



2021 SCHEME MEETINGS

Upper Manawatū- Lower Mangahao Scheme

REGIONAL OVERVIEW

- Current operating budget \$14.3M
- 40 Staff
- 34 Schemes provide protection from flooding and erosion to:
 - 11 urban areas
 - 75,00ha rural land





HORIZONS RIVER MANAGEMENT

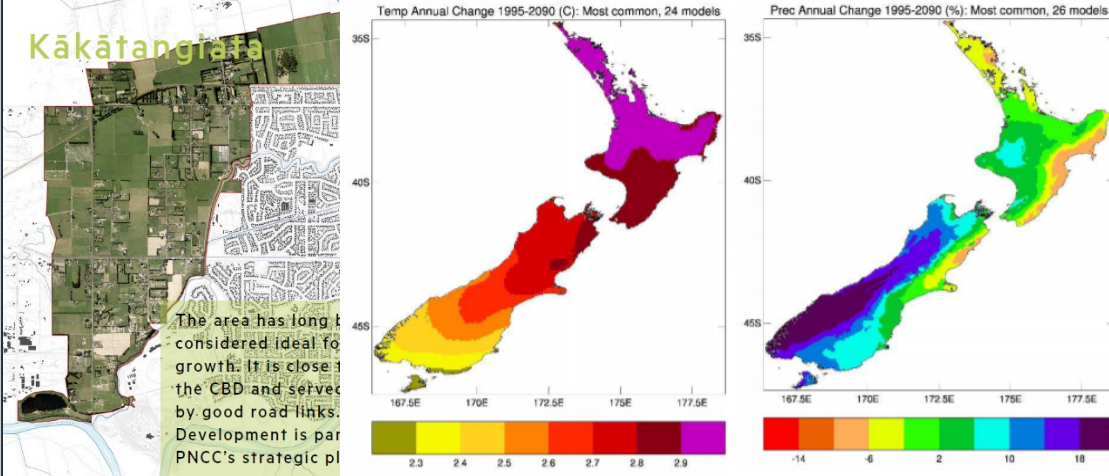
REGIONAL OVERVIEW

\$650M of assets

- 1,270km of river channel
- 1,100km of drain
- 23 pump stations with a total discharge capacity of 43m³/s
- 54 detention dams that can store 4.3M cubic metres of floodwater
- 500km of stopbanks



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SIGNIFICANT RIVER MANAGEMENT ISSUES

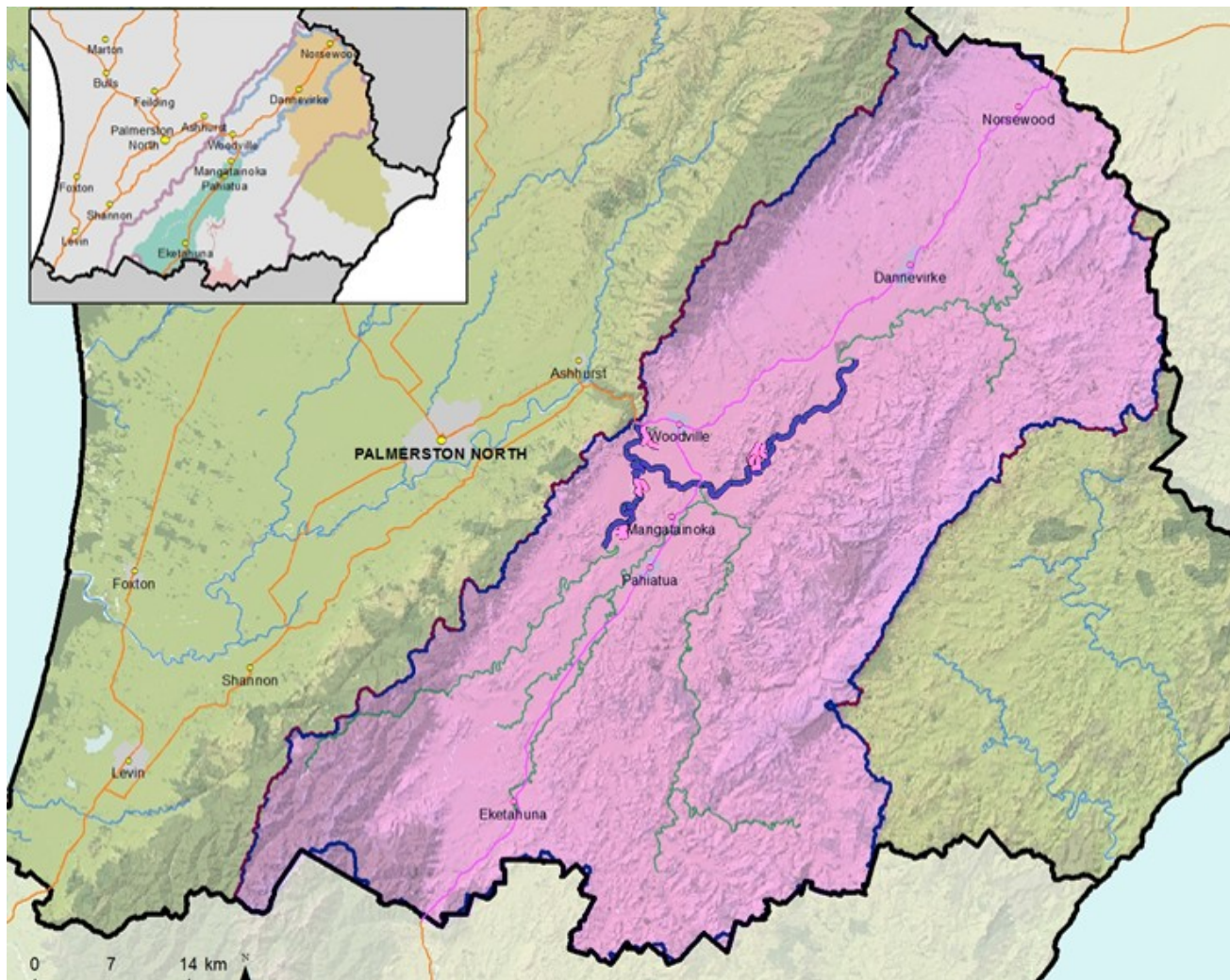
REGIONAL OVERVIEW

- Accelerating land use change
- Unsustainable land use
- Climate change
- Asset reliability
- Evolving community expectations



SCHEME UPDATE SUMMARY

UPPER MANAWATŪ-LOWER MANGAHAO RIVER SCHEME



UPPER MANAWATŪ- LOWER MANGAHAO RIVER SCHEME

- Mangahao and Upper Manawātū.
- 24,000ha.
- Predominantly dairy, sheep and beef land.
- Total Asset Value: \$10,378,076.

