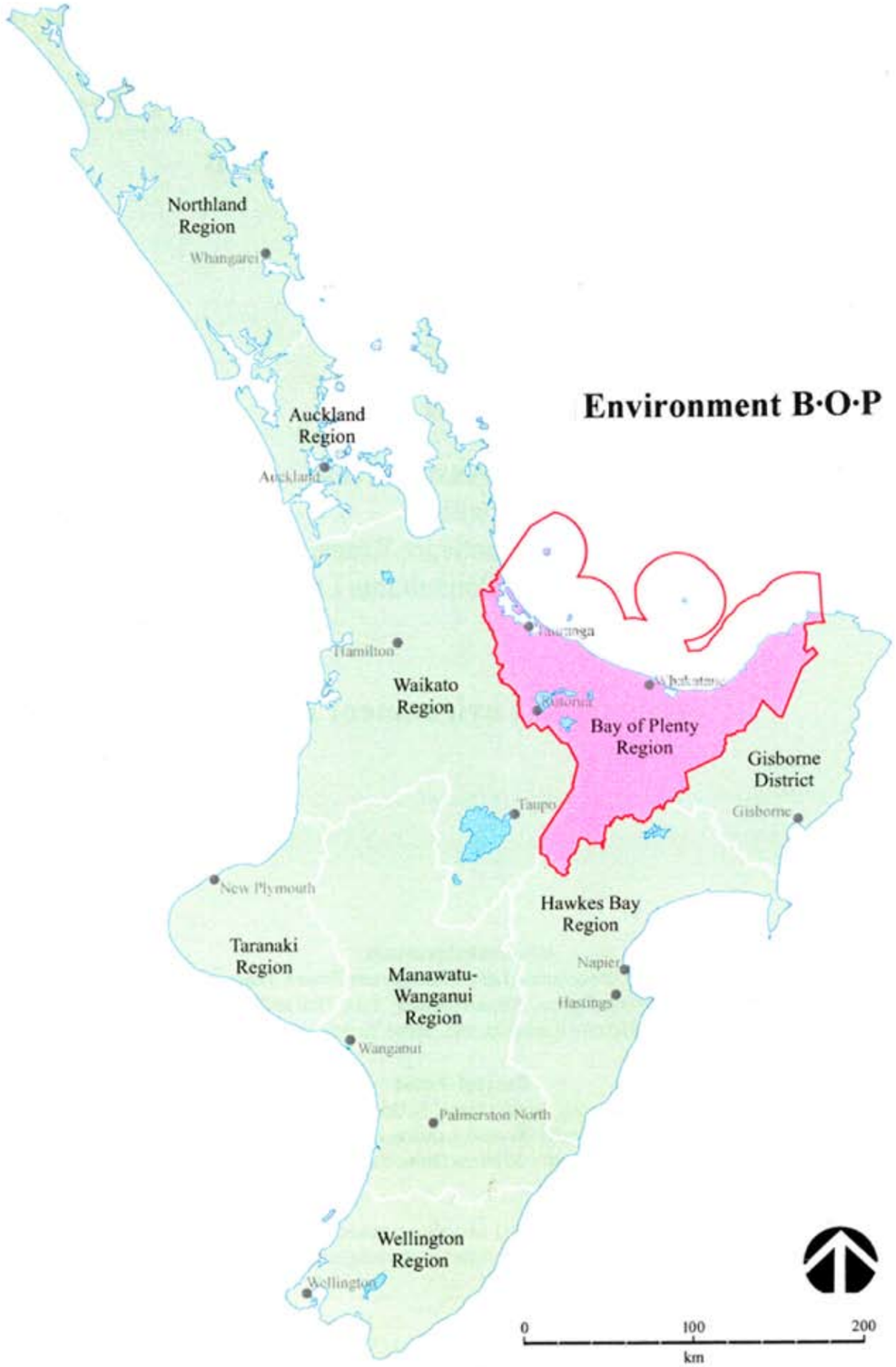
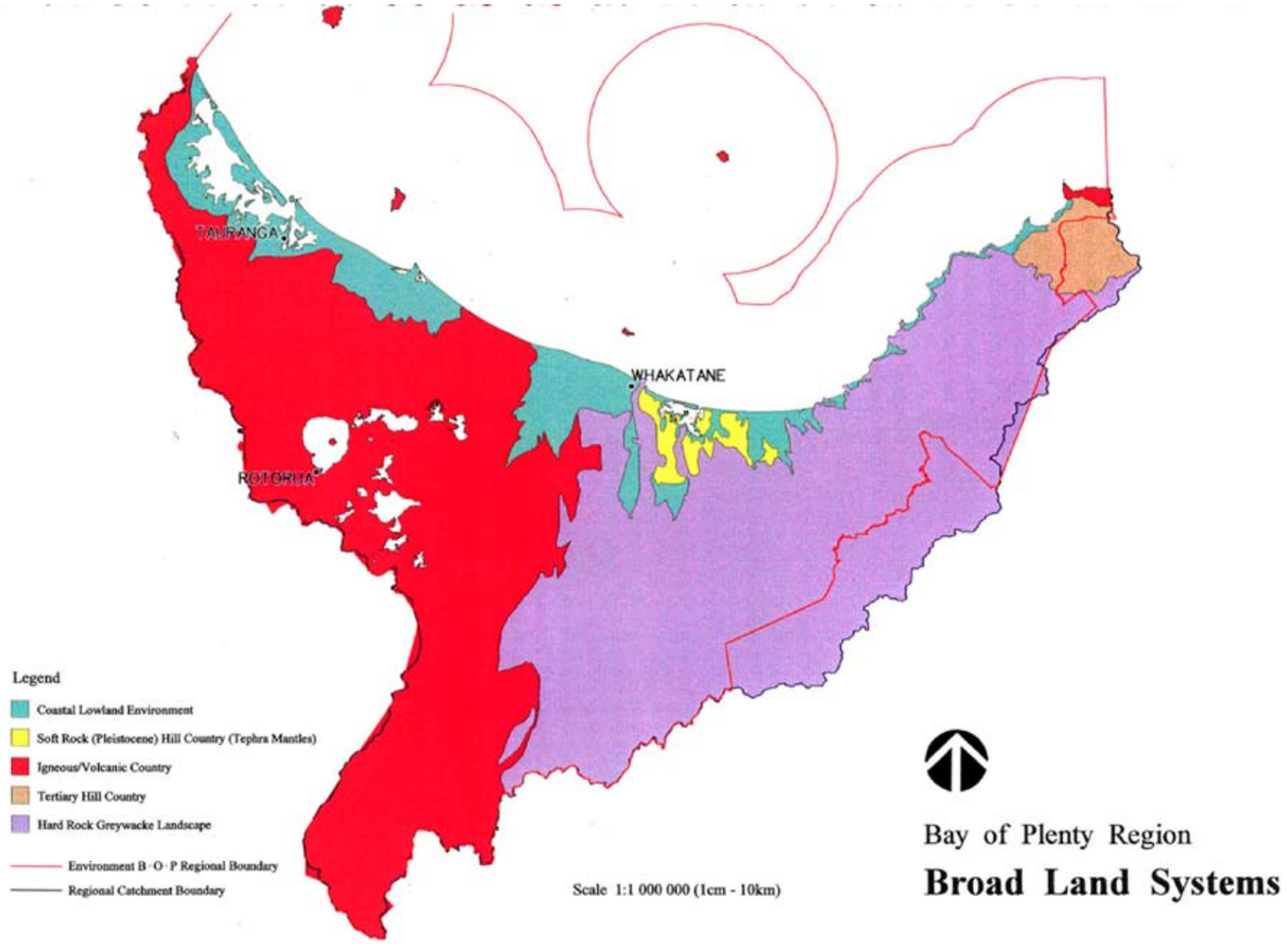
Bay of Plenty Region





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Lucas Associates with Ian Lynn, Landcare Research, Wildland Consultants Ltd 1998

Legend

COASTAL LOWLAND ENVIRONMENT

- 1 Rangitaiki Alluvial Plains
- 2 Ohiwa
- 3 Pongakawa
- 4 Tauranga Basin

fluvial depositional environment

- 5 Free Draining Valley Floor
- 6 North Eastern Coastal Strip

SOFT ROCK HILL COUNTRY (TEPHRA MANTLES)

