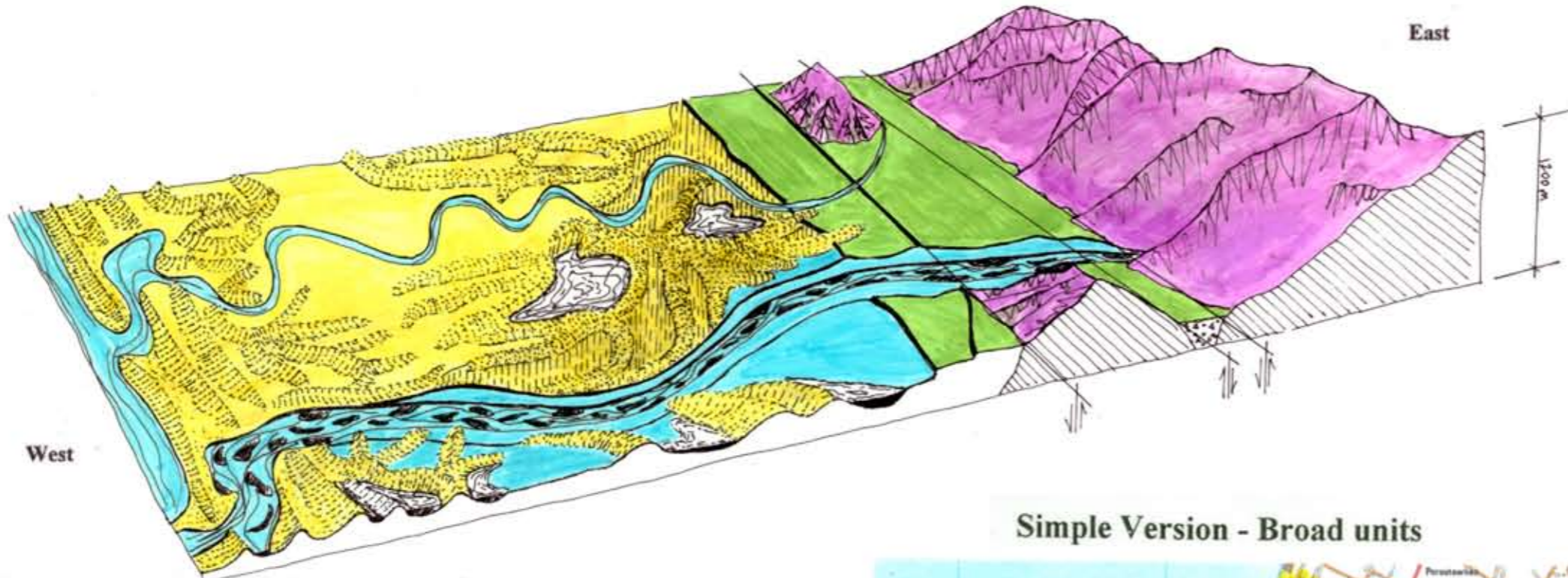


A LAND SYSTEM FRAMEWORK FOR THE DUNE LAKES - MANAWATU

Land Type Block Diagram



Moderate to low rainfall prograding lowland coastal plain land type

The study area of the land type includes the lowland prograding coastal plain extending westwards from the Pukerua fault zone to the Tasman sea southward of a line from Hokio Beach to Gladstone, through Lake Horowhenua, to the southern boundary of the Waikanae River catchment at its mouth.

