

# A national approach for managing Acid Sulfate Soils in New Zealand?

**Jonathan Caldwell**

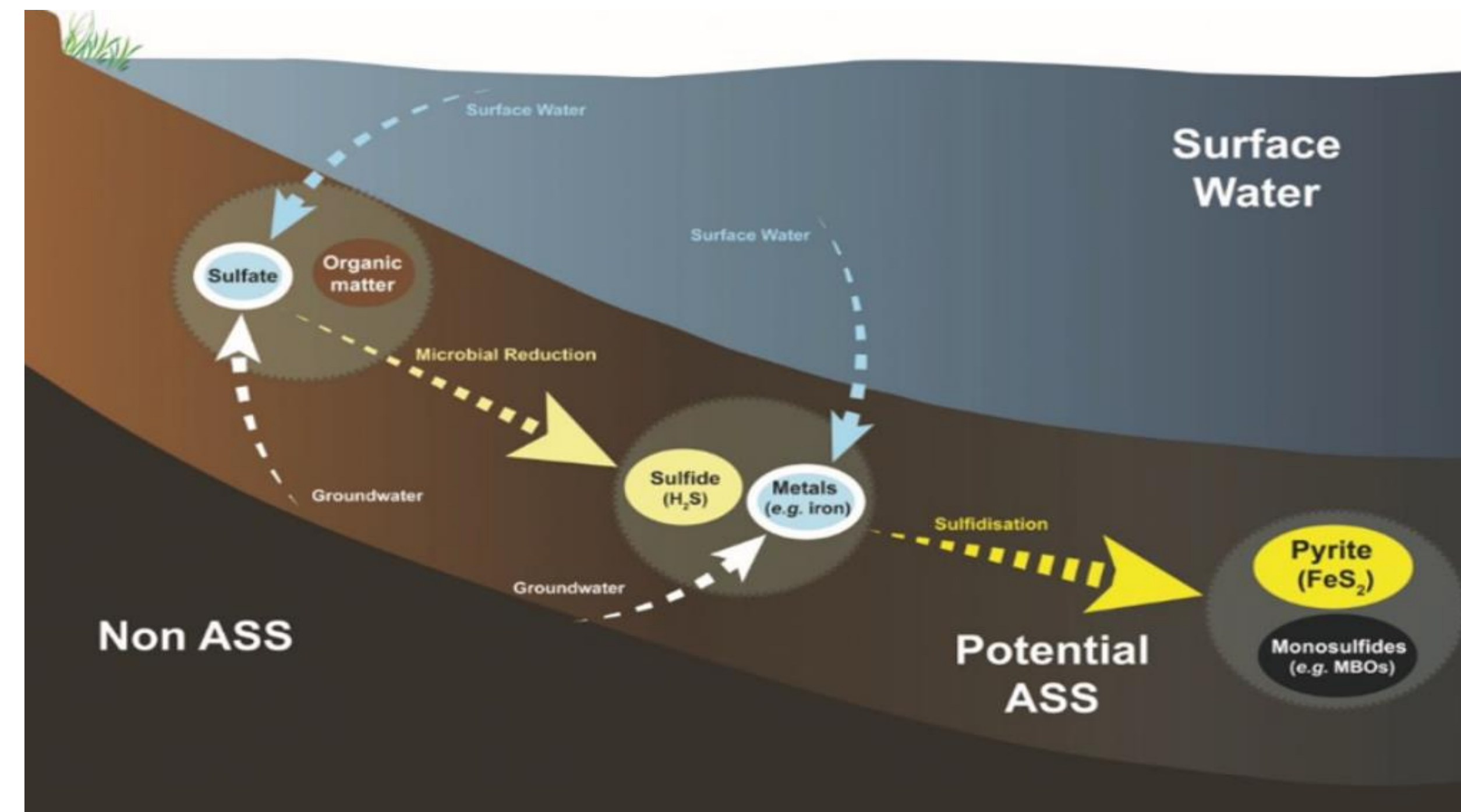
Senior Scientist (Environmental Chemistry)  
Waikato Regional Council

