

10 Matapouri

Description and geomorphology

Matapouri is an east facing pocket beach located approximately 25 km north-east of Whangarei.

The Matapouri site includes a barrier spit shoreline that has both an open coast and estuary shoreline. The open coast shoreline is approximately 1 km long.

The beach comprises fine to medium sand and has a minimal high tide berm that is less than 5 m wide.

The site has as a healthy dune system at the northern end of the site which is well vegetated with spinifex. The dune elevation ranges from RL 4 to 7 m. A recent erosion scarp is evident near the centre of the bay where the dune face is over steep.

The site has a large intertidal flat area located at the southern end of the site located adjacent to the river mouth. This area is a local sediment sink. The shoreline along the estuary side of the spit is relatively low lying and erosion protection structures are present along most of the shoreline.

The north facing estuary shoreline located on the opposite side of the channel appears to be building out significantly.

Local considerations

A small stream enters the site at the northern extent. The stream has a local effect on shoreline position.

Dune nourishment has been undertaken at the site primarily focussed on placing sand sourced from the estuary along the centre of the site.

There are no erosion protection structures located on the open coast section of the site. However, we understand some sections of a failed rock revetment remain, buried under subsequent dune nourishment works. The south facing estuary shoreline has a range of erosion protection structures in relatively poor condition.



Site Photograph A (northern end)



Site Photograph B (centre)



Site Photograph C (estuary – north facing shoreline)

Coastal Erosion Hazard Assessment

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

Adopted component values are presented within Table 10-1. Short-term erosion values on the open coast range from 10 to 30 m and within the estuary between 2 and 6 m except for Cell F which is more variable and is assigned a value of 5 to 20 m. Shoreline trends are variable on the open coast at between -0.2 and +0.2 m/year and generally erosive within the estuary at 0 to -0.2 m/year, except for Cell F which had accreted significantly (up to 85 m) since 1942.

Histograms of individual components and resultant CEHZ distances using a Monte Carlo technique are shown in Figure 10-1 to Figure 10-7.

Coastal Erosion Hazard Zone widths are presented within Table 10-2 and Figure 10-8. CEHZ's have been mapped in agreement with the calculated values, although where CEHZs from the sea and estuary intersect at the distal tip of the sand spit, the hazard zone has been truncated. Note that cell 10F has accreted since about 1942, with CEHZs offset from the accreted most recent shoreline.

Figure 10-9 shows the available historic shorelines for Matapouri.

Table 10-1 Component values for Erosion Hazard Assessment

Site		10. Matapouri						
Cell		10A ⁴	10B	10C	10D	10E	10F	10G
Cell centre (NZTM)	E	1736602	1736612	1736817	1736795	1736590	1736981	1736981
	N	6063646	6063413	6063163	6063019	6063084	6062891	6062891
Chainage, m (from N/W)		0-250	250-560	560-900	900-1170	1170-1550	1550-1900	1900-2050
Morphology		Dune	Dune	Inlet	Estuary Bank	Estuary Bank	Estuary Bank	Estuary Bank
Short-term (m)	Min	10	10	10	10	2	5	2
	Mode	15	15	15	15	4	10	4
	Max	30	20	20	20	6	20	6
Dune/Cliff elevation (m above toe or scarp)	Min	3.7	5.1	2.3	1.0	2.8	1.3	1.4
	Mode	4.6	6.3	4.7	1.8	3.7	1.9	1.9
	Max	6.4	7.4	6.5	2.5	5.2	2.6	2.6
Stable angle (deg)	Min	30	30	30	30	30	30	30
	Mode	32	32	32	32	32	32	32
	Max	34	34	34	34	34	34	34
Long-term (m) -ve erosion +ve accretion	Min	0.2	0.1	0.1	0	-0.05	0.2	0
	Mode	0	0	0	-0.1	-0.075	0.1	-0.05
	Max	-0.2	-0.1	-0.1	-0.2	-0.1	0	-0.1
Closure slope (beaches)	Min	0.051	0.051	0.051	0.051	0.051	0.051	0.051
	Mode	0.041	0.041	0.041	0.051	0.051	0.051	0.051
	Max	0.03	0.03	0.03	0.051	0.051	0.051	0.051
SLR 2065 (m)	Min	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
	Max	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

