

Water NZ 2018  
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Wastewater planning driven by  
environmental effects

# National Context

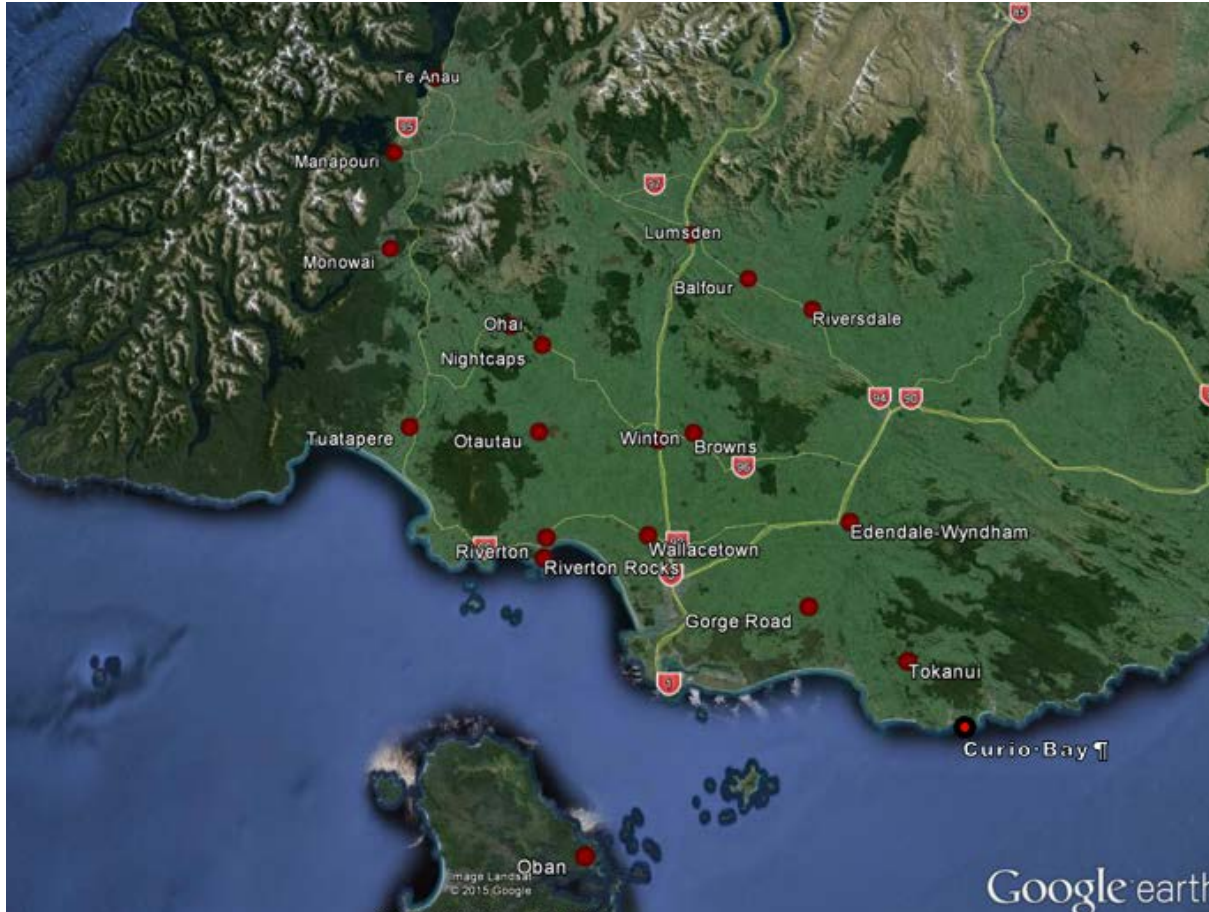
- National Policy Statement for Freshwater Management
- Local Government Act: 30 year Infrastructure Plan
- Government Three Waters Review

# Regional Context

- Proposed Southland Water and Land Plan
- Future Limit Setting Process
- Southland Economic Project