**Jade McConchie**

Technical Lead (Environmental Scientist)  
GHD

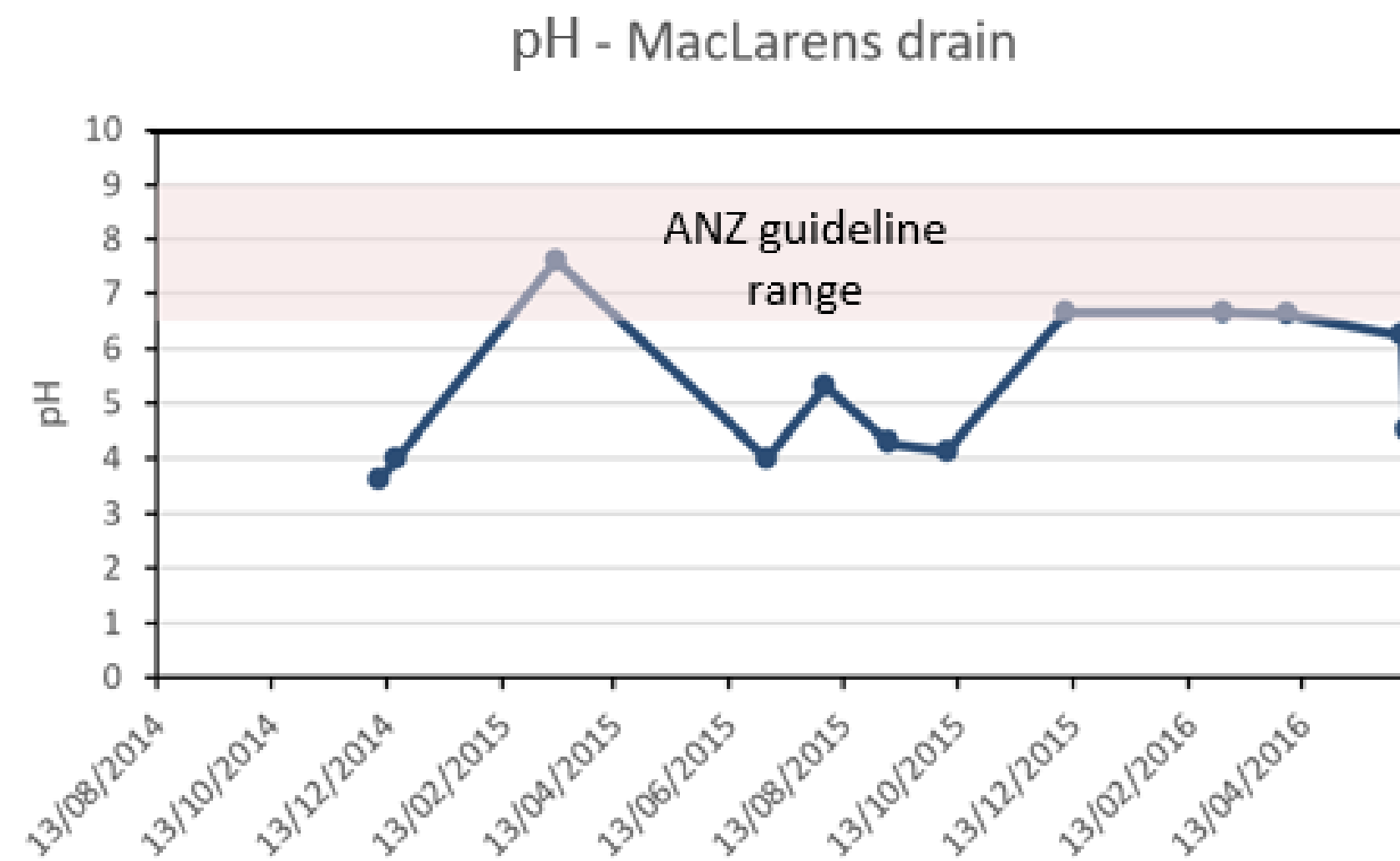
# What are Acid Sulfate Soils and the Issue?

- Naturally occurring sediments containing inorganic sulfides
- Usually in low lying, coastal or wetland areas, with shallow water and lots of organic matter
- If disturbed, can oxidise to produce acid
- The acidity can mobilise metals & nutrients
- Can cause environmental & infrastructure impacts



# Where are they?

- A worldwide issue
- Throughout NZ, but most common in upper north island (known since the 70s)
- I've confirmed ASS presence in Northland, Auckland, BoP, Manawatū and Waikato



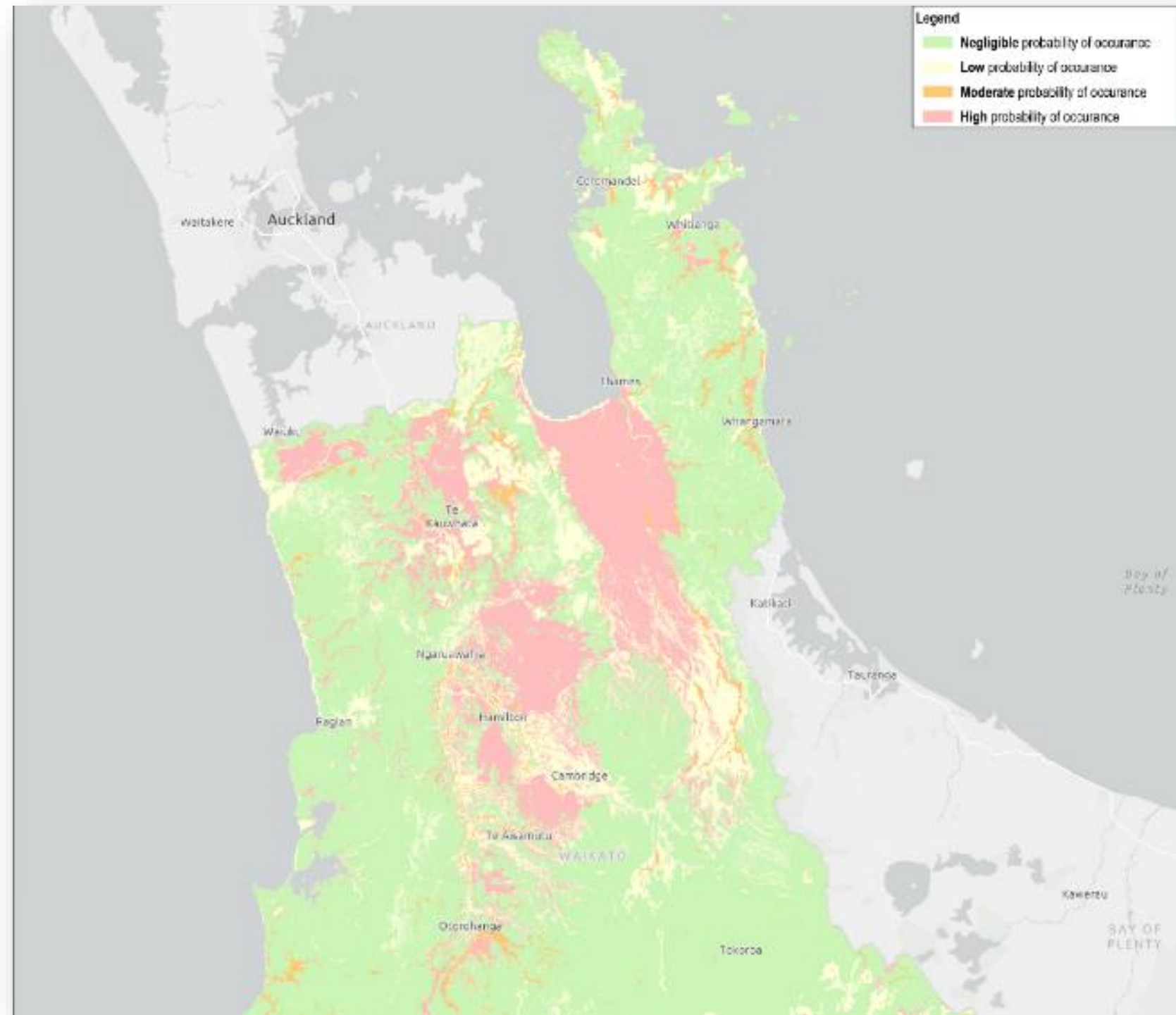
Subsidence in the Marsden City development could cost ratepayers millions to fix. Photo / NZME