Scheme Assets:

4,400 tonnes Rock Groynes
1.8km of stopbanks
19,660 tons bank armouring
23km tied trees
278ha plantings
19km drainage channels
337 m PMU's
615 m Permeable Groynes

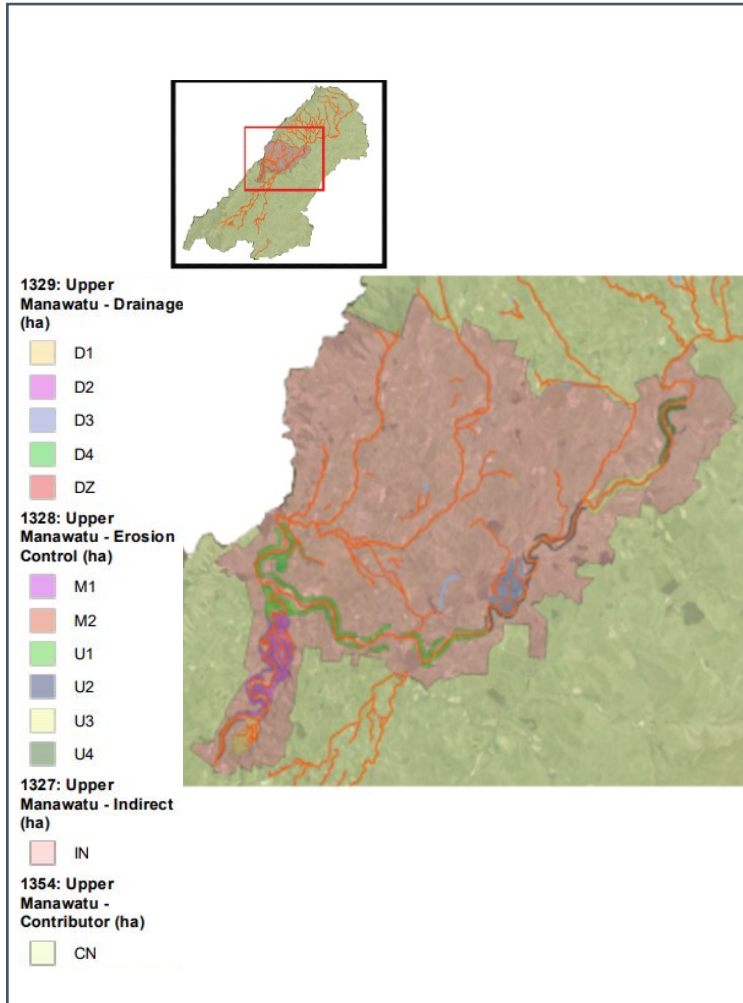
UPPER MANAWATŪ-LOWER MANGAHAO RIVER SCHEME STRATEGIC DIRECTION

The focus of the Scheme over the next year is to continue to maintain existing infrastructure in order to meet the expectation of the local community for channel maintenance, flood protection, drainage and recreational use.

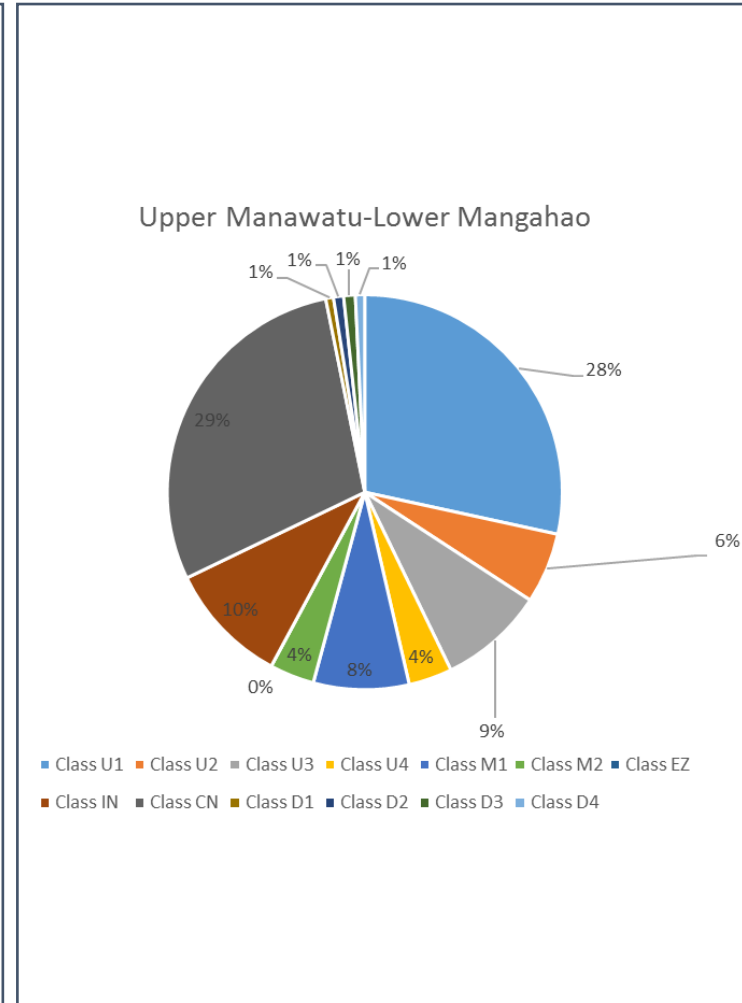
This includes managing gravel, and general channel condition in the rivers by maintaining the desired channel alignment and minimizing lateral erosion.

Scheme Aims for Service Level

- Ensure assets are managed in a consistent, efficient and sustainable manner.
- Maintain river alignment in order to minimize river bank erosion.
- To contain flood flows not exceeding 20% AEP within stopbanks to protect the minor sections of the Upper Manawatū River.
- Maintain drainage and channel capacity that facilitates maintenance of the groundwater levels.