- 7 Pleistocene Soft Rock Hill Country

IGNEOUS/VOLCANIC COUNTRY

ignimbrite plateaus & fans

- 8 Rotoehu
- 9 Kaingaroa Plateau
- 10 Mamaku
- 11 Whakamarama

active or recently active volcanic systems

- 12 Rotorua - Okataina
- 13 Putauaki Mountain
- 14 Rotoma
- 15 Offshore Islands

dissected old igneous hills & mountains

- 16 Papamoa
- 17 Matakaoa
- 18 Kaimai
- 19 Whirinaki Basin

TERTIARY HILL COUNTRY

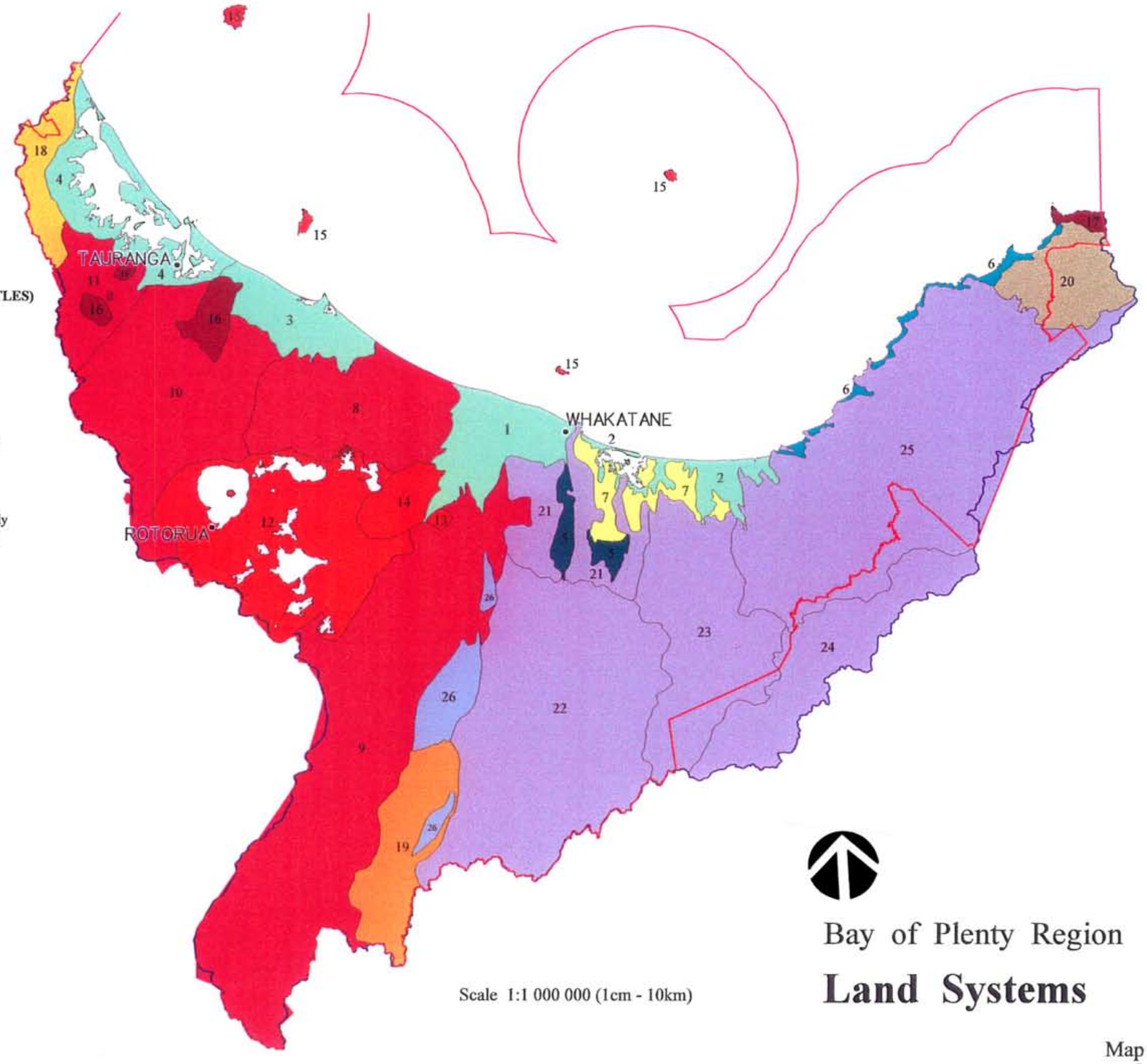
- 20 Whangaparo

HARD GREYWACKE LANDSCAPE

- 21 Moderately Steep Hard Rock Hill
- 22 Urewera Steeplands
- 23 Eastern Urewera Foothills
- 24 Upper Motu
- 25 Raukumara Steeplands
- 26 Inland Tectonic Basins

Environment B·O·P Regional Boundary

Regional Catchment Boundary



Scale 1:1 000 000 (1cm - 10km)

Bay of Plenty Region

Land Systems

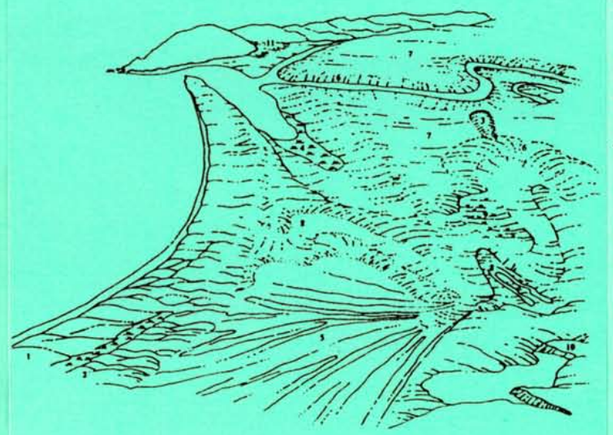
Map 2

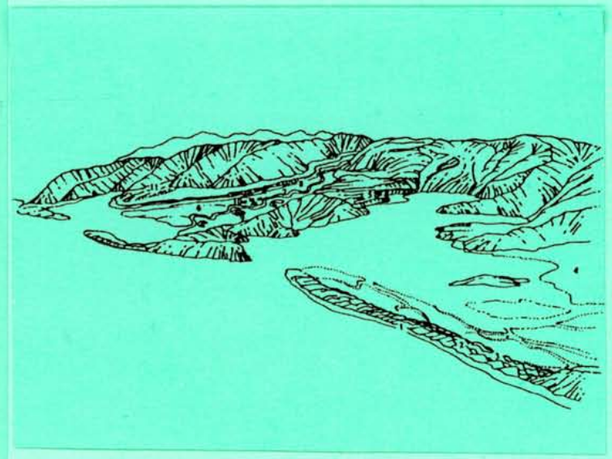
Bay of Plenty Region

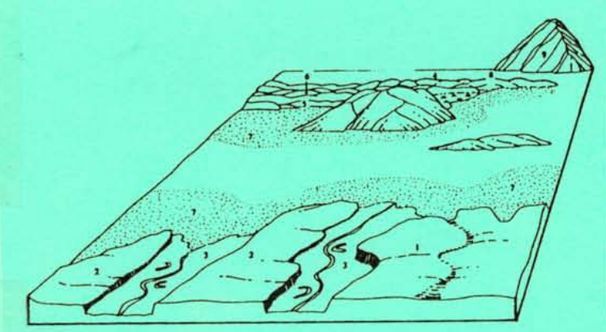
Coastal Lowland Environment

Land Types

COASTAL LOWLAND ENVIRONMENT







Brief Descriptions of the 26 Land Systems / Ecosystems of the Bay of Plenty Reg

1. RANGITAIKI ALLUVIAL PLAINS LAND SYSTEM / ECOSYSTEM

The Rangitaiki Alluvial Plains Land System / Ecosystem consists of the recent co the Whakatane, Rangitaiki and Tarawera Rivers, in the coastal and semi-coa comprise beach dunes, estuaries, intertidal flats, swamps, current and former meander troughs, valley floor terraces, fans, and dissected terraces. Elevation r from 1200 to 1600 mm pa. The vast former wetland with minor forest has l agriculture, and the coastal dunelands have been highly modified by grazing and vegetation exist. Remnant wetland vegetation is highly modified and fragr Restoration options and the re-establishment of linkages between remnants need to This land system / ecosystem includes most of the Te Teko Ecological District.

2. OHIWA LAND SYSTEM / ECOSYSTEM

The Ohiwa Land System / Ecosystem consists of the higher dissected marine ter margin deposits of the Waioeka and Otara Rivers, and the Waiotahi and Nuku climatic zones. Landform components comprise beach dunes, interdune swales current and former floodplains, levees, backswamps, channelways, meander tr higher marine terraces with a highly variable, age dependent tephra mantle. Eleva from 1400 to 1700 mm pa. The formerly forested area has been largely clea agriculture, and the coastal dunelands have been highly modified by grazing and remnants of indigenous forest and wetland remain. Restoration and the re-estab considered.

This land system / ecosystem includes part of Taneatua and most of Opotiki Ecolo

3. PONGAKAWA LAND SYSTEM / ECOSYSTEM

The Pongakawa Land System / Ecosystem consists of flat to rolling tephra mantle flat low lying drained former swamplands inland of a coastal dune belt, coalescing rivers, and ocean margin dune and estuarine systems between Papamoa and C climatic zones. Landform components comprise beach dunes, interdune wetland former floodplains, levees and backswamps, dissected terraces, and isolated head and rainfall from 1300 to 1600 mm pa. Remnants of the former forest cover a introduced pastures and orchards. Willows and raupo, with local sedges and flax c This land system / ecosystem includes part of the Tauranga Ecological District

4. TAURANGA BASIN LAND SYSTEM / ECOSYSTEM

The Tauranga Land System / Ecosystem consists of flat to strongly rolling depo including Matakana Island, underlain by weakly indurated fluvial and estuarine de zones. Landform components comprise dissected high terraces, intermediate and l flats, fixed and moving sand dunes, barrier islands, and minor indurated rhyolitic level to 260 m and rainfall from 1400 to 1800 mm pa., with a warm sunny cl former broadleaf-podocarp forest has been cleared or milled, while most of the lo has been converted to pasture and horticultural use. Extensive areas of saltma Harbour. This land system / ecosystem lies within the Tauranga Ecological Distr