# Identifying Acid Sulfate Soils

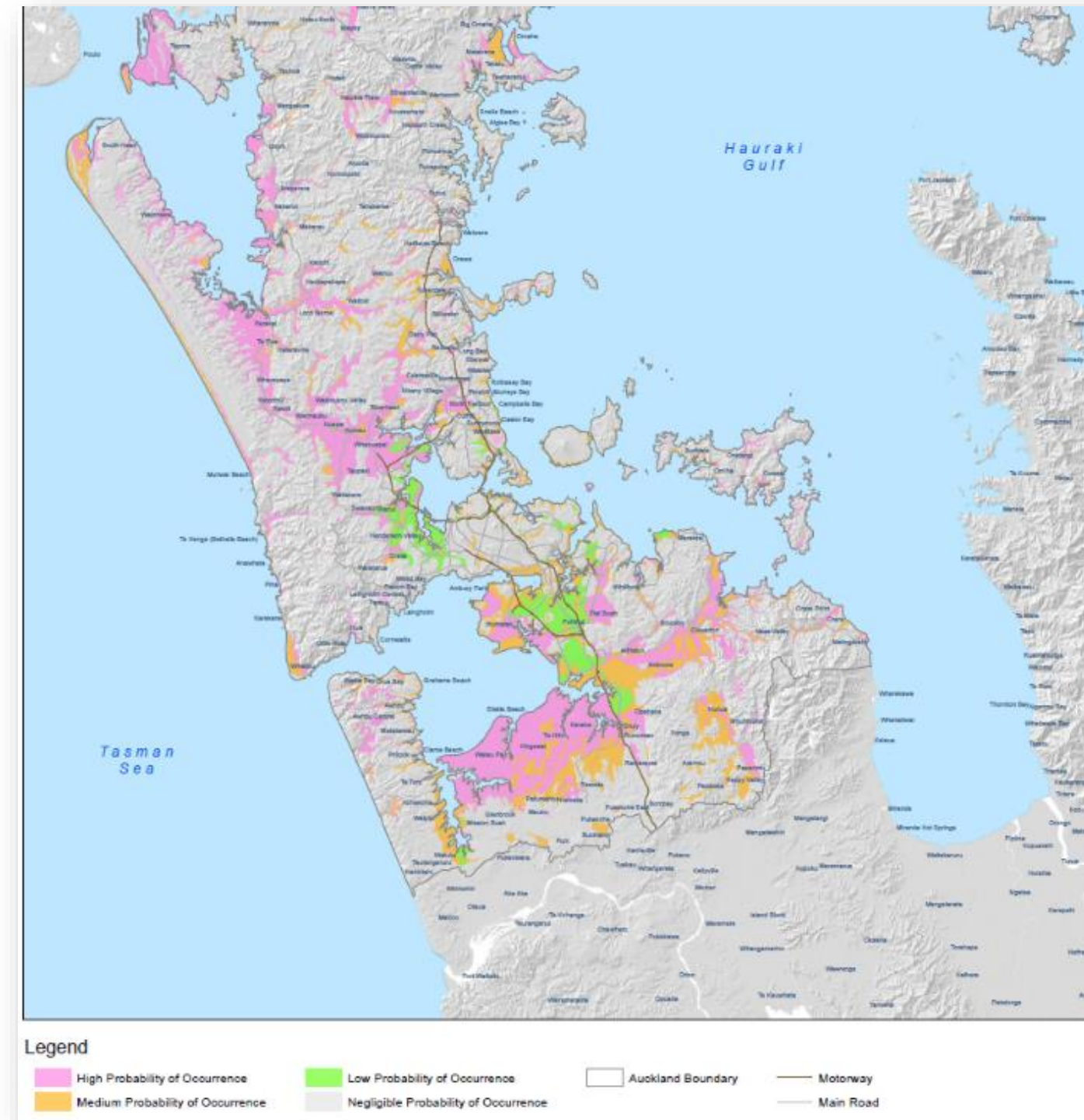
- Orange coloured / iron oxide staining – waterways & concrete
- Very clear or milky blue-green waterways (high diss.  $\text{Al}^{3+}$ )
- Poor vegetation growth & sulfurous/rotten egg odour
- $\text{pH}_f$  &  $\text{pH}_{\text{fox}}$  (field screening test)
- **Chromium reducible sulfur** (definitive lab test)