Upper Manawatū-Lower Mangahao scheme rating map



Upper Manawatū-Lower Mangahao scheme rates breakdown by proportion of total funding

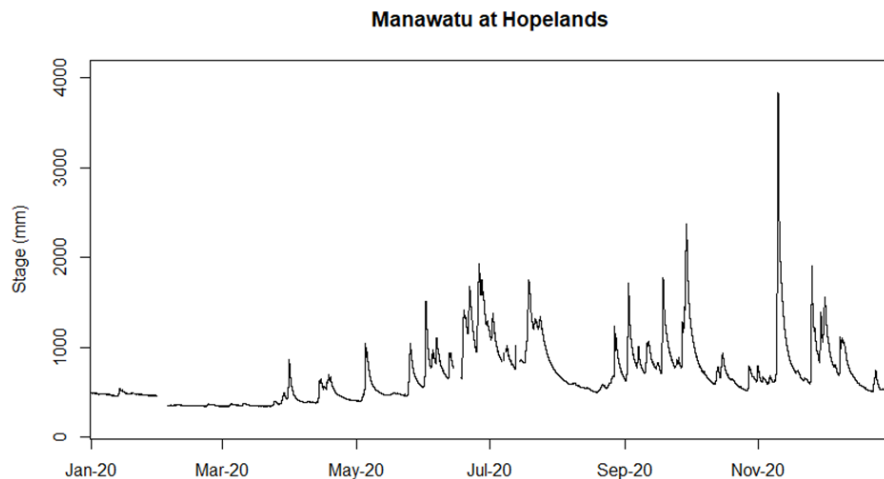
UPPER MANAWATŪ- LOWER MANGAHAO SCHEME FUNDING

The Schemes funding comes from three revenue sources:

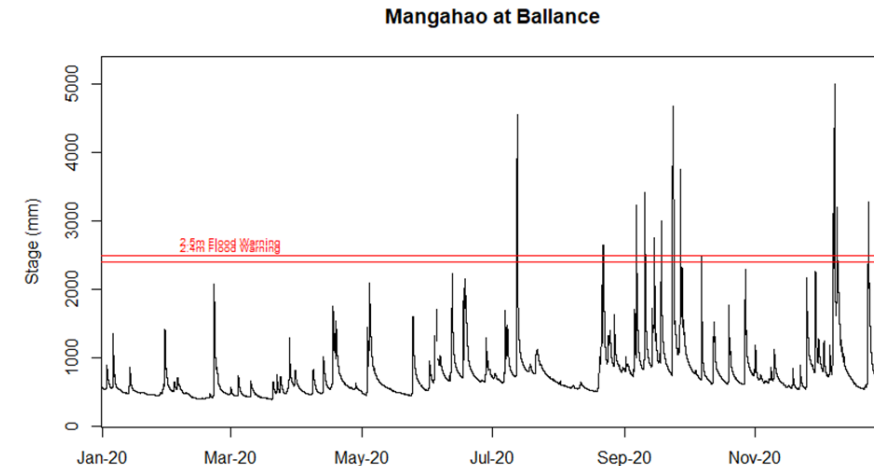
- Targeted Rates – differential targeted rates levied on properties directly benefiting from or causing the need for the work. 80% of scheme cost.
- General Rates – uniformed rate levied over all properties in the Horizons Region. 20% of the scheme cost.
- Other income – Revenue from scheme reserves, etc. held by the scheme. This is used to reduce the level of the targeted rate.

UPPER MANAWATŪ-LOWER MANGAHAO SCHEME HYDROLOGY

River Management works reflect the behaviour of water flowing in the river. High flow events (hydrological peaks) will generally result in higher rates of erosion.



River gauging at Hopelands 2020-2021. Peaks indicate high flows.



River gauging at Ballance 2020-2021. Peaks indicate high flows.

Manawatū at Hopelands – AEP Flows

Return Period		Flood Flow
2 year	50% AEP	650 m3/s
5 year	20% AEP	1018 m3/s
20 year	5% AEP	1566m3/s
50 year	2% AEP	1960 m3/s
100 year	1% AEP	2282 m3/s

Manawatū at Hopelands - Annual Maximum stage (water height) 2008-2020

Year	Stage (m)	Flow (m³/sec)	Date
2008	5.699	756	2008-01-08
2009	3.252	305	2009-12-27
2010	4.157	459	2010-09-06
2011	3.220	300	2011-11-09
2012	5.548	736	2012-03-01
2013	5.416	698	2013-09-11
2014	4.196	466	2014-12-10
2015	5.889	796	2015-06-19
2016	2.839	240	2016-11-11
2017	6.188	849	2017-07-13
2018	6.330	882	2018-06-13
2019	4.881	595	2019-06-13
2020	3.384	369	2020-11-10

Mangahao at Ballance – AEP Flows

Return Period		Flood Flow
2 year	50% AEP	527 m3/s
5 year	20% AEP	684 m3/s
20 year	5% AEP	886 m3/s
50 year	2% AEP	1015 m3/s
100 year	1% AEP	1111 m3/s

Mangahao at Ballance - Annual Maximum stage (water height) 2008-2020

Year	Stage (m)	Flow (m³/sec)	Date
2008	5,712	815	2008-01-08
2009	4.837	603	2009-12-27
2010	5.948	876	2010-09-06
2011	4.425	515	2011-10-26
2012	3.703	374	2012-12-30
2013	3.879	407	2013-09-11
2014	4.447	519	2014-12-10
2015	5.190	678	2015-06-19
2016	4.405	500	2016-02-19
2017	5.301	705	2017-02-03
2018	3.946	412	2018-07-08
2019	4.369	495	2019-08-17
2020	4.995	634	2020-12-08