COASTAL ENVIRONMENT

fluvial depositional environment

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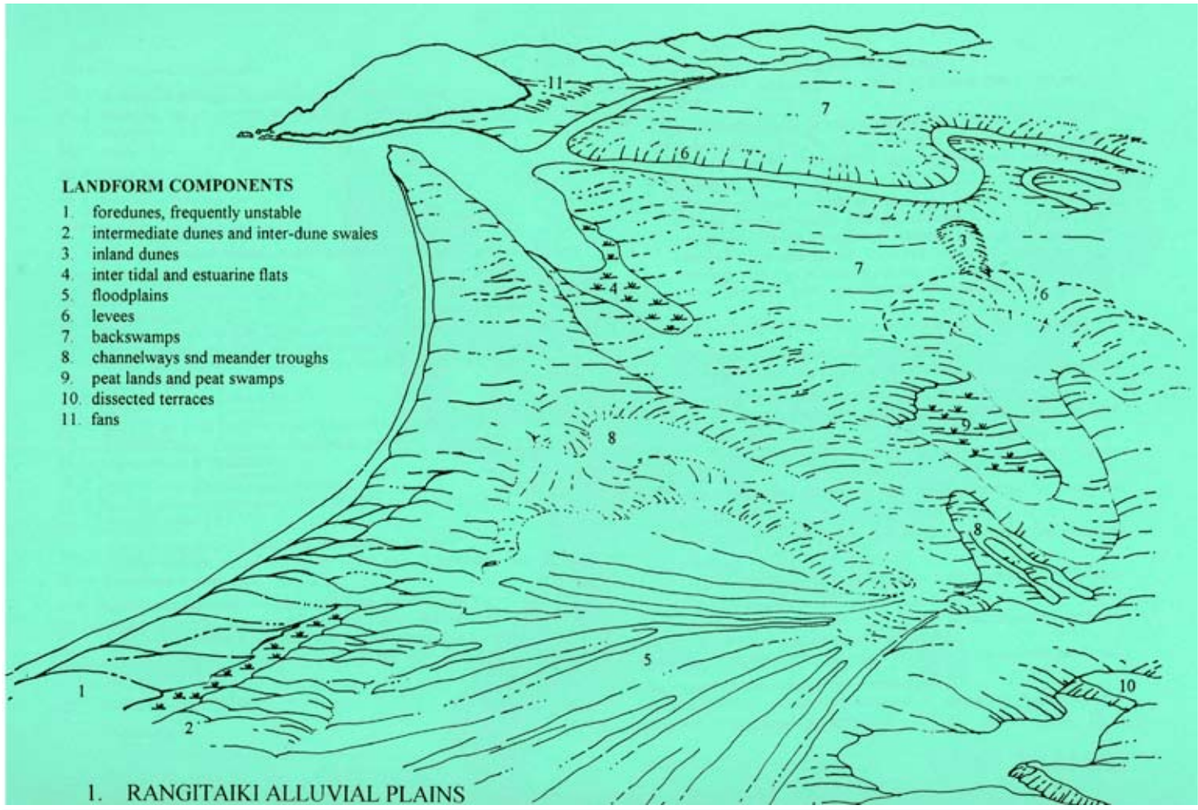
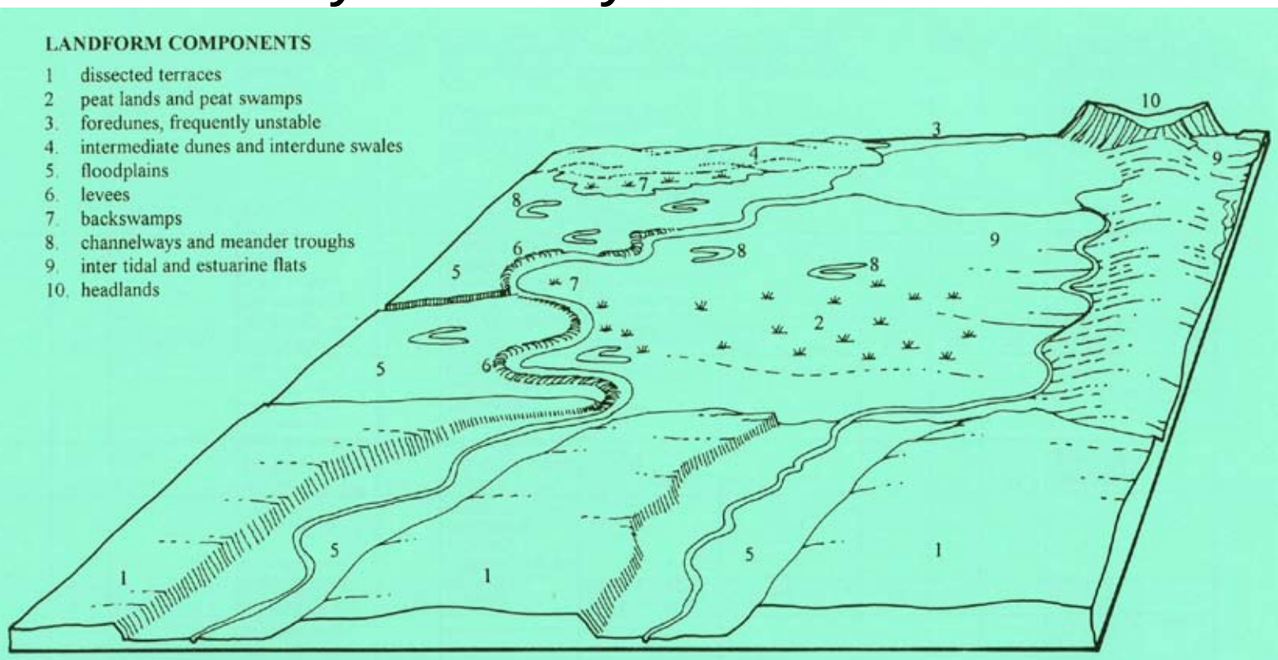
4.1.2

Whakatane District

Western Bay of Plenty



1. RANGITAIKI ALLUVIAL PLAINS



3. PONGAKAWA

Opotiki District

6 NORTH EASTERN COASTAL STRIP

Coastal Lowland Environment Land Types

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4.1.3

8. ROTOEHU LAND SYSTEM / ECOSYSTEM

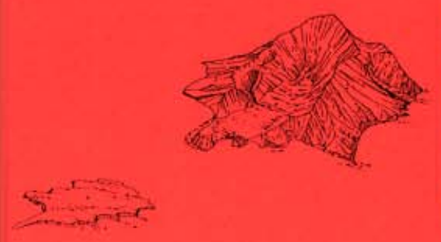
Comprises a young constructional fan/plateau dissected by parallel dry valleys with flat interfluves developed on the Rotoiti Breccia (40 000 BP) ignimbrite fan between the Rotorua Caldera and the Okataina Volcanic Centre and the coast in the semi coastal and lowland bio-climatic zones. Landform components include rolling to strongly rolling interfluves, moderately steep to steep side slopes and narrow flat to gently undulating valley floors. Elevation ranges from 5 - 400 m, and rainfall from 1400 - 2000 mm pa, summer droughts are infrequent.

This land system / ecosystem is bounded to the west by the contact with the Mamaku Ignimbrite, to the east by the 'Waikakarapiti Stream Fault' and lies within the Otanewainuku (and part in the Rotorua) Ecological District.

11. WHAKAMARAMA LAND SYSTEM / ECOSYSTEM

The Whakamarama Land System / Ecosystem consists of a gently sloping (3-5°) surface, inclined to the north and east formed from Upper Pleistocene dacitic and rhyolitic welded ignimbrites. The plateau is bounded on the west by the Hauraki Fault scarp, the north east by the Kaimai Ranges, and is buried on the east by Pleistocene terrestrial sediments of the Tauranga Basin. The southeastern boundary is the contact with the Mamaku ignimbrite in the vicinity of SH 28. Elevation ranges from 20 to 760 m and rainfalls from 1600 - 2400 pa with common high intensity falls. Summers are warm and winters are mild. The land system / ecosystem is predominantly in the lowland bio-climatic zone. Podocarp/hardwood forest, predominantly rimu, tawa, kamahi and tawari, is the indigenous vegetation with hard beech common in the gorges and stunted forest on the ridges. Plateau forests have been logged for podocarps, tawa, and red beech. Some pastoral farming and orcharding on lower north eastern slopes below 300 m.

This land system / ecosystem lies within the Otanewainuku and Tauranga Ecological Districts.



15. OFFSHORE ISLANDS LAND SYSTEM / ECOSYSTEM

Small isolated offshore islands and stacks including active White Island, Moutohora (Whale Is.) and Moutoki Island; Tuhua (Mayor Is), and the low lying, stable 'plateau like' Motiti Island. Landforms range from active and inactive andesitic and rhyolitic volcanic craters and cones, hill slopes, steep to very steep sea cliffs, raised shore platforms, terraces, sandy and rocky beaches, and minor dune belts. The land system / ecosystem is formed predominantly from Edgecumbe Andesite, Haparangi Rhyolite and Beeson's Island Volcanic rocks with minor recent sedimentary deposits. The islands primarily occupy the coastal bio-climatic zone with minor semi-coastal areas at higher elevation. They have warm summers and mild frost free winters. Rainfall is approximately 1400 mm pa. Former native vegetation was dominated by pohutukawa forest and coastal scrubland with low grass and herbfield on the more geologically actives facets of the landscape. Some islands have had a long history of human occupation (e.g. Tuhua) and have been extensively cropped and farmed (e.g. Motiti).

This land system / ecosystem comprises the White Island, Motiti and Mayor Ecological Districts.

17. MATAKAOA LAND SYSTEM / ECOSYSTEM

The Matakaoa Land System / Ecosystem consists of old, pre Pleistocene, moderately steep to steep igneous hills and mountains which have had their original constructional topographic expression extensively modified by the effects of erosion. Examples include the basic Matakaoa Volcanics of the Cape Runaway peninsula and the associated inland hills. Landform components include moderately steep to steep hillslopes, colluvial sideslopes, incised gorges and steep to very steep coastal cliffs. Elevation ranges from sea level to 480 m, and rainfall from 1600 to 1800 mm. The land system / ecosystem lies predominately in the semi coastal bio-climatic zone with the lower elevations lying in the coastal zone. Some remnant pohutukawa and puriri coastal forest but extensive areas have been cleared for grazing. Secondary forest and remnant tawa-dominant forest with limited exotic forestry present.

This land system / ecosystem lies within the Pukeamaru Ecological District.

18. KAIMAI LAND SYSTEM / ECOSYSTEM

The Kaimai Land System / Ecosystem consists of part of the Kaimai Range, a rugged up faulted block of Miocene - Pliocene basaltic to dacitic volcanic rocks of the Kaimai Subgroup bounded on the west by the youthful eroded scarp of the Hauraki Fault. The range is for the most part a single NNW-trending ridge of summit height between 570 to 850 m. Numerous streams fall steeply over waterfalls and cascades on the west and to a lesser extent to the east. Elevation ranges from 100 to 850 m, and rainfall from 1600 - 2400 mm pa, with high intensity falls common. Summers are warm and winters are mild. The land system / ecosystem is predominant in the lowland bio-climatic zone with the upper ridges and summits in the sub-montane bio-climatic zone, with some hill country and cliffs in the coastal bio-clime. Podocarp-hardwood forest, predominantly rimu, tawa, kamahi and tawari with a simple altitudinal gradation of forest types dominates, with hard beech common in the gorges and stunted forest on the ridges.

This land system / ecosystem comprises part of the Te Aroha and Waihi Ecological Districts.

Bay of Plenty Region

Igneous Volcanic Country

Land Types

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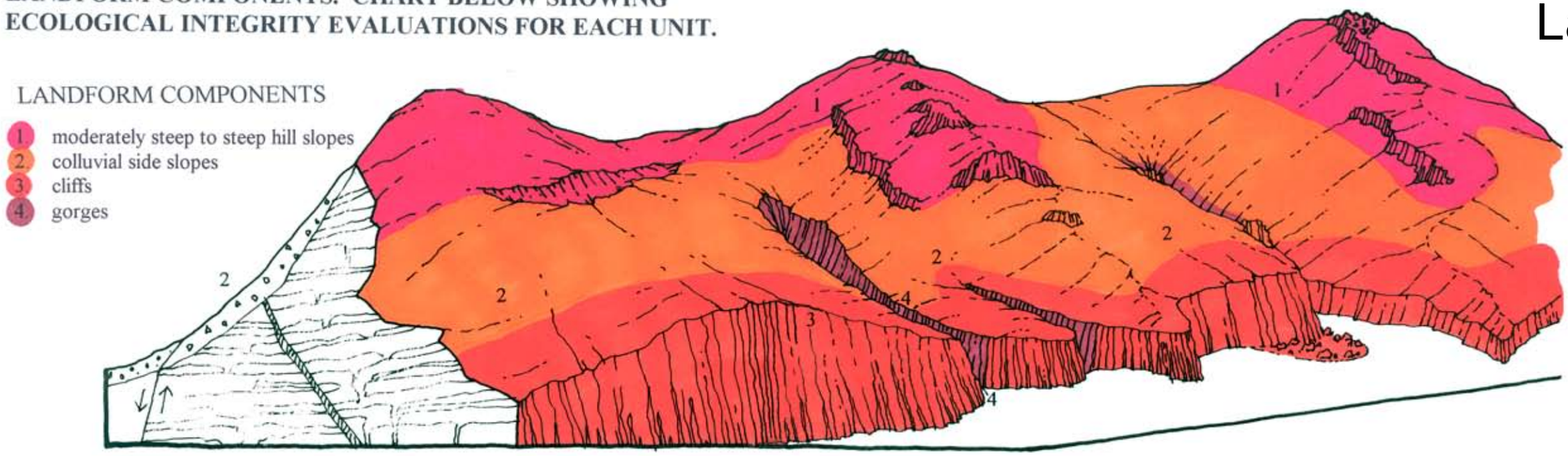
Igneous/Volcanic Country Land Type

SAMPLE LAND SYSTEM / ECOSYSTEM DRAWING SHOWING LANDFORM COMPONENTS. CHART BELOW SHOWING ECOLOGICAL INTEGRITY EVALUATIONS FOR EACH UNIT.