Site		10. Matapouri						
Cell		10A ⁴	10B	10C	10D	10E	10F	10G
	Mode	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

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

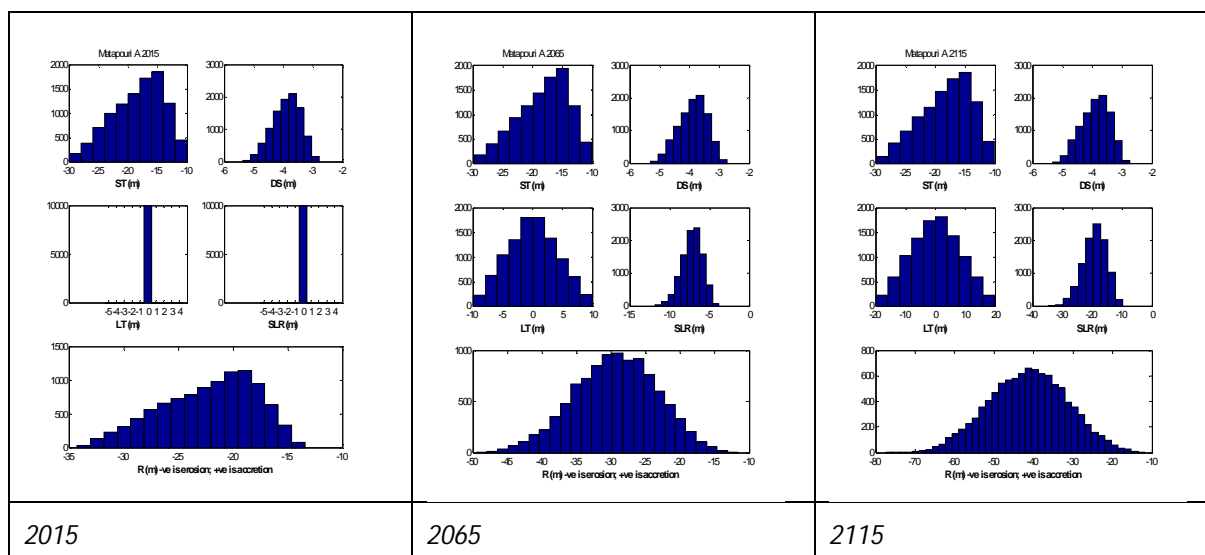


Figure 10-1 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 10A

