Tairāwhiti Regional Freshwater Planning Advisory Group – Hui 4

Date: **11 October 2023**

Title of report: **Water quality and discharges to land and water:**

Diffuse discharges, and fertiliser and solid discharges

Report no: **1**

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Purpose of this report

This report provides information to the Advisory Group on:

- **Diffuse discharges**
- **Fertiliser and solid discharges**

These two topics relate to the 'Water quality and discharges to land and water' section of the Tairāwhiti Resource Management Plan (TRMP).

Outcomes sought

1. Members of this Advisory Group understand the matters and issues relating to these topics.
2. Members' experience and knowledge helps to build our collective understanding of the issues relating to **Diffuse discharges, and fertiliser and solid discharges.**
3. Members will consider and discuss different approaches and options for managing these activities and associated effects.

Getting ready for the hui

Please consider the questions in this report ahead of the hui. These questions will be discussed at the hui so if you haven't made a note of your thoughts for each of the questions prior to the hui, we can capture them then.

What are diffuse discharges?

Diffuse discharges are defined as *'run-off or leachate from land onto or into land, a waterbody or the sea'*. They are discharges of water and contaminants that are not collected and discharged from a defined point/pipe, but instead discharge via dispersed overland flow or runoff.

What are fertiliser and solid discharges?

These discharges cover activities that relate to the application of fertiliser to land (and its potential to reach ground or surface water) and the placement/disposal of material in land (such as farm dumps and solid waste landfills).

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Summary

This report focuses on two sub-sections of Section C6.2 *Water quality and discharges to land and water* of the Tairāwhiti Resource Management Plan (TRMP) - **diffuse discharges** and **fertiliser and solid discharges**.

These provisions primarily cover a range of rural discharge activities:

Diffuse discharges

- commercial vegetable growing, cropping and intensively farmed stock activities (existing and new)
- discharges from stock access (waterways) or grazing when winter intensive grazing is being undertaken
- discharge of greenhouse nutrient solution (from greenhouses and similar)
- use of feed pads/feedlots
- other diffuse discharges – including diffuse discharges of stormwater from forestry roads and earthworks associated with plantation forestry.

Fertiliser and solid discharges

- fertiliser discharges
- solid material (inert) disposal
- farm dumps, offal pits, solid animal waste or vegetative material including silage/ organic matter/compost
- landfills.

Many activities do not require a resource consent if they meet the standards set in the TRMP. For diffuse discharges from intensively farmed stock activities and commercial vegetable growing and cropping, these standards primarily relate to the requirement for a Farm Environment Plan (FEP) or setbacks from water bodies. Permitted fertiliser use needs to be undertaken in accordance with New Zealand Codes of Practice and be applied no closer than 5 metres from outstanding water bodies and regionally significant wetlands.

A key issue for the Plan is how it interfaces with national directions that also control aspects of farming and horticultural activities. These include:

- The National Environmental Standard for Freshwater 2020 (in particular Part 2: standards for farming activities)
- Resource Management (Stock Exclusion) Regulations 2020
- The Resource Management Act 1991 and associated Resource Management (Freshwater Farm Plans, FFPs) Regulations 2023 – which require the staged adoption of FFPs for arable, horticultural and pastoral land uses.

We need to consider whether these regulations are sufficient to progress towards desired environmental outcomes or whether additional requirements are required.

It's worth noting that some aspects of the TRMP rules already go further than national requirements.

List of questions for the Advisory Group to consider

Management 'toolbox' for diffuse rural discharges

- Does the 'toolbox' in ***Table 4*** (p12 and 13) outline the main options for managing rural runoff/diffuse discharges? Are there other management options that you are aware of?
- Which 'tools'/options are most likely to be applicable and where?
- What are some of the practical issues associated with these 'tools'/options?

