

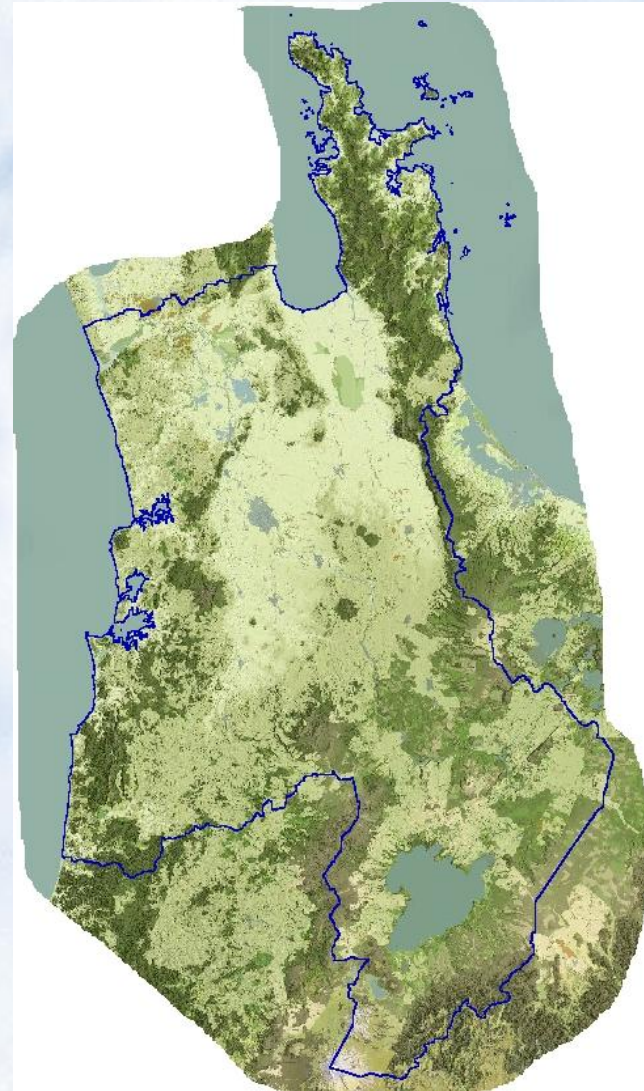
# Prioritising Natural Areas for Biodiversity Management in the Waikato Region

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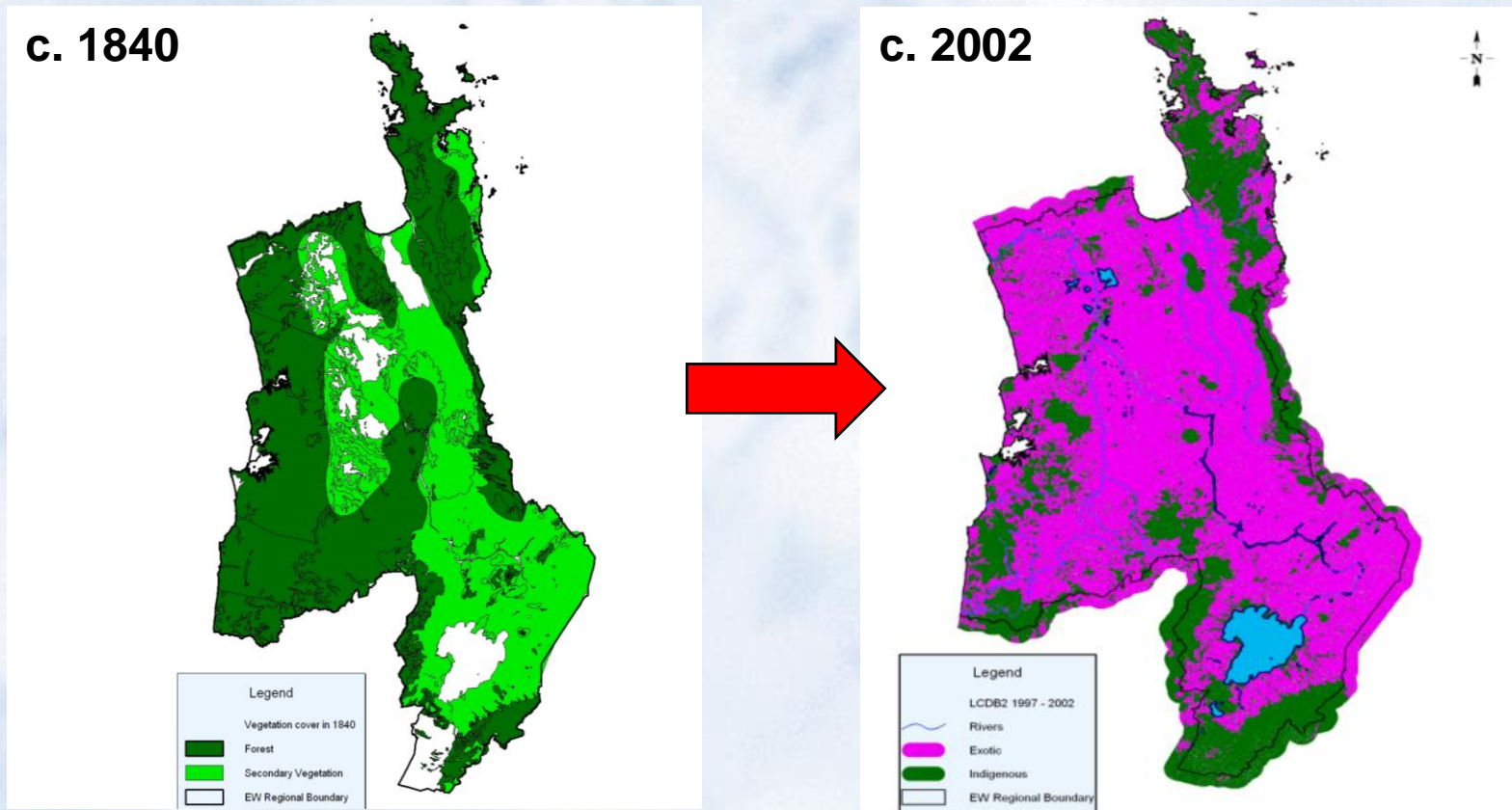


# Overview

- **Background & Scope**
- **Methods**
- **Progress**
- **Issues**
- **The Future**