# Local Context – Why?



- 20 schemes, considered as consents expire
- Uncertainty – new consents, WWTP upgrades, timing, \$
- Lack of prioritisation
- Need 30yr infrastructure plan
- Input to ES Limit Setting Process & future consents

# Strategy Project Objectives

- Prioritise WWTP upgrades
  - **greatest overall environmental benefits at appropriate stage, whilst being affordable**
- Develop 30-50 year capital works programme
- Establish monitoring programmes to support consenting
- Obtain stakeholder input

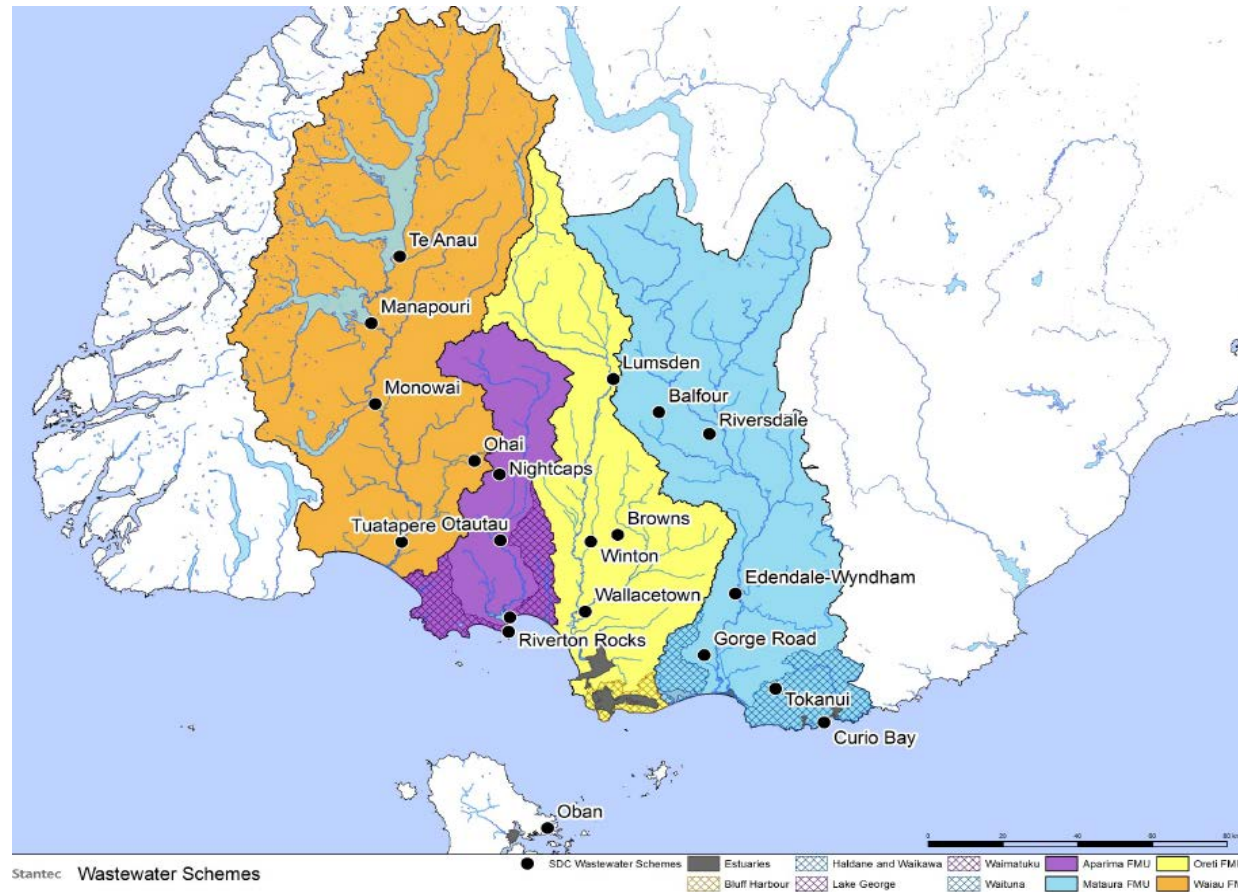
# Strategy Project Approach

- Stage 1: Information Summary & Strategy Approach
  - Desk-top review
  - Identify potential issues
  - Develop strategy approach
  - Consultation
- Stage 2: Strategy
  - Long-term, high level, District-wide
  - Options, costs & timeframes
- Using outputs from Southland Economic Project

