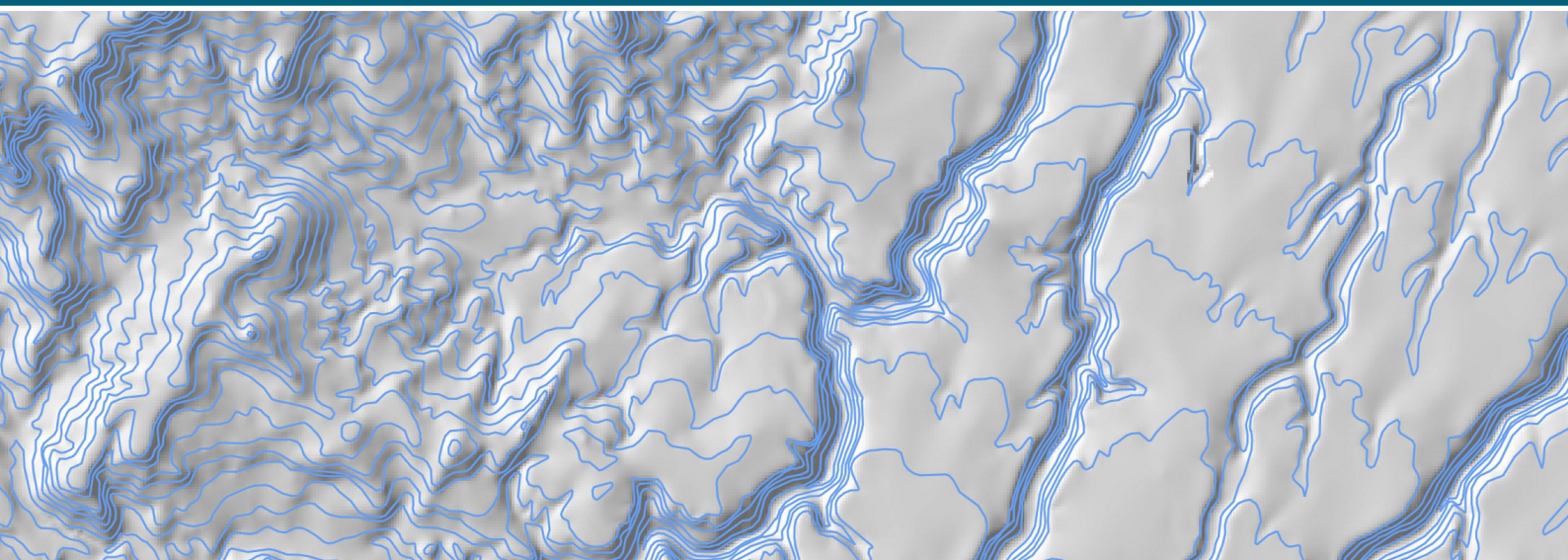


Tapuika Environmental Management Plan

MAP BOOK



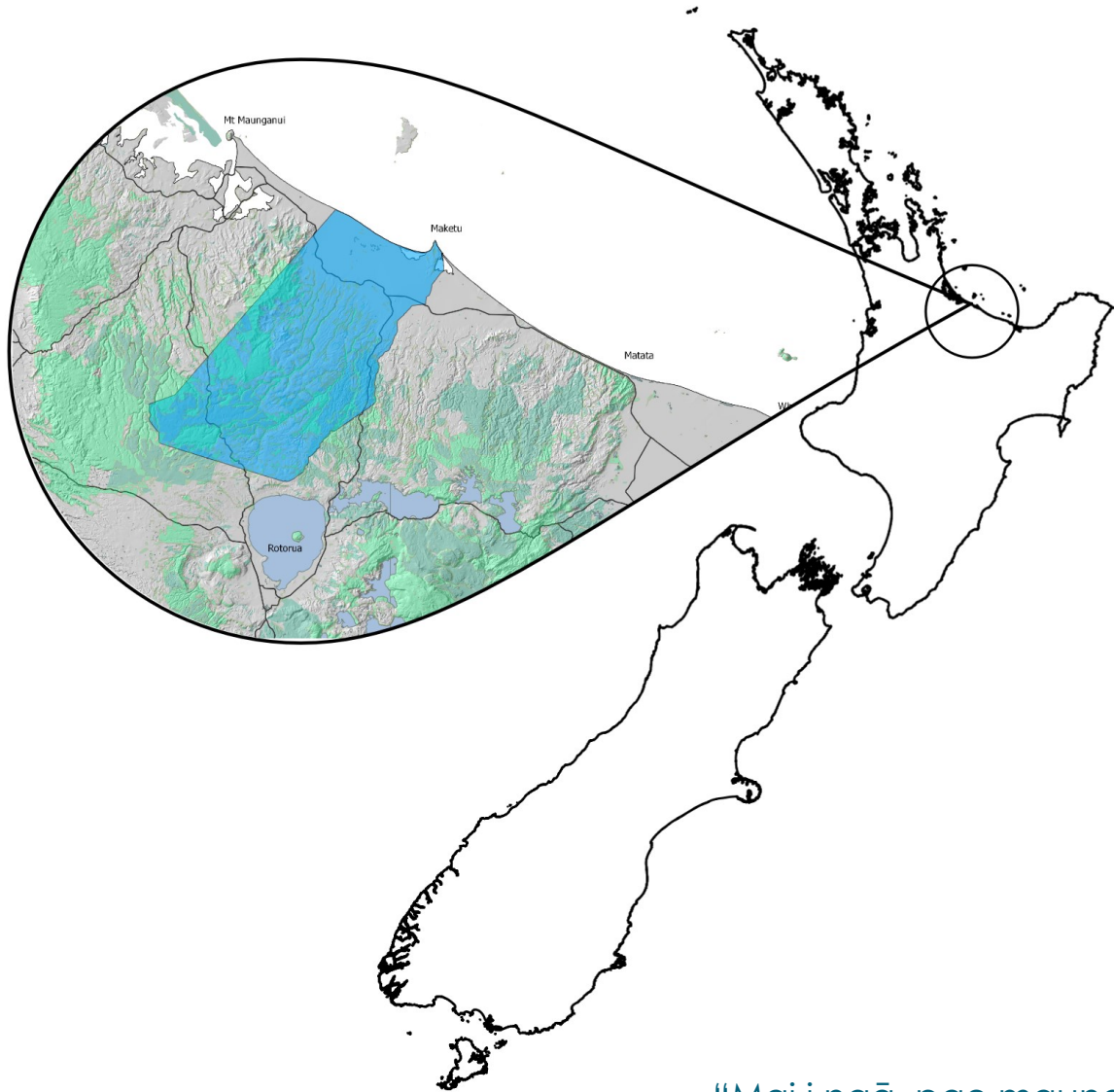
**This Map Book has been produced to support
and accompany the
Tapuika Environmental Management Plan**

MAP DESIGN AND LAYOUT:

Conroy & Donald Consultants Limited
2014

Te Takapū o Tapuika

Te Moana a Toi
Aotearoa



“Mai i ngā pae maunga
ki te toropuke e tū kau mai ra
ki te awa e rere mai ana
waiho te whenua
ko te Takapū o taku tamaiti a
Tapuika”

- Tia

Map Book Contents



GIS DATA ANALYSIS INTRODUCTION

Land Use Capability Assessment.....	7
Landcover Assessment.....	8
Māori Land.....	8
Erosion Prone Land.....	9
Water Resources.....	10
Biodiversity.....	11

ROHE & RESOURCE ANALYSIS MAPS

Map Id	Map Title
tpk_01a	Tapuika Rohe
tpk_01b	Tapuika Rohe Aerial
tpk_02	Landcover / Landuse
tpk_03	Land Use Capability
tpk_04	Māori Land
tpk_05	Kaituna Co-governance Area
tpk_06	Shallow Groundwater Catchments
tpk_07	Streams & Rivers
tpk_08	Statutory Acknowledgement & Deed of Recognition Areas
tpk_09a	Sites of Significance
tpk_09b	Sites of Significance - Types
tpk_10	Biodiversity
tpk_11	Department of Conservation Hunting Areas
tpk_12	Te Tumu & Maketū Estuary

