

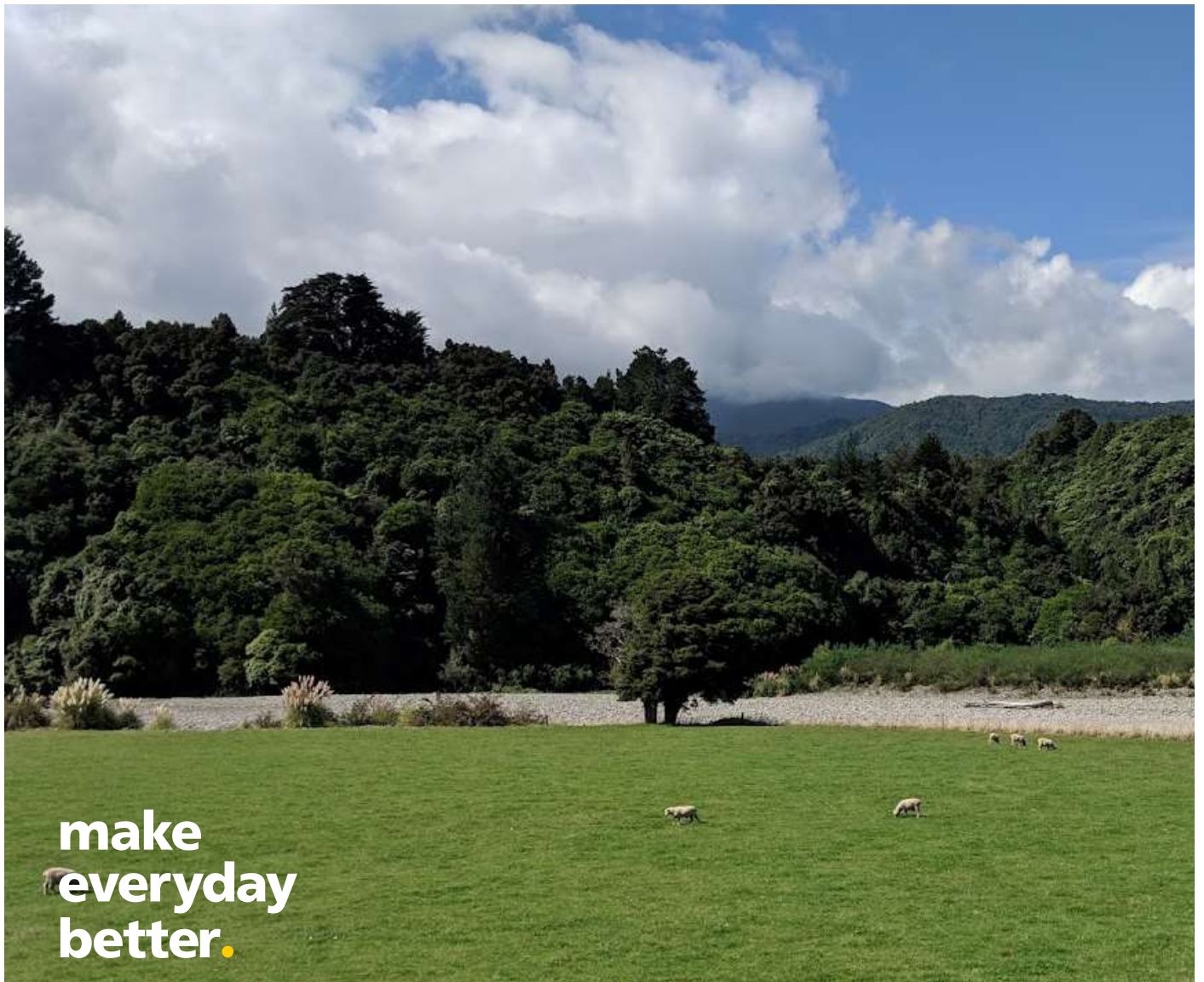
Cost-Benefit Analysis of the Proposed Changes to the NES-DW

Marae and Rural Water Supply Case Studies

Prepared for Ministry for the Environment

Prepared by Beca Limited

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Executive Summary

The Ministry for the Environment is proposing to amend the National Environmental Standard for Sources of Human Drinking Water (NES-DW). These case studies are intended to inform the Ministry for the Environment's regulatory impact assessment.