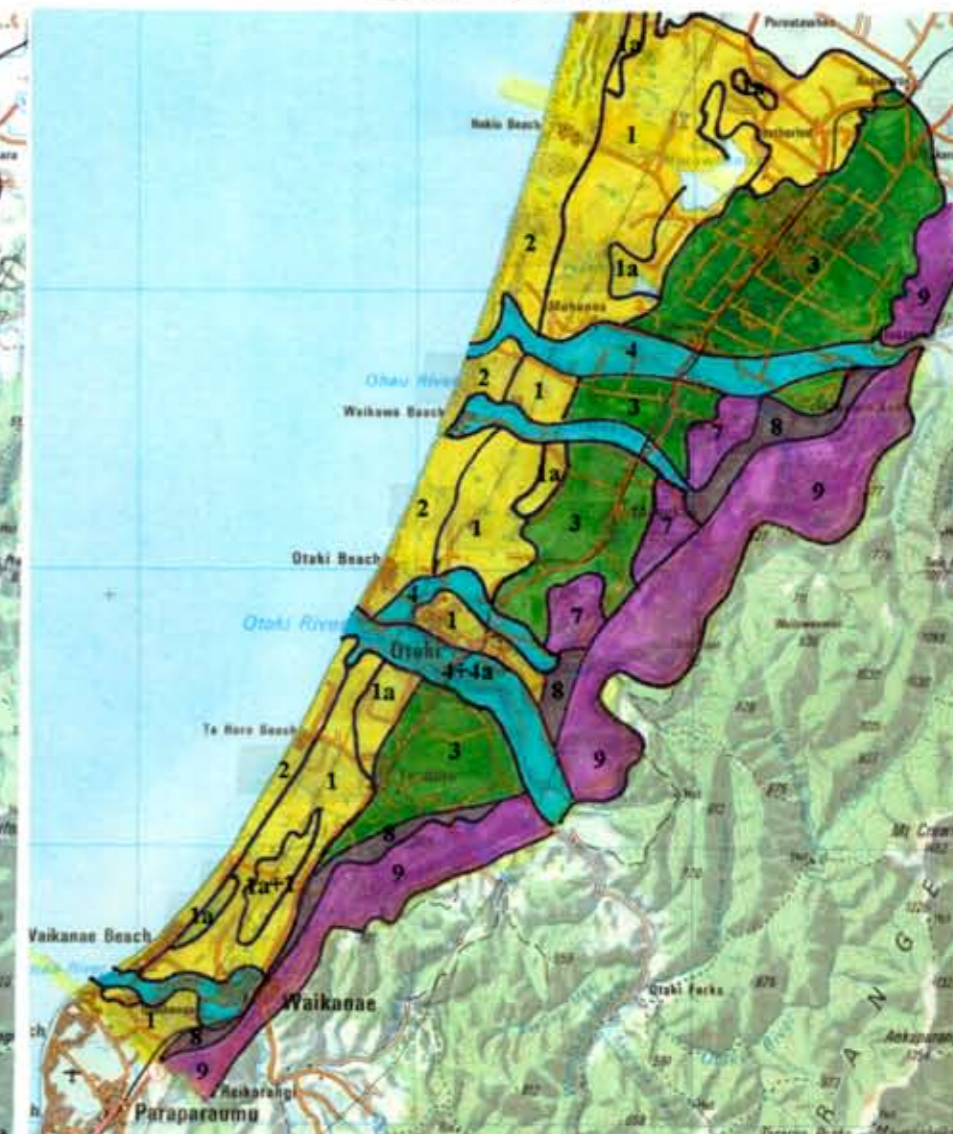
Extensive sand dune complexes and associated sandflats, interdune wetlands, peat swamps and lakes of variable age and stability, braided and meander floodplains, estuaries and lagoons, terrace lands with isolated 'hard rock' hills and footslope fans between the rising mountain front and the prograding coastline. Elevation ranges from sea level to 250 m on the plains and to 1000 m on the bounding ranges. Warm temperate subhumid climate with rainfalls ranging from 800 to 1000 mm. Extensively modified, drained and farmed. Remnant native vegetation ranges from isolated coastal swamp forest (nikau, pukatea, kahikatea), kohekohe coastal forest, and patches of pingao and mixed native scrub and fern dune vegetation.