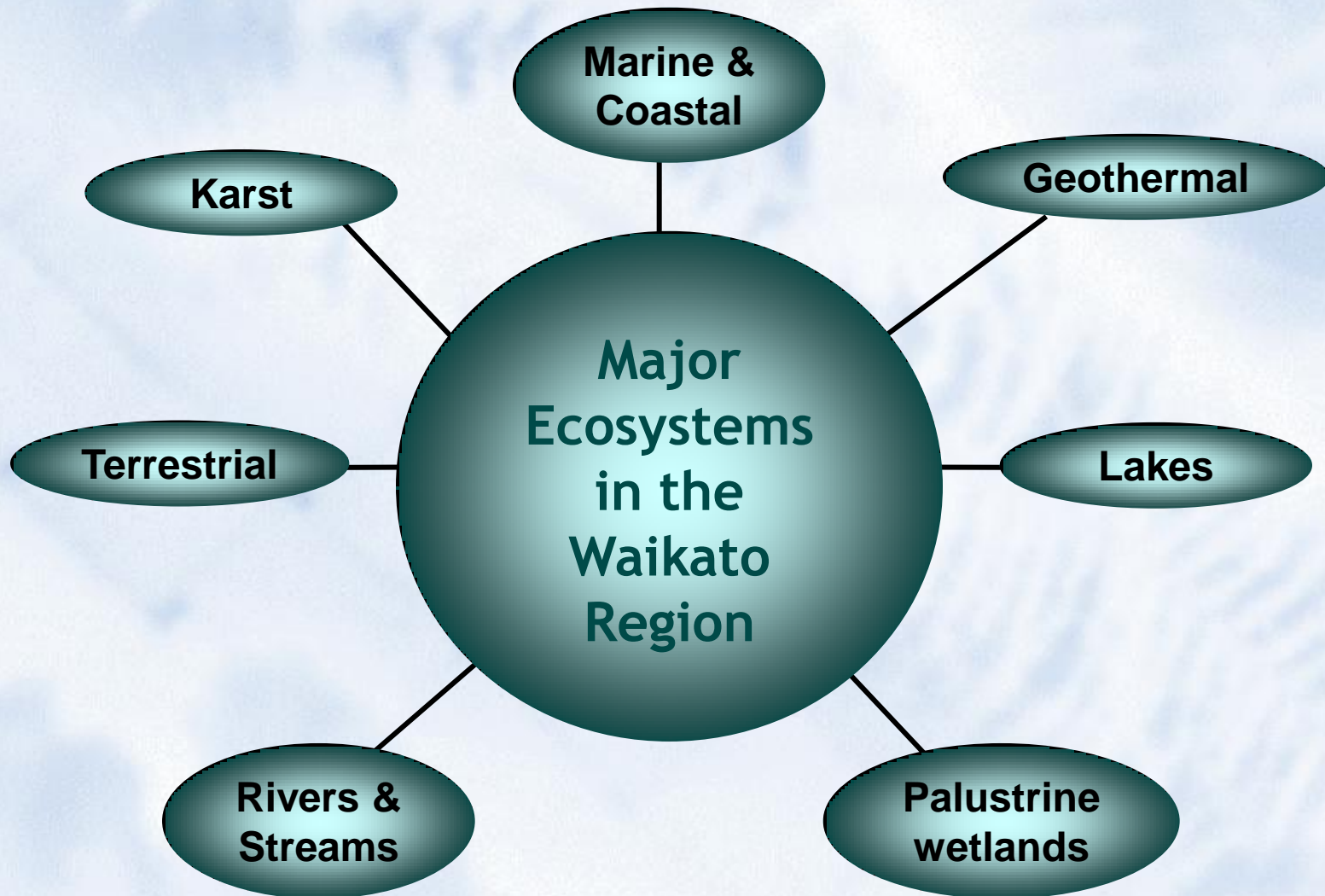


# Why Prioritise?

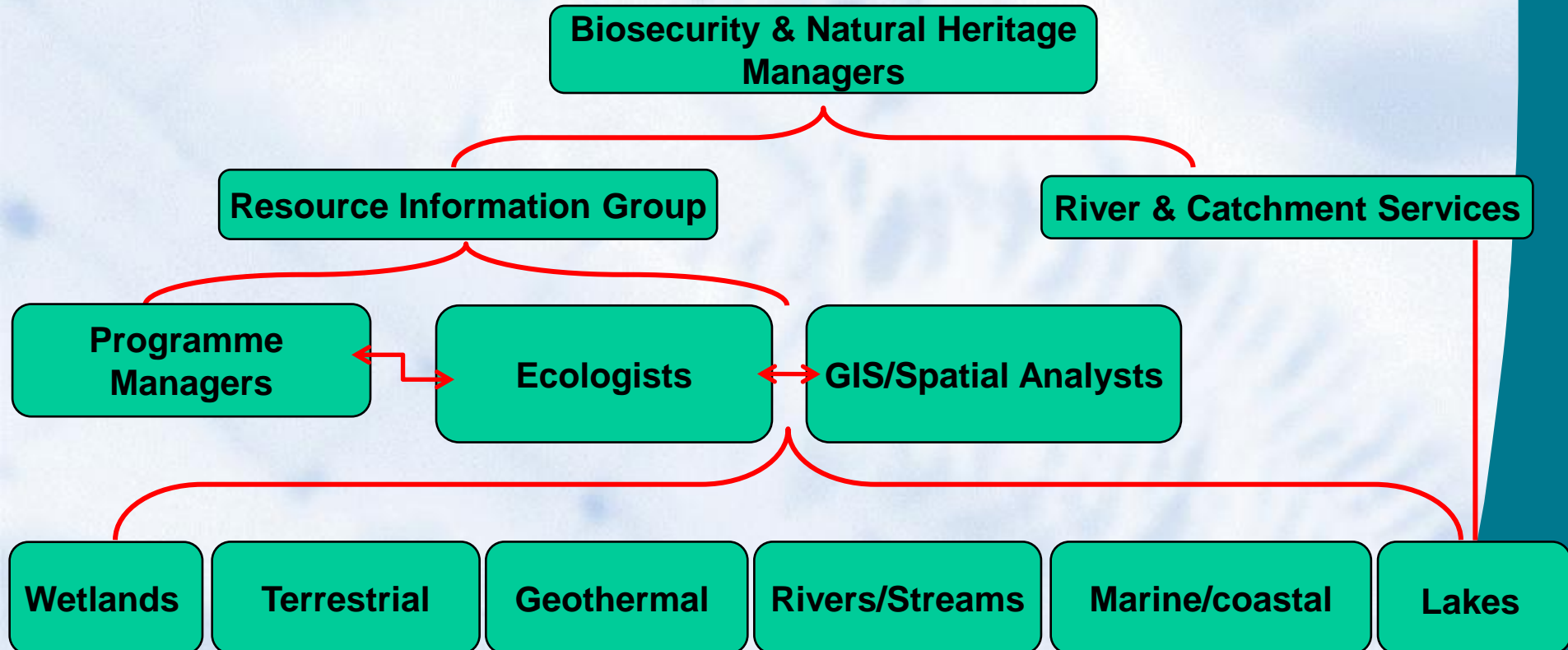


**Keep what we still have, and improve it!**

# Ecosystem Focus

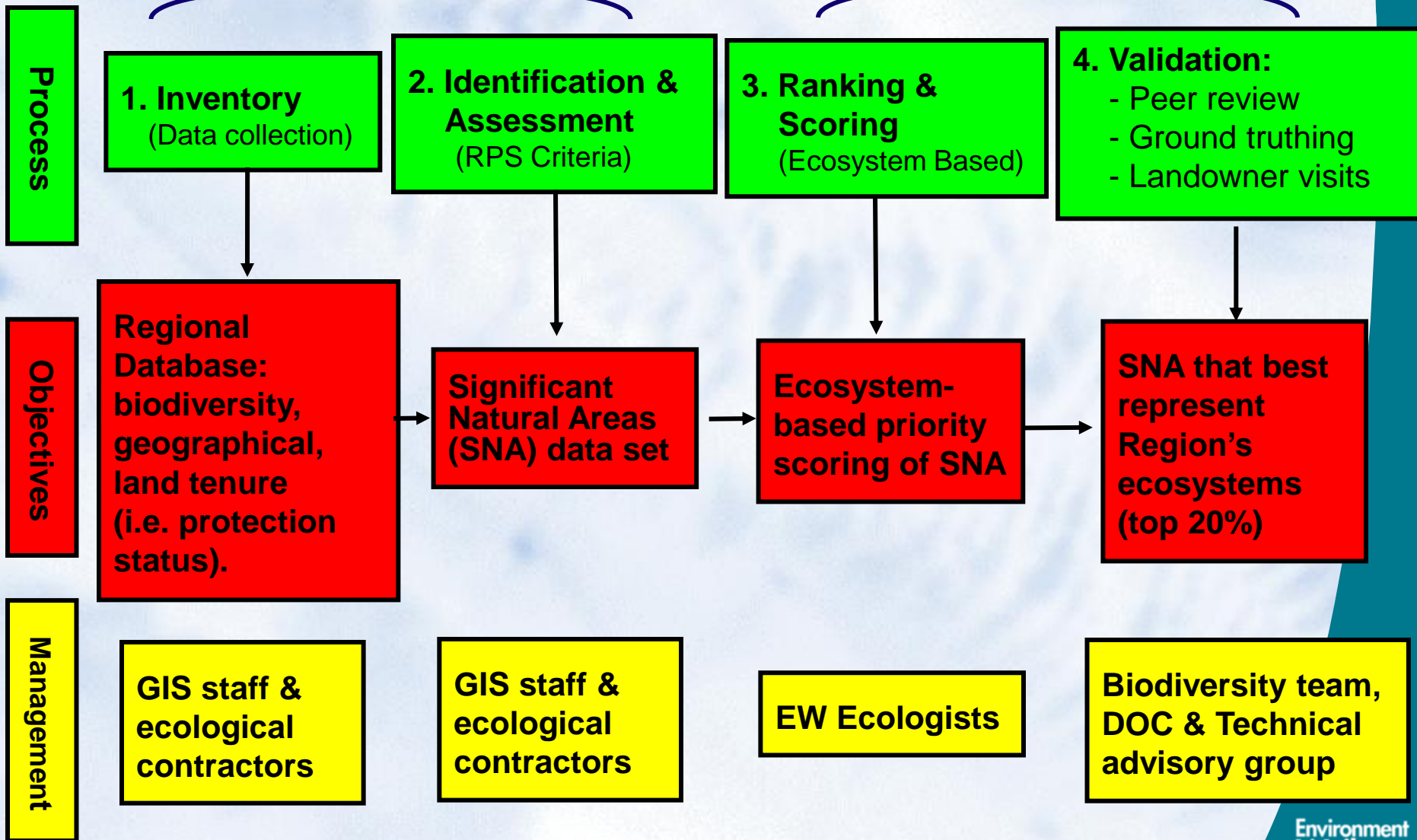


# Multi-disciplinary Project Staff

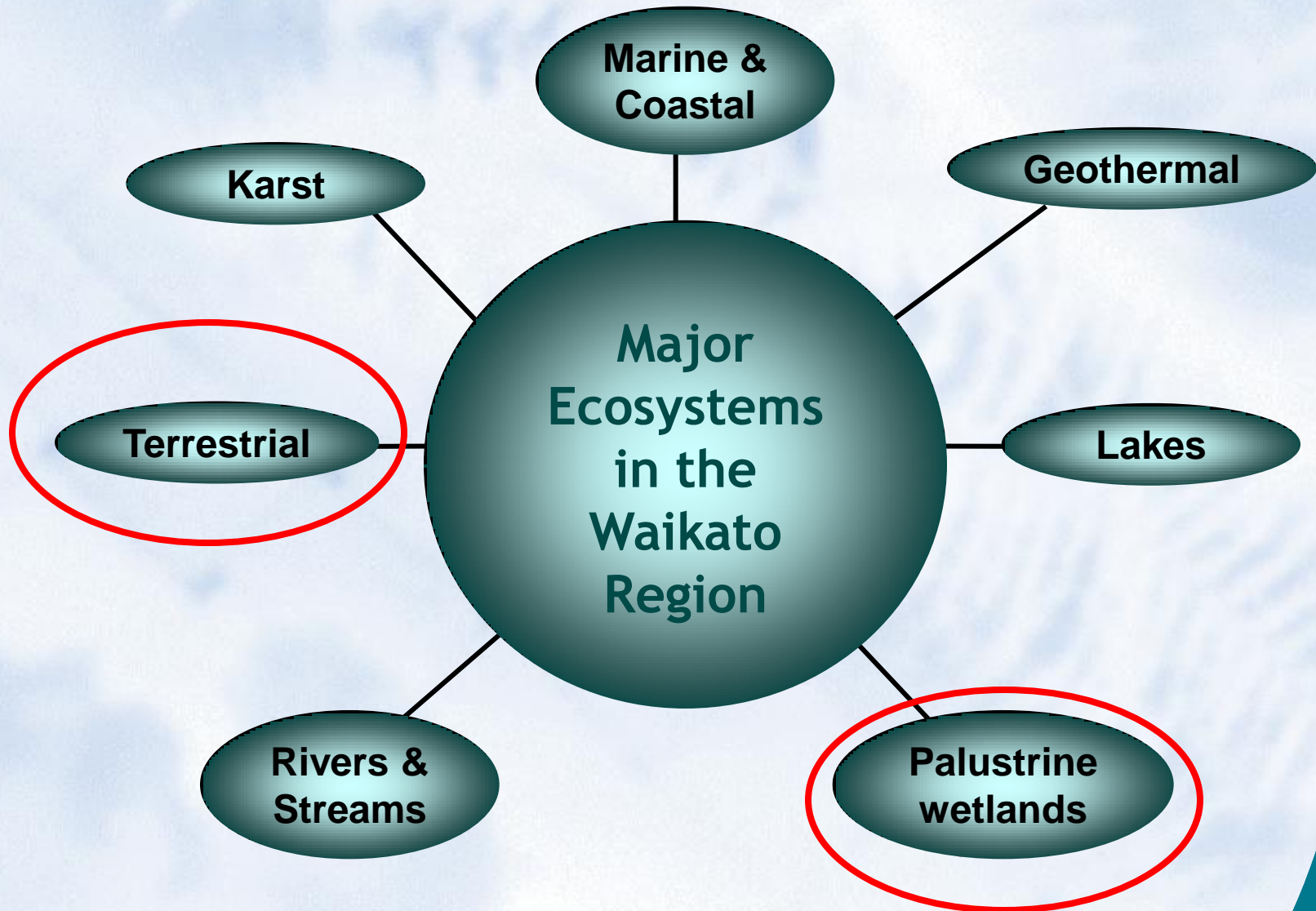


# Qualitative

# Quantitative



# Ecosystem Focus



# 1. Inventory

## Biodiversity Vegetation (Bioveg) Mapping

- LCDB2 re-digitised based on 2002 aerial photography
- Scale = 1:10,000 for digitising, up to 1:5,000 for classification
- Minimum Mapping Unit = 0.5ha (5,000m<sup>2</sup>)
  