Five case studies have been selected to represent small water supplies in rural settings across three regions of New Zealand. A mixture of land uses has been identified in the areas surrounding the water supplies, primarily pastoral farming, with smaller amounts of horticulture and forestry, and in some cases residential areas. One of the water supplies has a surface water source, one has a spring source and the remainder have groundwater sources.

The case studies compare the current rules for typical water supply, pastoral farming, horticultural and household activities that would be covered by Sections 13, 14 and 15 of the Resource Management Act in the relevant regional plans to the proposed rules put forward in the amended NES-DW. The case studies show that the proposed amendments to the NES-DW:

- Have a greater effect for Resource Users in the areas surrounding surface water supplies because the area covered by the immediate source water protection zone (source water risk management area 1 or SWRMA1) will be larger
- May make some activities related to maintaining a water supply (e.g. maintaining intake structures or discharging process water) more permissive and would reduce costs associated with resource consent applications for water suppliers.
- Under the current proposed activity rules, there are no anticipated additional costs for onsite effluent discharges (to water or land), pastoral farming activities and application of fertiliser within the wider source water protection areas (source water risk management area 2 or SWRMA2) in these case studies.
- However, the proposed amendments to the NES-DW restrict discharges to water within SWRMA1. Stormwater discharges to water have been identified as one activity where the proposed amendments could create greater restrictions, however in the rural areas of these case studies, stormwater discharges are few, and more likely to go to land.
- The proposed amendments to the NES-DW also require application of agrichemicals within SWRMA2 to have a resource consent. Since the SWRMA2 areas are quite large, it may not be practicable for Resource Users to avoid carrying out the application of agrichemicals and there would be additional costs to apply for resource consents and complete risk assessments.
- One case study highlighted that some additional thought may be required around the delineation of source water risk management areas for springs, but that a hybrid of the bore and surface water definitions may be workable.
- Overall, the proposed amendments are unlikely to have significant effects on Resource Users in the source water risk management areas investigated in this study.

1 Introduction

The Ministry for the Environment is proposing to amend the National Environmental Standard for Sources of Human Drinking Water (NES-DW). These case studies are intended to inform the Ministry for the Environment's regulatory impact assessment. They also supplement the Cost Benefit Analysis for the Proposed Amendments to the National Environmental Standards for Sources of Human Drinking Water Report issued in July 2021.

The case studies have been selected to highlight the potential impacts on small, private water supplies. Four rural water supply case studies and one marae case study have been selected and are described in the following sections. It was hoped that further marae case studies would be completed, but unfortunately due to time and resource constraints they could not participate.

The methodology for these case studies is:

- Gather information about the water supply, from existing knowledge and/or by interviewing the participants.
- Prepare a rough delineation of the “default” Source Water Risk Management Areas (SWRMAs), for details see Table 2-1. Note that because the case studies are anonymous this information has not been provided in the report.
- Compare the regional plan for each case study location against the proposed changes to the NES-DW.
- Identify activities undertaken by the water supplier where the proposed amendments to the NES-DW would result in lesser restrictions.
- Identify activities undertaken by other where the proposed amendments to the NES-DW would result in greater restrictions.
- Estimate the costs to water suppliers and other Resource Users within SWRMA1 and SWRMA2 associated with these restrictions. Costs for specific activities have been previously calculated in the report Cost-Benefit Analysis of the Proposed Changes to the NES-DW (July 2021) and a table summarising the costs for Resource Users is provided in Section 3..

We note that these case studies are based on the best available information at the time of writing.

