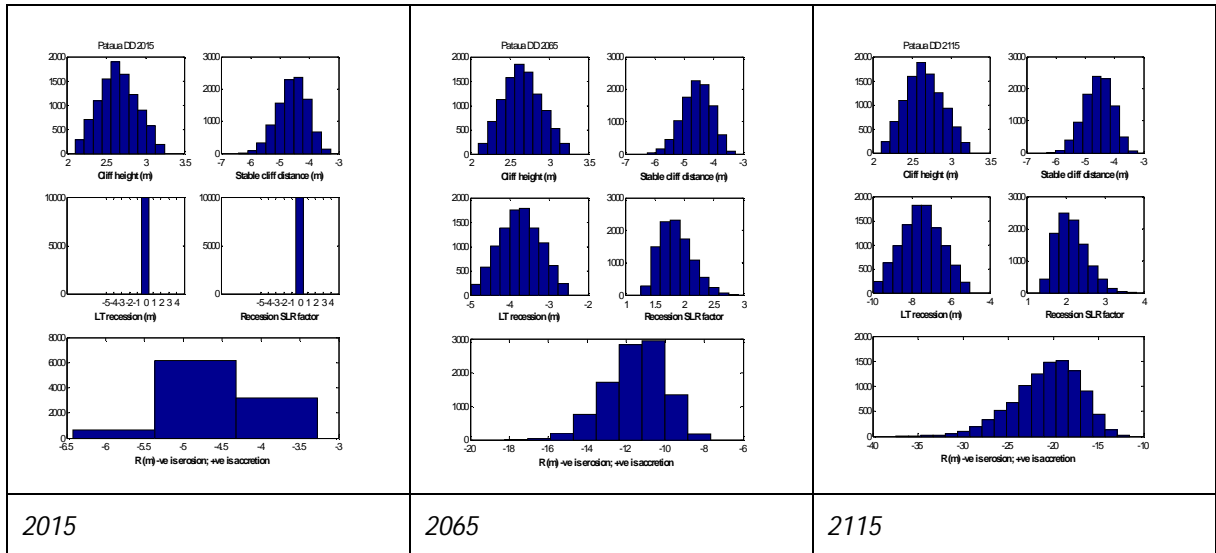


Figure 8-5 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8DD

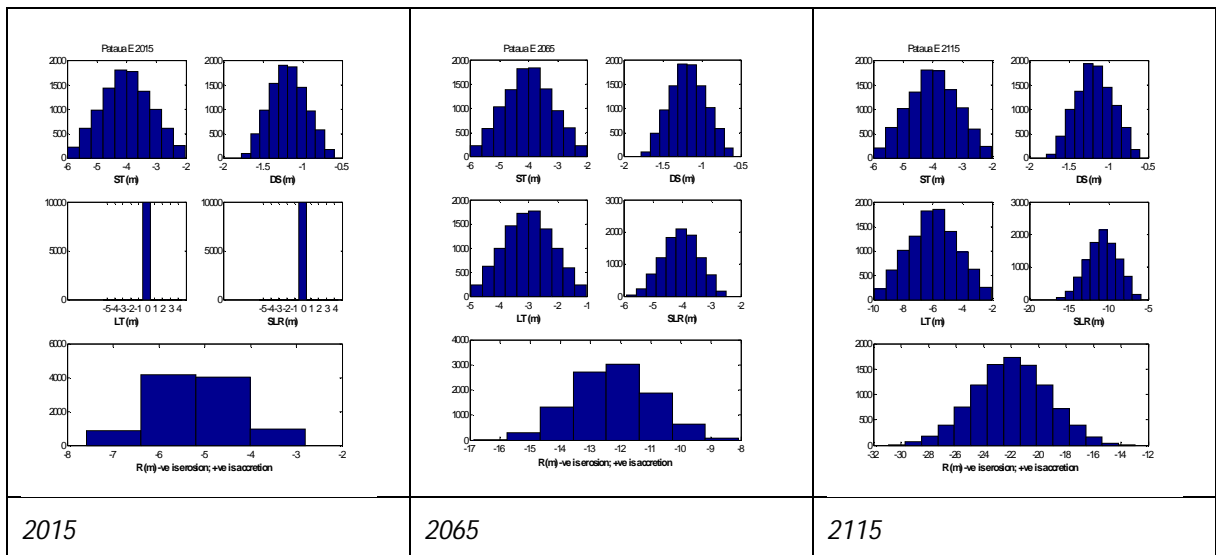


Figure 8-6 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8E

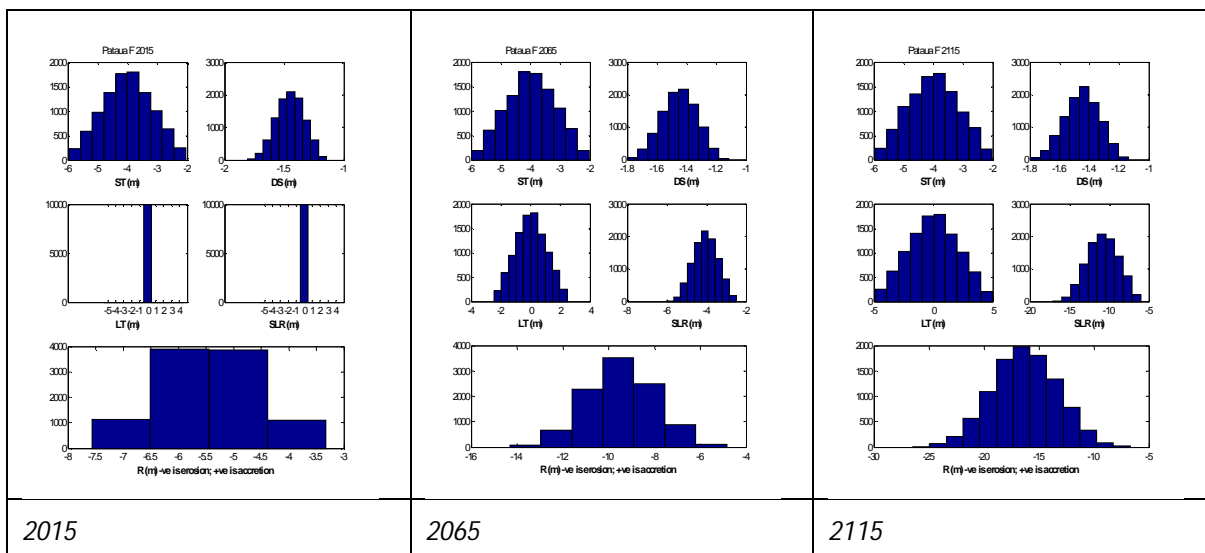


Figure 8-7 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8F

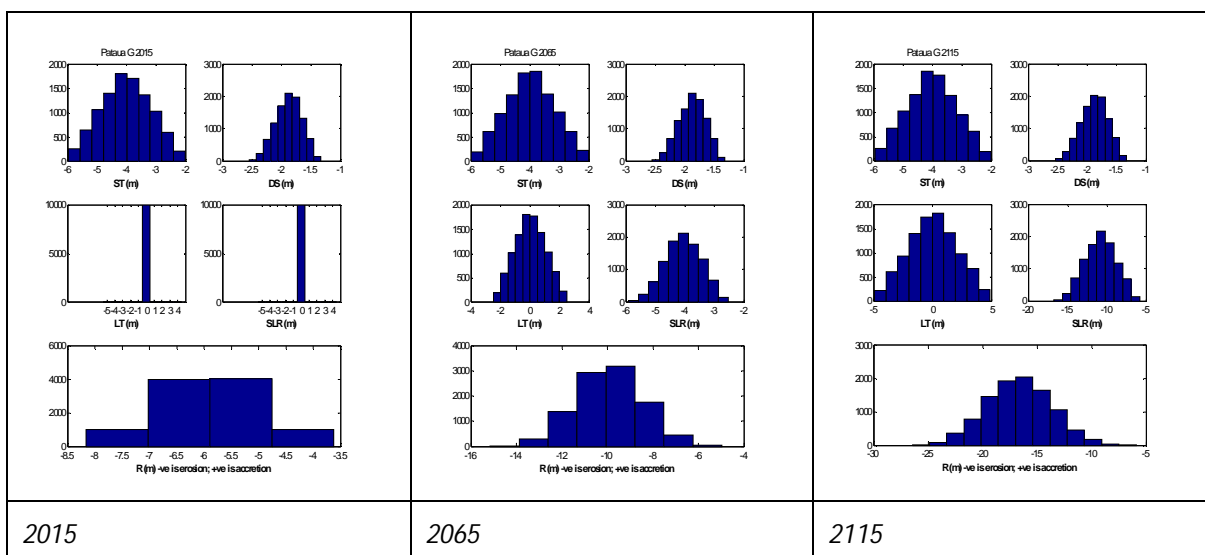


Figure 8-8 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8G

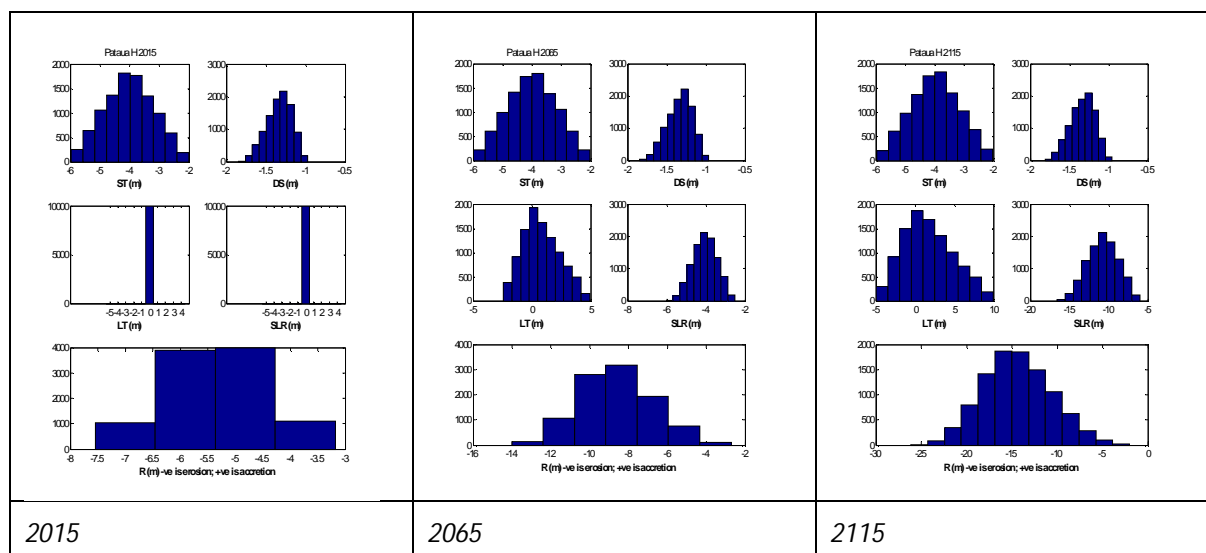


Figure 8-9 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 8H

Table 8-2 Coastal Erosion Hazard Zone Widths

Site		8. Pataua														
