

STEP TWO - Record coastal land tenure

1. To record land tenure, each parcel of land shown on the Cadastral sheets has first to be allocated one of the common land tenure types listed in Table 1. From this land tenure, public access to the coast can be classified as **legally restricted**, or **unrestricted** using Table 2. The boxes on Table 2 may be used to record a standardised colour code for land tenure (see discussion in section 2.2, above).

*The purpose of this step is to determine the legal status of public access to and along the seacoast (from the land) by recording coastal land tenure, and to classify public access as either **legally restricted** or **unrestricted** on the basis of this tenure.*

2. Obtain land tenure details from records held by DoC, DOSLI and from the local authorities' Valuation Roll books. Valuation Roll books contain specific information on individual pieces of land. Use information on the occupier and owner of the land (where recorded in the roll book) to determine the tenure of the land. To ensure information on the roll books corresponds to information on the 1:2,000 and 1:10,000 scale Cadastral sheets, match the S.O., D.P. or M.L. plan number, lot or section number, the area of the land and its location.

Note: Care is needed when dealing with **unformed** roads because the existing network is only partly known. Public usage depends on adequate physical definition on the ground so that the risk of trespass on adjoining private land, and clashes with landowners, is avoided.

3. If the Conservancy Office of the Department of Conservation has a Land Register for the area, details regarding land managed by DoC can be obtained. In some regions information can be acquired for more than conservation land. For example, the Land Register held by Canterbury Conservancy covers its entire area.

4. For land not managed by DoC, note the D.P., S.O., or M.L. plan numbers corresponding to the particular accessway and examine these at DOSLI offices. For rural areas most will be S.O. plans unless subdivision of the land has occurred, in which case

Notes to Table 2 (Opposite)	
¹ If consistent with the actual purpose.	⁹ Unrestricted on useable roads only.
² Although generally unrestricted may be restricted through management bylaws or special conditions such as leases or licenses.	¹⁰ Restricted in special cases only.
³ Access by permit only.	¹¹ Access may be negotiated.
⁴ Restricted in special cases only.	¹² May be restricted or unrestricted depending on agreement.
⁵ May be restricted or unrestricted depending on agreements.	¹³ Generally unrestricted but public may be restricted in certain areas. Public may commit trespass if the Crown has chosen to close the area.
⁶ Special areas may be restricted.	¹⁴ May be restricted or unrestricted in accordance with license conditions or public right of way.
⁷ Unrestricted unless closed.	
⁸ Unrestricted unless closed.	

Table 2 Types of land tenure and the two public access categories (U, R) used in these guidelines. Note that changes in legislation may lead to the addition or deletion of categories.

Code	Type	Unrestricted (U)	Restricted (R)
Reserves			
<input type="checkbox"/>	Local purpose ¹	U	
<input type="checkbox"/>	Local purpose (esplanade)	U	
<input type="checkbox"/>	Government purpose ²	U	
<input type="checkbox"/>	Recreation ²	U	
<input type="checkbox"/>	Historic ²		R
<input type="checkbox"/>	Nature ³	U	
<input type="checkbox"/>	Scenic ²	U	
<input type="checkbox"/>	Scientific ⁴	U	
<input type="checkbox"/>	Maori ⁵		R
Parks			
<input type="checkbox"/>	National ⁶	U	
<input type="checkbox"/>	Conservation/Forest ⁷	U	
<input type="checkbox"/>	Stewardship ⁸	U	
Public roads			
<input type="checkbox"/>	Formed ⁹	U	
<input type="checkbox"/>	Unformed ⁹	U	
<input type="checkbox"/>	Marginal strips ¹⁰	U	
<input type="checkbox"/>	Esplanade strips and Access strips ¹⁰	U	can be R at times
<input type="checkbox"/>	Private land ¹¹		R
<input type="checkbox"/>	Covenant ¹² (protected private land, management agreement and wildlife refuge)	U	R
<input type="checkbox"/>	Unalienated Crown land ¹³	U	
<input type="checkbox"/>	Crown forestry licence ¹⁴	U	R

they will become D.P. plans. When looking at S.O. or M.L. plans, record the date of approval. For urban areas the majority will be D.P. plans. Record when the D.P. plan was deposited (when it comes into effect).