Management approaches/options

- Considering ***Table 5*** (p15 – 17), are there any additional 'tools'/approaches that should be included?
- What are some of the pros, cons and implications (including practical, cost and other matters) of the approaches/options in addition to those outlined in the table?
  - What 'tools'/approaches are going to work best in Tairāwhiti?
- How practical is stock exclusion on steeper land (above 5 degrees)? Should the Plan:
  - extend the national requirement for stock exclusion to steeper land region-wide?
  - take a targeted approach – focus on areas upstream of specific values?
  - take another approach?
- Are the current setbacks in the Plan being adopted for horticulture/intensive grazing and other activities?
  - Should setbacks also apply to drains (as they carry water and contaminants to main waterways)?
- What do you think about the widespread use of farm plans for farming and horticulture?
  - Are they an alternative to rules about setbacks for farming activities?
  - How do we ensure ongoing compliance, once certified?
- What are the priorities for additional management of rural land-use activities in Tairāwhiti?
  - Where will we get the big wins?
  - What are the priorities?
  - What activities do we need to focus on?

1 Background and context

The 'Water quality and discharges to land and water' section (discharges section) covers a range of discharge activities that may affect freshwater quality and other freshwater values.

Due to the range of activities and issues it covers, the discharges section is being discussed across three Advisory Group hui. This is the second hui which focuses on two related topics:

- **Diffuse discharges**
- **Fertiliser and solid discharges**

1.1 Diffuse discharges (C6.2.8 – 6.2.10)

Diffuse discharges are defined in the TRMP as '*run-off or leachate from land onto or into land, a waterbody or the sea*'. That is, discharges of contaminants in rural runoff that are not captured and discharged at a single point, but which largely run/flow overland to freshwater bodies and the coastal environment (or potentially infiltrate to groundwater).

Table 1: Diffuse discharge activities currently managed in the TRMP

Type of discharge	Comments
Intensively farmed stock activities (existing as of October 2015)	These activities are permitted (allowed) by the TRMP subject to requirements for a FEP and/or setbacks from waterways Where the requirements are not met, a resource consent is required
Commercial vegetable growing and cropping activities (existing as of October 2015)	
New commercial vegetable growing, cropping and intensively farmed stock activities	
Discharges from stock access (waterways) or grazing when winter intensive grazing is being undertaken	
Greenhouse nutrient solution to land	Permitted by the TRMP subject to compliance with code of practice for nutrient management and nutrient loading rates
Use of feed pads	Permitted subject to location, design and management requirements
Runoff from feedlots	A resource consent is required for these activities
Other discharge activities not provided for – including diffuse discharges of stormwater from forestry roads and earthworks associated with plantation forestry	

It is common for regional plans to manage these activities. However, as discussed below, national requirements have been put in place that control some of these activities in a nationally consistent manner – although not necessarily in a local context. The hui will discuss the issues associated with these activities, options for management and whether additional or more stringent requirements are needed to address existing and future water quality issues.

1.2 Fertilisers and solid discharges (C6.6.11 – 13)

This set of provisions relates to material that is applied/discharged to land and which may run off to surface water or infiltrate into groundwater. There are two main types of activities that are controlled:

- the application of fertilizer
- the disposal/application of a range of solid waste/material (both rural and other waste).

It is common for regional plans to manage these activities and similar rules are found in most regional plans. The provisions for the five activities in grey in Table 2 below are technical in detail and will be reviewed by staff and refined to reflect best practice, and brought back to the Advisory Group.

Table 2: Fertiliser and solid discharge activities currently managed in the TRMP

Type of discharge	Comment
Fertiliser discharges	Permitted subject to compliance with relevant code of practice and location requirements, including setbacks from water bodies
Solid material (inert)	Permitted subject to volume and location requirements, including setbacks from water bodies (including the groundwater table)
Farm solid waste/farm dumps/offal pits	
Solid animal waste or vegetative material application to land	Permitted subject to nutrient loading limits and location requirements including setbacks from water bodies
Silage/ organic matter/compost	Permitted subject to volume, location and design requirements, including setbacks from water bodies
Landfills	Resource consent is required for any new landfill

The key issue is the first activity – fertiliser discharges - including its contribution to effects on water quality and options for better managing fertilizer application use. This is inter-linked with the requirements for point source discharges above – for example farm management planning and nutrients from other sources.