# Stage 1: Information Gathering

## Existing Schemes

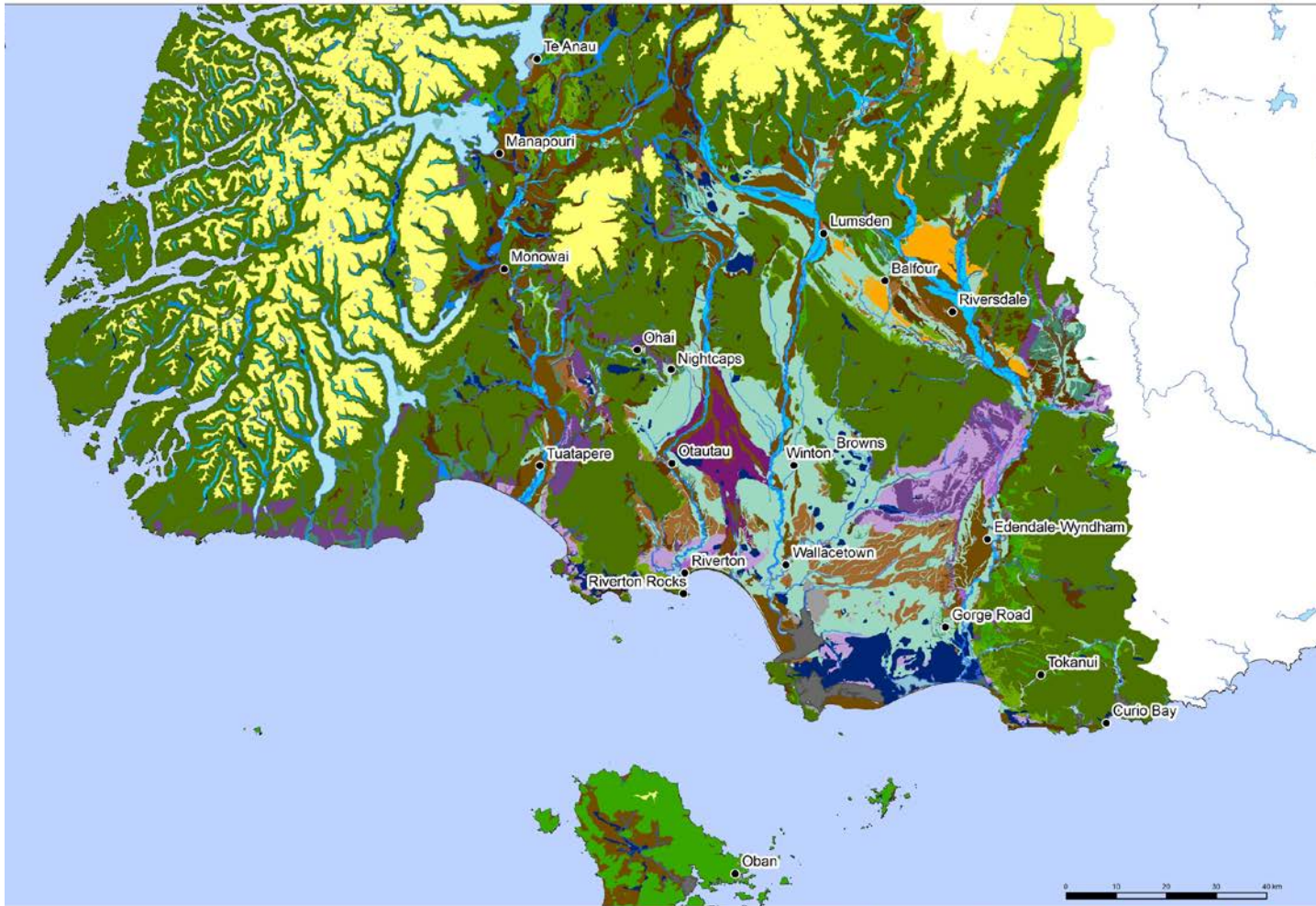
- Nature of schemes
  - location
  - treatment
  - discharge route
- Population
  - existing
  - future
  - catchment type