TAPUIKA MARAE AERIAL MAPS

Map Id	Map Title
tpk_13a	Makahae Marae
tpk_13b	Te Matai Marae
tpk_13c	Moko Marae
tpk_13d	Tawakepito Marae
tpk_13e	Te Paamu (Tia) Marae

TAPUIKA CULTURAL REDRESS LANDS (RESERVES)

Map Id	Map Title
tpk_14a	Te Paieka
tpk_14b	Te Whaititiri Pā
tpk_14c	Te Taita
tpk_14d	Waiari Stream site
tpk_14e	Te Weta Pā
tpk_14f	Te Kainga Onaumoko
tpk_14g	Omawake Pā & Te Riu o Hua
tpk_14h	Wai Paepae
tpk_14i	Te Pehu Pā
tpk_14j	Te Manga o Ngakohua
tpk_14k	Otahu Pā
tpk_14l	Otukawa
tpk_14m	Pūwhenua
tpk_14n	Ōtanewainuku

TAPUIKA COMMERCIAL REDRESS LANDS (FOREST BLOCKS)

Map Id	Map Title
tpk_15a	Pūwhenua Forest
tpk_15b	Te Matai Forest
tpk_15c	Kaharoa Forest

GIS Data Analysis Introduction

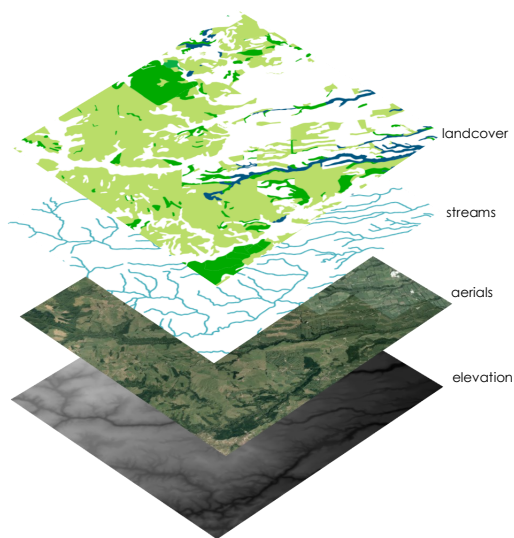
GIS DATA ANALYSIS

Data analysis is included to support selected maps e.g. Land cover, Land Use Capability, Biodiversity and Māori Land.

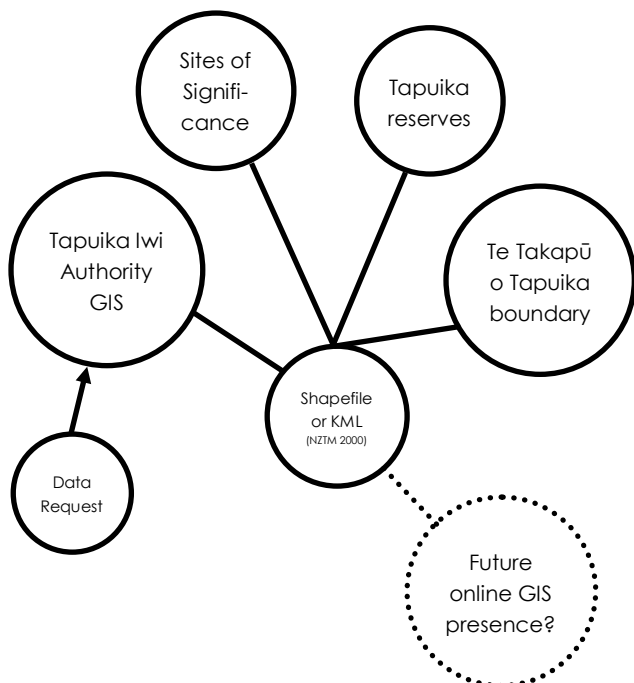
The data analysis provides a general overview of land resources at a catchment and rohe level.