Simple Version - Broad units



Ideal Version



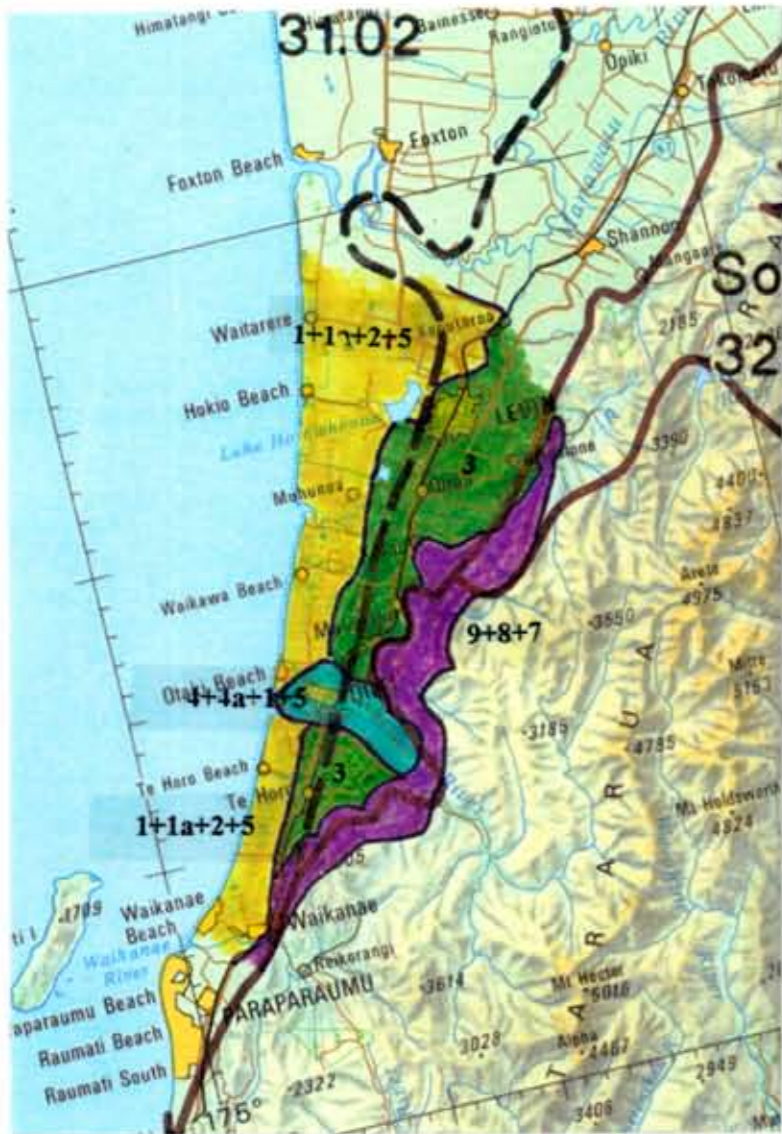
Manawatu/Wanganui Region

Key Landform Components:

1	older sand dune complex - extensive older sand dune complexes and associated sandflats, interdune wetlands, peat swamps, and lakes
1a	extensive peat swamp - extensive peat swamps associated with older sand dune complexes
2	young sand dune complex - young unstable sand dune complexes and associated sandflats, interdune wetlands, peat swamps, and lakes
3	terraces - terrace treads and risers between the prograding coastline and the bounding steeplands
4	braided river floodplains & low terraces - braided river floodplains and associated low terraces, e.g. Otaki R.
4a	braided river channels - braided river channels, islands and bars
5	estuaries, lagoon and river mouths
6	meander floodplain and low terraces - e.g. Waikawa Stream
7	isolated hard rock hills - e.g. Poroporo
8	footslope fans - footslope fans adjacent rising mountain front
9	bounding hill and mountain slopes