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Bioclimatic Zones key C = Coastal; SC = Semi-Coastal; L = Lowland

Ecological District	Biocli-matic Zone	Landform component	geological formation	elevat^{n} m	historical vegetation	present land use	Indigenous Vegetation/Habitats				ecological issues/ management
							present	prop. remain-ing	frag-ment^{n}	condit^{n}	
Pukeamaru	C	colluvial side slopes (2)	Matakaoa Volcanics	0 - 100	pohutukawa forest, reduced in extent by Maori burning; replaced with secondary scrub and forest	extensive grazing, native forest	pohutukawa forest	Low	Very	Poor	restoration, fencing, wild animal control
	C	cliffs (3)	Matakaoa Volcanics	0 - 60	pohutukawa forest	native forest	minor, pohutukawa forest	Low	Very	Poor	restoration, fencing, wild animal control
	SC	moderately steep to steep hill slopes (1)	Matakaoa Volcanics	20 - 300	tawa-beech forest, reduced in extent by Maori burning; secondary scrub and forest	extensive grazing, native forest	mainly secondary forest	Mod?	Mod?	Mod?	restoration, fencing, wild animal control
	SC	colluvial side slopes (2)	Matakaoa Volcanics	20 - 200	tawa-beech forest, reduced in extent by Maori burning; secondary scrub and forest	extensive grazing, native forest	mainly secondary forest	Mod?	Mod?	Mod?	restoration, fencing, wild animal control
	SC	gorges (4)	Matakaoa Volcanics	20 - 30	mixed hardwood forest, scrub	native forest	mixed hardwood forest, scrub	High?	Rel. Intact?	Mod?	restoration, fencing, wild animal control
	L	moderately steep to steep hill slopes (1)	Matakaoa Volcanics	300 - 480	mixed hardwood forest, scrub	extensive grazing, native forest	mixed hardwood forest, scrub	High?	Rel. Intact?	Mod?	restoration, fencing, wild animal control

Opotiki District

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4.1.5

Bay of Plenty Region

Soft Rock Hill Country,
Tertiary Hill Country
and
Hard Rock Greywacke
Landscape

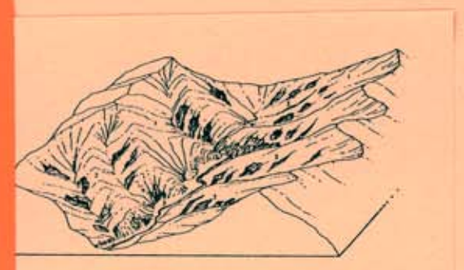
Land Types

SOFT ROCK (Pleistocene) HILL COUNTRY (Tephra Mantles)

7. PLEISTOCENE SOFT ROCK HILL COUNTRY LAND SYSTEM / ECOSYSTEM

The Land System / Ecosystem includes strongly rolling to steep, to very steep dissected predominant soft rock hill country underlain by Pleistocene marine and estuarine siltstones, sandstones and conglomerates with interbedded air fall and redeposited tephra, and associated minor greywacke hard rock hill slopes, both overlain by variable depths of recent tephra, situated in the coastal and semi coastal bio-climatic zones between the Rangitaiki River and Opotiki. Principal landform components include erosional soft rock hill slopes, structural soft rock hill slopes, minor valley floors, and terraces, and hard rock hill slopes. Elevation ranges from sea level and approx. 300 m, with rainfall between 1400 and 1600 mm pa. Extensive forest clearance has resulted in the former indigenous rimu-rata/tawa-rewarewa-pukatea-kamahi forest and rata/tawa-kohekohe-kamahi forest being present only as remnants on steeplands. Rewarewa-kanuka-pohutukawa forest is present in coastal situations.
This land system / ecosystem includes parts of the Taneatua and Opotiki Ecological Districts.

TERTIARY HILL COUNTRY



20. WHANGAPARAOA LAND SYSTEM / ECOSYSTEM

The Whangaparaoa Land System / Ecosystem includes moderately steep to steep hill country predominantly underlain by Tertiary, calcareous mudstones, siltstones and sandstones of the Mangaheia, Moanui, Whangai and Tapuwaeroa Formations in the Whangaparaoa and Waikura River catchments. Basement rocks have been intensively deformed and faulted and as a consequence mass movement forms of erosion are extensive. Elevation ranges from 10 to *c.*540 m incorporating the semi coastal and lowland bio-climatic zones. Rainfall ranges from 1500 to 2800^{+} mm pa. Formerly largely podocarp-hardwood-beech forest with black beech and hard beech at lower altitudes, and red beech and silver beech at higher elevations. Extensive forest clearance has occurred in the upper Whangaparaoa and Waikura River catchments. Some kahikatea present on river terraces.
This land system / ecosystem includes part of the Pukeamaru Ecological District.

HARD ROCK GREYWACKE LANDSCAPE

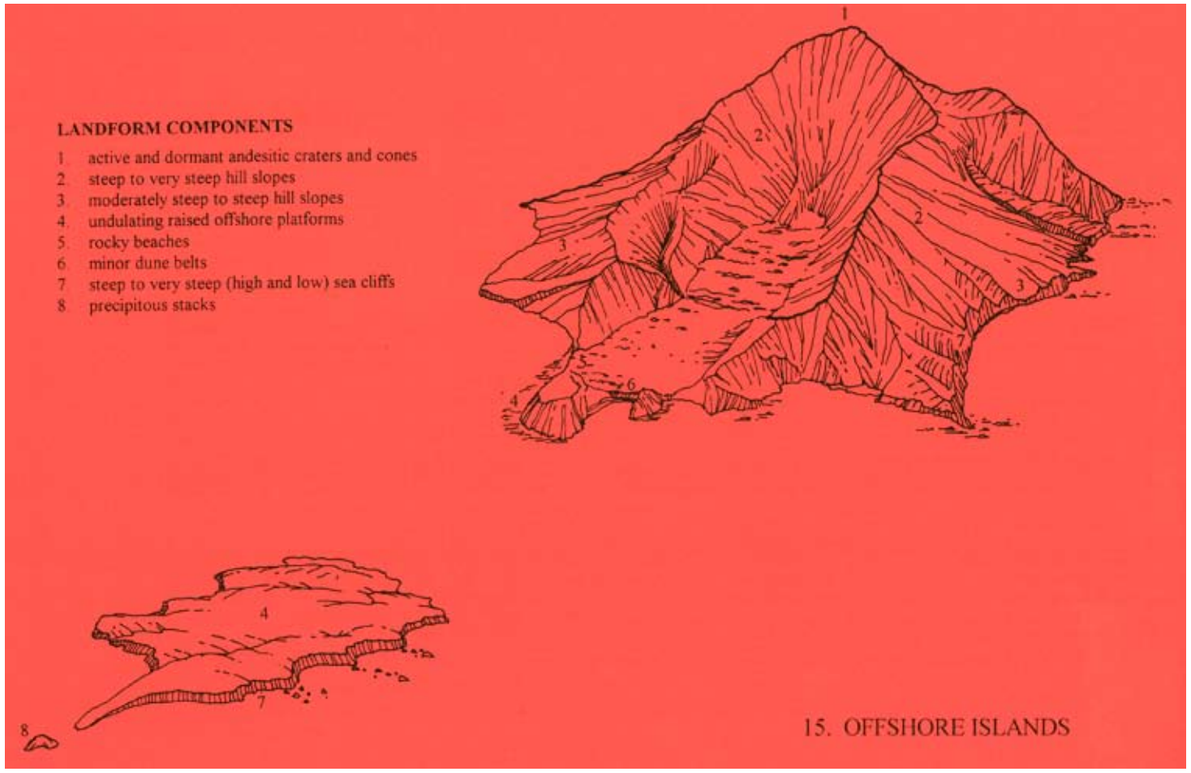
21. MODERATELY STEEP HARD ROCK HILL LAND SYSTEM / ECOSYSTEM

The Moderately Steep Hard Rock Hill Land System / Ecosystem includes strongly rolling to steep, to very steep dissected greywacke hard rock hill slopes, overlain by variable depths of recent tephra, situated in the coastal, semi coastal and lowland bio-climatic zones. Principle landform components include erosional hard rock hill slopes, minor valley floors and terraces. Elevation ranges from sea level to *c.*300 m, with rainfall between 1400 and 1600 mm pa. Extensive forest clearance has resulted in the former indigenous rimu-rata/tawa-rewarewa-pukatea-kamahi forest and rata/tawa-kohekohe-kamahi forest being present only as remnants on steeplands. Rewarewa-kanuka-pohutukawa forest is present in coastal situations.
This land system / ecosystem includes parts of the Taneatua and Opotiki Ecological Districts.