- Also.....
  - Wetlands and dunes identified
  - Uncertainty in boundary and/or classification recorded
  
- Independent ground truthing
  - Boundary & Classification accuracy ~ 90% correct

# 2. Identification & Assessment

## Significant Natural Areas (SNA) data - Identification

- Desktop exercise
- Indigenous Bioveg = foundation for SNA data
- Divided by land tenure:
  - DOC Estate
  - Nga Whenua Rahui Kawenata
  - Local District Reserves and Covenants
  - QEII Covenants
  - EW Land
  - Private

...to determine protected from unprotected and private from public

- Many attributes captured:
  - e.g. Protection Status, Bioclimatic Zone, Ecological District, Ecosystem type, key flora and fauna, LENZ IV, etc....

# 2. Identification & Assessment

## Significant Natural Areas (SNA) data - Assessment

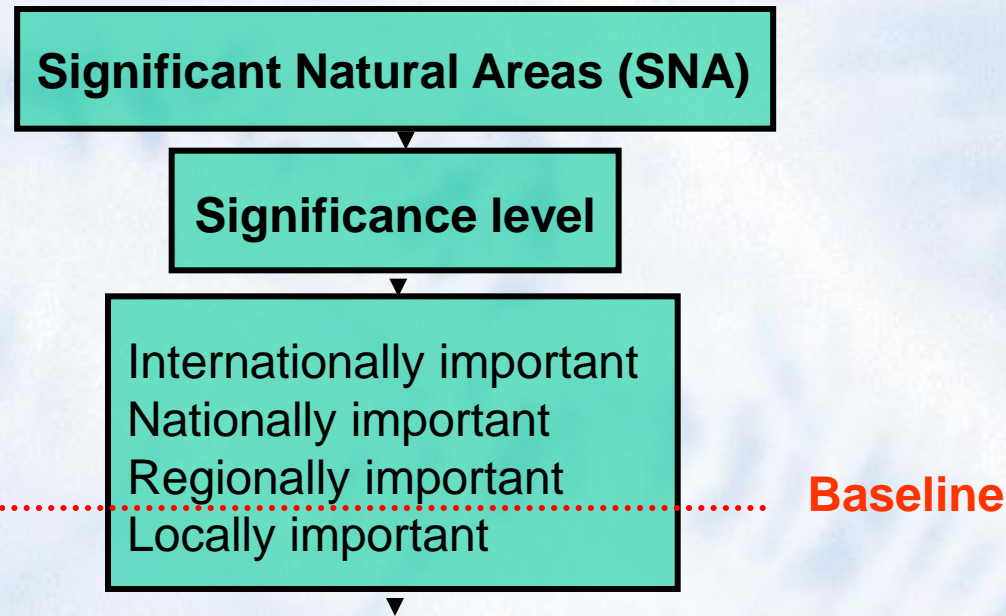
### IS IT SIGNIFICANT?

1. Each site assessed against 11 EW RPS criteria, identifying which criteria are known or likely to be met (if any).
2. Significance Level:  
**International**, **National**, **Regional**, **Local**
3. Management Issues: Animal, weed, stock, development, other?