2 Proposed Changes to the NES-DW

The proposed amendments to the NES-DW have three key elements:

- Introduction of SWRMAs that will define the spatial area to which the NES-DW regulations apply. This will provide a nationally consistent approach for identifying activities that pose risks to drinking water sources to enable risks to be appropriately addressed.
- Improving the regulation of activities that pose risks to source waters on a nationally consistent scale. This will involve the introduction of a new assessment criteria for regional councils to use when assessing risks to source waters and requiring certain activities to obtain a consent. This will provide a nationally consistent approach for assessing risks to source waters and enable water suppliers to be engaged in resource consent decisions.
- Expanding the coverage of the NES-DW regulations to include all registered water suppliers, other than domestic self-suppliers, which is in line with the Water Services Act 2020.

The definitions for the SWRMAs and the proposed activity rules within those areas are summarised in Table 2-1¹.

The anticipated actions that are expected to be generated by these proposed amendments include:

- **Central government** – preparation and communication of guidelines, approval and gazetting of bespoke SWRMAs, monitoring and review
- **Regional councils** – delineation of SWRMAs, review of effects on existing regional plans, processing of additional consent applications, consent compliance monitoring and enforcement for the additional consents
- **Resource users** – where activities are within SWRMAs 1 and 2 completion of source water risk assessments, source water risk management or mitigation, application for additional resource consents, resource consent reporting, notification on non-compliance, and where necessary, changes in activity or land use practice
- **Water suppliers** – enabled to undertake certain activities around abstraction points to support the provision of safe drinking water, and greater involvement in consent applications where a risk to source water is identified.

These case studies look at the anticipated impacts on Resource Users and water suppliers in particular. A more detailed discussion of the anticipated impacts of the proposed amendments to the NES-DW is provided in the July 2021 report.

¹ We note there have been some refinement of these since the completion of the Cost-Benefit Analysis of the Proposed Changes to the NES-DW in July 2021

Table 2-1 Summary of SWRMAs under the proposed amended NES-DW

SWRMA	Definition	Proposed Activity Restrictions
SWRMA1 Immediate Area	Streams/ivers – 5m landward of water's edge 1,000m upstream and 100m downstream Lakes – 500m radius from intake and 5m landward of water's edge Groundwater – 5m radius	Water suppliers permitted to undertake activities that support the delivery of safe water. Discharges to land will have strict standards and require consent. All other activities are prohibited or have strict standards and will require consent
SWRMA2 Intermediate Area	Streams/ivers – 8 hours travel time plus 100m downstream and 100m landward Lakes – whole lake plus 8 hours travel time up tributaries plus 100 m landwards from the water's edge Groundwater – 1 year of travel out to a maximum distance of 2.5km	High risk activities e.g. earthworks and bore drilling, discharge to water and works in river/lake beds are prohibited or have strict standards and will require consent. Discharges from application of agrichemicals will have strict standards and will require consent. For lower risk activities e.g. Non-point discharge like application of fertilisers to land there is no change to the current regional plan consent status
SWRMA3 Catchment	Entire catchment or capture area	SWRMA catchments to be identified via NES-DW, consideration in planning to be given to cumulative and long-term catchment risks. Catchment management under rules and targets in NPS-FM. Regional plans set rule requirements while considering source water values.

We note that the introduction of the National Policy Statement for Freshwater Management (NPS-FM), National Environmental Standard for Freshwater (NES-FW) and Stock Exclusion Regulations in late 2020 already placed additional restrictions on farming activities. Table 2-2 shows the conditions under which certain activities are permitted under the NES-DW, the NES-FW and the Resource Management (Stock Exclusion) Regulations 2020. The proposed amendments to the NES-DW only have a small additional effect on top of the NES-DW and Stock Exclusion Regulations, and only within SWRMA1.