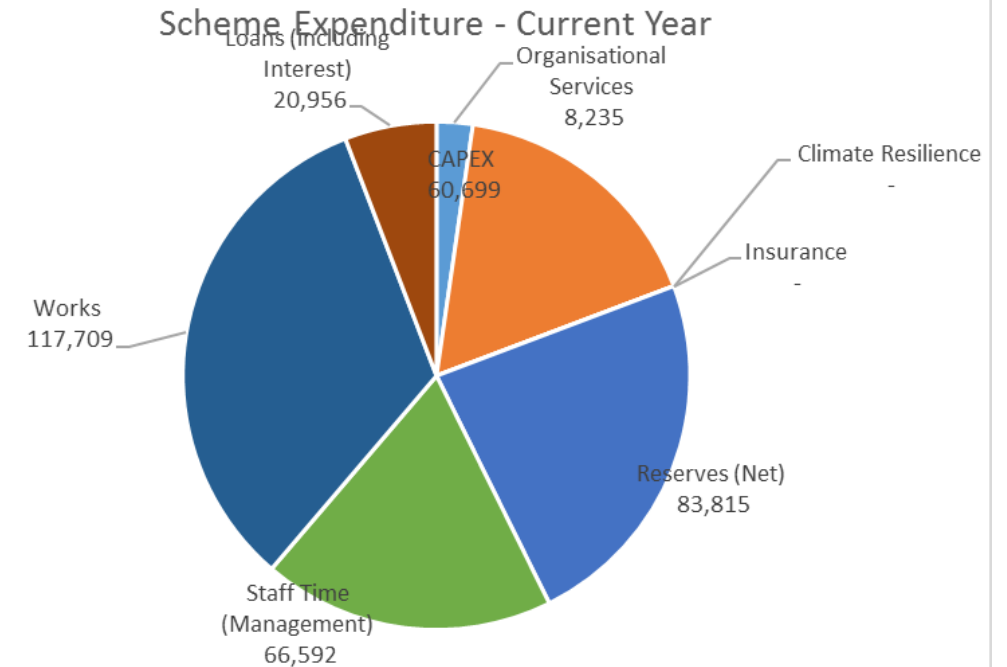
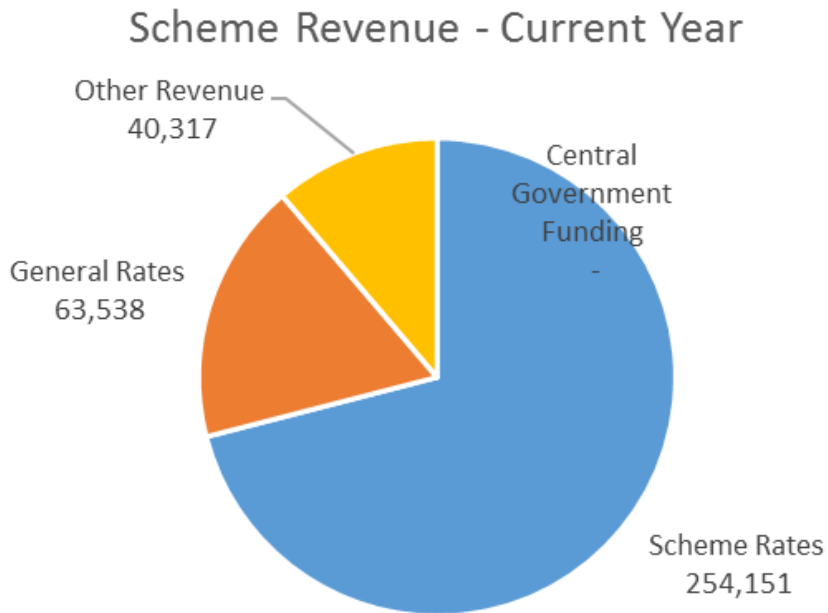
UPPER MANAWATŪ- LOWER MANGAHAO SCHEME HYDROLOGY

The likelihood of a flood event of a given size is described by the Annual Return Period (AEP).

River management assets such as generally maintained with the aim to withstand a 5% AEP.

5% AEP describes a flood that is estimated to occur every 20 years, or has a 5% chance of occurring in any given year.

UPPER MANAWATŪ-LOWER MANGAHAO SCHEME INCOME AND EXPENDITURE 2020-2021



KEY ACTIVITIES AND ISSUES: 2020-21

- Scheme Expenditure:

Opex Works:	\$132,709	+30,000
Capex Works	\$60,699	
Drain Cleaning	\$15,000	
Staff Costs (inc. overheads)	\$66,592	
Organisational Costs	\$8,235	
Reserves	\$53,815	-30,000
Loans	\$20,956	

- Works OPEX activities are expected to exceed budget, primarily as a catch-up for last years works which were delayed due to COVID-19 Level 3&4 restrictions. This will be off set by a lower value being transferred to the reserves.

- This financial year has been busy so far, with works being completed at:

Sinclair's – Tied tree works and bank protection to the RH bank of the Mangahao.

Stafford's – completion of works started in the 2019-20 financial year on the RH bank of the Manawatū.

Oete Rd - completion of works started in the 2019-20 financial year on the RH bank of the Manawatū.

Drain cleaning – all of the drains in the UM-LM scheme have been mechanically cleaned, due to the build-up and congestion of weed and the need to reset the invert on the drains.

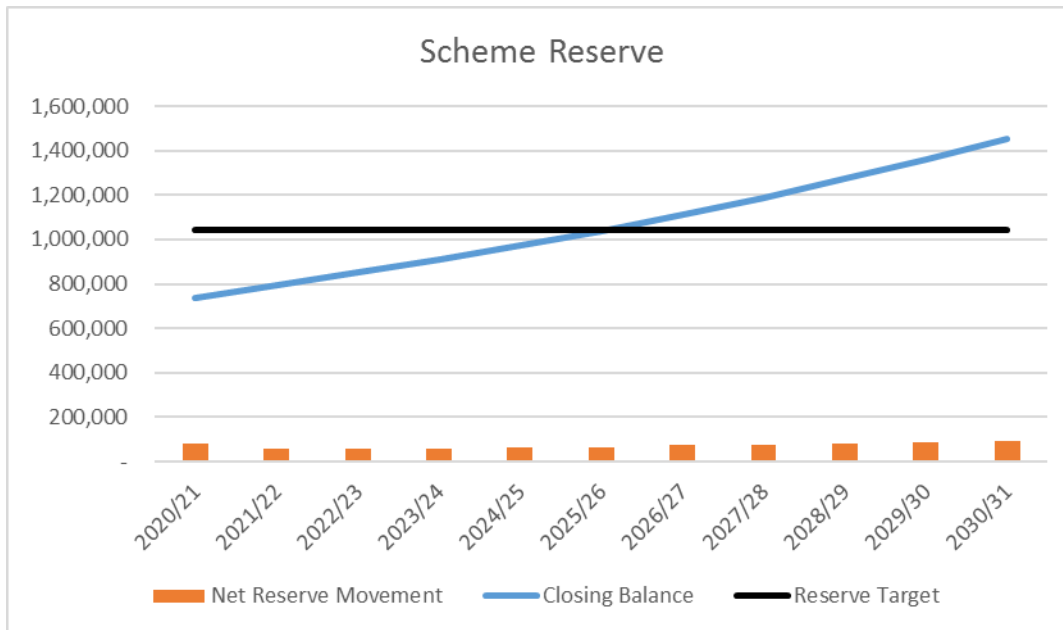
KEY ACTIVITIES AND ISSUES: 2020-21 (CONT)

- Flood events have occurred in the Mangahao and Mangatainoka rivers at the end of October and December 2020. This has led to flood damage being experienced at a number of properties on the Mangahao and lower stretches of the Manawatu (i.e. downstream of the confluence with the Tiraumea/Mangatainoka Rivers) Rivers which will need to be remedied.
- Works are planned for:
 - Cooper's – Bank protection on LH of the Manawatū opposite Cleghorns beach.
 - Cooper's – Bank protection on the RH of the Mangahao, 500m upstream of the confluence with the Manawatū.
 - Macbeth – Bank protection on the LH of the Mangahao.
 - Holderway – Bank protection on the LH of the Mangahao.
 - King – Bank protection and channel shaping on the RH of the Mangahao at the confluence of Soldiers Rd drain with the Mangahao.