5. Obtain dates when publicly accessible land (e.g., Local Purpose Reserves, Esplanades) were set apart, and write the date next to the relevant reserve on the Cadastral sheets. These may serve to indicate whether the surveyed reserve still exists after the effects of physical coastal processes such as coastline retreat (covered in Step Four below).

Note: Gazette Notices are not a reliable source for this purpose, because the reserve area may have been created prior to the gazette date.

6. Using the land tenure information, colour-outline the piece of land on the relevant numbered base map (see Step One, no.4) with the relevant colour from Table 2. Where a number of lots have the same tenure and adjoin, code around the entire block. Some areas will be too large to code on a map. If so, code the seaward boundary only, but indicate that the area extends further inland than is shown.

7. Using Table 2 to identify the public access category for each type of tenure, label the areas on the base maps with codes **U** for **legally unrestricted public access** and **R** for **legally restricted public access** (see Figure 3).

8. Summarise this access information onto the 1:50,000 scale NZMS 261 cadastral sheets using the colour *red* to represent **legally restricted access** and *green* for **legally unrestricted access**. This sheet will then provide an overview of the legal basis for public access along that particular stretch of coast (see sample in Figure 4).

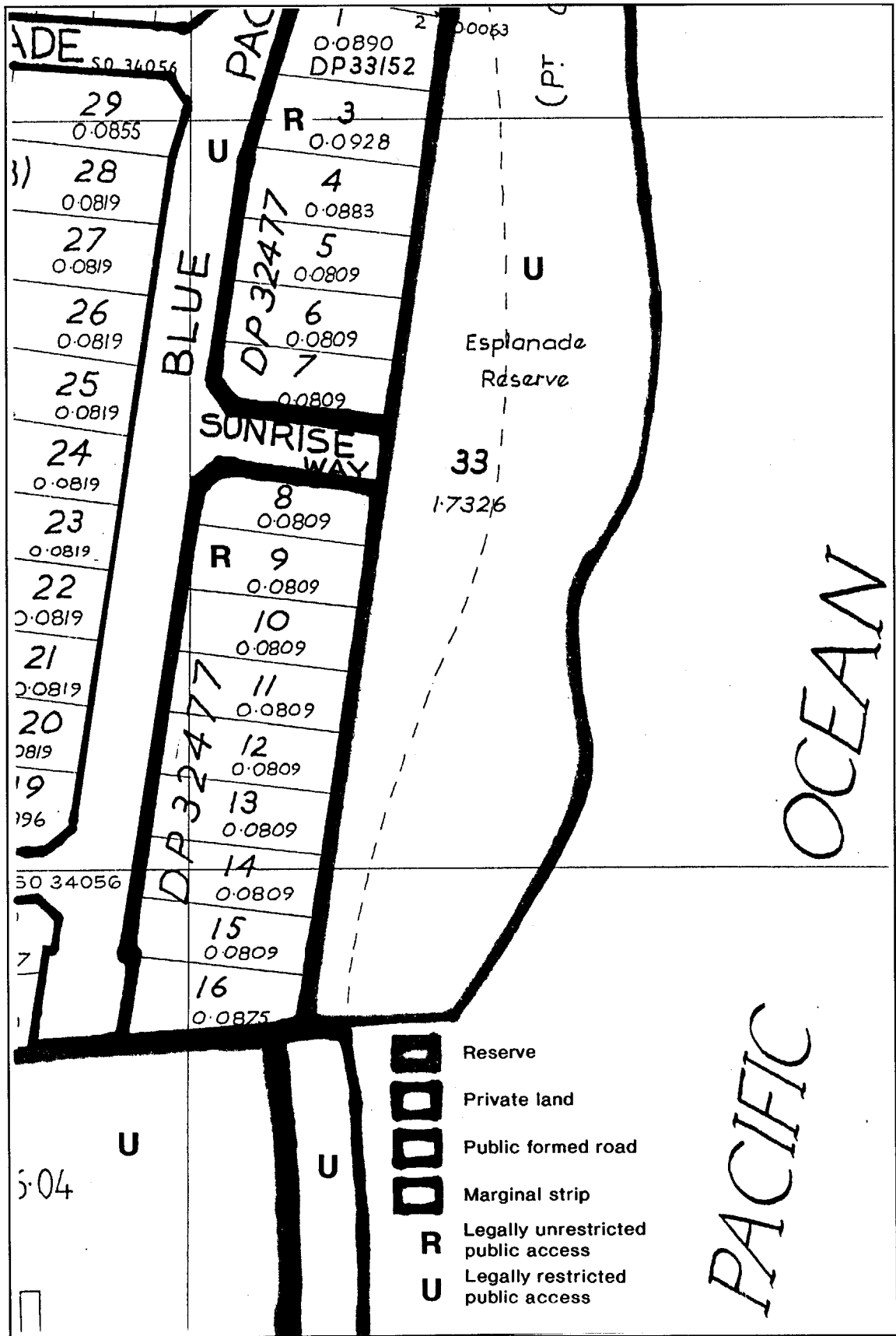


Figure 3 Part of a 1:2,000 scale cadastral sheet for Riversdale, Wairarapa east coast, with iana zenure and access codes for legally restricted (R) or unrestricted (U) public access added.