25. RAUKUMARA STEEPLANDS LAND SYSTEM / ECOSYSTEM

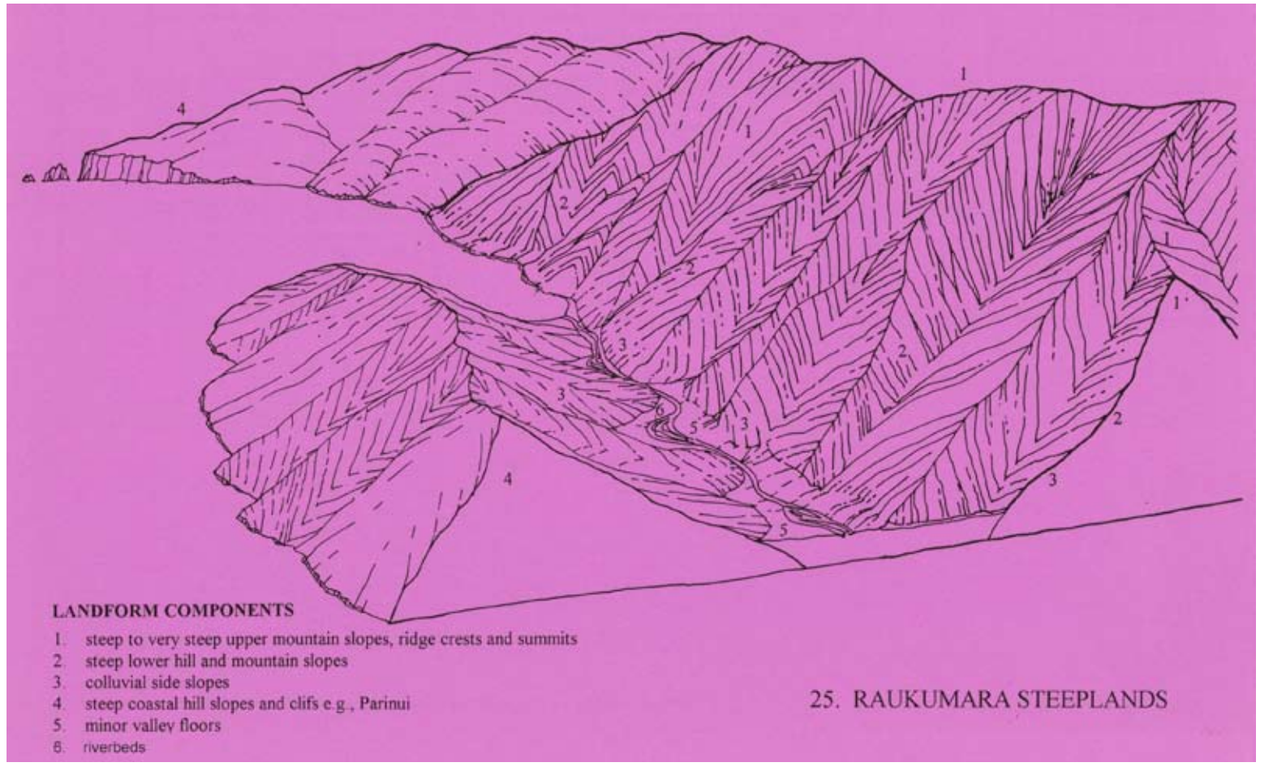
The Raukumara Steeplands Land System / Ecosystem consists of rugged deeply and finely dissected, steep to very steep 'hard rock' Cretaceous greywacke sandstone and siltstone hill and mountain slopes which form the coast, foothills and main Raukumara Ranges. Landform components include steep upper mountain slopes, ridge, crests, spurs and summits, lower mountain slopes, colluvial side slopes, coastal hill slopes and cliffs, and minor valley floors. Elevation ranges from sea level to 1475 m, encompassing coastal, semi coastal, lowland, sub-montane, montane, and sub-alpine bio-climatic zones, with exposed ridge crests and summits intersecting the montane and sub-alpine zones. Rainfall ranges from 1400 to 4000^{+} pa. Altitudinal sequence of forest from low altitude conifer/tawa-hard beech forest, to podocarp/red beech-silver beech at higher elevations, red beech-silver beech forest, silver beech forest with kaikawaka common in the montane forest belt and local mountain beech. Low sub-alpine vegetation on the highest peaks. Pohutukawa and puriri is present adjacent to the coast.
This land system / ecosystem includes part of the Motu Ecological District.