1.3 Current state and plan effectiveness

State of the Environment (SoE) monitoring

Contaminants from diffuse and solid discharges can run off and enter waterways or groundwater. Table 3 provides a high-level assessment of Council's SoE monitoring data for water quality and how it may be affected by fertiliser use and point source discharges.

Table 3: Indicative conclusions for Council' State of the Environment monitoring

Measure	Comment
Ammonia and nitrate toxicity	Generally occurs at low concentrations across the region Five-year trend analysis suggests more sites show a likely improvement than likely degradation

Measure	Comment
	Nitrate is likely to be sourced through fertiliser application and application of animal/vegetative material to land
Phosphorus	A wide range of results – with high quality in the Ūawa and Waiapu catchment areas to predominantly D-grade in the Waimatā and Waipaoa catchment areas Five-year trend analysis suggests likely improvement across the majority of monitoring sites – but this isn't the case in all areas Phosphorus is strongly bound to sediment and high levels can reflect both natural and applied phosphorus (phosphate) in sediment
Microbiological contaminants (represented by E.coli)	Occur in high concentrations (poor quality) at most monitoring sites, particularly in the Waimatā and Waipaoa catchment areas and national bottom lines are currently not being met across large parts of Tairāwhiti Five-year trend analysis suggests slightly more sites are degrading than improving E.coli is a non-specific indicator of microbiological contamination and occurs from runoff from pastoral farming activities, direct access of stock/animals to waterways and other sources including domestic animals, birds and pest species
Indicators of ecological health (macroinvertebrates)	Results are variable but suggest a relatively poor ecological state overall Macroinvertebrates are an integrated indicator of ecological health and low values can be due to a range of factors and not solely discharges/water quality – particularly stream channel and structure/integrity and riparian margins
Sediment	A key issue for Tairāwhiti Suspended fine sediment is high in several catchment areas including Waimatā, Waipaoa, Mōtū and Waiapu Sediment sourced from exposed soil in horticultural land uses, stream bank erosion and activities that disturb the land surface such as earthworks and forestry preparation/harvesting can lead to large scale erosion, leading to the deposition of large volumes of sediment in waterways and the coastal environment

How well is the TRMP managing discharges?

Council's Freshwater team has considered whether the existing TRMP provisions have been effective and efficient in managing point source discharges. The success of the plan is difficult to determine as most of the rural diffuse discharge activities are permitted – subject to compliance with a FEP or separation distances from water bodies (or both) and other standards. While some FEPs have been prepared and submitted, on-going implementation and compliance is required to ensure their effectiveness. In addition, some activities (for example intensive winter grazing and break feeding) can occur in specific locations and times.

Nevertheless, water quality in areas with intensive land use activities appears to be declining and the introduction of intensive farming activities, including horticulture, into new areas has the potential to further reduce existing water quality. Additionally, the microbiological and ecological quality of Tairāwhiti's rural freshwater bodies is generally low (poor) region-wide, suggesting that further requirements/improved compliance is required to meet the expectations of the NPS-FM and to give effect to Te Mana o Te Wai.

In this context, there are four key environmental effects where improved outcomes (and hence enhanced management) in relation to rural discharges should be considered:

#	Contaminant/Effect	Sources
1.	**Sediment**	Erosion/runoff from horticultural and pastoral activities (including intensive winter grazing and break feeding), stock access to rivers and associated stream bank erosion
2.	**Microbiological**	Runoff from pastoral activities (including intensive winter grazing) and stock access to waterways
3.	**Nutrients**	Application of nitrogen and phosphate
4.	**Stream ecosystem health**	Water quality, stream bank modification/erosion (including stock access).

Other activities (not part of this section of the TRMP)

There are other activities/land uses that contribute to sediment discharges and the adverse effects listed about, but which aren't part of the diffuse discharges section of the TRMP:

- **Forestry**. Forestry earthworks, roading, harvesting, slash management etc. Forestry will be the subject of a separate hui.
- **Erosion of highly erodible land.** Council is continuing to work with landowners to implement a programme to protect Tairāwhiti's most erosion-prone land (Land Overlay 3A). About 86% of this land now has effective tree cover. About 7,223ha (14%) still requires action – approximately half of which is in the Waiapu catchment[1]. It is anticipated that this will continue to be part of the Plan moving forward.