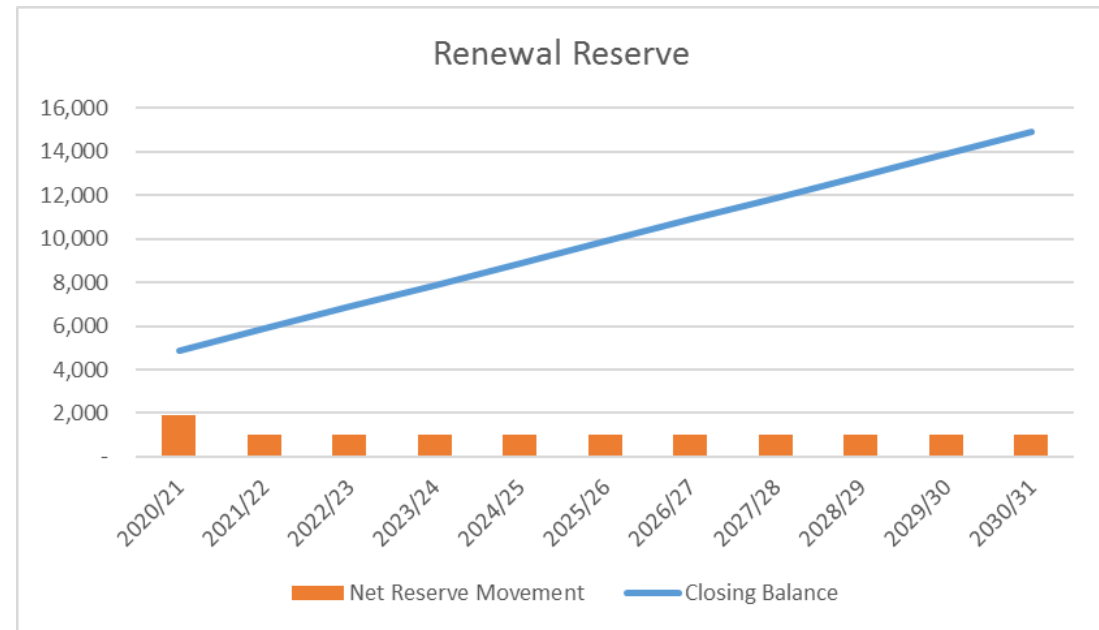
KEY ACTIVITIES AND ISSUES: 2020-21 (CONT)

- Another item that are being undertaken this year is the renewal of the Upper Manawatū – Lower Mangahao River Scheme Gravel extraction consent. The application for this renewal was submitted before Christmas.
- Also of note is that a Gravel extraction consent has been granted to Byfords, for the beaches at Maybey's, Edward's and Cleghorn's on the Manawatū River. Extraction is due to start at the end of January.
- A Gravel extraction consent has also been granted to HCS to extract gravel from a large armoured bend on the Manawatū River downstream from Oringi on Oringi Road. Extraction has already at this beach.
- A meeting has been held between Kiwi Rail and Horizons Compliance about the erosion on the Tiraumea River adjacent to its confluence with the Manawatū River. A follow-up letter has been sent by the compliance team to Kiwi Rail requiring Kiwi Rail to remediate the damage caused by their works and to prevent it from exacerbating.

UPPER MANAWATŪ-LOWER MANGAHAO SCHEME EMERGENCY RESERVE BALANCE AS AT 30 JUNE 2020



Scheme Reserve balance – \$654,803 (1,040,000)



Renewal Reserve Balance - \$2,982

UPPER MANAWATŪ-LOWER MANGAHAO LOAN BALANCE AS AT 30 JUNE 2020



Loan due for repayment in
2025-26 Financial year



UPPER MANAWATŪ-LOWER MANGAHAO SCHEME WORKS 2020-21

Upper Manawatū Reach 1 - Bank protection works

- Tied tree works to reduce bank attack
- Willow removal to increase channel capacity



UPPER MANAWATŪ-LOWER MANGAHAO SCHEME WORKS 2020-21

Upper Manawatū Reach 1– Gravel extraction and channel shaping

- Gravel removed to increase channel capacity
- Channel shaping to reduce back attack at bends during high flow
- Willows removed to liberate metal



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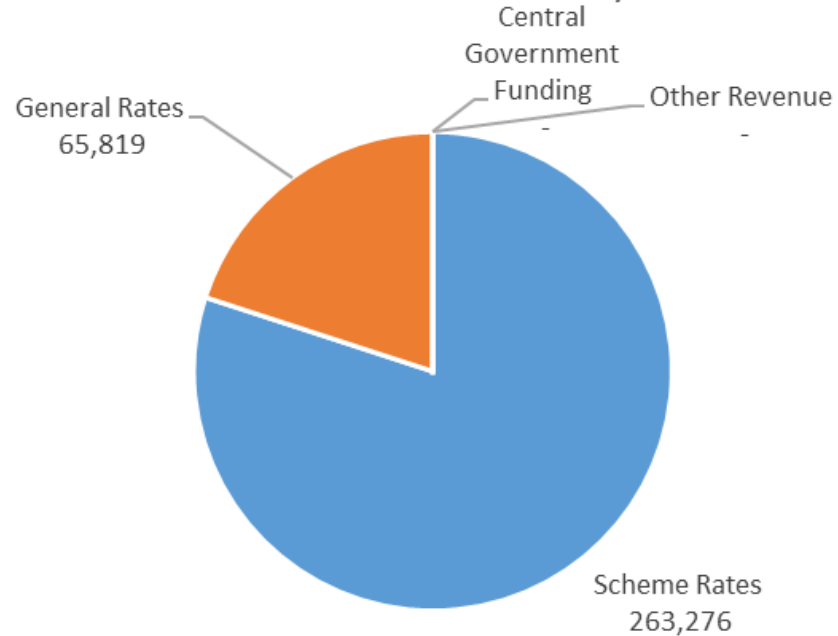
UPPER MANAWATŪ- LOWER MANGAHAO WORKS 2020-21