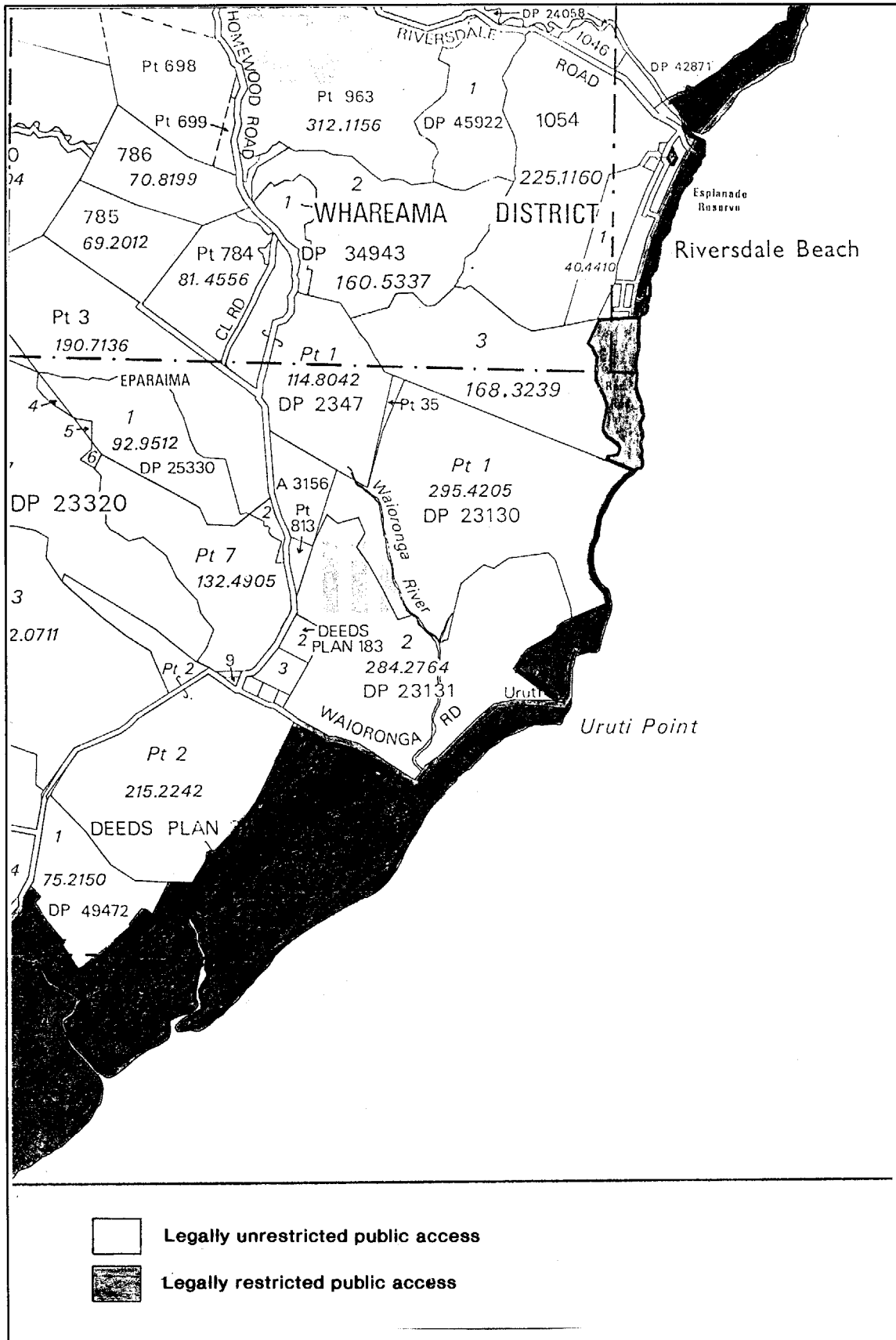


Figure 4 Part of a 1:50,000 scale cadastral sheet colour coded to provide an overview of legally restricted and unrestricted public access along part of the Wairarapa east coast.

STEP THREE - Determine long-term horizontal coastline trend

1. The **horizontal coastline trend** is the long-term rate of advance, retreat, or dynamic equilibrium along the coast. Long-term rates are determined by measuring the horizontal distance between early surveys of the coast in a direction perpendicular to the coastline, at various intervals of time over as long a survey period as possible.

The purpose of this step is to determine areas of coastline where public access has been physically restricted or lost by long-term shoreline retreat from erosion.

2. The information may be compiled on the 1:10,000 and/or 1:2,000 scale cadastral sheets at equidistant points and summarised on the 1:50,000 scale cadastral sheets used to determine public access to and along the coast. Examples are given in Figure 5 and Figure 6. **Caution is needed when interpreting maps of horizontal coastline trend.** Because the data is historical, there is no guarantee that future rates will continue unchanged. The exaggerated horizontal scale necessary to portray the trend on a map does not represent **actual** areas of threatened erosion on the ground. What the maps do is indicate which parts of coastline are **eroding** and which are **accreting**. The likely **actual rates** of either must be read off the horizontal scale diagram (see Figure 5).

3. To calculate the rate divide the horizontal displacement by the time interval between successive surveys. To determine a long-term rate with confidence, at least two short-term cycles of erosion-accretion must be spanned. For New Zealand, this would suggest a minimum survey record of from 30 to 50 years and ideally, 100 years or more as short-term cycles generally occur every 15 to 30 years (Gibb et al. 1992).