1.4 Legislation relevant to diffuse discharges

Several national legislative requirements are relevant to the topic of diffuse rural discharges and water quality. Councils are obliged to give effect to national policy statements in preparing their regional (and unitary) plans and are required to implement national environmental standards and regulations. However, regional plans can impose more stringent controls than the standards and regulations.

National Policy Statement for Freshwater Management (NPS-FM)

As indicated in previous hui, the key direction in the NPS-FM is to give effect to Te Mana o te Wai by placing the health of waterbodies above other priorities such as human needs and economic interests. Key requirements of relevance to diffuse discharges include:

- managing water quality and quantity to achieve identified environmental outcomes and restoring and preserving the balance between the water, the wider environment, and the community

1 State of our Environment 2020. Te Āhuatanga o te Taio. Gisborne District Council, 2020.

- policies that are directed at protecting values and extent of rivers, wetlands and outstanding water bodies; and to phase out degradation (below target water quality)
- setting targets for future water quality that are above national bottom lines and above the current (baseline) state - unless this is already in the highest band.

The implication of these is that the updated TRMP should include provisions that ensure water quality and ecosystem health do not degrade further and that steps are put in place to address existing degradation.

National Environmental Standard for Freshwater (NES-F)

The NES-F includes a range of regulations (rules required to be implemented by regional councils) for activities that may affect freshwater. For this topic, the key ones are the regulations and standards for farming activities. Many of these primarily relate to dairy farming, which is not significant in Tairāwhiti, but some also apply to non-dairy pastoral farming activities:

- feedlots
- stockholding areas
- intensive winter grazing
- synthetic nitrogen application.

Some of these overlap with current provisions in the TRMP.

Stock Exclusion Regulations 2020

These regulations require the exclusion of stock (dairy cattle, pigs, deer and beef cattle) from waterways (including wetlands). In respect of beef cattle, the requirement applies to:

- low slope land, being land less than 5% in slope (as mapped – see below)
- rivers more than 1 m wide with a 3 m setback from the river
- mapped wetlands, wetlands including threatened species and natural wetlands greater than 0.05 Ha on low-slope land.

Given the steep topography of Tairāwhiti, low slope land is a relatively small component of the land area of the region as indicated in Figure 1 below. Estimates from Niwa[2] are that only about 10% of Tairāwhiti's 12,646 kms of rivers require stock exclusion under the regulations, with stock estimated as currently being excluded from 29% of this length.

[2] Modelling the effect of stock exclusion on E. coli in rivers and streams – National Application. MPI Technical Paper No: 2017/10 Prepared for Ministry for Primary Industries by NIWA.