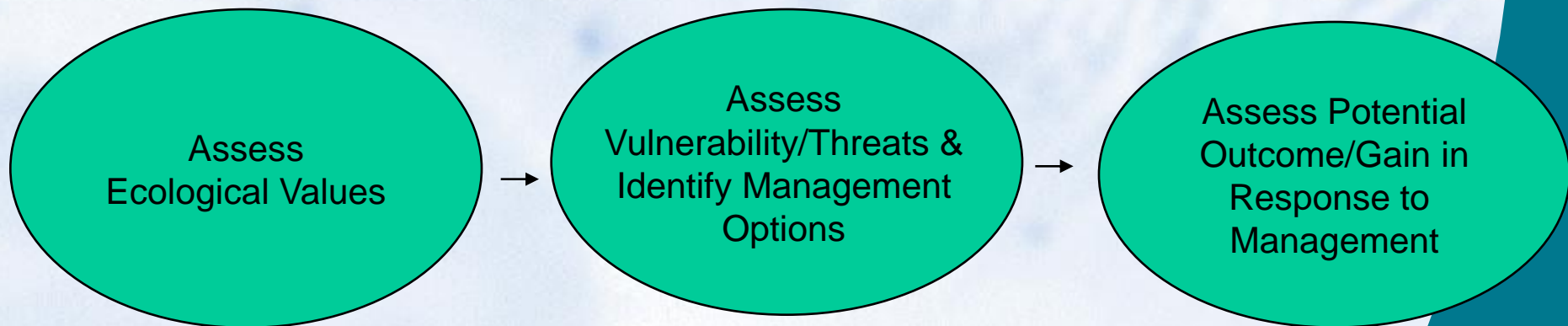
#### **Outputs:**

Spatial (GIS) data, attribute data, and report(s).

# 1. Inventory, 2. Identification & Assessment



## 3. Ecosystem-based assessment component



= PRIORITY FOR MANAGEMENT (score or rank)

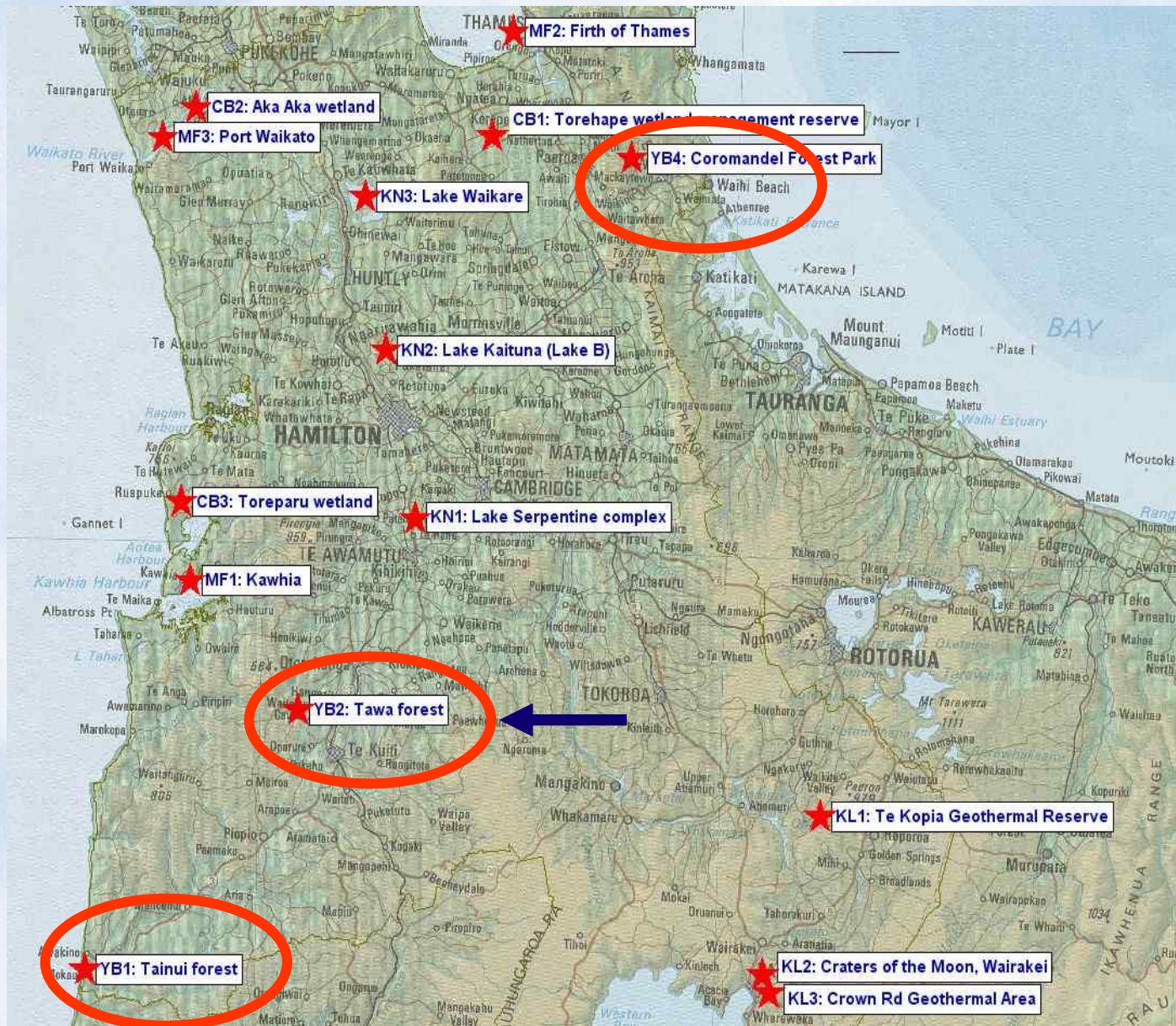
# Ecosystem ranking criteria

- 1 National Priority
- 2 Threatened Species
- 3 Threatened Environment Classification
- 4 Ecosystem Condition
- 5 Regional Representativeness
- 6 Indigenous Vegetation Representativeness
- 7 Habitat Diversity
- 8 Proximity to Other Natural Areas
- 9 Regions Priority Land
- 10 Vulnerability
- 11 Size of Area (ha)
- 12 Extinction Protection
- 13 Outcome Objectives for LTCCP
- 14 Funding and Management Input
- 15 Restoration Potential