Cell		8A			8B			8C			8D			8DD		
Time		2015	2065	2115	2015	2065	2115	2015	2065	2115	2015	2065	2115	2015	2065	2115
Probability of CEHZ (m) Exceedance	Min	-14	-13	-15	-16	-22	-27	-14	-19	-26	-5	-12	-18	-3	-8	-12
	99%	-16	-19	-23	-18	-26	-35	-16	-24	-34	-6	-13	-21	-4	-9	-14
	95%	-17	-21	-27	-19	-28	-40	-17	-27	-38	-6	-14	-23	-4	-9	-15
	90%	-18	-23	-30	-20	-29	-42	-18	-28	-41	-7	-14	-23	-4	-10	-16
	80%	-19	-24	-34	-21	-31	-46	-19	-30	-45	-7	-15	-24	-4	-10	-18
	70%	-20	-26	-37	-22	-32	-48	-20	-31	-47	-8	-15	-25	-4	-11	-19
	66%	-20	-26	-37	-22	-33	-49	-20	-31	-48	-8	-15	-25	-4	-11	-19
	60%	-21	-27	-39	-22	-33	-50	-20	-32	-50	-8	-16	-26	-4	-11	-19
	50%	-22	-28	-41	-23	-34	-52	-21	-33	-52	-8	-16	-27	-5	-11	-20
	40%	-23	-30	-44	-23	-35	-54	-22	-34	-54	-9	-16	-27	-5	-12	-21
	33%	-23	-30	-45	-24	-36	-56	-22	-35	-55	-9	-17	-28	-5	-12	-22
	30%	-24	-31	-46	-24	-36	-56	-22	-35	-56	-9	-17	-28	-5	-12	-22
	20%	-25	-33	-49	-25	-38	-59	-23	-36	-59	-9	-17	-29	-5	-13	-24
	10%	-27	-35	-53	-26	-39	-62	-24	-38	-62	-10	-18	-30	-5	-14	-26
	5%	-28	-37	-56	-27	-40	-65	-25	-40	-66	-10	-18	-31	-5	-14	-27
	1%	-29	-40	-62	-28	-43	-69	-26	-42	-72	-11	-19	-32	-6	-15	-31
	Max	-31	-44	-73	-29	-47	-80	-28	-49	-85	-12	-20	-35	-6	-18	-37
	CEHZ1		-26			-33			-31			-15			-11	
CEHZ2		-56			-65			-66			-31			-27		