GIS software and readily available GIS data layers have been used to carry out this analysis.

The attached maps and accompanying data analysis will support environmental management, especially land resources, within Te Takapū o Tapuika.



TAPUIKA GIS DATA AVAILABLE ON REQUEST FROM TAPUIKA IWI AUTHORITY



The following maps are attached:

- ▶ essential overview maps
- ▶ marae aerial maps
- ▶ detailed maps of Tapuika cultural redress lands (reserves)
- ▶ detailed maps of Tapuika commercial redress lands (forest blocks).

For Tapuika, these maps provide a quick reference for project management purposes.

Available on request are relevant data layers for users to view on their own GIS software.

Land Use Capability

LAND USE CAPABILITY CLASSIFICATION

The Land Use Capability (LUC) classification is used to assess the suitability of land areas for productive use, after accounting for the physical limitations of the land. The LUC Classes are determined by using the Land Resource Inventory (LRI) which includes assessing; rock type, soil, slope, erosion type and severity, and vegetation cover.

The following table details the LUC Classes within Te Takapū o Tapuika:



Example Land Use Capability (LUC) Classes in Te Takapū o Tapuika. For example, the hill slope has an LUC class of 7 with an erosion limitation.

	LUC Class	Area (ha)	Area Percentage	Dominant limitations	Pastoral grazing suitability	Production Forestry Suitability	Erosion risk	General suitability
					High	High	Low	
Increasing limitations to use	2	12194	20	Soil & wetness	High	High	Low	Multiple use land (eg. Cropping, pasture, orchards)
	3	6759	11	Erosion, soil & wetness	↓	↓	↓	
	4	10625	17	Erosion & wetness				
	6	15487	25	Erosion & wetness	Low	Low	Pastoral or forestry	
	7	7048	11	Erosion	Unsuitable	Unsuitable	High	Conservation land
	8	9203	15	Erosion	-	-	-	
	Estuary	254	0.5	-	-	-	-	Estuary & urban
	Town	234	0.5	-	-	-	-	

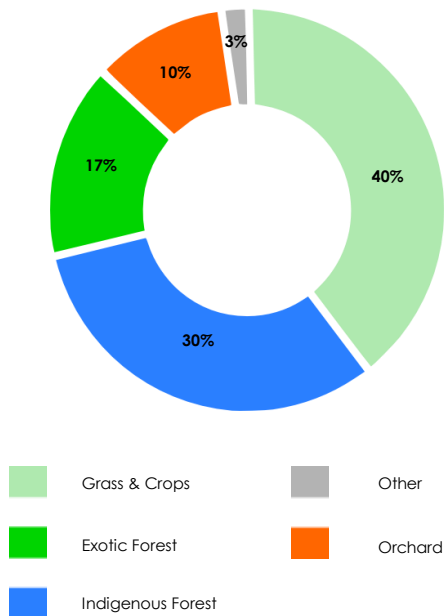
AREAS TO FOCUS SOIL CONSERVATION EFFORTS IN TE TAKAPŪ O TAPUIKA

- ▶ High risk erosion prone land
- ▶ Identifying suitable land areas for forestry/pastoral/cropping and horticulture.
- ▶ Retain existing indigenous vegetation
- ▶ Oppose conversion of forestry to pasture on LUC 6,7 & 8 land areas.