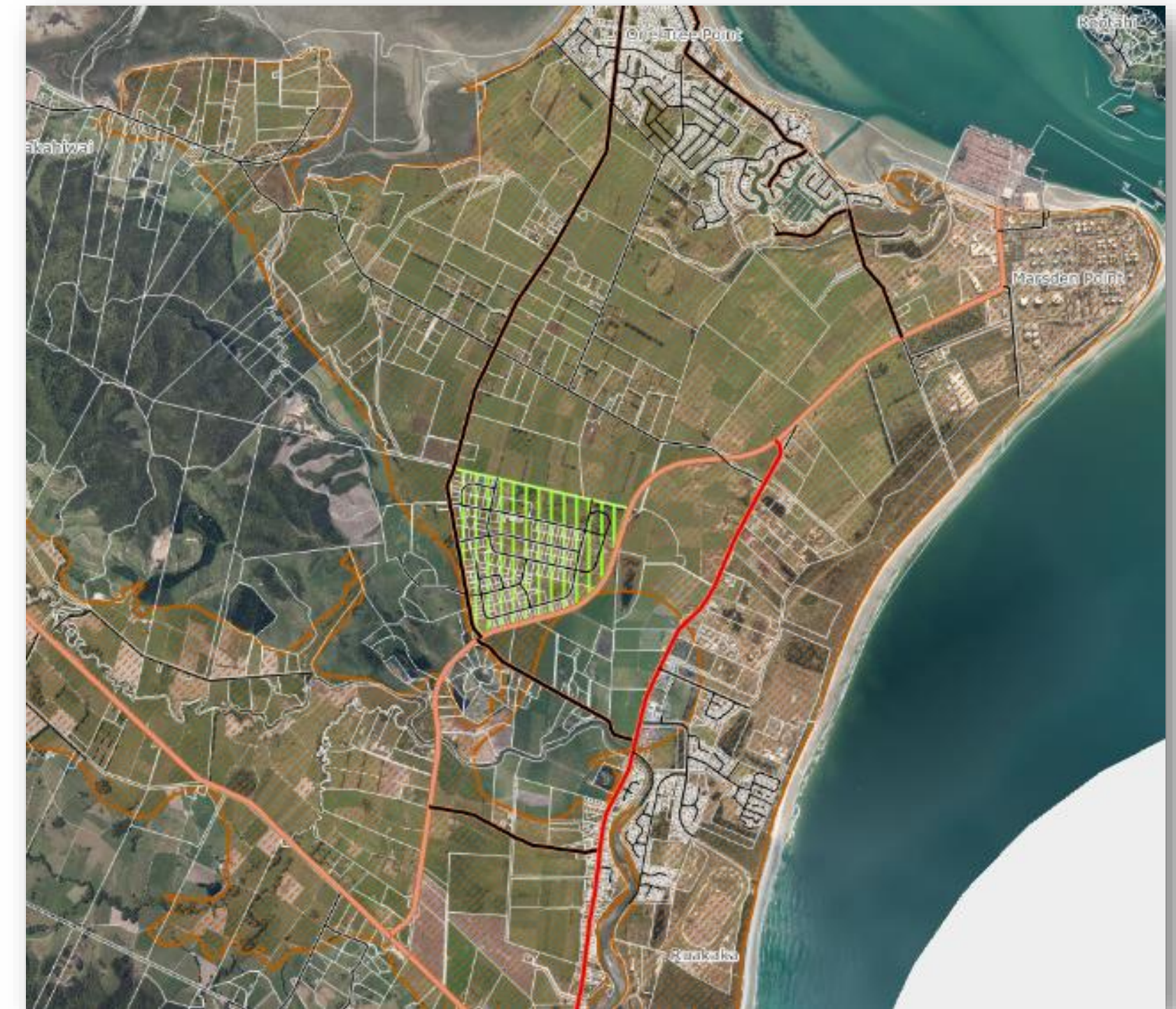
# What maps do we have?



Waikato (1<sup>st</sup> gen)