# Stage 1: Information Gathering

## Potential Land Discharge?



Physiographic Zones

- SDC Wastewater Strategy
- Estuaries
- Alpine - No Variant
- Bedrock/Hill Country - Artificial Drainage
- Bedrock/Hill Country - No Variant
- Bedrock/Hill Country - Overland Flow
- Central Plains - No Variant
- Gleyed - No Variant
- Gleyed - Overland Flow
- Lignite - Marine Terraces - Artificial Drainage
- Lignite - Marine Terraces - No Variant
- Lignite - Marine Terraces - Overland Flow
- Old Maituro - No Variant
- Oxidising - Artificial Drainage
- Oxidising - No Variant
- Oxidising - Overland Flow
- Past Wetlands - No Variant
- Riverine - No V
- Riverine - Over
- Urban Area

# Stage 1: Information Gathering

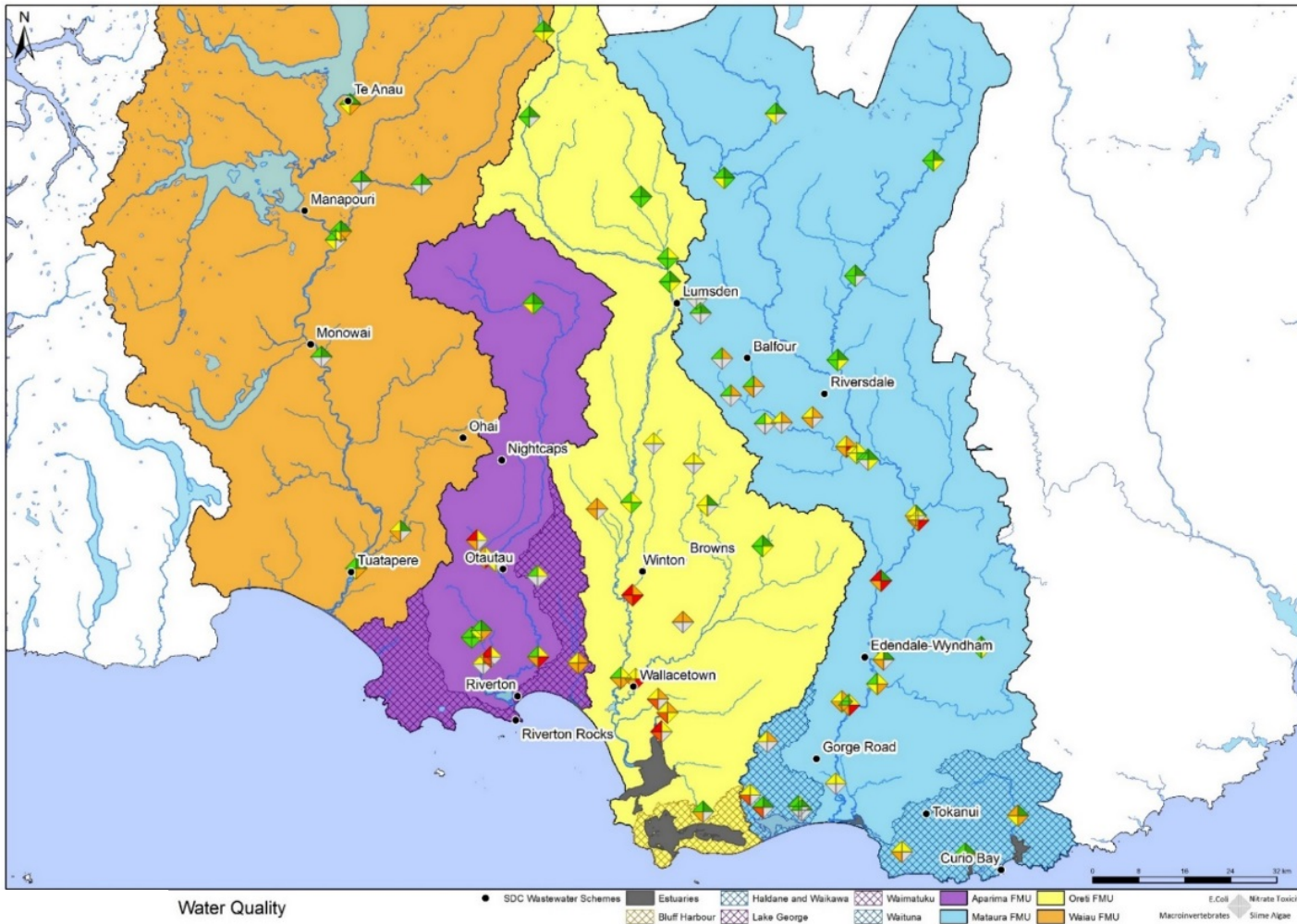
## Discharge & Water Quality

- Consent compliance
- Existing WQ standards
- Future WQ standards
  - Limiting Setting Process?





# Surrounding Landuse Consents vs Water Quality



# Scheme Assessment Summary

FMU	Discharge Route	Ease of Land Disposal	Popn 2013	Popn 2043	Consent Compliance 2015/16	Existing WQS - Other	Existing WQS – micro/NH <sub>3</sub>	Future WQS - micro/N/P	Overall Ranking
Fiordland and Islands	Land	<ul style="list-style-type: none"> <li>poor infiltration</li> <li>overland flow</li> </ul>		↑ 24%	DIN, E.coli			DRP, TIN (recent) No upstream data	
Aparima	Water	<ul style="list-style-type: none"> <li>poor infiltration</li> <li>ltd contam. removal</li> <li>overland flow</li> </ul>			Flow	QMCI	Micro	DRP, TN, E.coli	
Aparima	Land	<ul style="list-style-type: none"> <li>aquifers linked to rivers</li> </ul>		↑ 11%	discharge to aquifer			DRP, TIN, E.coli	
Aparima	Land	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> </ul>		↑ 11%	Flow			Missing DRP, TIN, TN & upstream data	(TBC)
Aparima (coastal)	Land	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> </ul>		↑ 11%		DO		Missing DRP	
Mataura	Water	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> </ul>		↑ 27%	TSS		micro	DRP, TIN, TN, E.coli	
Mataura	TBC	<ul style="list-style-type: none"> <li>poor infiltration</li> <li>overland flow</li> </ul>			recently constructed	recently constructed	recently constructed	recently constructed	recently constructed