Land Cover

LANDCOVER IN TE TAKAPŪ O TAPUIKA

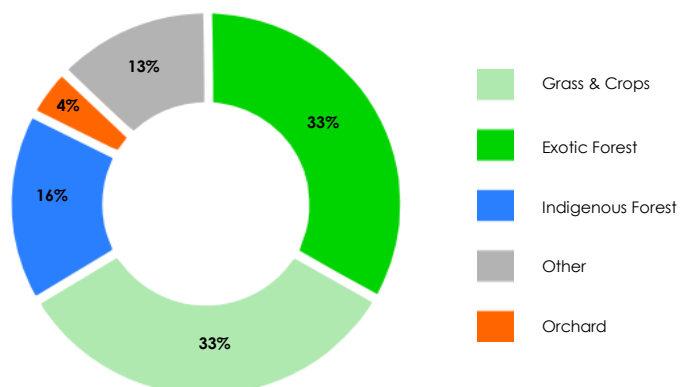
The landcover data for Te Takapū o Tapuika was determined from the New Zealand Land Cover Database (LCDB) v.3.3 which includes data from 2008/09 landcover.



Landcover	Area (ha)	Area (%)
Grass & Crops	25,012	40
Indigenous Vegetation (Forest & Shrub)	18,641	30
Exotic Forest	10,153	17
Orchard, Vineyard & Other Perennial Crops	6,313	10
Other	1,735	3
Lake or Pond	57	0.09
Built-up Area (settlement)	714	1.15
Estuarine Open Water	323	0.52
Gorse and/or Broom	82	0.13
Gravel or Rock	4	0.01
Herbaceous Saline Vegetation	64	0.10
Mangrove	4	0.01
Mixed Exotic Shrubland	84	0.14
River	118	0.19
Sand or Gravel	32	0.05
Surface Mine or Dump	21	0.03
Transport Infrastructure	22	0.04
Urban Parkland/Open Space	138	0.22
Herbaceous Freshwater Vegetation	71	0.12

LANDCOVER ON MĀORI LAND IN TE TAKAPŪ O TAPUIKA

WITHIN TE TAKAPŪ O TAPUIKA THERE IS 13.26 HECTARES OF MĀORI LAND. THE LANDUSE/LANDCOVER OF THIS MĀORI LAND IS...

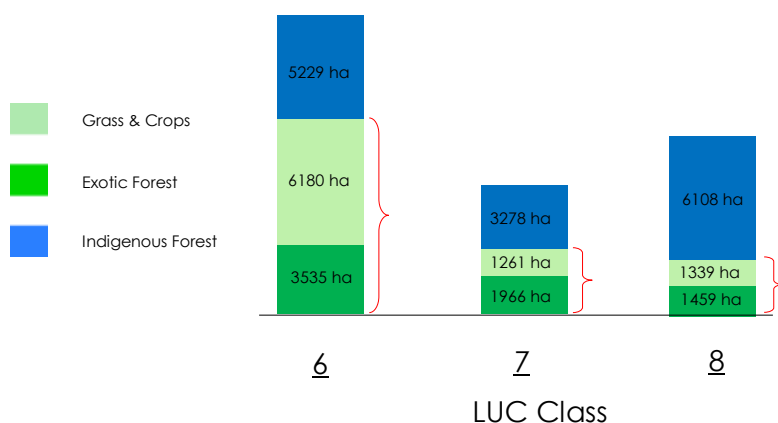


FORESTRY vs PASTURE

Forested (native, exotic & shrub) catchments have less erosion than pasture covered catchments and subsequently yield less sediment. Afforestation of small catchments reduces sediment yields by 50-80% (Blaschke & Rutherford, 2008), when compared to pasture. Over the full harvest cycle (planting to harvest) pine forestry as a land use, yields less erosion than pasture, even when accounting for the larger yields of sediment during forest harvesting. The reduction in sediment yields from afforestation of a catchment will only occur if the erosion prone land is targeted.

The recommended target land use change areas to reduce erosion and sediment yields in water ways in Te Takapū o Tapuika include:

- ▶ Consider LUC Class 6 over pasture with afforestation, or spaced planting where farmed.
- ▶ Target LUC Class 7 over pasture with afforestation
- ▶ Target LUC Class 8 over pasture with production forest to conservation land.