Table 2-2 Comparison of Rules for Farming Activities under NES-DW, NES-FW and Stock Exclusion Regulations

Activity permitted if:	NES-FW	Stock Exclusion Regulations	NES-DW	Comments
Feedlots	At least 50m away from water body or bore	3m setback from lakes and wide rivers	Outside SWRMA 1 (and permitted by Regional Plan)	Activity governed by NES-FW
Stock holding areas	At least 50m away from water body or bore	3m setback from lakes and wide rivers	Outside SWRMA 1 (and permitted by Regional Plan)	Activity governed by NES-FW
Stock access to waterways		3m setback from lakes and wide rivers Only to cross and restricted to no more than twice a month	Outside SWRMA 1 (and permitted by Regional Plan)	NES-DW only has an additional effect to the Stock Exclusion Regulations for the SWRMA1 areas on farms as the setback area for SWRMA1 is 5m.

3 Costs

For ease of reference, a summary of the costs to Resource Users that were developed as part of the Cost Benefit Analysis for the Proposed Amendments to the National Environmental Standards for Sources of Human Drinking Water Report issued in July 2021 is replicated in Table 3-1. The extent to which these costs would apply are discussed in each of the case studies.

With regards to resource consent applications, the costs have been split into three levels of complexity:

- A low complexity application is one where there are few affected or interested parties, and the level of input required to assess the environmental effects is low and relatively straight forward. This consent is unlikely to be publicly notified.
- A medium complexity application is likely to be one that involves several affected or interested parties and require one or two technical assessments of environmental effects. This consent may be limited or fully publicly notified.
- A high complexity application is likely to be one with a large number of affected parties, may be in a sensitive ecological area and/or requires a high level of technical inputs to assess the environmental effects. This consent is likely to be notified.

Table 3-1 Summary of costs for the proposed amendments to the NES-DW (adapted from Table 3-2 in the July 2021 report)

Activity	Affected Party	Cost (\$)	Type of Cost
Processing additional consent applications	Undertaken by Regional Councils but paid for by Resource Users	For a currently permitted activity that would become restricted discretionary: \$3,000 to \$16,000 For an activity that is already restricted discretionary or controlled: additional \$400 Existing permitted to restricted discretionary: \$3,000 to \$16,000 Existing restricted discretionary: additional \$400	Per consent
Consent compliance monitoring and enforcement	Undertaken by Regional Councils but paid for by Resource Users	\$2,000 to \$20,000	Annual
Additional applications for resource consents	Resource Users	Low complexity: \$10,000 - \$30,000 Medium complexity: \$30,000 - \$50,000 High complexity: \$50,000 - \$200,000	Per consent
Risk Assessment	Resource Users	\$30,000	Per consent
Management or mitigation of risks to source water	Resource Users	Refer case studies	Per consent
Resource consent reporting	Resource Users	\$5,000 - \$15,000	Annual, per consent
Notification of non-compliance	Resource Users	\$400	Per event
Land use changes	Resource Users	Refer case studies	Per consent

4 Rural Case Study – Rural Agricultural Supply

4.1 Context

This case study is a surface water supply located in the Southland Region. The surrounding area is rural and primarily made up of farmland (including dairy). It serves a population of about 215 people and 55 farms, as well as a school, public toilets and a freedom camping area.

The scheme is a restricted (trickle feed) supply water, with a restrictor on each connection that limits the flow into private households and farm water storage tanks. There are a total of 237 unmetered water units allocated within the supply to residential and farm connections. Currently chlorination is the only treatment provided.

The Southland District Council has identified drinking water protection zones in key locations across the region in the proposed Southland Water and Land Plan (partially operative as of January 2021), however this water supply is not one of these zones. No guidelines to define drinking water protection zones for surface water appear to be available, although the Regional Council has delineated groundwater management zones. Therefore, the proposed amendments to the NES-DW will likely be the initial definition of drinking water protection zones within the region.