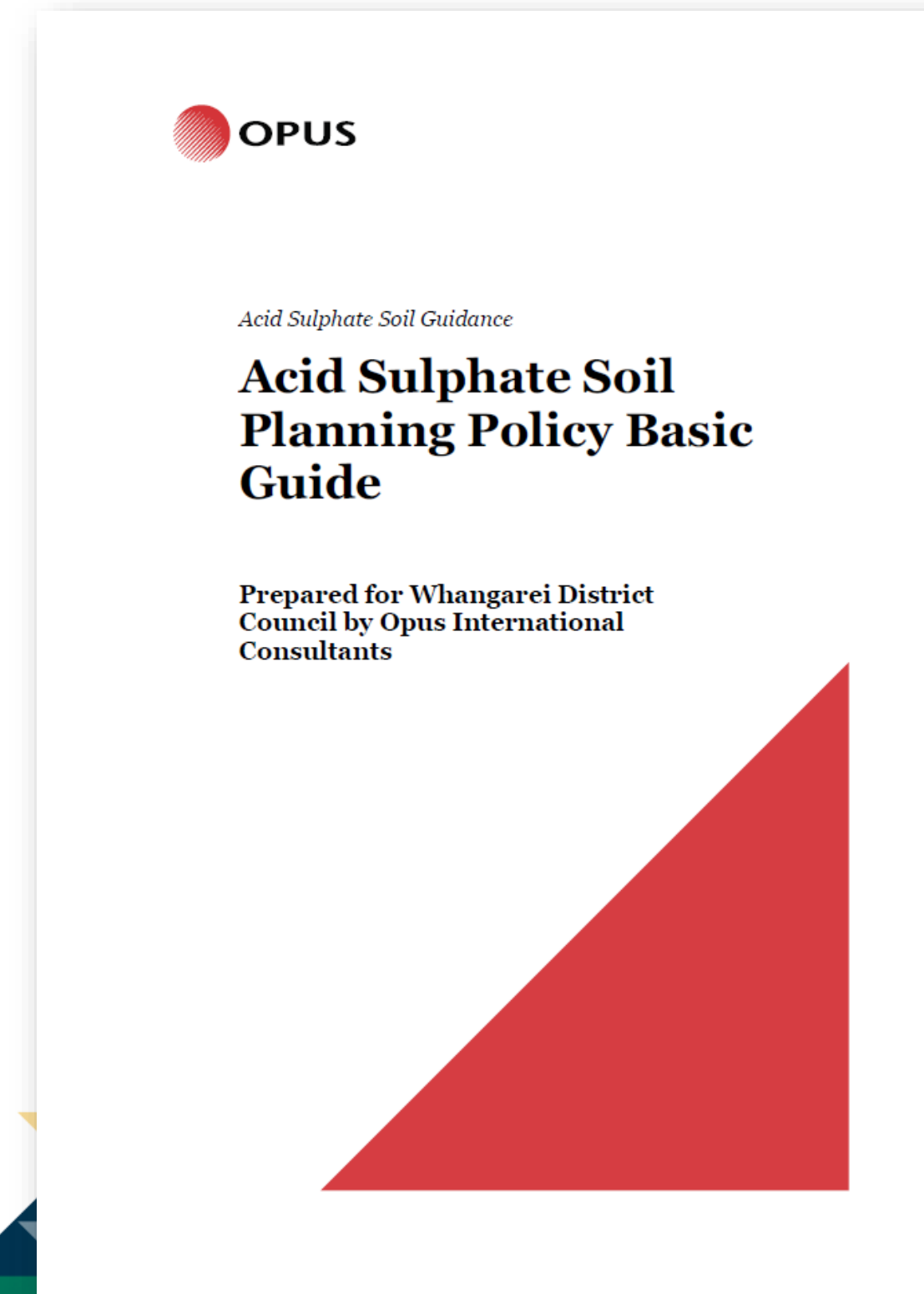
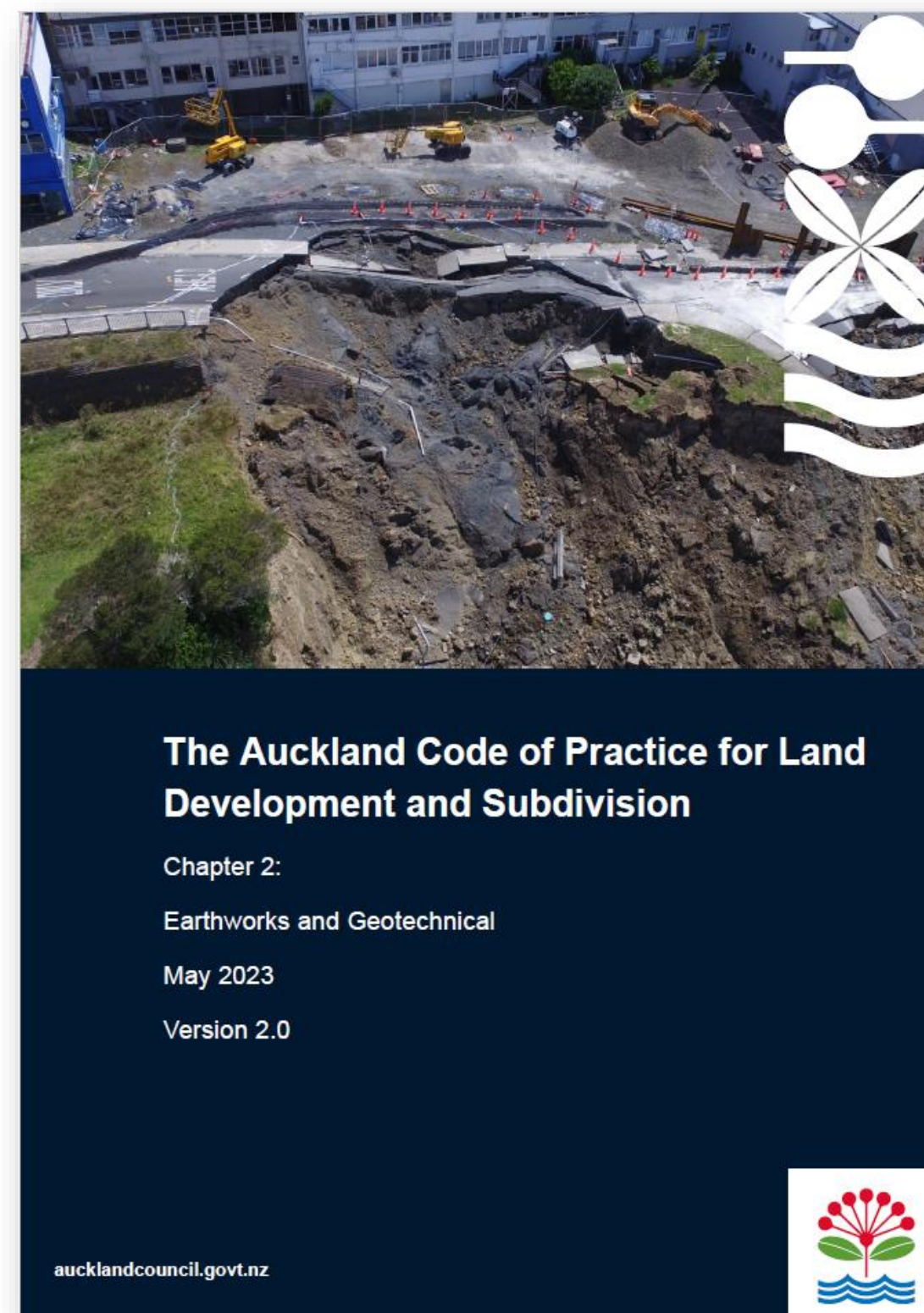
Auckland (1<sup>st</sup> gen)