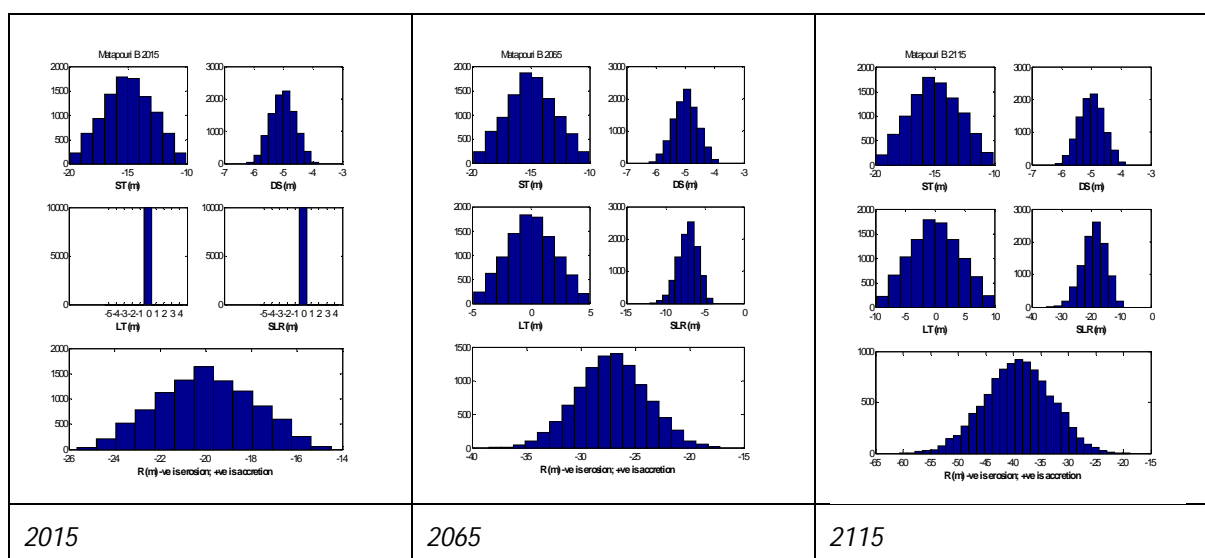


Figure 10-2 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 10B

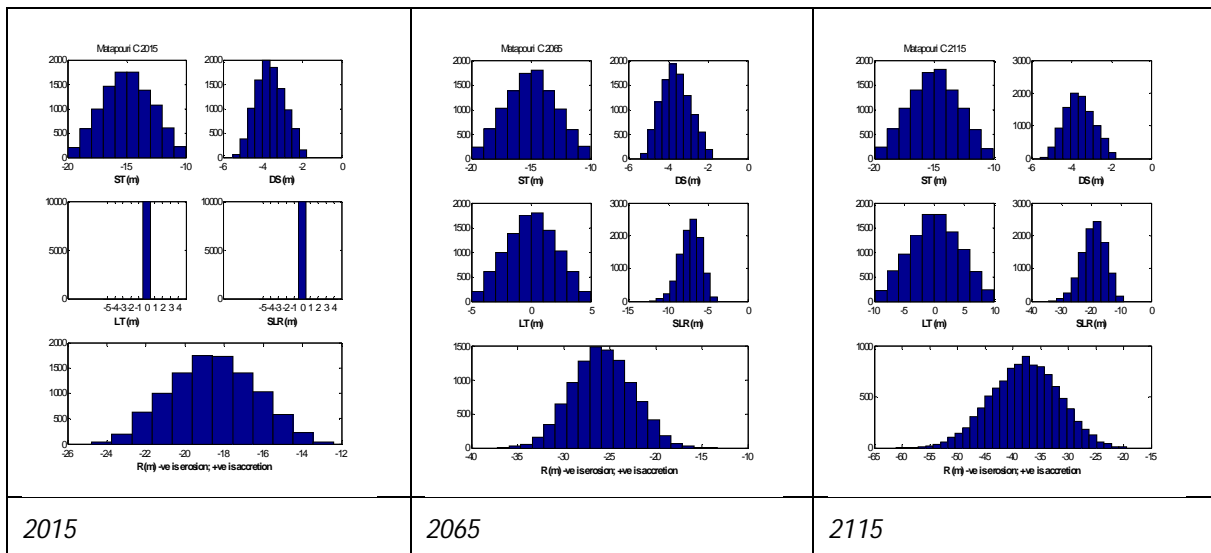


Figure 10-3 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 10C