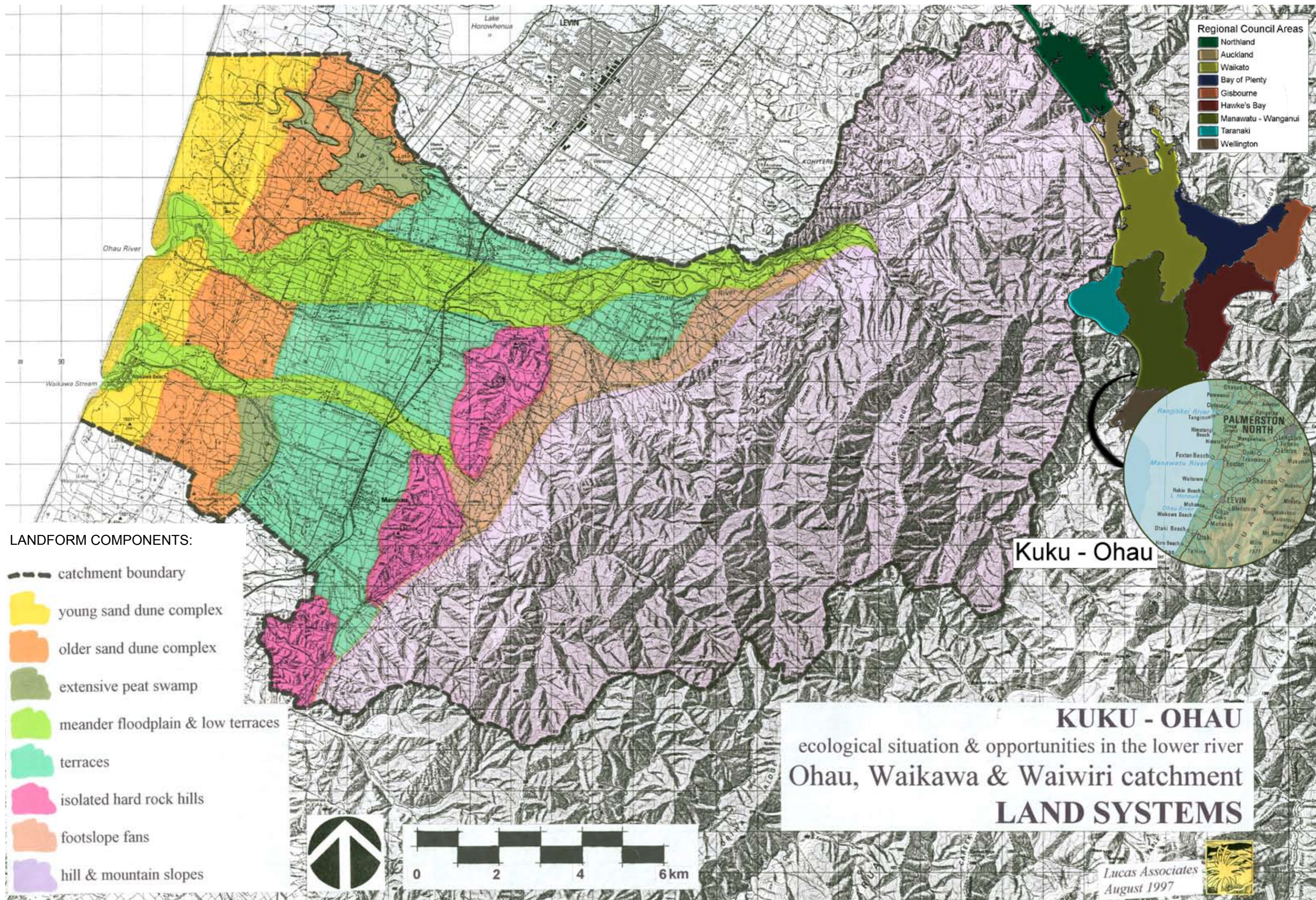
Low to moderate rainfall prograding lowland coastal plain land type