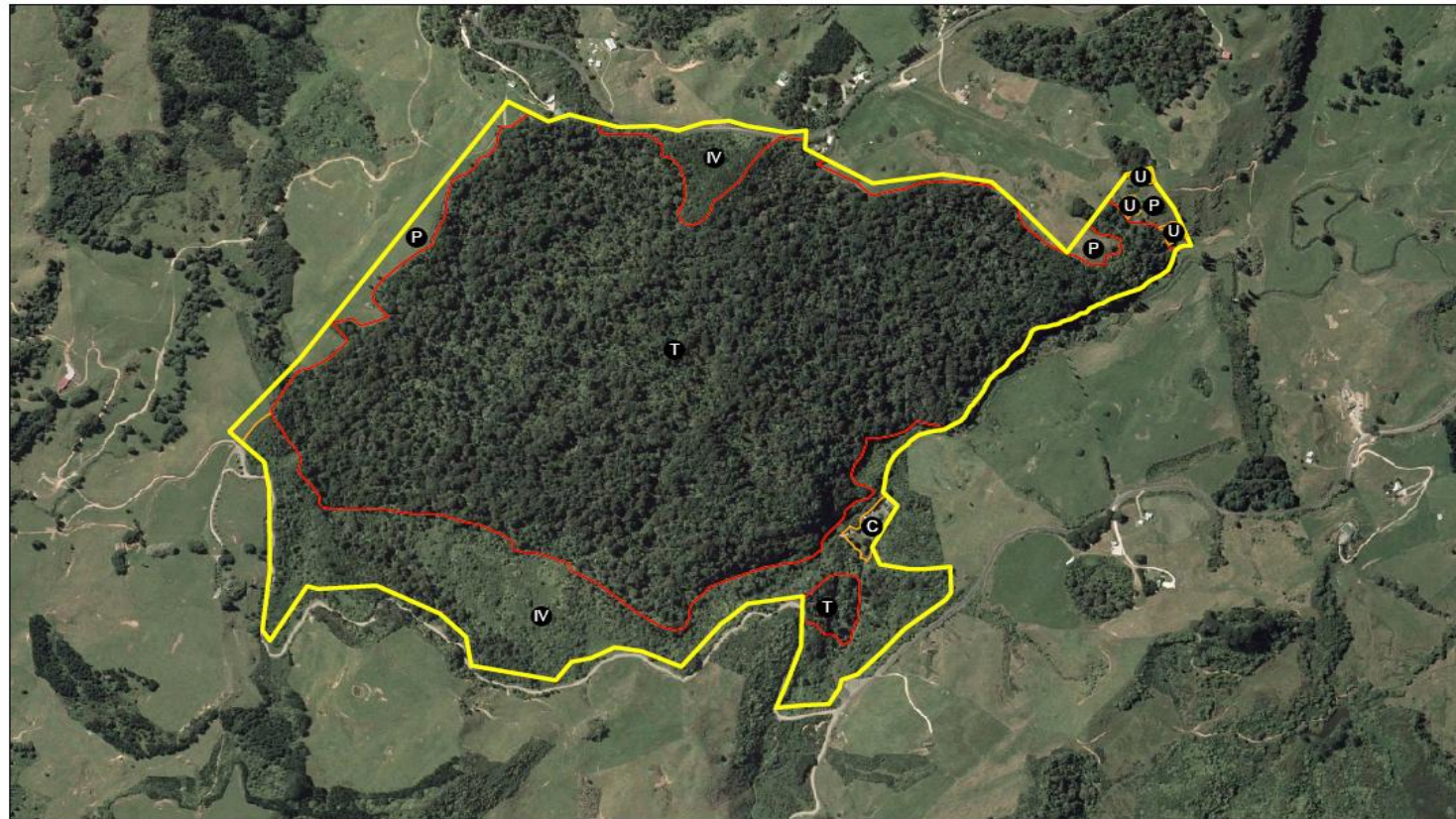
# Principles of the scoring process

- **Based on both National and Regional goals**
- **Uses National and EW inventories**
- **Aligned with ecological principles**
- **Incorporates National database layers:  
LCDBII, LENZIV & TEC**
- **Includes management input**
- **Consistent across both public and private land**
- **Independent of other classification systems**
- **Criteria can be used as biodiversity indicators**

# Location of ecosystem scoring examples in the Waikato region



# EXAMPLE: Tawa/karst forest Ruakuri Caves and Bush Scenic Reserve



- Legend**
- Reserve
  - Tawa forest
  - Indigenous vegetation
  - Pasture
  - Carpark
  - Unknown

**Figure 2: Tawa forest at Ruakuri Caves and Bush Scenic Reserve, Waitomo, Waikato Region**



Wildlands

Scale: 1:10,000  
Date: 16/10/07  
Cartographer: NWS

# 1 National priority

<b>National priority</b> (score weighting = 6)	<b>Tawa forest</b>	<b>Score</b>
20 % or less remaining in indigenous cover (6)	N/A	
Sand dunes and wetlands that have become uncommon due to human activity (6)	N/A	
'Originally rare' terrestrial ecosystem types (6)	Karst	36
Provides a critical ecological buffer or a connection to a nationally important lake, wetland or estuary (6)	N/A	

# 2 Threatened species

## Score

Nationally Vulnerable (NZ falcon & long-tailed bat)	<b>2X4</b>	<b>8</b>
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	Weighting
<b>Threatened species</b>	<b>1</b>
Nationally Critical	<b>6</b>
Nationally Endangered	<b>5</b>
Nationally Vulnerable	<b>4</b>
Serious decline	<b>3</b>
Gradual decline	<b>2</b>
Sparse	<b>1</b>
Regionally threatened	<b>1</b>
<b>Maximum value</b>	<b>66</b>

No. of species	Score x weighting
1	1 x weighting
2-3	2 x weighting
>3	3 x weighting