Whangārei (1<sup>st</sup> gen)

# How is it being regulated?

- Auckland Council – CoP for Land Development & Subdivision – identifies it as a geohazard
- Whangarei DC – Acid Sulfate Soil Policy Guide & identifies ASS as a natural hazard in District Plan



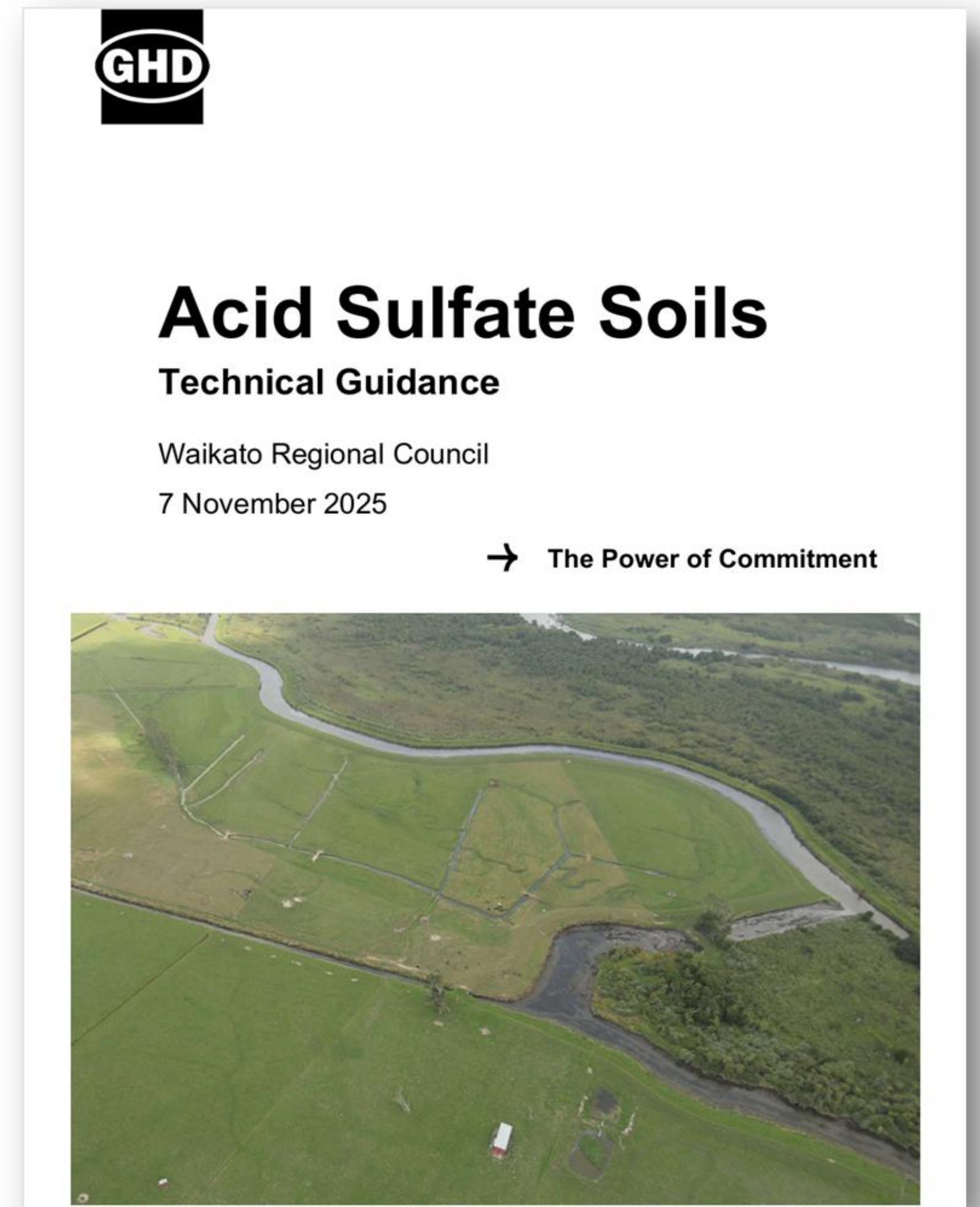
# How is it being regulated by Waikato RC?