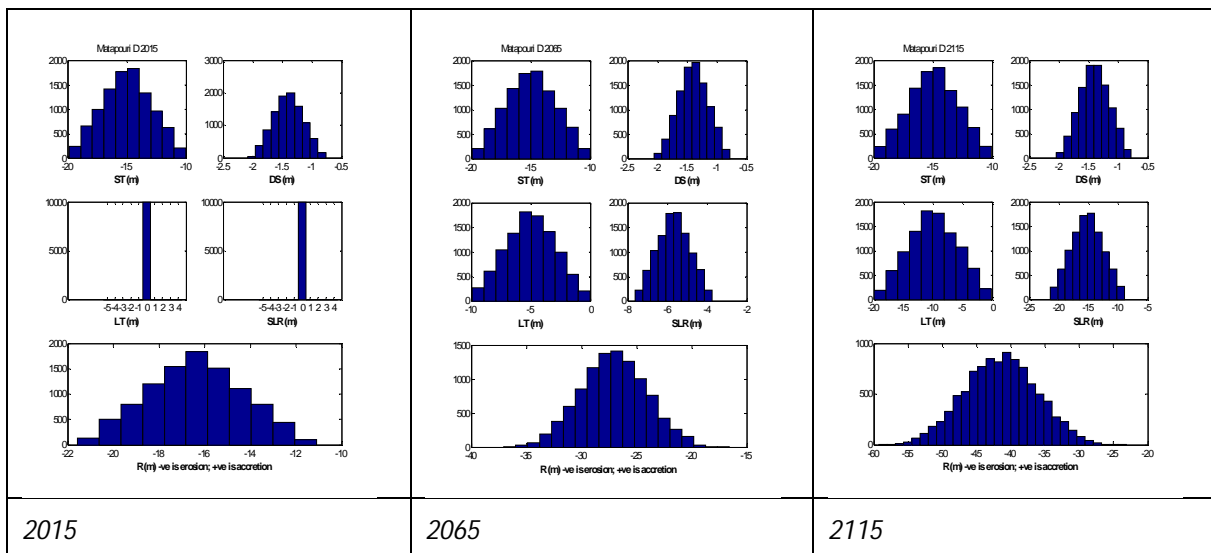


Figure 10-4 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 10D

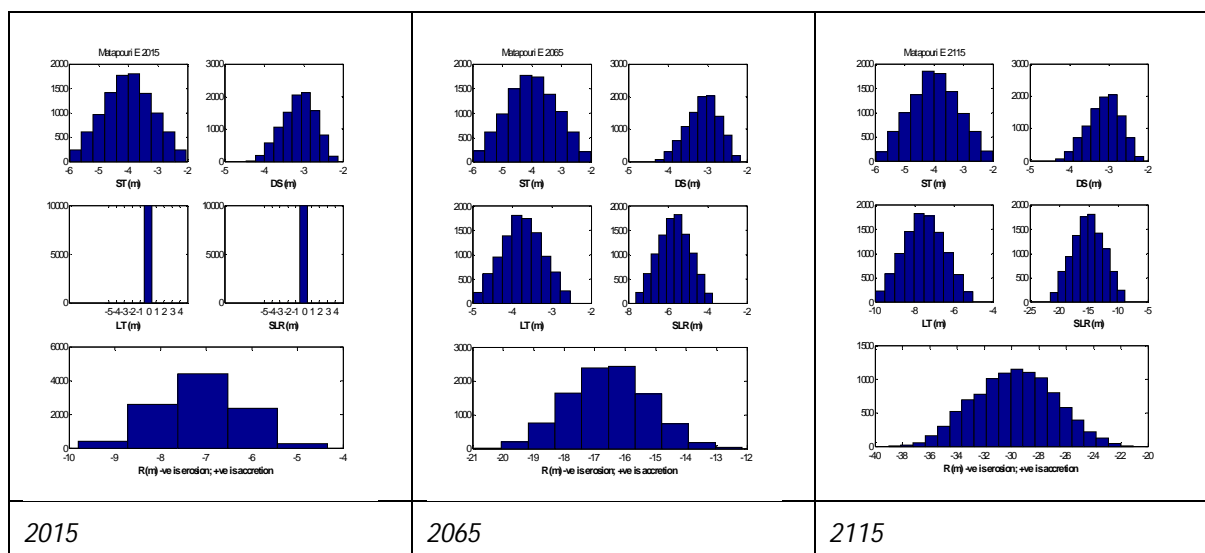


Figure 10-5 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 10E

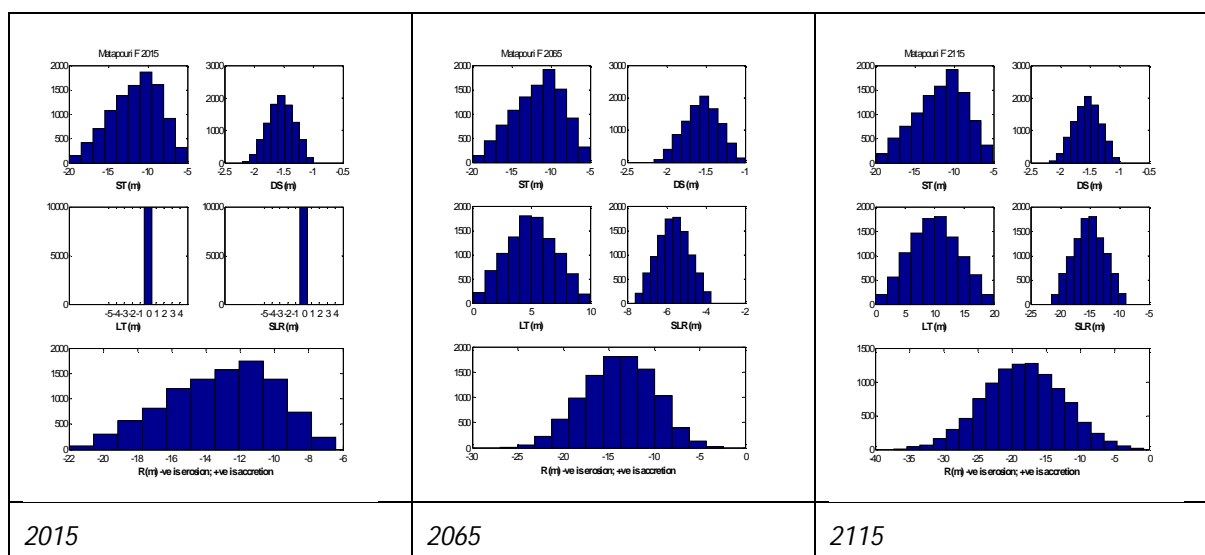