# 3 LENZ Threatened Environment Classification

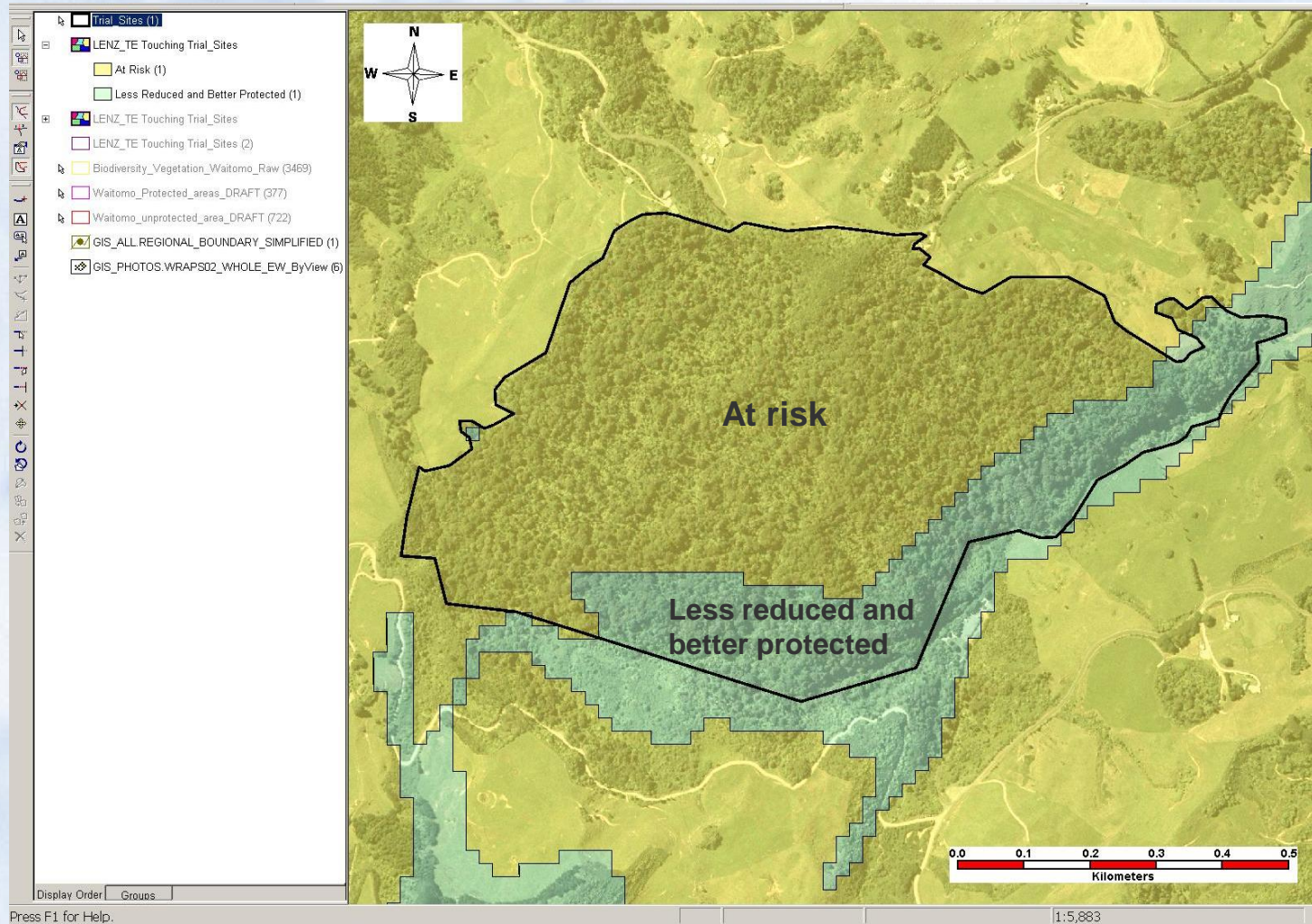
(score weighting = 1)

Category Criteria	Category Name	Score
<10% indigenous cover left (12)- (6)	<b>Acutely Threatened</b>	
10–20% left (10) – (5)	<b>Chronically Threatened</b>	
20–30% left (8)- (4)	<b>At Risk</b>	<b>8</b>
>30% left and <10% protected (6)- (3)	<b>Critically Underprotected N/A</b>	
>30% left and 10–20% protected (4)- (3)	<b>Underprotected N/A</b>	
>30% left and >20% protected (2)- (1)	<b>Less Reduced and Better Protected</b>	<b>1</b>



**GREATEST THREAT =  
Habitat loss**

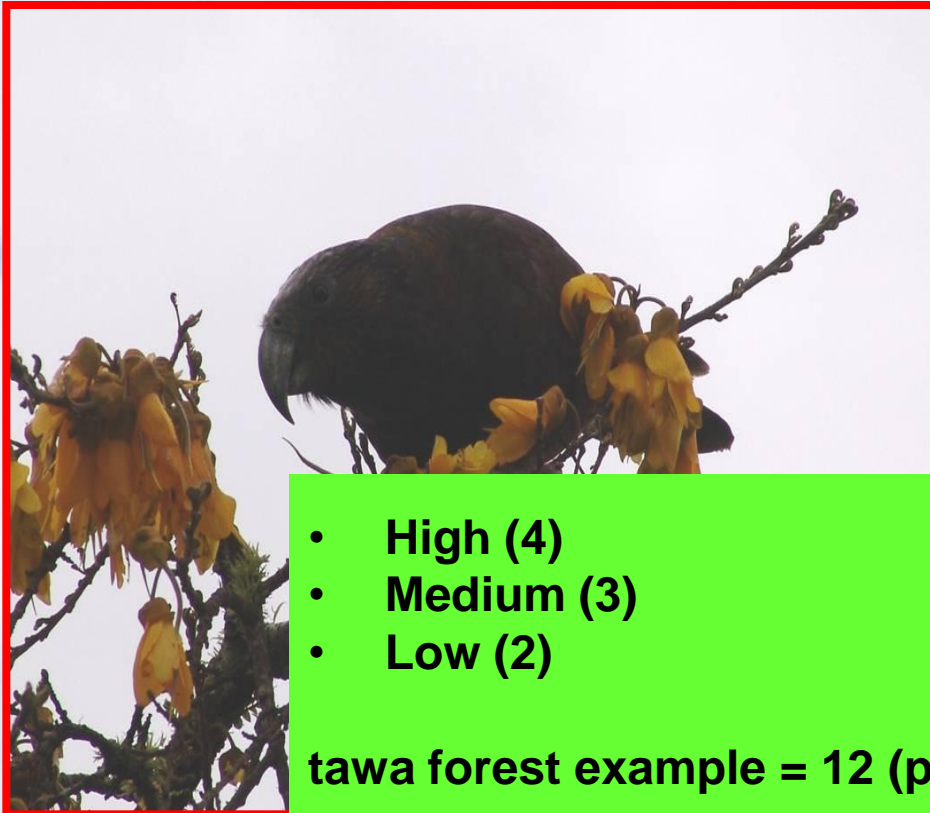
# LENZ Threatened environments



**Tawa forest - Ruakuri Caves and Bush Scenic Reserve  
GIS analysis data**

# 10 Vulnerability

(score weighting = 6)



- High (4)
- Medium (3)
- Low (2)

tawa forest example = 12 (pressure from recreation)

Adapt to feed? – Native (many specialists) vs Exotic (many generalists)

# 12 Extinction protection

(score weighting = 4)