Igneous/Volcanic Country Land Type

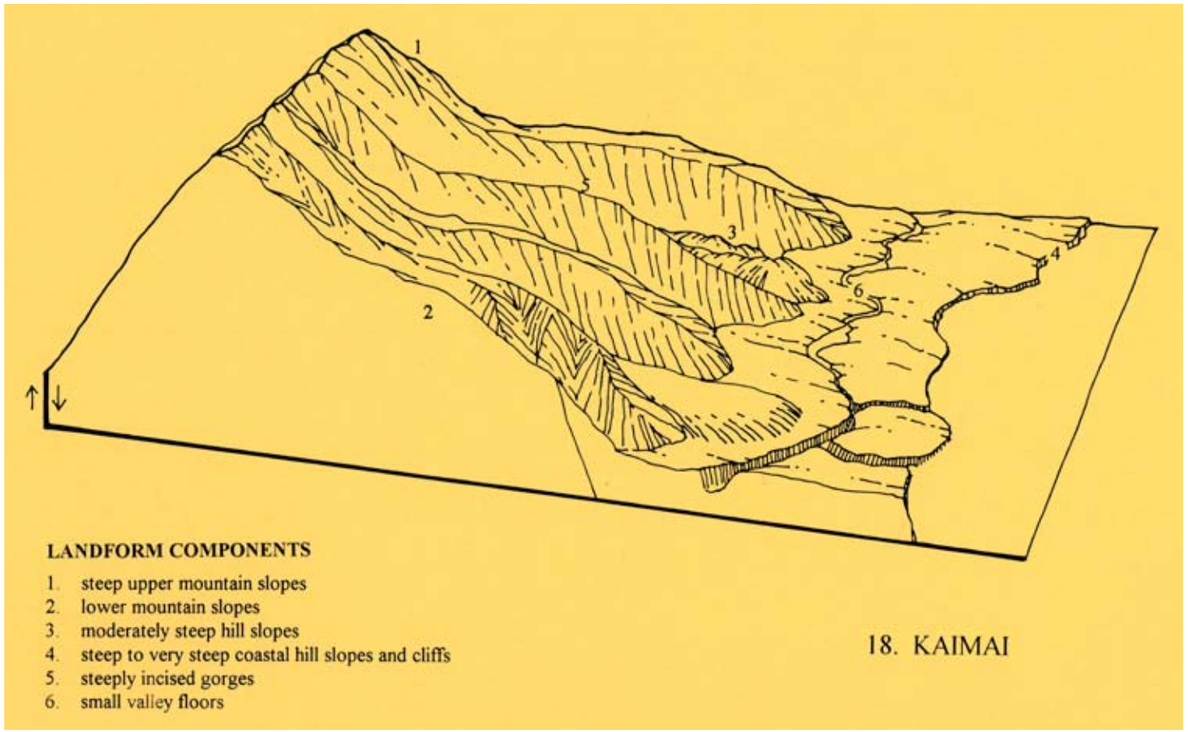


Whakatane District

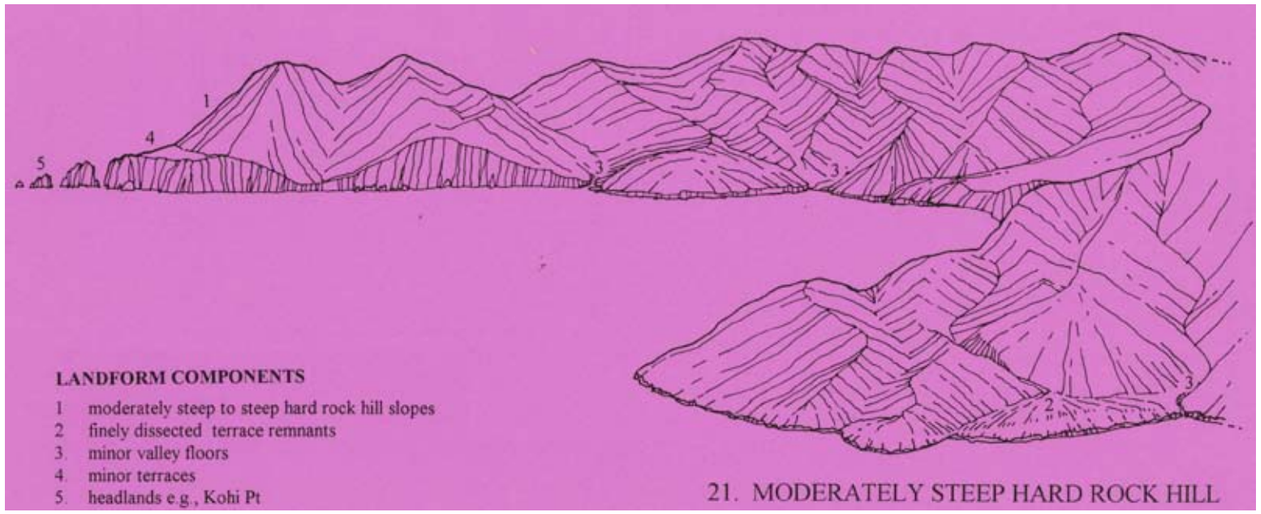
Hard Rock Greywacke Land Types



Opotiki District



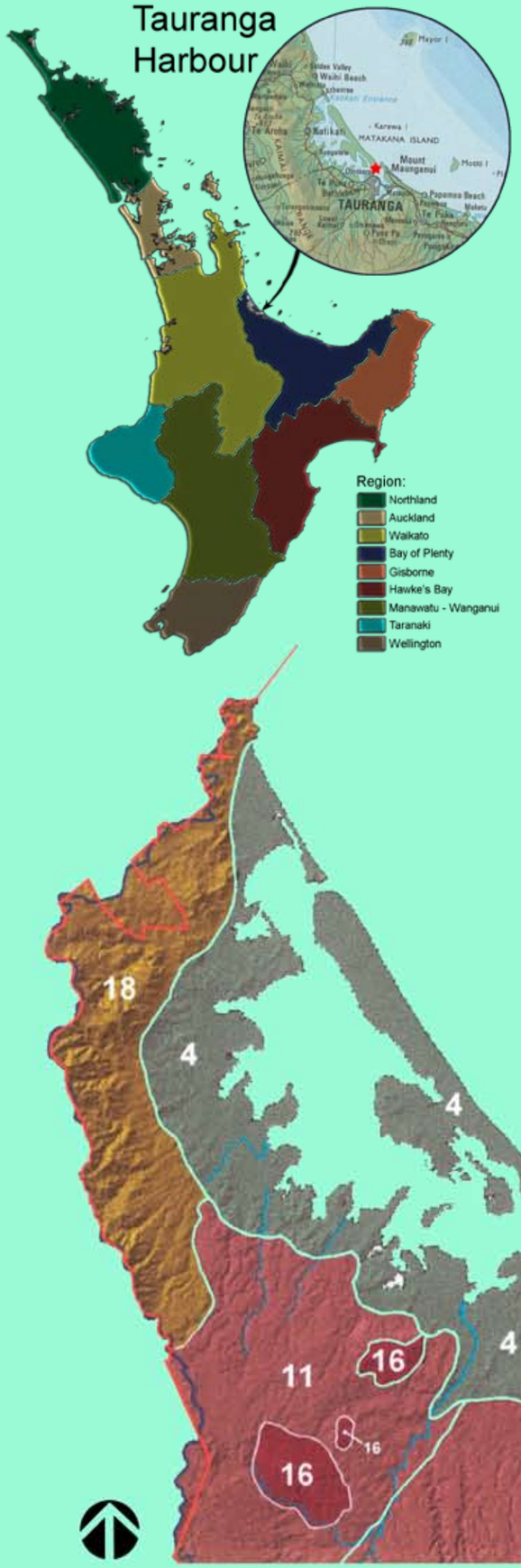
Western Bay of Plenty District

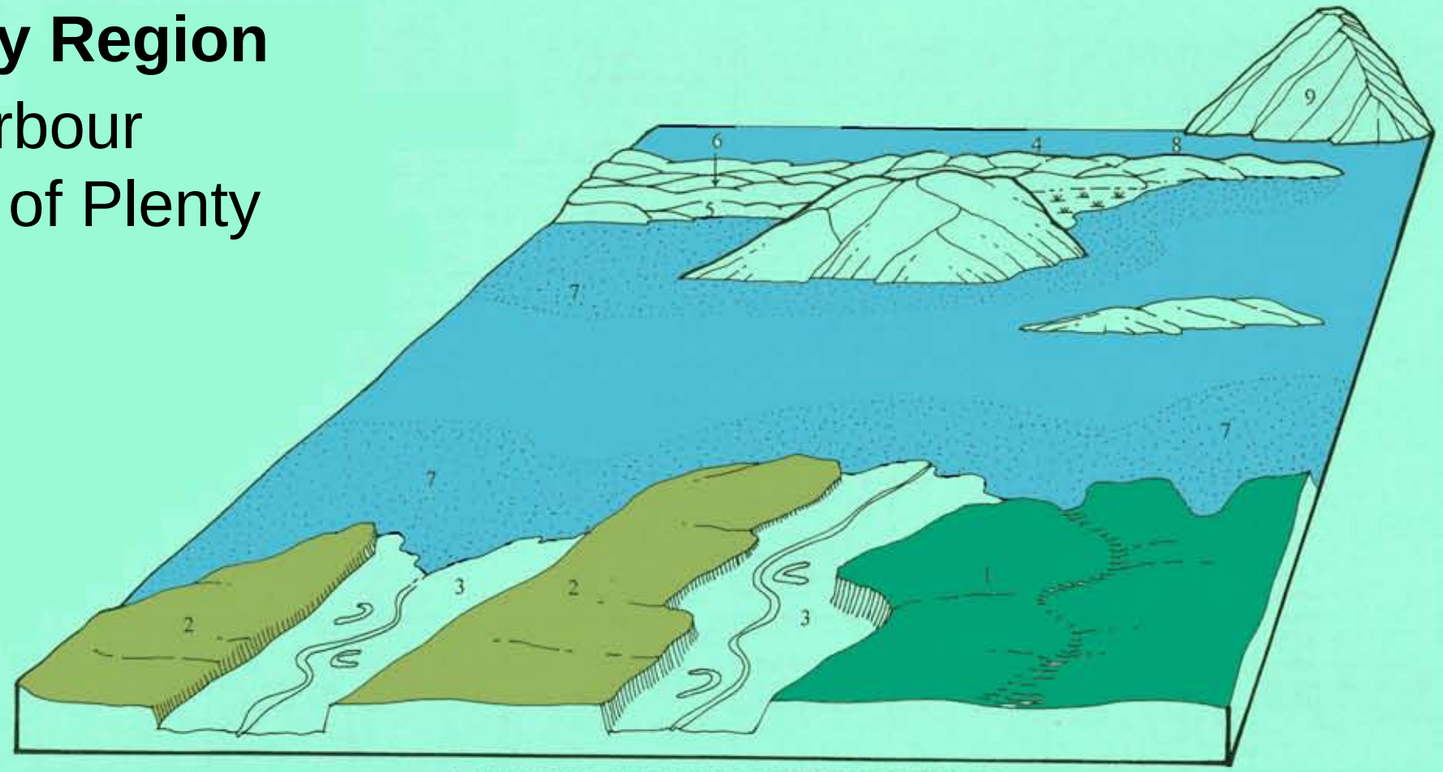


Whakatane & Opotiki Districts

Bay of Plenty Region

Tauranga Harbour
Western Bay of Plenty





4. TAURANGA BASIN LAND SYSTEM / ECOSYSTEM

The Tauranga Land System / Ecosystem consists of flat to strongly rolling depositional landforms surrounding Tauranga harbour including Matakana Island, underlain by weakly indurated fluvial and estuarine deposits in the coastal and semi coastal bioclimatic zones. Landform components comprise dissected high terraces, intermediate and low terraces, alluvial floodplain deposits, estuarine flats, fixed and moving sand dunes, barrier islands, and minor indurated rhyolitic domes and headlands. Elevation ranges from sea level to 260 m and rainfall from 1400 to 1800 mm pa., with a warm sunny climate. The former broadleaf-podocarp forest has been cleared or milled, while most of the former wetlands, fern and scrubland vegetation has been converted to pasture and horticultural use. There are scattered forest and wetland remnants, generally weed infested. Extensive areas of saltmarsh and mangroves are present in the Tauranga Harbour. This land system / ecosystem lies within the Tauranga Ecological District.

Bioclimatic Zones key C = Coastal; SC = Semi-Coastal

Ecological District	Biocli-matic Zone	Landform Component	Geological formation	Elevat^{n} m	Historical vegetation	Present land use	Indigenous Vegetation/Habitats: present	prop. remain-ing	frag-ment^{n}	condit^{n}	Ecological issues/ management
Tauranga	C	dissected higher terraces (1)	recent tephra mantling Pleistocene siltstones and sandstone	20 - 200	originally pohutukawa and mixed coastal forest, but by 1840 would have been scrub, shrublands and fernland	intensive grazing, horticulture, orcharding	very minor secondary remnants, weed invested	Low	Very	Poor	ongoing fragmentation, weeds and animal pests, restoration opportunities
	C	low flat to rolling terraces (includes part Matakana Island) (2)	recent tephra mantling siltstones and sandstone	20 - 200	originally pohutukawa and mixed coastal forest, but by *c.* 1840 would have been scrub, shrublands and fernland	intensive grazing, horticulture, orcharding	very minor secondary remnants	Low	Very	Poor	restoration opportunities, weed control
	C	estuarine flats Tauranga Harbour (7)	estuarine alluvium	0 - 1	estuarine saltmarsh, mangroves	recreation, wildlife habitat, grazing	estuarine salt marsh, mangroves	High	Mod	Med - High	drainage, marina proposals, loss of native habitats, *Spartina* invasion, infilling, restoration opportunities

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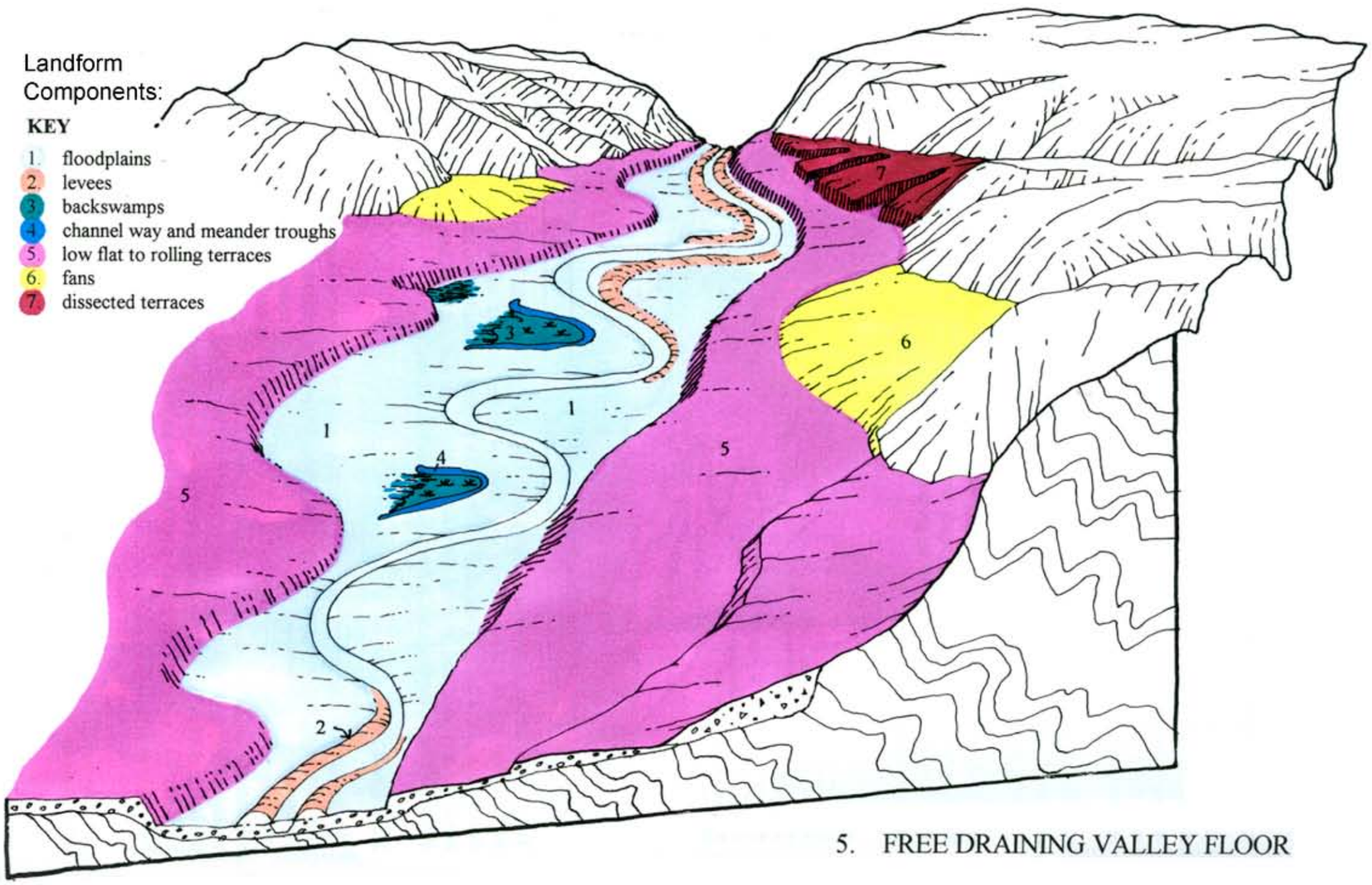
SAMPLE LAND SYSTEM / ECOSYSTEM FRAMEWORK MODEL DRAWING (AND CHART BELOW).