Figure 10-6 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 10F

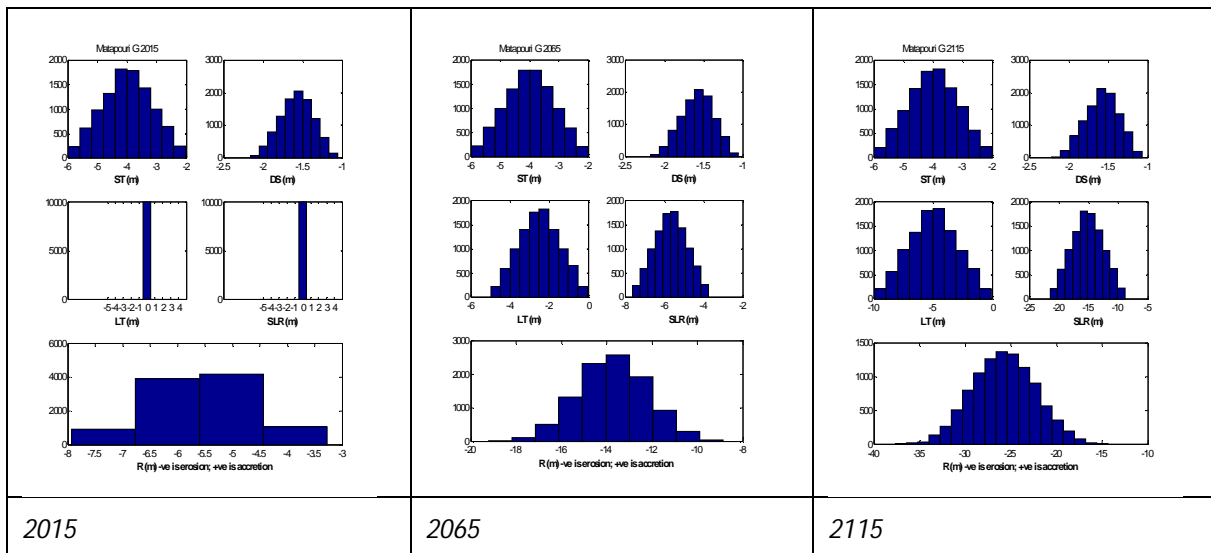


Figure 10-7 Histograms of parameter samples and the resultant shoreline distances for 2015, 2065 and 2115 timeframes for cell 10G