Mataura	Water	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> </ul>					micro	DRP, TIN, E.coli	
Mataura	Water	<ul style="list-style-type: none"> <li>poor infiltration</li> <li>ltd contam. removal</li> <li>overland flow</li> </ul>	↑ 18%, pretreated	↑ 72%, pretreated		pH, DO	micro	DRP, TIN, E.coli	
Mataura	Land/Water	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> </ul>	↑ 11%	↑ 52%	flow, DO, ammonia	DO	NH <sub>3</sub> , micro	DRP, E.coli Missing TN, TIN	
Mataura	Land/Water	<ul style="list-style-type: none"> <li>poor infiltration</li> <li>overland flow</li> </ul>			Flow		micro	DRP, TIN, E.coli	
Oreti	Land/Water	<ul style="list-style-type: none"> <li>poor infiltration</li> <li>ltd contam. removal</li> <li>overland flow</li> </ul>		↑ 28%	Flow		micro	FC No TIN, TN, DRP, E.coli	
Oreti	Land	<ul style="list-style-type: none"> <li>aquifers linked to rivers</li> <li>nitrogen in gdwater</li> </ul>			Flow				(TBC)
Oreti	Water	<ul style="list-style-type: none"> <li>poor infiltration</li> <li>ltd contam. removal</li> <li>overland flow</li> </ul>	↑ 8%, ind	↑ 31%, ind	Ammonia	DO, MCI & SQMCI	NH <sub>3</sub> , micro	TIN, TN, DRP, E.coli, FC	
Oreti	Water	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> </ul>	↑ 8%	↑ 38%, non SDC WWTP and consent	non SDC consent	non SDC consent	non SDC consent	non SDC consent	non SDC consent
Waiau	Land/Water	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> </ul>		↑ 64%, ind/ com				DRP, TIN, TN	
Waiau	Land	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> </ul>			faecal coliforms, cBOD <sub>5</sub>				
Waiau	Water	<ul style="list-style-type: none"> <li>poor infiltration</li> <li>overland flow</li> </ul>				DO, temp	NH <sub>3</sub> , micro	DRP, FC No TIN, TN, E.coli	
Waiau	Water	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> <li>aquifers linked to rivers</li> </ul>	↑ 15%, ind	↑ 73%, ind/com	Flow	DO		DRP	
Waiau	Water	<ul style="list-style-type: none"> <li>nitrogen in gdwater</li> <li>aquifers linked to rivers</li> </ul>				DO	micro	DRP, E.coli	