- Discharges regulated by s15 RMA
- Not specifically addressed in plan
- WRC considers risk of discharge from ASS where land disturbance activities:
  - med / high probability area
  - $>250 \text{ m}^3$
  - $>1 \text{ m}$  depth
  - drainage
  - dewatering / groundwater drawdown



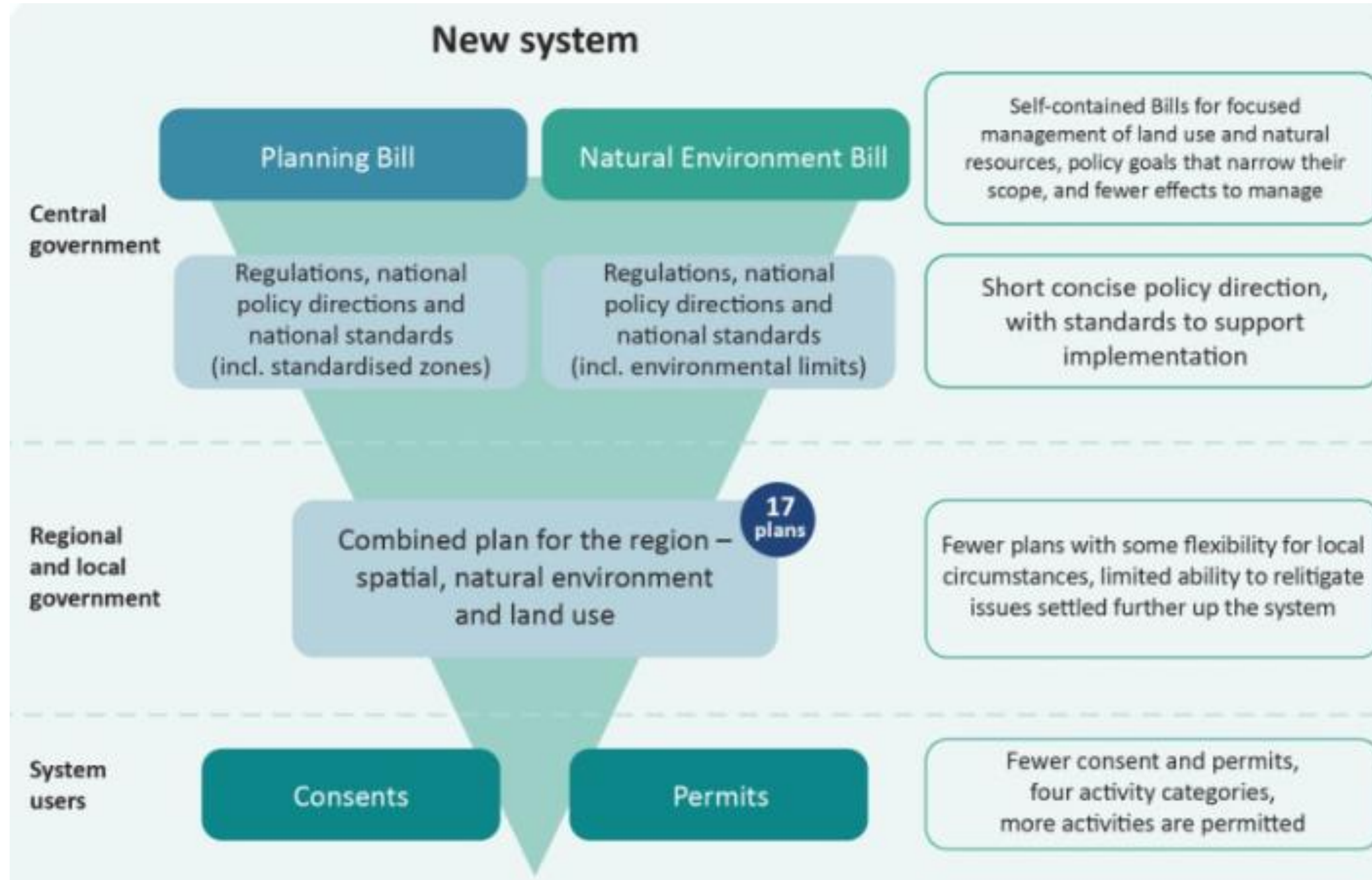
# How is it being regulated by Waikato RC?

- Dedicated webpage with links to mapping layer and technical guidance
- General land disturbance / earthworks consent application form
- Generic conditions which require ASS investigation & management



# Time for national policy & guidance?

Top-down approach



# Planning Bill Goals

- Ensure that land use does not unreasonably affect others, including by separating incompatible land uses
- Plan and provide for infrastructure to meet current and expected demand
- Safeguard communities from the effects of natural hazards through proportionate and risk-based planning

## Planning Bill

Government Bill

### Explanatory note

#### General policy statement

The Planning Bill will replace the Resource Management Act 1991 (RMA), working in tandem with the Natural Environment Bill. Once passed, the Bills will be known as the Planning Act and Natural Environment Act.

The Planning Bill and the Natural Environment Bill provide distinct, but consistent, approaches for land use planning and environmental management, respectively. The Planning Bill establishes a framework for planning and regulating the use, development, and enjoyment of land. The Natural Environment Bill establishes a framework for the use, protection, and enhancement of the natural environment.

The development of the new planning and environmental management system created by these Bills was guided by the following objectives:

- to make it easier to get things done by—
  - unlocking development capacity for housing and business growth:
  - enabling delivery of high-quality infrastructure for the future, including doubling renewable energy:
  - enabling primary sector growth and development (including aquaculture, forestry, pastoral, horticulture, and mining).

The intention is that these objectives will be done while also—

- safeguarding the natural environment and human health:
- adapting to the effects of climate change and reducing the risks from natural hazards:
- improving regulatory quality in the resource management system:
- upholding Treaty of Waitangi settlements and other arrangements.

235—1



# Natural Environment Bill Goals

- Enable use and development of natural resources within environmental limits
- Safeguard life-supporting capacity of air, water, soil and ecosystems
- Protect human health from harm caused by discharge of contaminants
- Manage natural hazard risks associated with use or protection of natural resources through proportionate & risk-based planning

## Natural Environment Bill

Government Bill

### Explanatory note

#### General policy statement

The Natural Environment Bill will replace the Resource Management Act 1991 (RMA), working in tandem with the Planning Bill. Once passed, the Bills will be known as the Natural Environment Act and the Planning Act.