**Target land use areas on pasture over class 6, 7, and 8.*

SEDIMENT & EROSION

The loss of topsoil from land due to erosion results in the loss of productive soils. The sediment makes its way to waterways and eventually settles in estuaries and coastal environments.

Sediment in waterways affects the quality of water for people, aquatic life and mahinga kai resources.

ACTION: CARRY OUT MAPPING AT A SMALLER SCALE E.G. CATCHMENT OR FARM LEVEL.

CURRENTLY THE LUC DATA AVAILABLE IS MAPPED AT A SCALE OF 1:63,360. AT THIS SCALE, IT IS IMPOSSIBLE TO ACCURATELY DETERMINE HIGH RISK AREAS AT A SMALLER SCALE E.G. CATCHMENT OR FARM LEVEL.

Water Resources

WATER QUALITY

Over the summer and autumn months, the Regional Council carries out water quality monitoring on the Kaituna River:

- ▶ Below Okere Falls,
- ▶ At the Te Matai Rail Bridge
- ▶ At Te Tumu

Two significant discharges into rivers within Te Takapū o Tapuika:

- ▶ AFFCO freezing works wastewater into the Kaituna River
- ▶ Treated wastewater from the Te Puke township into the Waiari Stream.

Regional Council monitoring in 2007 found that the Kopuaroa Stream and a tributary running through Te Puke had high levels of suspended solids and bacteria - exceeding safe levels for swimming. Most river sites monitored over that time had e.coli levels which exceeded safe levels.

ACTION: ADVOCATE THAT THE REGIONAL COUNCILS CARRIES OUT WATER QUALITY MONITORING WITHIN TE TAKAPŪ O TAPUIKA MORE REGULARLY AND AT MORE SITES.

WATER QUANTITY

Demand for water from rivers, streams and groundwater aquifers is high, yet the amount of water available for use is limited. There are a number of river and groundwater catchments within the rohe that are likely to be fully allocated, meaning that no more water is available for use.

ACTION: ANALYSE THE ALLOCATION STATUS OF WATER IN RIVERS, STREAMS AND GROUNDWATER CATCHMENTS WITHIN TE TAPUIKA O TAPUIKA WHEN THIS INFORMATION BECOMES AVAILABLE FROM THE REGIONAL COUNCIL.

STREAM NAME CHANGES

As part of the Treaty Settlement with the crown, two waterways have had their names altered:

- ▶ Paraiti River formally, part Mangorewa River (downstream of the confluence of the Ohaupara and Mangorewa Rivers)
- ▶ Pakipaki Stream, formally Parawhenuamea Stream.



Biodiversity

BREAKDOWN OF TERRESTRIAL VEGETATION

The High Value Ecological (HVE) Sites, as identified by the Regional Council, are sites which are targeted for biodiversity protection works.

Several Tapuika reserves are situated adjacent to HVE Sites and Department of Conservation reserves.

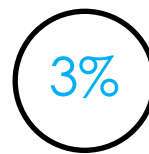
WETLANDS

In 1840, the area of freshwater wetlands within the Kaituna River catchment was 6,100 hectares. Presently, the area of wetlands is between 100 to 435 hectares. Landcover analysis showed that there was approximately 435 hectares of wetland within Te Takapū o Tapuika.

Major wetlands in Te Takapū o Tapuika

- ▶ Waihi Estuary Wildlife Management Reserve - Nohohoa wetland or repo.
- ▶ Lower Kaituna Wetland
- ▶ Maketu Conservation Area - kawa repo

Biodiversity Area	Area (ha)	Area %
DOC conservation areas	7567	40
Tapuika Reserves	404.5	2
Wetlands	435	2
High Value Ecological Sites	2414	12
Other Areas with unknown protection	8008	42



AS LITTLE AS 3 PERCENT
OF BAY OF PLENTY'S
WETLANDS REMAIN

THE KAITUNA WETLANDS ARE THE
LARGEST OF THE REMAINING
WETLANDS IN THE BAY OF PLENTY