# Stage 2: Develop Strategy

	Scheme Ranking	High-Level Options and Costs	Implementation Timeframe
6 schemes	Red	<p>Develop and cost high-level scheme-specific options to meet receiving water quality standards.</p> <p>Options to consider</p> <ul style="list-style-type: none"> <li>Existing and future receiving water quality standards for microbiology, nitrogen, phosphorus</li> <li>Wastewater treatment options (including soil component if land application)</li> <li>Discharge to water and land</li> </ul>	<p>Short to medium term (eg 5 – 10 years)</p> <p>When prioritising consider:</p> <ul style="list-style-type: none"> <li>If scheme meets existing standards</li> <li>Upgrade cost verses benefit. This will address the relative sizes of the schemes</li> <li>Outcome of limit setting process when available</li> </ul>
10 schemes	Orange	<p>Develop and cost high-level options to meet receiving water quality standards using most appropriate case-study (town) from Southland Economics Study.</p> <p>Options to consider</p> <ul style="list-style-type: none"> <li>Existing and future receiving water quality standards for microbiology, nitrogen, phosphorus</li> <li>Wastewater treatment options (including soil component if land application)</li> <li>Discharge to water and land</li> </ul>	<p>Medium to long term (eg 10 – 20 years)</p> <p>When prioritising consider:</p> <ul style="list-style-type: none"> <li>If scheme meets existing standards</li> <li>Upgrade cost verses benefit. This will address the relative sizes of the schemes</li> <li>Outcome of limit setting process when available</li> </ul>
2+2 schemes	Green	<ul style="list-style-type: none"> <li>Business as usual</li> </ul>	<ul style="list-style-type: none"> <li>Business as usual (ie <u>reconsent</u> as existing consents expire)</li> </ul>

# High Level Options

1. Upgrade WWTP - Existing Water Discharge
2. Existing WWTP – New Land Discharge
3. Existing WWTP – New Land Discharge (summer), Existing Water Discharge (winter)
4. Existing WWTP – Existing Discharge