Site		8. Pataua											
Cell		8E			8F			8G			8H		
Time		2015	2065	2115	2015	2065	2115	2015	2065	2115	2015	2065	2115
Probability of CEHZ (m) Exceedance	Min	-3	-8	-13	-3	-5	-7	-4	-5	-6	-3	-3	-2
	99%	-3	-9	-16	-4	-6	-10	-4	-7	-10	-4	-4	-6
	95%	-4	-10	-17	-4	-7	-11	-4	-8	-12	-4	-5	-8
	90%	-4	-11	-19	-4	-8	-12	-5	-8	-13	-4	-6	-9
	80%	-4	-11	-20	-5	-8	-14	-5	-9	-14	-5	-7	-11
	70%	-5	-12	-21	-5	-9	-15	-5	-9	-15	-5	-8	-12
	66%	-5	-12	-21	-5	-9	-15	-6	-9	-15	-5	-8	-13
	60%	-5	-12	-21	-5	-9	-16	-6	-10	-16	-5	-8	-14
	50%	-5	-12	-22	-5	-10	-16	-6	-10	-17	-5	-9	-15
	40%	-5	-13	-23	-6	-10	-17	-6	-10	-17	-6	-9	-16
	33%	-6	-13	-23	-6	-10	-18	-6	-11	-18	-6	-10	-16
	30%	-6	-13	-23	-6	-10	-18	-6	-11	-18	-6	-10	-17
	20%	-6	-13	-24	-6	-11	-19	-7	-11	-19	-6	-10	-18
	10%	-6	-14	-25	-7	-11	-20	-7	-12	-21	-6	-11	-19
	5%	-7	-14	-26	-7	-12	-21	-7	-12	-22	-7	-12	-20
	1%	-7	-15	-28	-7	-13	-23	-8	-13	-23	-7	-13	-22
	Max	-8	-17	-31	-8	-14	-26	-8	-15	-26	-8	-14	-26
	CEHZ1	-12			-10			-10			-10		
	CEHZ2	-26			-25			-25			-25		

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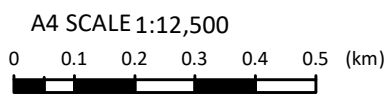
LEGEND

- 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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SCALE (AT A4 SIZE) 1:12,500		
PROJECT No. 1001049		

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 Coastal Erosion Hazard Assessment
 Pataua
 Site: 8

FIGURE No. **Figure 8-10**

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Legend

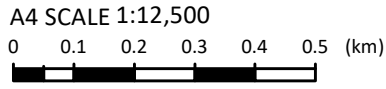
↔ Cell Extent

Shorelines

- 2014 baseline
- 14/01/2014
- 15/04/1998
- 13/12/1985
- 02/05/1966
- 17/03/1961
- 19/05/1942

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroG, IGN, 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).



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ARCFIELD HistoricShorelines.mxd		
SCALE (AT A4 SIZE) 1:12,500		
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Historic shorelines
Pataua
Site: 8

FIGURE No. Figure 8-11

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