The Natural Environment Bill and the Planning Bill provide distinct, but consistent, approaches for environmental management and land use planning, respectively. The Natural Environment Bill establishes a framework for the use, protection, and enhancement of the natural environment. The Planning Bill establishes a framework for planning and regulating the use, development, and enjoyment of land.

The development of the new planning and environmental management system created by these Bills was guided by the following objectives:

- to make it easier to get things done by—
  - unlocking development capacity for housing and business growth;
  - enabling delivery of high-quality infrastructure for the future, including doubling renewable energy;
  - enabling primary sector growth and development (including aquaculture, forestry, pastoral, horticulture, and mining).

The intention is that these objectives will be done while also—

- safeguarding the natural environment and human health;
- adapting to the effects of climate change and reducing the risks from natural hazards;
- improving regulatory quality in the planning system;
- upholding Treaty of Waitangi settlements and other arrangements.

234—1

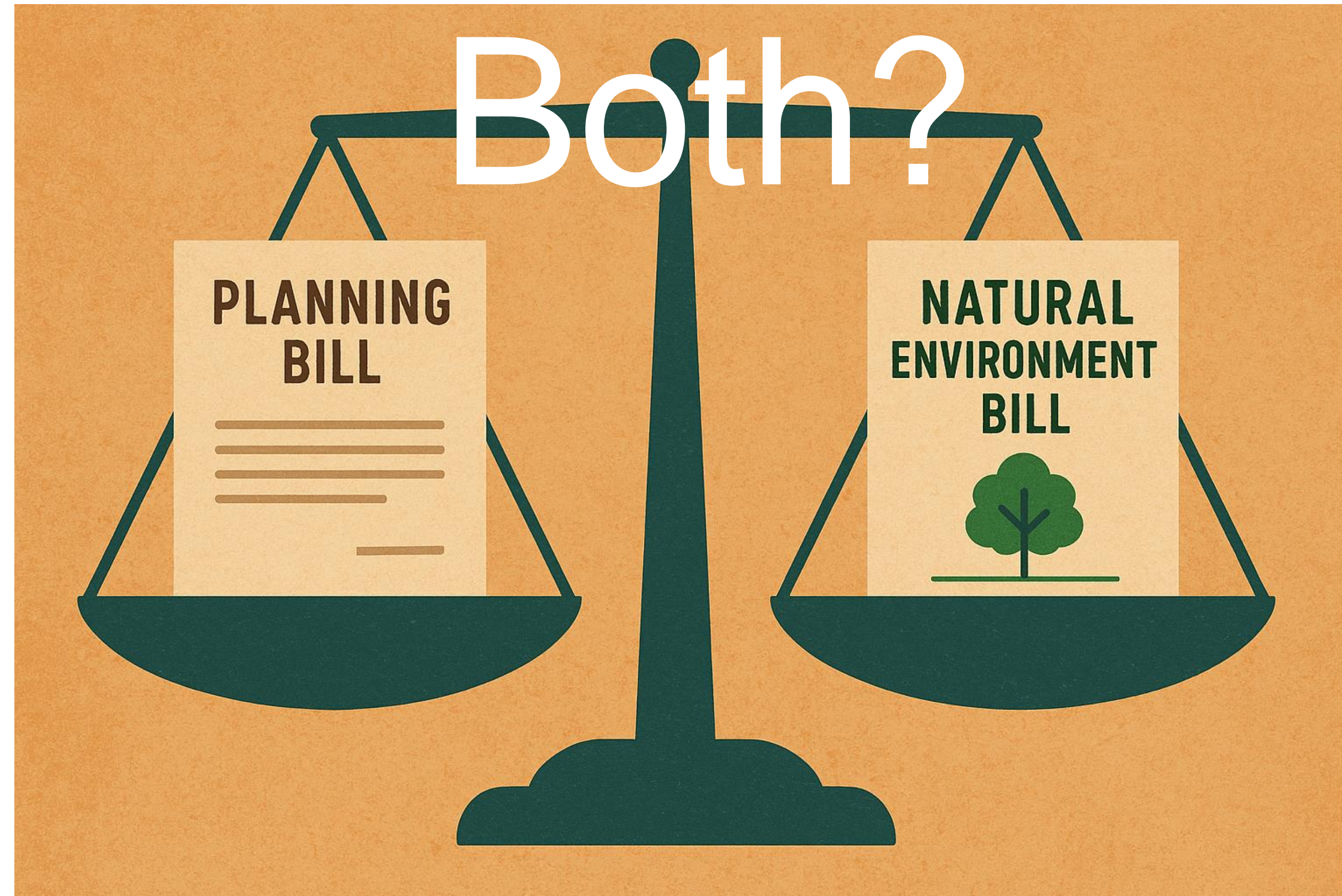


# How could we include ASS?

- s21 of the NEB is very similar to s15 of the RMA regarding discharges and the onus to manage effects
- Regional spatial plans could provide a mechanism for identifying areas of controls and management in areas of development
- Could be permitted provided discharges are adequately managed
- Essential to have a consistent [national approach!](#)



# Planning Bill or Natural Environment Bill for Regulating ASSs?



# Summary

- Naturally occurring ASSs can present risk to environment & infrastructure when disturbed
- ASSs identified across NZ, with 2 regional maps & 1 district map
- No specific regulation but discharges associated with disturbance of ASSs can be regulated under RMA & generic regional & district plan rules
- Replacement of RMA with Natural Environment Act & Planning Act provides opportunity to address this through specific national policy, regulation and guidance