$$\text{Rate (m/year)} = \frac{\text{horizontal displacement (m)}}{\text{time (years)}}$$

4. Changes in the position of the coast over the past century can be determined by comparing coastline positions from cadastral plans dating from the mid 19th century, vertical aerial photographs dating from about 1934 and hydrographic charts dating from 1842. It is standard practice to adopt either the seaward toe of the foredune or seacliff, or the vegetation line as the "coastline" because they represent far better the gains and losses of "dry" land (Gibb 1978).

5. Cadastral plans and vertical sequential aerial photographs of the coast are held by DOSLI throughout New Zealand. Charts are held by the Hydrographic Branch of the Royal New Zealand Navy in Auckland. Gibb (1978) has published rate data for the coastlines of New Zealand for 471 sites. A number of areas along the east and west coasts of the North and South Islands are covered by a Coastal Resource Map Series held by regional councils, at 1:5,000 and 1:2,500 scale produced by the Photogrammetric Branch of DOSLI. The Map Series records all the early coastline positions from cadastral and aerial surveys up to the early 1980s and provides the most accurate information available to calculate rates.

Note: Similar data are available from the same offices on other maps for site-specific studies.

Note: This is a GRAPH of coastline trend, with **exaggerated** horizontal scale to emphasise greater and lesser trends. The area on the map covered by the shading represents this **exaggerated trend**. It DOES NOT represent space on a map, or an area on the ground that may be at risk from the physical processes of accretion or erosion.