For this water supply, the SWRMA1 would be 5m either side of the source river and tributaries for 1,000m upstream and 100m downstream. Within this area there appears to be sheep, beef and forestry land parcels². The SWRMA2 area would be defined by an area eight hours travel time upstream plus 100m downstream and 100m either side of the river and upstream tributaries. Without knowing the velocities in the river and tributaries it is only possible to estimate at a high-level the extent of the SWRMA2 area. If a velocity of 1 m/s is assumed³, then the SWRMA2 could extend for nearly 30km upstream from the water intake and would include any tributaries. This wider area includes sheep, beef, deer and other livestock, dairy support, forestry and alpine land uses and encompass over 20 separate properties.

4.2 Regional Plan Review

Table 4-1 summarises the potential effects of the amended NES-DW on activities within the water supply catchment for this water supply. Although the Regional Plan places additional restrictions on activities within a microbial health protection zone or within 250m of a water supply abstraction point, this water supply is not one of the listed microbial health protection areas or water supply abstraction points, and these additional restrictions do not currently apply.

Under the proposed amendments to the NES-DW additional restrictions would be placed on activities that discharge to water or are within SWRMA1, and for the application of agrichemicals within SWRMA2, but other activities would not be affected.

² Environment Southland 2016. *Methodology for GIS-Based Land Use Maps for Southland Technical Report*.

³ Based on typical river velocities in the Waikato region
<https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/tr05-04.pdf>

Table 4-1 Summary of Activities within the Rural Agricultural Water Supply Catchment

Activity		Amended NES-DW	Southland Water and Land Plan
	SWRMA1	SWRMA2	
Disturbance of riverbed	Permitted for water suppliers to maintain water supply. Otherwise, prohibited or have strict standards and will require consent.	If discharged to water, prohibited or have strict standards and will require consent If discharged to land no change to current regional plan consent status	Gravel Extraction is Restricted Discretionary. Other activities are Permitted.
Discharge of process or stormwater	For discharges to water, prohibited or have strict standards and will require consent. For discharges to land, strict standards and will require consent.		Discharge of: Industrial waste is a discretionary activity Non-reticulated stormwater is permitted Instrument process water is permitted Other process discharges are controlled Urban/reticulated stormwater is discretionary
Drilling and bore construction	Permitted for water suppliers to maintain water supply. Otherwise, prohibited or have strict standards and will require consent.	Prohibited or have strict standards and will require consent.	Controlled
Discharge from an onsite wastewater disposal system	Prohibited or have strict standards and will require consent	No change to current regional plan consent status	Permitted ⁴
Stockholding areas and feedlots			Permitted ⁴
Stock access to waterways			Sets out a timetable over which this becomes a discretionary activity
Offal pits			Permitted ⁴
Discharge of fertiliser to land			Permitted as long as not in riparian planting area or within 3m of body of water
Discharge from application of agrichemical		Strict standards and will require consent.	Permitted ⁴

⁴ Discretionary within a microbial health protection zone or within 250 metres of abstraction point of the drinking water supply site

4.3 Effects of Changes to Activity Status

4.3.1 Water Supply

Under the proposed amendments to the NES-DW, activities carried out by water suppliers within SWRMA1 are proposed to be more permissive compared with most regional plans. For example, for a surface water supply the water supplier may need to disturb the riverbed from time to time to maintain the intake structure. These activities are already permitted in the Southland Land and Water Regional Plan so the proposed amendments to the NES-DW would have no impact.

The water supplier may also have a need to discharge process water or stormwater. The discharge of non-reticulated stormwater is currently permitted, and the discharge of reticulated stormwater or process water is currently a controlled activity, so the amended NES-DW would make some discharge activities easier (i.e. discharges of process water or reticulated stormwater to land) for water suppliers by not requiring them to apply for consents, however discharges to water may be prohibited or at least require consent. The costs for a resource consent application and risk assessment are discussed in Sections 3.3.1 and 3.3.3 of the July 2021 Report and are estimated to be in the order of \$10,000 - \$30,000 for a low-complexity application.