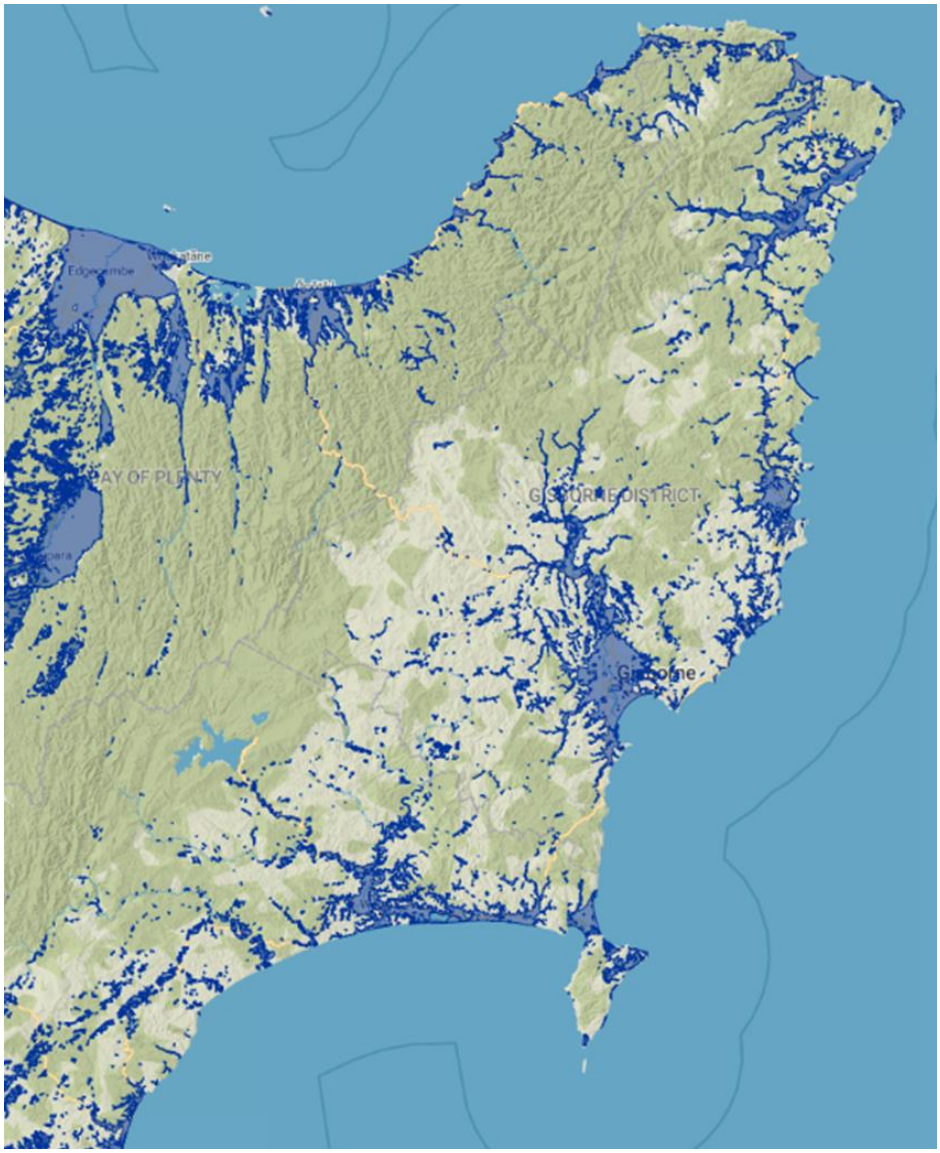

Figure 1: Low slope land (blue), Tairāwhiti

Freshwater Farm Plans (FFPs) – RMA and Freshwater Farm Plans Regulations 2023

These documents require FFPs to be prepared where:

- 20 or more hectares of the farm is arable land use; or
- 5 or more hectares of the farm is horticultural land use; or
- 20 or more hectares of the farm is pastoral land use; or
- 20 or more hectares of the farm is a combination of any 2 or more of the land uses described above.

The requirements for FFPs are being rolled out nationwide from August 2023 (starting in Waikato and Southland) with all regions being subject to the requirements by the end of 2025. FFPs are required to respond to the catchment context, challenges and values for the local area in which the farm is situated – with this context being provided by councils. A feature of FFPs under the regulations is that they are required to be independently audited and certified by an approved certifier, and re-audited every five years or when significant change occurs.

These three national standards and regulations have been outlined as they are relevant to the future Tairāwhiti planning framework. Consideration needs to be given to whether these requirements are sufficient in themselves to progress towards future management outcomes (maintaining or improving water quality/ecological health) or instead whether additional or more stringent requirements are required. For example, it is noted that several of the current TRMP provisions already include setbacks that are larger than those under the national requirements for some activities.

2 The 'toolbox' for managing diffuse discharges

Additional management controls may be required for rural discharges to improve freshwater outcomes. Management of diffuse runoff/discharges can be challenging as the entrainment of contaminants in runoff and its pathways to freshwater can be complex and occur over a wide area.

A 'toolbox' of management options is available to assist in managing rural discharges, and some of these are outlined in the table below. Not all options may be needed in Tairāwhiti and some may have practical limitations. However, the purpose of the table is to outline some of the management tools that could be used and discuss their applicability and how they may be combined and applied within the context of the region and its freshwater management issues.