Drains– Drain maintenance

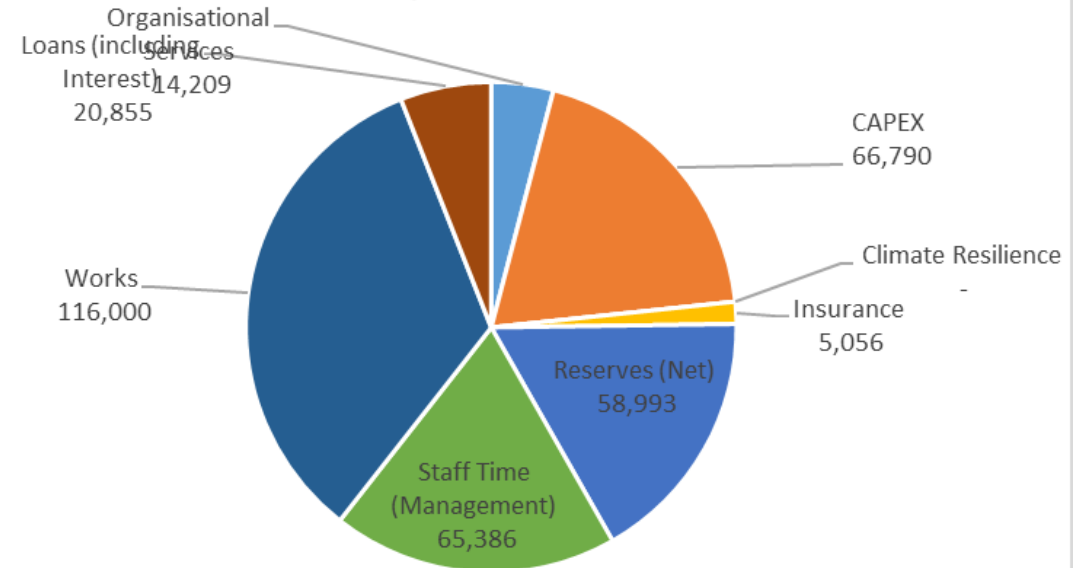
- Mechanical clearing at Soldiers Road.

UPPER MANAWATŪ-LOWER MANGAHAO SCHEME INCOME AND EXPENDITURE 2021-2022

Scheme Revenue - 2021/22



Scheme Expenditure - 2021/22



FORECAST ACTIVITIES AND ISSUES: 2021-22

Scheme Expenditure

Opex Works:	\$101,000
Capex Works	\$66,790
Drain Cleaning	\$15,000
Staff Costs (inc overheads)	\$65,368
Insurance	\$5,056
Organisational Costs	\$14,209
Reserves	\$86,000
Loans	\$20,855

Predicted scheme rate rise – 3.59%

Works Activity

Opex Works	– Continuation of bank protection activities and gravel extraction
Capex Works	– Continuation of bank protection activities
Drain Cleaning	– Drain spraying programmed for all drains

FORECAST ACTIVITIES AND ISSUES: 2021-22 (CONT)

ISSUES:

- New pieces of legislation, including the NPS Freshwater and NES Fish Passage will place some pressure on the work that we do. Primarily around culverts on scheme drains.
- Gravel extraction continues to be a very popular activity.



ORANGA WAI - OUR FRESHWATER FUTURE

Implementing Government's 'Essential Freshwater' package

OVERVIEW

Government has introduced new requirements for managing the health of freshwater in New Zealand, including:

- Changes to the Resource Management Act 1991 (RMA)
- An updated National Policy Statement for Freshwater Management 2020 (NPS-FM)
- New National Environmental Standards for Freshwater (NES-FW)
- Additional new regulations under s360 of the RMA for:
 - Measuring and Reporting of Water Takes; and
 - Stock exclusion

Some of these changes come into effect immediately (from gazettal 3 August 2020), while others are phased in over time.



NATIONAL ENVIRONMENTAL STANDARDS FOR FRESHWATER & REGULATIONS



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THE TASK AHEAD

Regional councils are required to:

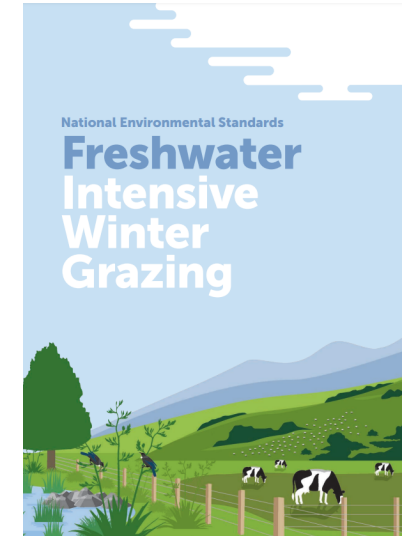
- Issue and monitor consents relating to intensification of land use (until the end of 2024), intensive winter grazing*, stock holding areas and feedlots – all come into effect from mid-2021, and activities that have more than a minor impact on wetlands and streams (effective from 3 Sep 2020).

*Land owners seeking consent for intensive winter grazing need to work directly with iwi/hapū.

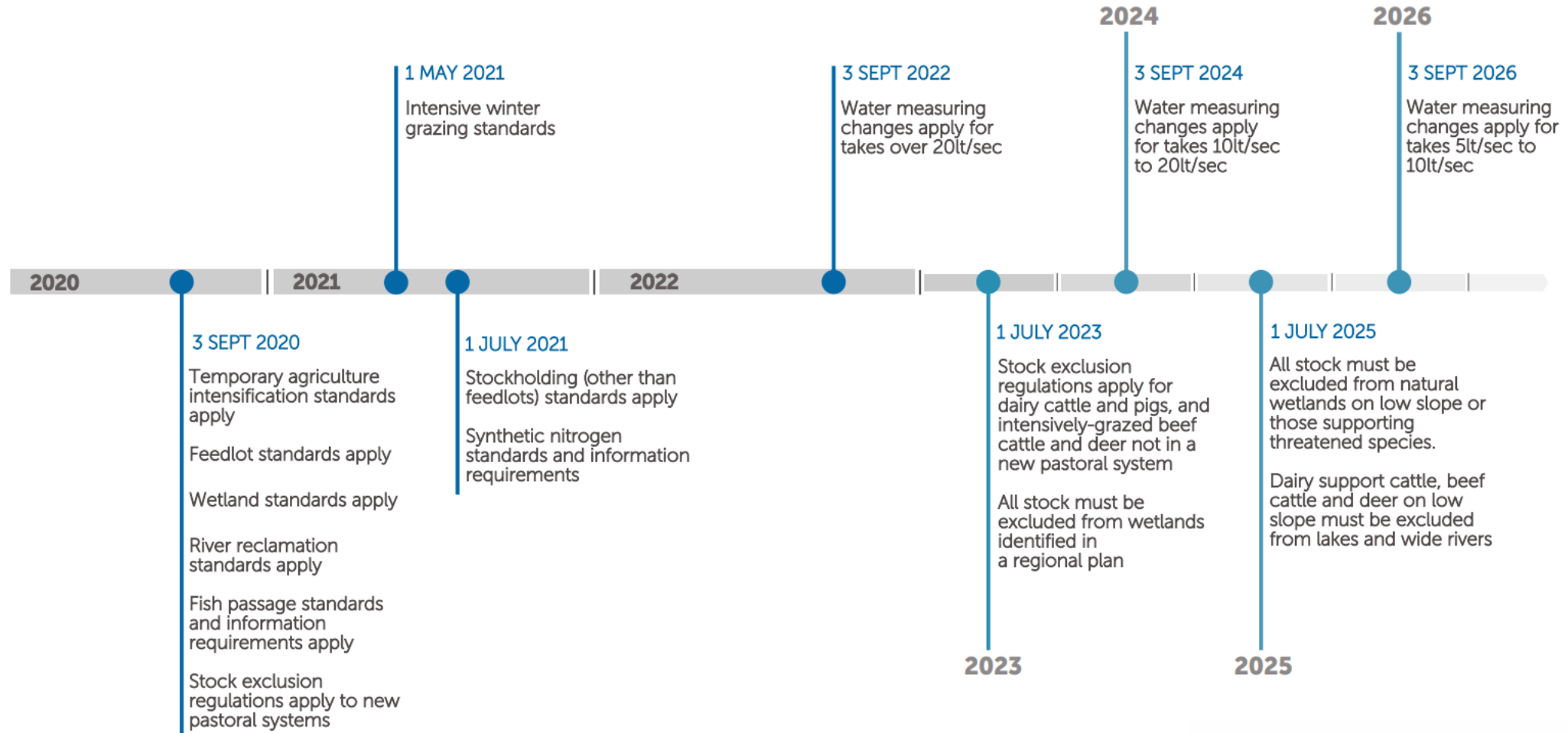
- Collect data and monitor levels of synthetic nitrogen fertiliser use
- Stock exclusion (dairy and beef cattle, pigs and deer) from wetlands, streams and their margins (>1m wide); requirements for bridges and culverts, phased in over time
- Real time monitoring and reporting of water takes >5 l/s