4.3.2 Onsite Wastewater Disposal Systems

The proposed amendments to the NES-DW do not affect the current activity status for discharges to land within SWRMA2 but would restrict the discharge from onsite wastewater disposal systems within SWRMA1 instead of it being a permitted activity.

Currently, in the Southland Land and Water Regional Plan, discharges from onsite wastewater disposal systems are a discretionary activity within a microbial health protection zone or within 250 metres of an abstraction point for a drinking water supply site and permitted elsewhere. As this water supply is not currently identified as a drinking water supply within the regional plan, the proposed changes to the NES-DW will change the requirements for this activity within the new SWRMA1 area. For the properties within this area (estimated to be up to 30 land parcels, but only one building) discharge of wastewater from onsite disposal systems (if they have them and the discharge is also within SWRMA1) will now be restricted and will most likely require a consent and a risk assessment to take place. This is likely to be a straightforward process and a low-complexity consent application. Alternatively, for SWRMA1 the discharge may be prohibited.

The costs for a resource consent application and risk assessment are discussed in Sections 3.3.1 and 3.3.3 of the Cost Benefit Analysis for the Proposed Amendments to the National Environmental Standard for Sources of Human Drinking Water Report:

- Low complexity consent applications: \$10,000 - \$30,000
- Risk assessment: \$30,000.

We note that in especially sensitive areas, regional councils may choose to put additional conditions on the installation. For example, in the Rotorua Lakes Area, Bay of Plenty Regional Council require aerated wastewater systems to be installed that reduce nitrogen levels in the discharge. The installation cost for a domestic aerated wastewater treatment system is between \$15,000 - \$20,000. These treatment systems can be installed as a supplementary treatment to the primary septic tank treatment or installed as a replacement alternative treatment process. Councils may also require annual maintenance checks for onsite wastewater systems to ensure that they are working properly.

This can be a significant cost burden for low-income households and be a barrier to construction of new housing or upgrading of existing damaged systems. However, it can also become an incentive for the reticulation of sewage in small communities.

We would not expect regional councils to require monitoring or reporting for this type of activity.

4.3.3 Stormwater

Under the Southland Land and Water Regional Plan stormwater discharges are generally a permitted activity unless it is reticulated or potentially contains contaminating material e.g., from an industrial premise. Given the rural nature of the land in this water supply area, reticulated or industrial stormwater discharges would be unusual. Currently different scenarios are considered for the NES-DW:

- Stormwater discharges to land would be restricted within SWRMA1 and would remain permitted in SWRMA2
- Stormwater discharges to water within SWRMA1 and SWRMA 2 would be restricted and require a consent. They may be prohibited within SWRMA1.

There may be small stormwater discharges within the SWRMA1 and SWRMA2 areas, for example from houses. Within the SWRMA1 area there are very few buildings, and stormwater discharges to land or water are not expected to be present. However, if there are then this activity would be restricted and would require a consent under the proposed amendments to the NES-DW. Within the SWRMA2 there are a number of land parcels, and as discharging stormwater to land is generally more common in rural areas, this activity would continue to be permitted, and the proposed amendments to the NES-DW would not have an effect. Where these discharge to water in SWRMA2, the resource user would be required to apply for a consent and a risk assessment needs to be undertaken. This is likely to be a straightforward process, and a low-complexity consent application.

- Low complexity consent applications: \$10,000 - \$30,000
- Risk assessment: \$30,000.

4.3.4 Pastoral Farming

This water supply is not identified as a drinking water supply within the regional plan, so the rules for offal pits, stockholding areas, feedlots and application of fertiliser and agrichemicals do not currently apply in the area around the water supply.

Within SWRMA1, under the proposed amendments to the NES-DW all of these activities would all become restricted and would require consent. Within SWRMA 2 there would be no change to the current regional plan rules except for application of agrichemicals which would require consent.