Table 10-2 Coastal Erosion Hazard Zone Widths

Site		10. Matapouri																				
Cell		10A			10B			10C			10D			10E			10F			10G		
Time		2015	2065	2115	2015	2065	2115	2015	2065	2115	2015	2065	2115	2015	2065	2115	2015	2065	2115	2015	2065	2115
Probability of CEHZ (m) Exceedance	Min	-13	-12	-12	-15	-17	-19	-12	-13	-19	-11	-17	-23	-4	-12	-21	-6	-2	-1	-3	-9	-14
	99%	-15	-16	-19	-16	-20	-26	-14	-18	-24	-12	-20	-30	-5	-14	-23	-7	-6	-5	-4	-10	-18
	95%	-16	-20	-25	-17	-22	-29	-15	-20	-28	-13	-22	-33	-6	-14	-25	-8	-8	-9	-4	-11	-20
	90%	-17	-22	-29	-17	-23	-31	-16	-22	-30	-14	-23	-35	-6	-15	-26	-9	-9	-11	-4	-12	-21
	80%	-18	-24	-33	-18	-25	-34	-17	-23	-33	-15	-25	-37	-6	-15	-27	-10	-11	-13	-5	-12	-23
	70%	-19	-26	-36	-19	-26	-36	-17	-24	-34	-15	-26	-39	-7	-16	-28	-11	-12	-15	-5	-13	-24
	66%	-20	-27	-37	-19	-26	-37	-18	-24	-35	-15	-26	-39	-7	-16	-28	-11	-12	-16	-5	-13	-24
	60%	-20	-28	-39	-19	-26	-38	-18	-25	-36	-16	-26	-40	-7	-16	-29	-12	-13	-17	-5	-13	-25
	50%	-22	-29	-41	-20	-27	-39	-19	-26	-38	-16	-27	-41	-7	-17	-30	-13	-14	-18	-6	-14	-26
	40%	-23	-31	-44	-21	-28	-41	-19	-27	-39	-17	-28	-43	-7	-17	-31	-14	-15	-20	-6	-14	-27
	33%	-24	-32	-46	-21	-29	-42	-20	-27	-40	-17	-28	-44	-8	-17	-31	-15	-16	-21	-6	-14	-27
	30%	-25	-33	-47	-21	-29	-42	-20	-28	-41	-18	-29	-44	-8	-17	-31	-15	-16	-22	-6	-15	-28
	20%	-26	-35	-50	-22	-30	-44	-21	-29	-43	-18	-30	-46	-8	-18	-32	-16	-17	-23	-6	-15	-29
	10%	-29	-37	-54	-23	-31	-47	-22	-30	-46	-19	-31	-48	-8	-18	-34	-18	-19	-26	-7	-16	-30
	5%	-30	-40	-58	-23	-32	-49	-22	-31	-48	-20	-32	-50	-9	-19	-35	-19	-20	-28	-7	-16	-31
	1%	-32	-44	-64	-24	-35	-53	-23	-33	-52	-21	-34	-53	-9	-20	-36	-20	-23	-32	-7	-17	-33
	Max	-34	-49	-77	-26	-38	-61	-25	-37	-61	-22	-37	-59	-10	-21	-39	-22	-27	-37	-8	-19	-38
CEHZ1	-27			-26			-24			-26			-16			-12			-13			
CEHZ2	-58			-49			-48			-50			-35			-28			-31			



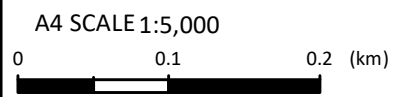
LEGEND

- 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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ARCFILE 1001049-000-CEHZ001.mxd		
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 Coastal Erosion Hazard Assessment
 Matapouri
 Site: 10

FIGURE No. **Figure 10-8**

Rev. **2**

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus IGN, and the GIS User Community

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

A4 SCALE 1:5,000

0 0.1 0.2 (km)

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Historic shorelines
Matapouri
Site: 10

FIGURE No. Figure 10-9

Rev. 2