5. FREE DRAINING VALLEY FLOOR

Landform Component	Geological formation	Elevat^{n} m	Historical vegetation
floodplains (1)	late Pleistocene and recent alluvium with a recent tephric mantle	10 - 80	originally podocarp forest including matai, kahikatea, totara. probably mostly secondary forest and shrubland by *c.*1840.
levees (2)	fine late Pleistocene and Holocene alluvium with a recent tephric mantle	10 - 80	originally podocarp forest including matai, kahikatea, totara. probably mostly secondary forest and shrubland by *c.*1840.
backswamps (3)	fine Holocene and recent alluvium and tephra with interlayered peat	10 - 60	originally flax, kahikatea, mixed swamp forest. probably relatively little changed *c.*1840.
channel way and meander troughs (4)	late Pleistocene and Holocene alluvial sands and silts with interlayered recent tephra	10 - 80	flax, kahikatea, raupo
low flat to rolling terraces (5)	variable tephra overlying recent tephric alluvium	10 - 80	originally podocarp forest but mostly shrublands with some secondary forest by *c.*1840.
fans (6)	recent tephra and tephric alluvium and colluvium	10 - 80	originally podocarp forest but mostly shrublands with some secondary forest by *c.*1840.
dissected terraces (7)	recent tephra mantling pumiceous alluvium	5 - 20	originally podocarp/tawa forest but mostly shrublands and secondary forest by *c.*1840.

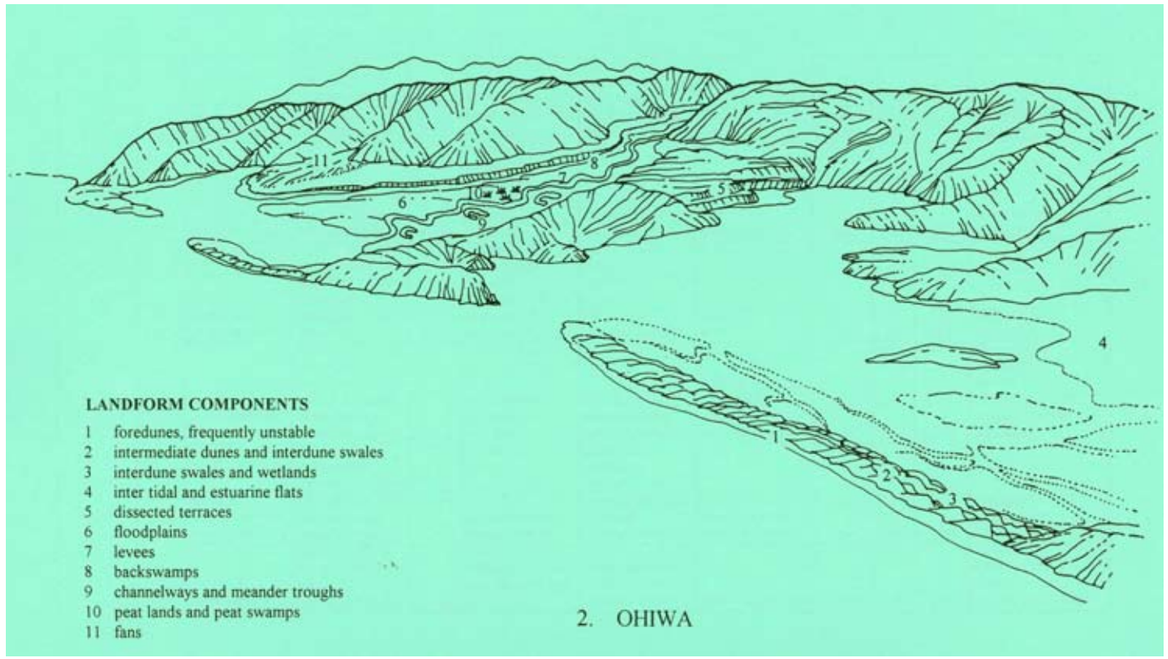
Table 2 Each line in the chart represents an Eco Unit.

5. FREE DRAINING VALLEY FLOOR LAND SYSTEM / ECOSYSTEM

The Free Draining Valley Floor Land System / Ecosystem consists of flat to gently rolling free draining floodplains and alluvial terraces in the middle reaches of the Whakatane and Waimana Rivers in the semi coastal bioclimatic zone. Landform components comprise floodplains and channelways, valley floor terrace treads and risers with minor valley side fans and higher dissected terrace remnants. Elevation ranges from 20 to 80 m asl, and rainfall between 1400 and 1600 mm pa. The former forest cover has been cleared and developed for intensive agriculture. Minor remnant indigenous vegetation remains.
This valley floor land system / ecosystem forms part of the Taneatua Ecological District.

Bay of Plenty Region

Coastal Lowland Environment



Ohiwa Harbour
Whakatane & Opotiki Districts

2. OHIWA LAND SYSTEM / ECOSYSTEM

The Ohiwa land system/ecosystem consists of the higher dissected marine terraces and recent coalescing floodplains and ocean margin deposits, of the Waioeka and Otara Rivers, the Waiotahi and Nukuhou Rivers, in the coastal and semi coastal bioclimatic zones. Landform components comprise beach dunes, interdune swabs and wetlands, estuaries, intertidal flats, swamps, current and former floodplains, levees, backswamps, channelways, meander troughs, valley floor terraces, fans, and dissected higher marine terraces with a highly variable, age dependent tephra mantle. Elevation ranges from sea level to 100 m, and rainfall from 1400 to 1700 mm pa. The formerly forested area has been largely cleared and or drained and developed for intensive agriculture, and the coastal dunelands have been highly modified by grazing and burning. Minor highly modified and fragmented remnants of indigenous forest and wetland remain. Restoration and the re-establishment of linkages between remnants should be considered.
This land system/ecosystem includes part of Taneatua Ecological District and most of Opotiki Ecological District.

Bioclimatic Zones Key C = Coastal; SC = Semi-Coastal

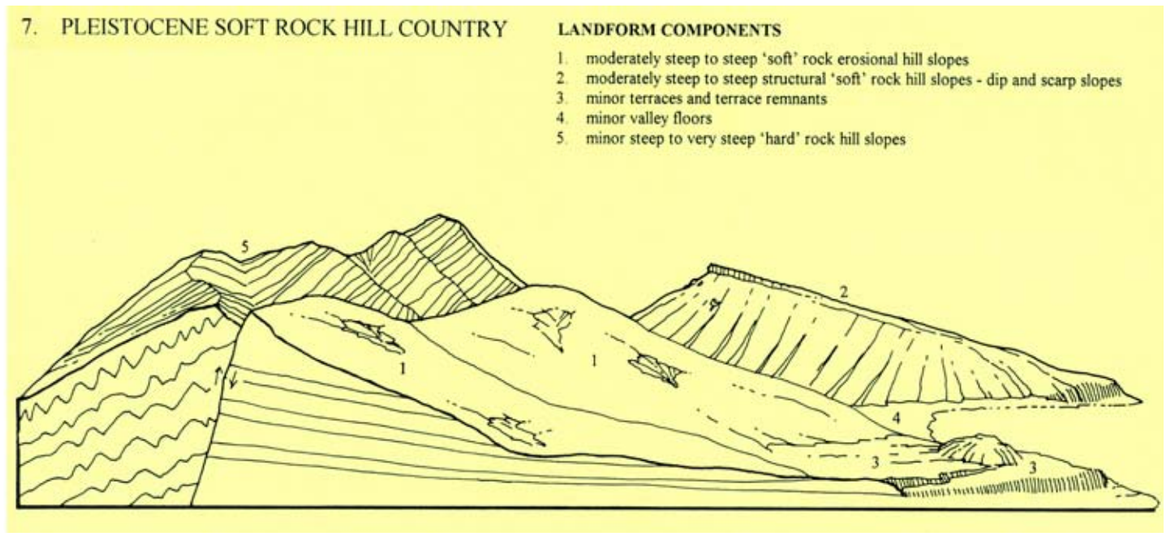
Ecological District	Bioclimatic Zone	Landform Component	Geological formation	Elevation m	Historical vegetation	Present land use	Indigenous Vegetation/Habitats: present	prop. remaining	fragmentn	conditn	Ecological issues/ management
Taneatua	C	foredunes, frequently unstable (1)	recent windblown sands from rhyolitic rocks	0 -20	spinifex, pingao, sand tussock (hinarepe), sand daphne, pohuehue, *Euphorbia glauca*	recreation and conservation reserve, extensive grazing, residential, modified duneland vegetation	spinifex, *Muehlenbeckia complexa, Calystegia soldenella,* pingao	High	Mod	Poor	loss of native habitats and increase in exotic species, ongoing fragmentation, recreational impacts buildings, plant pests
	C	intermediate dunes & interdune swales (2)	recent windblown sands from rhyolitic rocks with thin rhyolitic tephra mantle	4 -20	originally primary forest but reduced to secondary forest (kanuka) and pohuehue by European arrival	extensive and semi intensive grazing, minor horticulture, limited exotic forestry, residential conservation and recreation reserve	*Muehlenbeckia complexa, Isolepis nodosa*	Low	Very	Poor	loss of native habitats and increase in exotic species, ongoing fragmentation, recreational impacts

CLIFF / SCARP DIVISION BETWEEN LAND SYSTEMS 7 & 2
the sea eroded cut face and toe slope, being part of Land System 7., (component 1)

7. PLEISTOCENE SOFT ROCK HILL COUNTRY LAND SYSTEM / ECOSYSTEM

The Pleistocene Soft Rock Hill Country land system/ecosystem includes strongly rolling to steep, to very steep dissected predominant soft rock hill country underlain by Pleistocene marine and estuarine siltstones, sandstones and conglomerates with interbedded air fall and redeposited tephra, and associated minor greywacke hard rock hill slopes, both overlain by variable depths of recent tephra, situated in the coastal and semi-coastal bioclimatic zones between the Rangitaiki River and Opotiki. Principal landform components include erosional soft rock hill slopes, structural soft rock hill slopes, minor valley floors, and terraces, and hard rock hill slopes. Elevation ranges from sea level and approx. 300 m, with rainfall between 1400 and 1600 mm pa. Extensive forest clearance has resulted in the former indigenous rata/tawa-kohekohe-kamahi forest and pohutukawa-puriri forests (coastal) being present only as remnants on steeplands. Pohutukawa forest is present in coastal situations. This land system/ecosystem includes parts of the Taneatua and Opotiki Ecological Districts.