Table 4: Toolbox for managing rural diffuse discharges

Management tool	Effects managed	Description
Stock exclusion	Water quality, stream bank erosion and associated stream habitat, sediment discharges, microbiological contamination	Excluding stock from waterways and wetlands through fencing, or national exclusions. This eliminates or minimises the ability for stock to access riverbanks and direct discharge of effluent to water ways
Setbacks	Water quality including sediment discharges (particularly from horticulture and intensive farming), microbiological contamination (such as from pastoral farming activities), stream habitat (particularly when combined with riparian planting)	Providing a setback from a waterway ensures that activities do not encroach on riverbanks/wetlands – assisting in preserving the integrity of the riverbank and providing some space for contaminants in runoff to settle or be filtered out prior to reaching the waterway. This can be enhanced by the provision of riparian planting, which can also assist in filtering, river-bank stability, contributing to in-stream habitat and shading (in small rivers)
Riparian planting	Stream bank erosion and associated sediment discharges, microbiological contamination, stream habitat	
Nutrient management / caps	Nutrient enrichment – nitrates, phosphates	This option seeks to control the use of nitrogen and other fertilisers to managing potential effects on water quality caused by elevated nutrients

Management tool	Effects managed	Description
FFPs/FEPs	Wide range of land management issues and effects	FFPs/FEPs provide a mechanism for identifying key management issues in the context of a farm and the wider catchment and freshwater system. This enables site-specific management of farming activities in a way that responds to the wider environment
Land retirement or land use change	Depends on the issue – primarily sediment in Tairāwhiti, but could also be to manage elevated nutrients or microbiological discharges if necessary	This involves the change in land use to address the identified problem. In Tairāwhiti, this is primarily focused on the most erodible land as discussed above

Questions for the Advisory Group

- Are there other management options that can be used to manage rural runoff/diffuse discharges?
- Which options are most likely to be applicable and where?
- What are some of the practical issues associated with these tools?

3 How should we manage diffuse discharges in Tairāwhiti?

We need to change how we manage diffuse discharges to reduce existing and prevent additional water quality and ecosystem degradation.

There are a range of approaches that could be adopted. Some potential approaches are outlined in the diagram below. A brief description of the options, and some of their 'pros and cons' are provided in Table 5 following the diagram.

Council is required to implement the national requirements in respect of the NES-F and the stock exclusion and farm planning regulations – they are mandatory and minimum requirements. The options in Table 5 explore whether relying on the national requirements is sufficient or whether additional measures and controls are needed to address water quality/ ecosystem health.

The options are not mutually exclusive – more than one can be applied, and some options are more relevant to some areas/issues than others. It is likely that the best outcome will be a mix of options depending on the issue and location.

Feedback from the Group is needed to help refine the approach and the tools that could be adopted and in what circumstance.