**Prevent Local Extinctions (10)**

**Restore lost biota (8)**

*(pest-free habitat generally required)*

**Enhance quality of degraded systems**

**(Score =  $4 \times 6 = 24$ )**

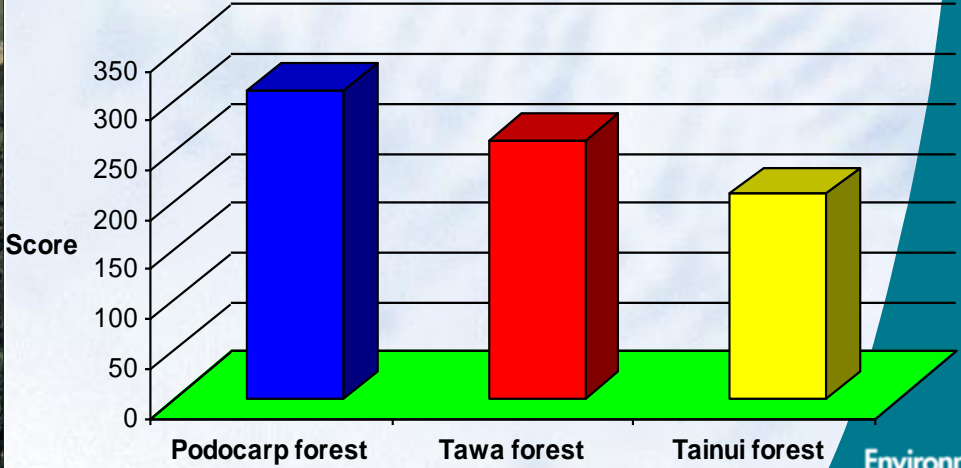
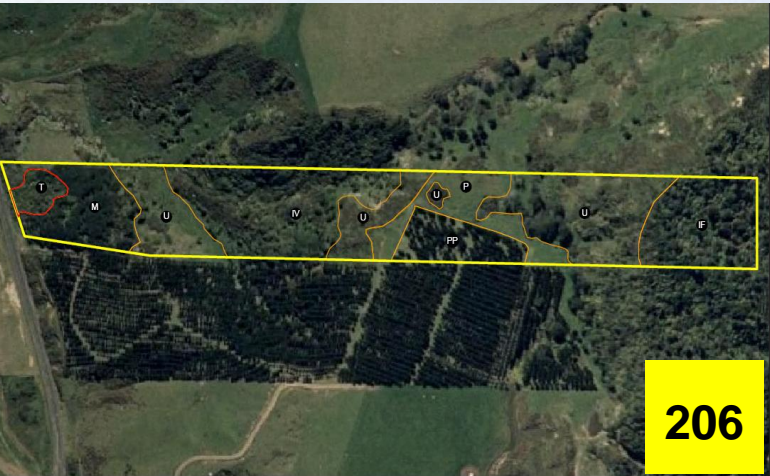
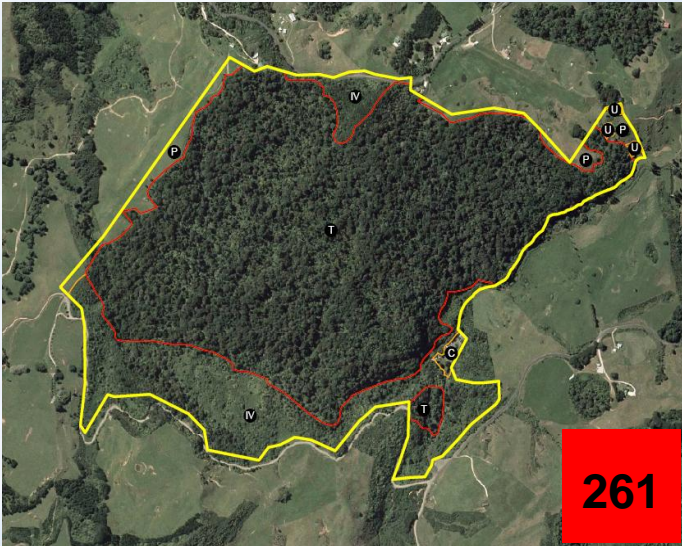


**What is next?**



Criteria	Score	Comments
National Priority	36	Original rare ecosystem
Threatened species	8	NZ falcon ( <i>Falco novaeseelandiae</i> "bush"), long-tailed bat ( <i>Chalinolobus tuberculatus</i> (North Island))
Threatened environment classification	45	At Risk, Less reduced and better protected
Ecosystem condition	10	Small-moderate size; mixture of pasture and indigenous vegetation; surrounded by pasture
Regional representativeness	35	Small-moderate size; forest, scrubland and pasture; Kahikatea and matai near the stream, with tree fuchsia, ramarama, kanono, and parataniwha; upslope, tawa becomes prominent, often with mangleo; podocarps are present on the ridges; natural limestone tunn
Indigenous vegetation representativeness	5	An extremely important site in the Waikato Region because it contains threatened species, encompasses nationally and regionally important geological sites
Habitat diversity	5	Lowland only
Proximity to other natural areas	15	Almost completely surrounded by pasture; contiguous with S16029.01 (karst) and through that site with S16029 and S16027 (both karst); within a few kms of many other protected areas
Region's priority land	18	D2.3a, F1.1b
Vulnerability	12	Small-moderate size; mixture of pasture and indigenous vegetation; surrounded by pasture
SNA size of area (ha)	20	116.18 ha
Extinction protection	24	n/a
Outcome objectives for LTCCP	14	Waikato/King Country Kiwi Survey; Waitomo Catchment Trust
Funding & management input	4	Unknown
Restoration potential	10	Small-moderate size; mixture of pasture and indigenous vegetation; surrounded by pasture
<b>Total Score</b>	<b>261</b>	

# Ranking results



# Some issues need to be resolved

- Reserve data is not comprehensive in some districts.
- There are information gaps in inventories of marine ecosystems.
- Rarity outweighs representativeness.
- Lack of information about threatened species.
- More robust and consistent parameters/attributes for determining SNA's.
- Landowner boundaries.

# **Future work**

## **Establishing Biodiversity indicators - biodiversity database for the region**

### **Status and trends of biodiversity components**

- **Trends in extent of selected biomes, ecosystems, and habitats**
- **Trends in abundance and distribution of selected species**
- **Coverage of protected areas**
- **Change in status of threatened species**
- **Coverage of indigenous forest areas**

# Summary of Key Objectives

- Develop biodiversity goals (objectives) to determine why we need to identify priority areas.

- Identify areas where management action will help to achieve our goals and objectives.

- Determine what management intervention the priority sites require.
- Determine the appropriate agency or party to action the management needs (who).

# Acknowledgements

- Environment Waikato Biodiversity project team
- University of Waikato
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