Drilling and bore construction may also be required for pastoral land use. Under the Southland Land and Water Plan, drilling and bore construction is controlled. Under the proposed amendments to the NES-DW, this would change to having strict standards and require resource consent and a risk assessment within SWRMA1 and SWRMA2 and may be prohibited within SWRMA1. The change from controlled to restricted is a minor and not expected to incur any additional costs. A change to prohibited may require existing bores within SWRMA1 to be relocated or abandoned, however, due to the relatively small size of land beside the surface waters in SWRMA1 this seems an unlikely scenario.

Within SWRMA1 where the activity status has become more restricted, the resource users will have a choice:

- Apply for the necessary resource consents, prepare a risk assessment and apply mitigation measures if required
- Move the activities so they are not within the SWRMAs if this is possible
- Change what the land is used for.

Which of these three choices a resource user will make will depend on a number of factors which are external to the NES-DW and which are outside the scope of this report. For the purposes of this exercise,

and given that the SWRMA1 is a relatively small area on land directly adjacent to a waterbody, we have assumed that the Resource User would elect to:

- Not construct new offal pits, stockholding areas or feedlots within SWRMA1
- Apply for resource consent and carry out risk assessments for the construction of new bores within SWRMA1 at a cost of \$10,000 - \$30,000 for a low complexity resource consent application and \$30,000 for a risk assessment.
- Change the farm management practices ensuring that no fertiliser and agrichemicals are applied within SWRMA1.

For completeness, if they did choose to continue with the construction of offal pits, stockholding areas or feedlots, or apply fertiliser or agrichemicals within SWRMA1, costs could be expected to be

- Resource consent application, low complexity - \$10,000 - \$30,000 for application of fertiliser and agrichemicals plus \$30,000 for a risk assessment
- Resource consent application, medium complexity - \$30,000 - \$50,000 for offal pit, stockholding areas, feedlots plus \$30,000 for a risk assessment

The larger size of SWRMA2 means that it may not be practicable for resource users to avoid carrying out activities which have become more restricted in status. We have assumed that the Resource User would elect to:

- Apply for resource consent and carry out risk assessments for the construction of new bores within SWRMA2 at a cost of \$10,000 - \$30,000 for a low complexity resource consent application and \$30,000 for a risk assessment.
- Apply for resource consent and carry out risk assessments for the application of agrichemicals within SWRMA2 at a cost of \$10,000 - \$30,000 for a low complexity resource consent application and \$30,000 for a risk assessment.

We do not consider it likely that the Regional Council would require mitigation measures to be applied since the activity is better controlled by restricting volumes or requiring buffer zones, or for the activity to be so restricted as to make the existing resource user consider a change in land use.

4.3.5 Horticulture

The areas covered by SWRMA1 and SWRMA2 for this water supply are large and encompass many land parcels, although the majority of land use appears to be pastoral as opposed to horticultural in this area². Currently, application of fertiliser and agrichemicals in the area around this water supply are permitted activities. The proposed amendments to the NES-DW would make application of fertiliser and agrichemicals in SWRMA 1 restricted and possibly prohibited activities, and the application of agrichemicals within SWRMA2 require strict controls and a resource consent.

As for pastoral farming above we have assumed that resource users will change the farm management practices to avoid the application of fertiliser and agrichemicals within SWRMA1, and to apply for resource consent for the application of agrichemicals within SWRMA2.

As for pastoral farming, we have assumed that resources users would apply for resource consents and carry out risk assessments for the construction of new bores in SWRMA1 and SWRMA2.

We do not consider it likely that the Regional Council would require mitigation measures to be applied for these activities since the activity is better controlled by restricting volumes or requiring buffer zones, or for the activity to be so restricted as to make the existing resource user consider a change in land use.

4.4 Rural Agricultural Case Study Costs

The effects of the proposed amended NES-DW amendments on specific activities within the rural agricultural supply catchment are summarised in Table 4-2.