landform component	geological formation	elevation m	soils	remnant native vegetation	present land use
1. extensive older sand dune complexes and associated sandflats, interdune wetlands, peat swamps, and lakes	Holocene and Late Pleistocene dune sand, peat and swamp deposits	0 - 60	yellow brown sands, e.g., Koputarua, Waitawa, Pukerua, Poriroa, Titahi sandy gley soils, e.g., Pukopuke organic soils, e.g., Omapuka peat	coastal (kohokohe) and mamaku forest ecologists to provide details	extensive grazing exotic forestry semi extensive grazing urban
1a. extensive peat swamps associated with older sand dune complexes	Holocene peat and swamp deposits, dune sand	0 - 10	organic soils, e.g., Omapuka peat, Mangarua peat	mamaku scrub, mosses ecologists to provide details	intensive grazing horticulture
2. young unstable sand dune complexes and associated sandflats 2a, interdune wetlands, peat swamps, and lakes	Recent and Holocene dune sand, peat and swamp deposits	0 - 40	recent soils, e.g., Waitarere, yellow brown sands, e.g., Foxton, weakly gleyed yellow brown sands e.g., Himatangi, Matuiti	scrub and fernland ecologists to provide details	recreation reserve "wasteland" exotic forest urban
3. terrace treads and risers between the prograding coastline and the bounding steeplands	fluvial terrace gravels, loess mantle on older surfaces	20 - 100	yellow brown earth yellow brown loam intergrades, e.g., Levin, yellow brown shallow and stony soils associated with yellow brown earths, e.g., Kawahatau, gleyed yellow grey earths, e.g., Ohakea	rata-kamahai forest ecologists to provide details	intensive grazing horticulture urban
4. braided river floodplains and associated low terraces, e.g., Otaki R.	Recent and Holocene alluvium from sedimentary rocks	0 - 100	recent soils e.g., Otaki, Karapoti, Manawatu, Rangitikei, gley recent soils, e.g., Kairangi	ecologists to provide details	intensive grazing horticulture
4a. braided river channels, islands and bars	Recent alluvium from sedimentary rocks	0 - 100	raw soils	ecologists to provide details	"wildland"
5. estuaries 5a, lagoons 5b, mudflats 5c & river mouths 5d	Recent lagoonal & estuarine muds and sands	<2	saline gley recent soils, e.g., Meeanee-Farnson complex, Pauatahanui	ecologists to provide details	wildlife reserve
6. meander floodplains and low terraces, e.g., Waikawa Stream	Recent and Holocene alluvium from sedimentary rocks	0 - 40	recent soils, e.g., Manawatu, gley recent soils, e.g., Kairangi, Opiki	ecologists to provide details	intensive grazing horticulture
7. isolated 'hard rock' hills e.g. Poroporo	complexly deformed argillite and greywacke sandstone	60 - 250	yellow brown earths and related steepland soils, e.g., Makara steepland	rata-kamahai forest ecologists to provide details	semi intensive grazing exotic forestry
8. footslope fans adjacent rising mountain front	Holocene and Recent fan alluvium	60 - 100	yellow brown earth yellow brown loam intergrades, e.g., Levin, gleyed yellow grey earths, e.g., Ohakea, yellow grey yellow brown earth intergrades, e.g., Halcombe Hill	rata-kamahai forest ecologists to provide details	semi intensive grazing exotic forestry
9. bounding hill and mountain slopes	complexly deformed argillite and greywacke sandstone	80 - 1000	steepland soils related to yellow brown earths, e.g., Ruahine steepland	rata-kamahai forest, montane and subalpine forest ecologists to provide details	native forest exotic forestry semi extensive grazing



Manawatu Plains 31.01	Low, loess covered, windy plains and terraces; range of soils from volcanic ash to gleyed clay soils, stony soils, alluvial and peaty soils; originally in forest and large wetlands; now small isolated forest and flax swamp remnants in a largely farmed landscape
Foxton 31.02	Long belt of sand dune country, several estuaries, wetlands, dune lagoons; windy; mainly sandy soils in a major coastal dune complex; originally dune vegetation and coastal swamp forests; now few unmodified dune areas, few forest remnants, dunes largely planted in marram, lupin and pine forests, inland areas farmed.
Manawatu Gorge (south) 32.02	Steep greywacke and argillite hills and ranges rising to 900m in the south; prolonged westerly gales, low persistent cloud, range of deep silty soils from drift to shallow, often stony soils on sedimentary rocks, much original forest destroyed, now secondary forest and scrub, small remnant stands of hard and black beech; forests cleared for grazing in gorge area.
Tararua 38.01	Steep, dissected greywacke and argillite hills and mountains reaching 1 571m; heavily faulted, severe erosion particularly in Rimutaka range; gale force westerlies common, rainfall ranges from 1 600mm to over 10 000mm; mainly steepland and hill soils, yellow brown soils from Pleistocene drift material or loess on easier slopes; largely indigenous vegetation; altitudinal zonation of forests, subalpine scrub, tussock and alpine herbfield, some burnt areas now in gorse, small areas in exotic forest.