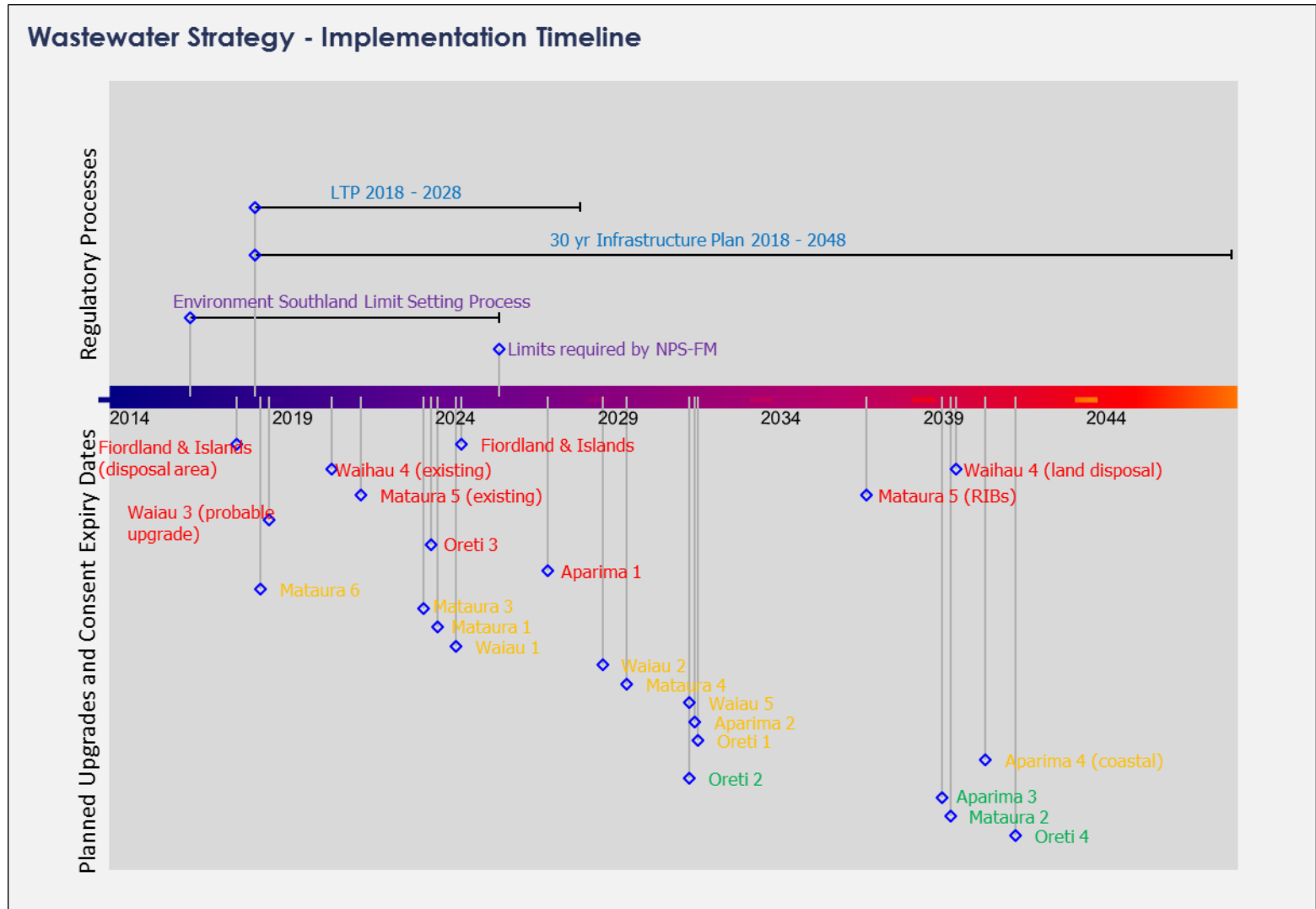




## Stage 2: Develop Strategy – Timeframes

- Red** Short to medium term (5-10 years)
- Orange** Medium to long term (10-20 years)
- Green** Business as usual (reconsent as consents expire)

# Stage 2: Develop Strategy – Timeframes



# Outcomes to date

- Inform strategic planning  
(with Southland Economic Project)
- Inform scheme consenting
- Engagement with stakeholders, internal & external



A blurred landscape background featuring a green field in the foreground, a dark treeline, and blue mountains in the distance under a clear sky. A white rectangular text box is overlaid on the left side of the image.

Questions?

<https://ideas.stantec.com/water-new-zealand-conference-expo-2018>