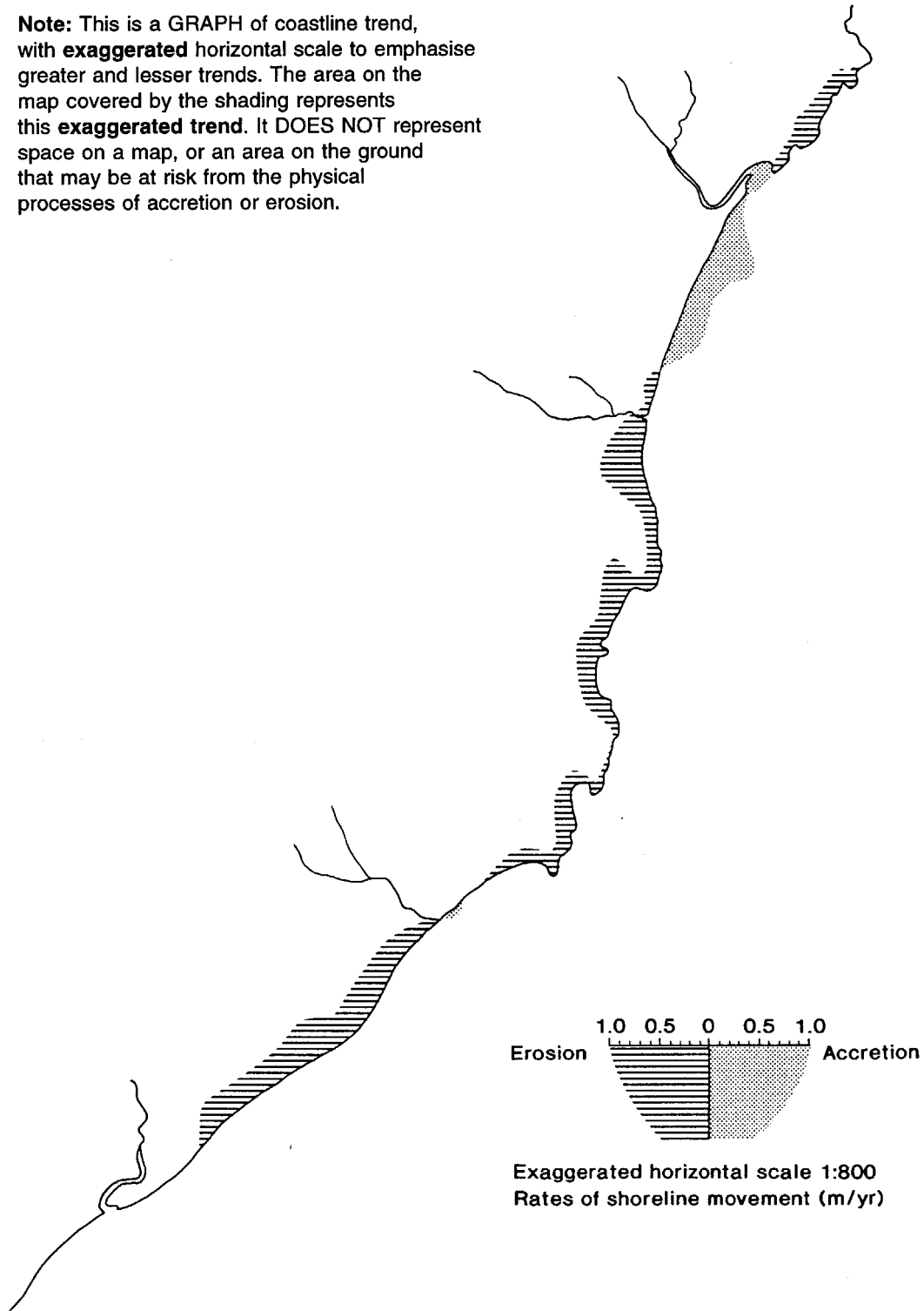


Figure 5 Horizontal coastline trend (shoreline advance or retreat) along part of the Wairarapa east coast. Rates were determined from Coastal Resource Maps held by Wellington Regional Council.