Ecological Regions and Districts of NZ
NZ Topographical Map: NZ MS 242. Sheet 2



- Regional Council Areas**
- Northland
 - Auckland
 - Waikato
 - Bay of Plenty
 - Gisborne
 - Hawke's Bay
 - Manawatu - Wanganui
 - Taranaki
 - Wellington

LANDFORM COMPONENTS:

- catchment boundary
- young sand dune complex
- older sand dune complex
- extensive peat swamp
- meander floodplain & low terraces
- terraces
- isolated hard rock hills
- footslope fans
- hill & mountain slopes

Kuku - Ohau

KUKU - OHAU
 ecological situation & opportunities in the lower river
 Ohau, Waikawa & Waiwiri catchment
LAND SYSTEMS

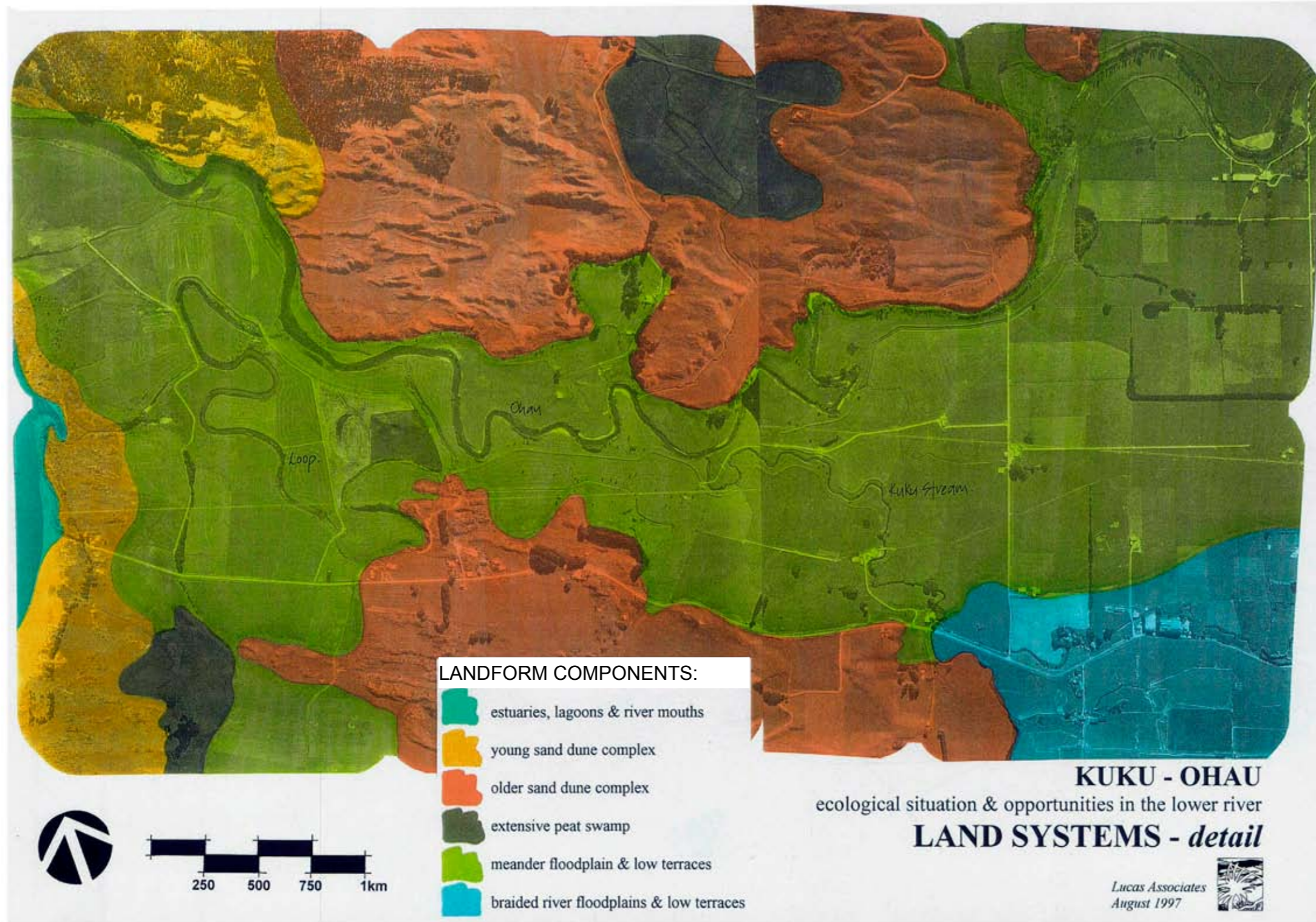


Lucas Associates
 August 1997



Manawatu/Wanganui Region

Kuku - Ohau, Horowhenua District



Kuku Stream

Ohau River