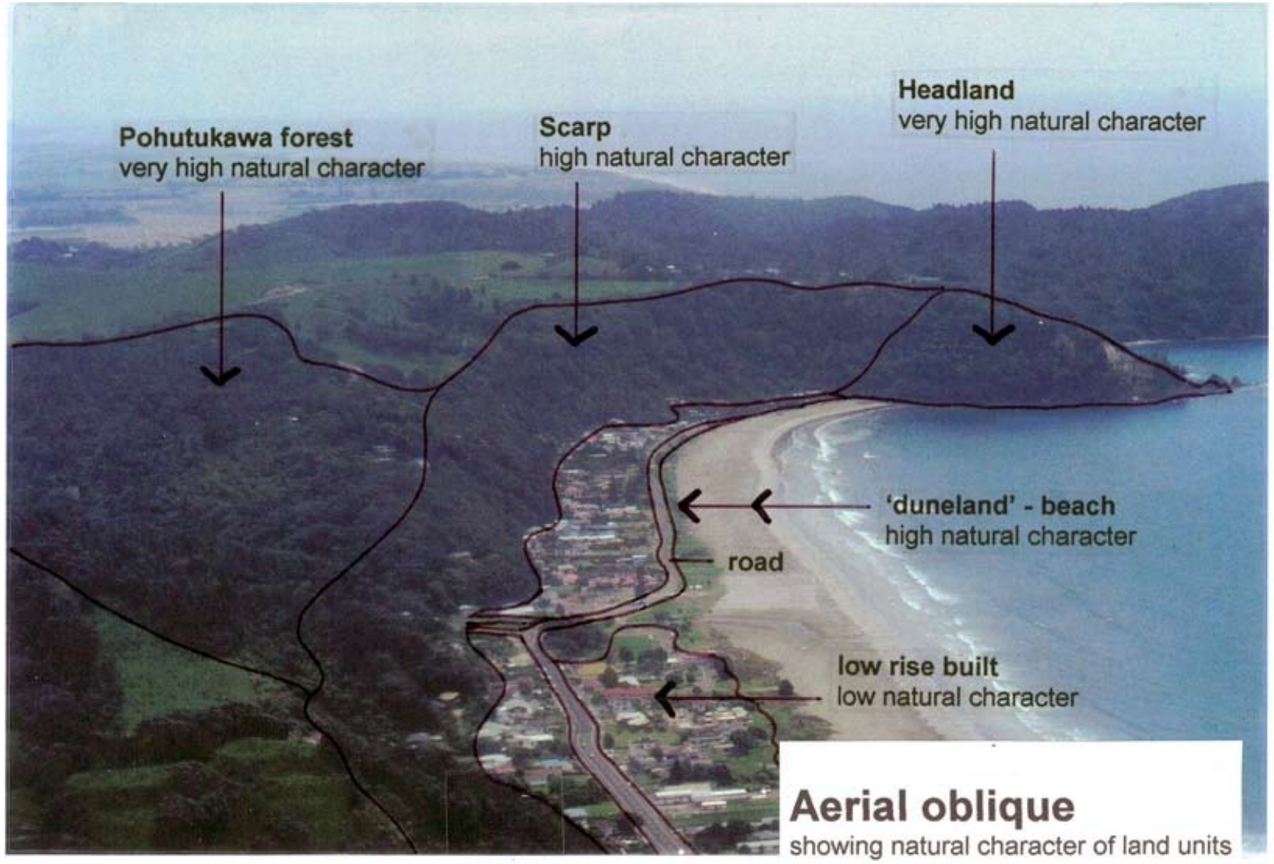
Soft Rock Hill Country

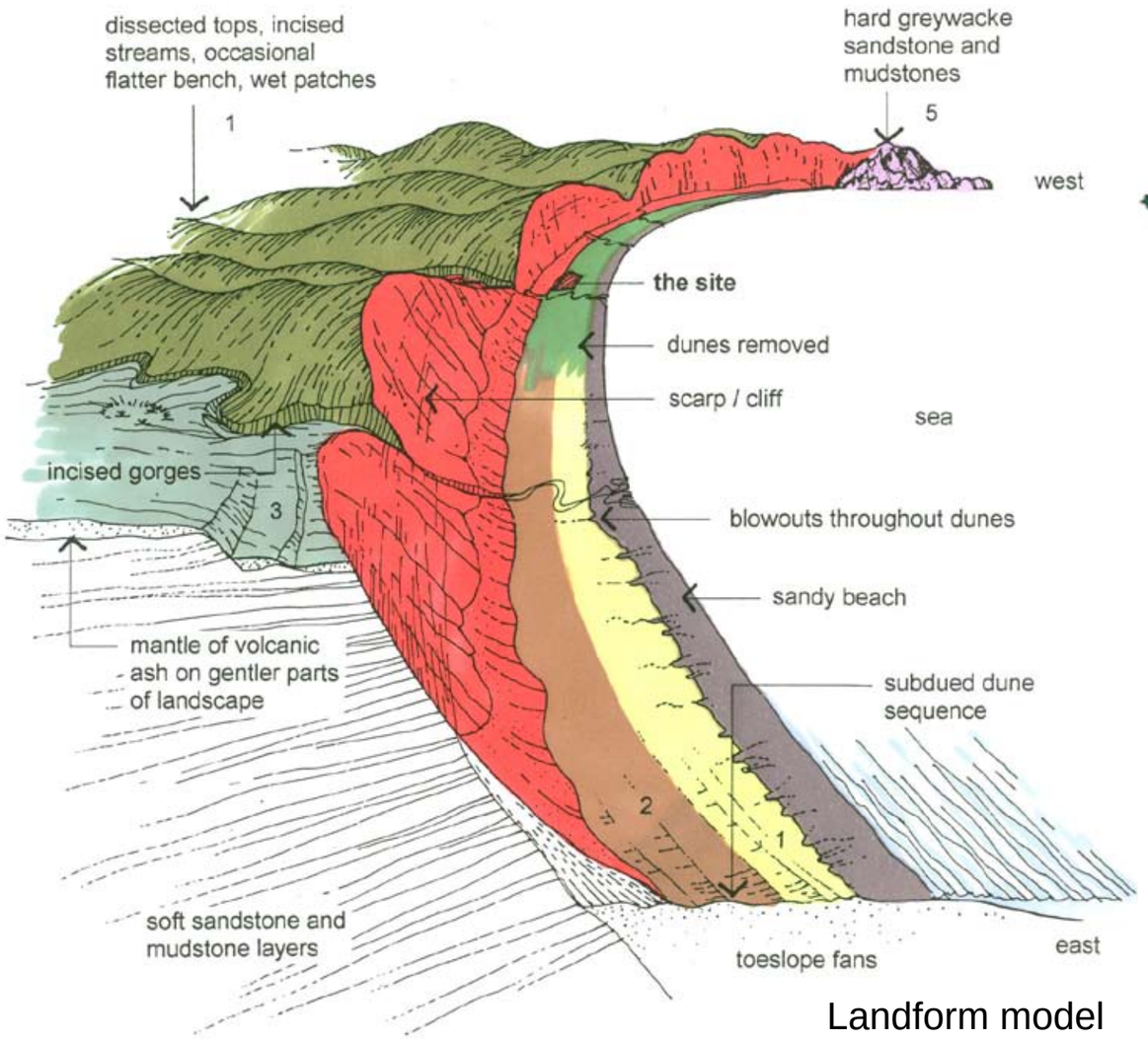


Bioclimatic Zones Key C = Coastal; SC = Semi-Coastal

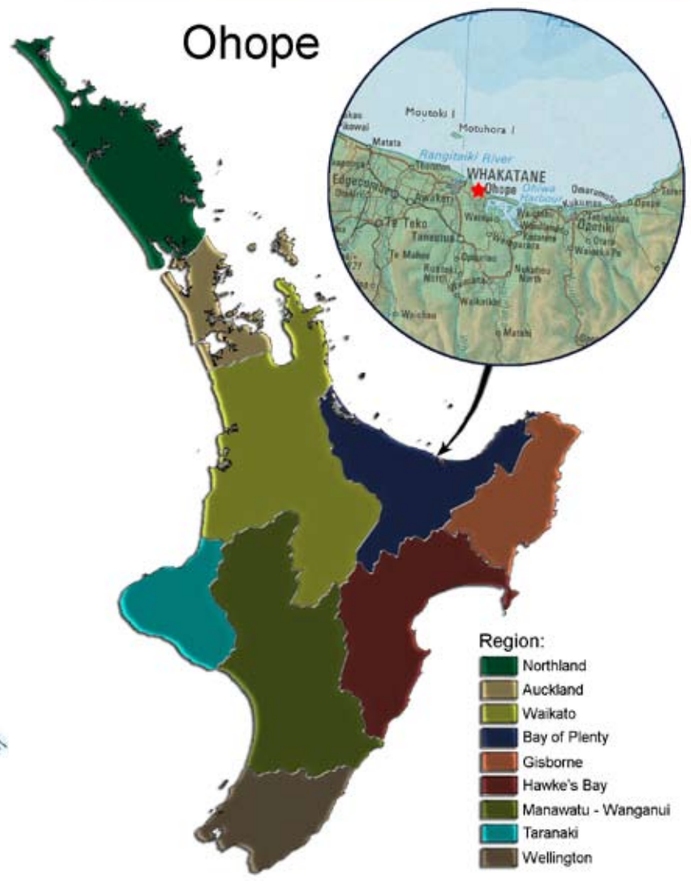
Ecological District	Bioclimatic Zone	Landform Component	Geological formation	Elevation m	Historical vegetation	Present land use	Indigenous Vegetation/Habitats: present	prop. Remaining	fragn	conditn	Ecological issues/ management
Taneatua	C	moderately steep to steep 'soft' rock erosional hill slopes (1)	recent rhyolitic tephra overlying Pleistocene siltstones, conglomerates & interbedded tephra	0 - 300	originally mixed coastal forest, heavily modified by c.1840 to be mainly secondary forest, fernland, and shrubland	extensive grazing, exotic forestry, reverted land	remnant, pohutukawa and secondary forest	High	Rel. Intact	Mod	possum control, weed invasion
	C	minor terraces and terrace remnants (3)	recent fine grained alluvium with a recent tephra mantle	0 - 50	podocarp forest, wetland vegetation	intensive grazing, cropping, horticulture	secondary forest (minor)	Low	Very	Poor	restoration opportunities, establishment of linkages
	C	minor steep to very steep 'hard' rock hill slopes (5)	Recent rhyolitic tephra overlying Urewera Greywacke sandstones and argillite	0 - 300	originally coastal forest, probably pohutukawa dominant. By c.1840 reduced to secondary forest and scrub with some small remnants of pohutukawa.	extensive grazing, exotic forestry, reverted land	secondary forest (minor)	Low	Very	Poor	restoration opportunities, establishment of linkages

scarp above
Ohope Beach
looking westward
toward Kohi Point





Landform model



Ohope Beach
Whakatane District