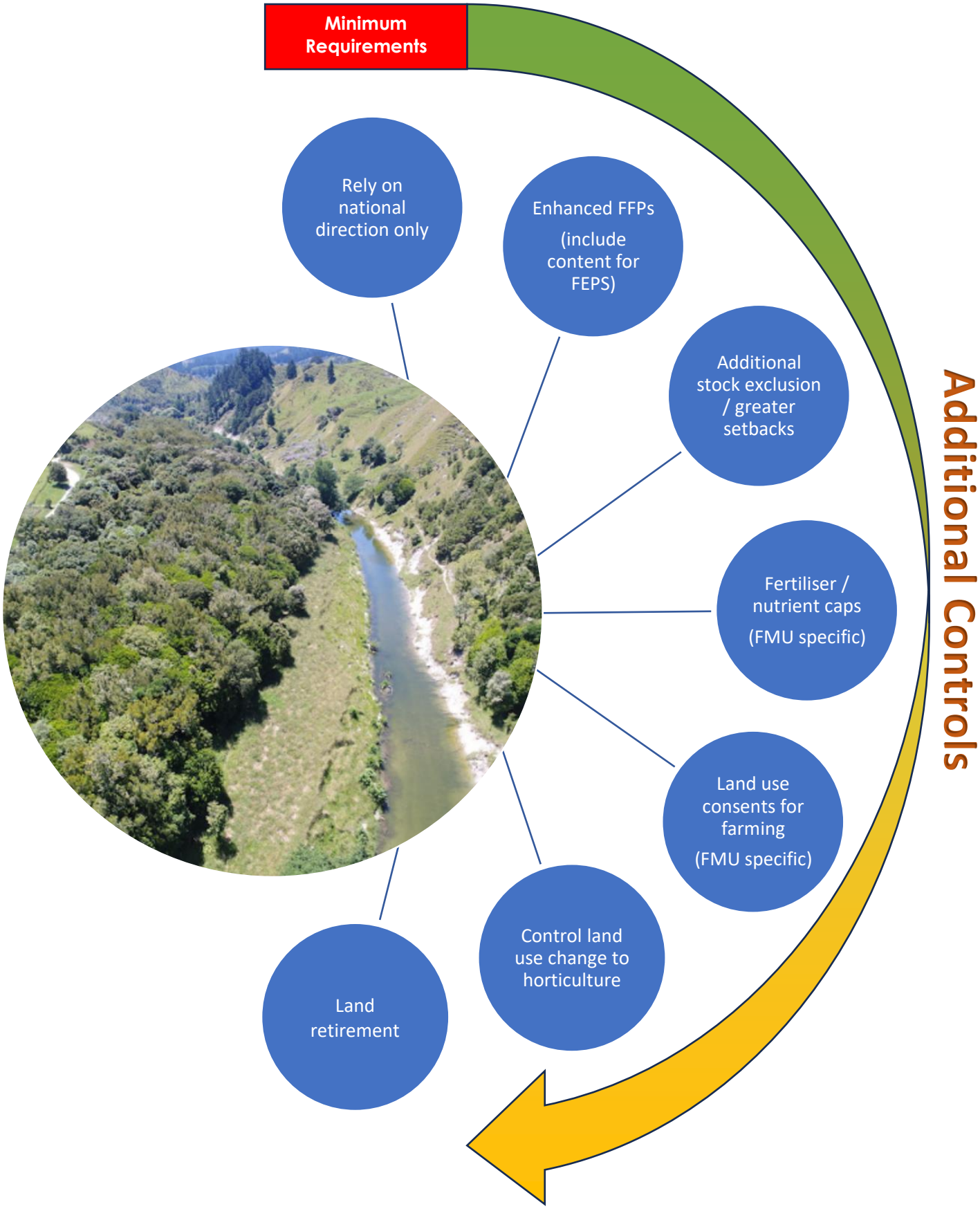

Figure 2: Options for managing rural diffuse discharges

Table 5: Potential management approaches (for discussion and feedback)

#	Option	Description	Pros	Cons
1	**Rely on national direction (for applicable activities)**	This option would rely on the requirements of national direction, without additional controls being provided in the plan (for the activities that are nationally regulated)	• Nationally established rules/regulations that Council is required to implement • National consistency • Reduces size and complexity of the plan • Minimizes requirements and costs for landowners • Some national direction (FFPs) may lift the bar significantly for some aspects of rural production activities • Independently audited and certified – reduced burden on council	• Does not cover the full range of rural discharge activities • National direction is heavily 'dairy farming' focused and triggers may not be applicable to other pastoral farming and horticulture/cropping activities • Does not necessarily address 'problem' areas/issues • May reduce some controls currently in TRMP (such as setbacks) • Requirements for FFPs to be implemented may be some time away – 2026/27 • Resourcing for audit /certification – are there enough certifiers?
2	**Enhanced FFPs**	This option would create 'Tairāwhiti specific' FFPs that go beyond national requirements and incorporate current TRMP content for FEPs and other matters (such as setbacks)	• Utilises the current national framework for FFPs • Has the potential to retain and apply specific local requirements to address issues and achieve better outcomes • Could utilize FFPs as a '1 stop shop' and minimize requirement for additional resource consents/permitted activity	• Likely timing of FFPs – 2026/27 • Resourcing for audit /certification • May increase costs for landowners beyond minimum national requirements