Also coming:

- Mandatory freshwater modules in farm plans (currently in draft)



New National Freshwater Rules



NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT (NPS-FM)



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NATIONAL POLICY DIRECTION

Aim is to halt waterway degradation within 5 years and improve water quality within a generation

NPS-FM introduces new (or updated) requirements including:

- Managing freshwater in a way that 'gives effect' to Te Mana o te Wai.
- Improving degraded water bodies, and maintaining or improving all others applying 'national bottom lines'.
- Compulsory values: ecosystem health, human contact, threatened species and mahinga kai, plus other values we must consider
- We must use the best information available including, where practicable, complete and scientifically robust data, but not refrain from decision making on the basis of uncertainty.
- Monitor and report annually on freshwater (including the data used); publish a synthesis report every five years containing a single ecosystem health score and respond to any deterioration.

What is a National Policy Statement?

In essence, national policy statements prescribe objectives and policies for local authorities for matters of national significance.

In some cases they provide direction as to how local authorities give effect to those policies and objectives.

This includes the NPS-FW and will likely include the NPS for Indigenous Biodiversity to be released in 2021.

TE MANA O TE WAI

6 principals:

- Mana whakahaere
- Kaitiakitanga
- Manaakitanga
- Governance
- Stewardship
- Care and respect

Hierarchy of obligations:

1. The health and well-being of water bodies and freshwater ecosystems
2. The health needs of people (such as drinking water)
3. The ability of people and communities to provide for their social, economic and cultural well-being, now and in the future

Read MfE's [Te Mana o te Wai factsheet](#) or watch their [brief explainer videos](#)



Figure 1: How regional councils must give effect to Te Mana o te Wai

THE TASK AHEAD

Regional councils are required to:

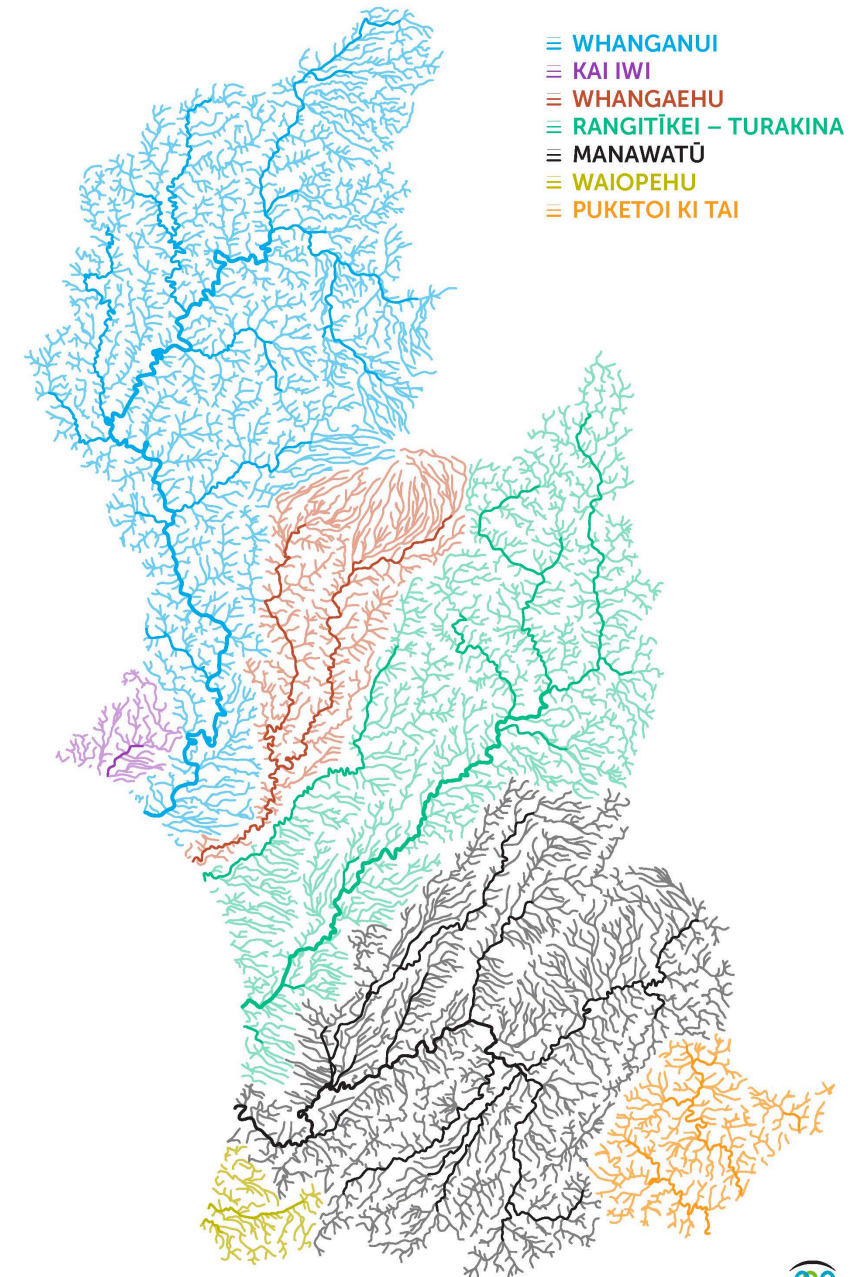
- engage with communities and tangata whenua to:
 - set our long-term vision (30 years and beyond);
 - implement the National Objectives Framework (NOF); and
 - report on progress towards this vision.
- map existing wetlands and encourage their restoration; address in-stream fish barriers

For each Freshwater Management Unit (FMU) we must identify:

- our values and vision for freshwater
- environmental outcomes (for each value), attributes (and their baseline and target states); and
- set limits and/or prepare action plans to achieve environmental outcomes.

We must use the best information available including, where practicable complete and scientifically robust data, but not refrain from decision making on the basis of uncertainty.

Monitor and report annually on freshwater (including the data used); pull a synthesis report every five years containing a single ecosystem health score and respond to any deterioration.



NATIONAL OBJECTIVES FRAMEWORK (NOF)

Table 5 – Ammonia (toxicity)

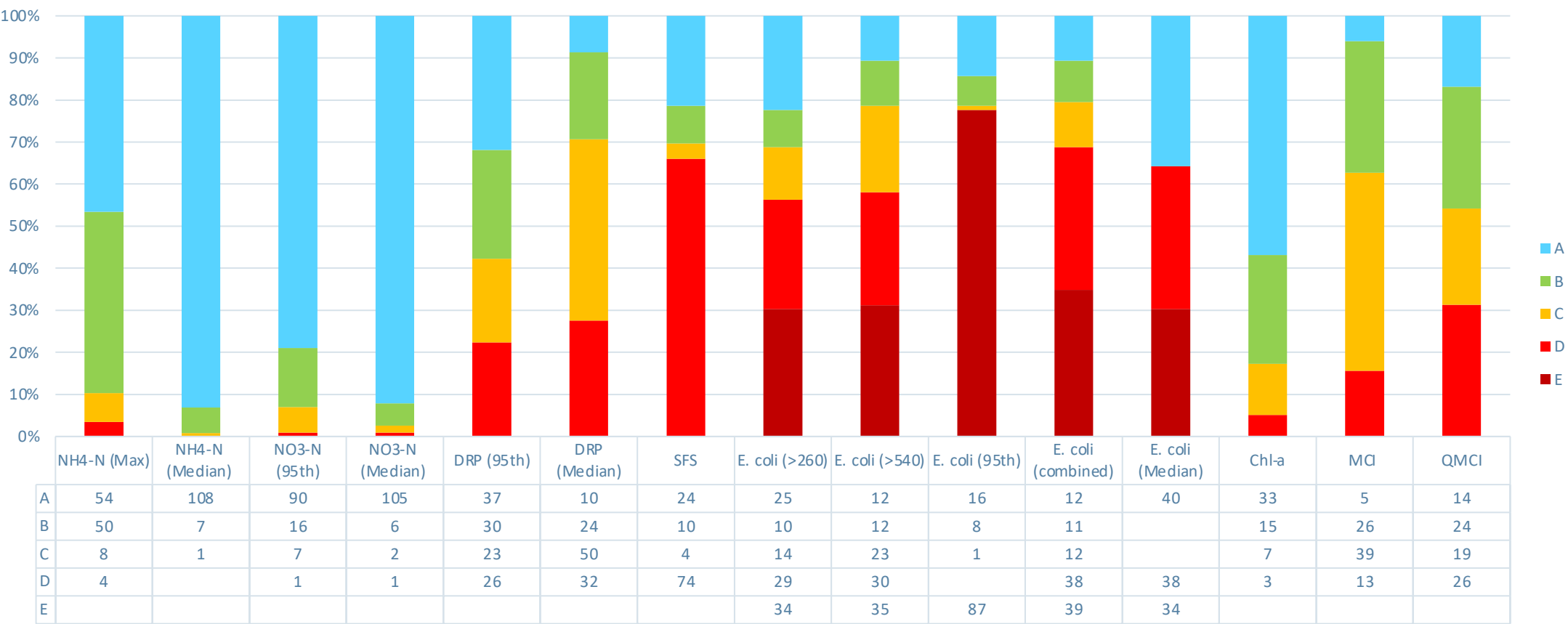
Value (and component)	Ecosystem health (Water quality)	
Freshwater body type	Rivers and lakes	
Attribute unit	mg NH ₄ -N/L (milligrams ammoniacal-nitrogen per litre)	
Attribute band and description	Numeric attribute state	
	Annual median	Annual maximum
A 99% species protection level: No observed effect on any species tested.	≤0.03	≤0.05
B 95% species protection level: Starts impacting occasionally on the 5% most sensitive species.	>0.03 and ≤0.24	>0.05 and ≤0.40
National bottom line	0.24	0.40
C 80% species protection level: Starts impacting regularly on the 20% most sensitive species (reduced survival of most sensitive species).	>0.24 and ≤1.30	>0.40 and ≤2.20
D Starts approaching acute impact level (that is, risk of death) for sensitive species.	>1.30	>2.20

Numeric attribute state is based on pH 8 and temperature of 20°C. Compliance with the numeric attribute states should be undertaken after pH adjustment.

- 22 attributes that provide for identified values (compulsory and non-compulsory)
- Some require limits to be set, others require action plans to address issues.
- Most have a 'national bottom line' set above the 'C' or 'D' band.

CURRENT STATE – SOE SITES

State of Environment Sites - NOF Assessment



LOTS OF WORK TO DO...

- Lots of new regulations
- More consultation and collaboration with tangata whenua, communities and industry
- Greater demand on iwi, Horizons, primary sector and industry, to provide guidance, and much more consent and compliance work
- New and expanded monitoring and reporting requirements (particularly for DO, fish, deposited sediment etc,)
- More data and information collection and sharing
- Establish limits and/or action plans to address water quality issues
- Ready ourselves to notify a plan change by Dec 2024
- Lots of work to do yet to meet with central and local government, iwi/hapū, primary sector reps, stakeholders to work through the details and interpretations, and communicate these with the wider community and write them into policy
- Further changes to come – NPS for indigenous biodiversity, implementing National Planning Standards, RM reform...

HORIZONS HELP AND GUIDANCE

Events and information:

Hui-a-iwi (twice a year) + three-weekly freshwater hui from late Feb 2021

[e-newsletters](#), guidance documents and brochures, social media,

Events: Manawatu River Improvement Festival – Sat 27 February, Rural Games – Fri 12-Sun 14 March, Central Districts Field Days – Thu 18-Sat 20 March, Community and scheme meetings

Check out our website: <https://www.horizons.govt.nz/managing-natural-resources/our-freshwater-future>

Please direct enquiries to info@ourfreshwaterfuture.nz



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