			rules – thus reducing compliance costs	
3	**Additional stock exclusion or setbacks**	This option could require stock exclusion across a larger range of watercourses and potentially include a requirement for larger exclusion setbacks (consistent with current TRMP). Sub-options include: a. generally more extensive (ie applied to a greater slope range/activity based etc) b. focused on areas upstream of specific uses or values such as swimming spots, mahinga kai areas and others	• Improved environmental outcomes (sediment, microbiological, stream bank erosion etc) by reducing stock access to a larger proportion of rivers • Larger setbacks provide a additional scope to filter runoff • Option of targeting specific areas would minimise costs to landowners by focusing on priority areas	• Costs and practicality of excluding stock – particularly in steeper topography • Cost of retiring removing land (including if wider setbacks utilized) • Stock exclusion do not address horticulture land uses - setbacks for these activities still required
4	**Fertiliser / nutrient controls/caps**	This option (utilized in conjunction with other options) would impose more stringent controls than that of national direction. This could incorporate a more stringent (lower) cap than that of the NES-F region-wide or in specific areas and broaden fertiliser to encompass both synthetic and other forms	• Enables management of fertiliser – particularly in high risk areas and activities (eg intensive horticultural cropping) • Tairāwhiti specific approach that reflects receiving environments rather than a one size fits all approach – particularly given limited dairying • It is a common approach for managing nutrient effects in most regional plans	• Setting an appropriate level requires understanding of both inputs and environmental response – may be difficult to set an appropriate regional level • Associated management, recording and auditing costs and resources • Compliance requirements are potentially significant
5.	**Land use consents for farming activities**	This option has been implemented by some other councils (eg Waikato) and applied in conjunction with farm planning requirements	• In theory, resource consents enable greater oversight, approval and compliance monitoring of farm plans and their implementation	• Less required under national FFPs, which are independently certified – may duplicate processes • Increased consenting costs for farming

			• Likely improved implementation and hence outcomes	
6.	**Control land use change to more intensive land uses**	Managing the transition of land to more intensive land uses – for example requiring a resource consent to change land use from pastoral farming to horticulture	• Enables the potential adverse effects of more intensive land uses to be assessed and managed at the outset • Assist in maintained existing water quality in areas with existing/potential water quality degradation	• More regulatory approach – may not be appropriate/necessary region-wide, given current state/issues • Consenting costs
7.	**Promoting land retirement / land use change in key areas**	Retiring land from a productive land use or to a lower intensity land use to reduce existing effects	• Currently being implemented in most significant erosion areas • Beneficial, particularly in critical areas	• Opportunity and land costs • Cost of revegetation

Questions for the Advisory Group

- Considering the approaches outlined above, are there any additional tools / approaches that should be included?
- What are some of the pros, cons and implications (including practical, cost and other matters) of the options in addition to those outlined in the table?
    - What tools/approaches are going to work best in Tairāwhiti?
- How practical is stock exclusion on steeper land (above 5 degrees)? Should the Plan:
    - Extend the national requirement for stock exclusion to steeper land region-wide?
    - Take a targeted approach – focus on areas upstream of specific values?
    - Take another approach?
- Are the current setbacks in the Plan being adopted for horticulture/intensive grazing and other activities?
    - Should setbacks also apply to drains (as they are conduits to main waterways)?
- What do you think about the widespread use of FFPs/FEPs for farming and horticulture?
    - Are they an alternative to rules about setbacks for farming activities?
    - How do we ensure ongoing compliance, once certified?
- What are the priorities for additional management of rural land-use activities in Tairāwhiti?
    - Where will we get the big wins?
    - What are the priorities?
    - What activities do we need to focus on?

4 Next steps

Following this hui, advice received from the Group will be used to refine potential options and approaches for the future Plan. These options will be collated and refined and discussed with members at a future hui to confirm the preferred approach. Once the Group agrees on a preferred approach for the draft Plan, drafting of policies, rules and schedules will commence.

The focus at the next hui on discharges will be on the last sub-sections of Chapter 6.2 ***Water quality and discharges to land and water*** – being:

- **Discharges from hazardous substances and contaminated sites**
- **Unreticulated (on-site) wastewater treatment, storage and disposal**