Table 4-2 Summary of Case Study Specific Effects for the Rural Agricultural Water Supply

Resource User	Activity	Effect of amended NES-DW	Likelihood	Cost description	Change in Cost	Type of Cost
Rural agricultural water supply	Disturbance of riverbed	No effect	Likely	NA	NA	NA
	Discharge of process or stormwater	May make discharge of process water easier if discharged to land, but may prohibit discharges to water	Possible depends on water supply configuration	Avoided resource consent application	-\$10,000 - \$30 000	Per consent
Households	Onsite wastewater disposal	Restricted or may be prohibited within SWRMA1	Only one building has been identified within/adjacent to SWRMA1 and this may or may not have a septic tank that discharges within SWRMA1	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
				Mitigation	\$15,000 - \$20,000	Per consent
	Discharge of stormwater	No effect where discharge is to land. If discharge to water than resource consent required or might be prohibited in SWRMA1	Considered unlikely that there are stormwater discharges to water, especially given there is only one building identified within/adjacent to SWRMA1	NA	NA	NA
Pastoral Farming	Drilling and bore construction	No material effect from change to controlled to restricted	Possible	NA	NA	NA
	Offal pits, stockholding areas, feedlots, application of fertiliser	Prohibited or restricted within SWRMA1, application, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, possible within SWRMA2	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent

Resource User	Activity	Effect of amended NES-DW	Likelihood	Cost description	Change in Cost	Type of Cost
Horticulture	Drilling and bore construction	No material effect from change to controlled to restricted	Possible	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, possible within SWRMA2	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA

5 Rural Case Study - Farm 1

5.1 Context

Farm 1 is a 2300ha beef, dairy and sheep farm in the Waikato Region. It has two separate water supplies one for stock and one for household drinking water. The water source for the household drinking water supply is rainwater supplemented by a bore. The household drinking-water supply serves 12 houses and has a mesh filtration system. The owner reports no issues with water quality or quantity.

The Waikato Regional Plan does not currently include special considerations for drinking-water source protection zones.

Under the proposed amendments to the NES-DW, for this water supply, SWRMA1 is a 5m radius around the bore on the owner's property. A 2.5km radius has been assumed for SWRMA2 and this extends nearly all the way to the coast and includes several (a dozen or more) land parcels and numerous waterways. Land use within the SWRMA2 area is primarily pastoral farming with a small amount of indigenous vegetation⁵.

5.2 Regional Plan Review

Table 5-1 summarises the potential effects of the amended NES-DW on activities within the Farm 1 water supply catchment.

Under the proposed amendments to the NES-DW additional restrictions would be placed on activities that discharge to water and within SWRMA1, and for the application of agrichemicals within SWRMA2, but other activities would not be affected.

5.3 Effects of Changes to Activity Status

5.3.1 Farm 1 Water Supply

Under the amendments to the NES-DW, activities carried out by water suppliers within SWRMA1 are proposed to be more permissive. For a groundwater supply, the types of activities that a water supplier might need to carry out are things like remediation work on bores. This is covered by the drilling and bore construction activity in the Waikato Regional Plan which also covers the maintenance of bores, and there is assumed to be no effect from the proposed amendments to the NES-DW.

⁵ <https://waikatoregion.govt.nz/environment/land-and-soil/land-use-in-the-waikato/regional-land-use/>

Table 5-1 Summary of Activities within the Farm 1 Water Supply Catchment

Activity	Amended NES-DW		Waikato Regional Plan
	SWRMA1	SWRMA2	
Disturbance of riverbed	Permitted for water suppliers to enable a safe water supply Otherwise, prohibited or strict standards and will require consent	No change to current regional plan consent status	Discretionary
Works in riparian areas			Discretionary
Drilling and bore construction	Permitted for water suppliers to maintain water supply. Otherwise, prohibited or have strict standards and will require consent.	Prohibited or have strict standards and will require consent.	Controlled if more than 50m from surface water body
Discharge of Stormwater	If discharged to land, strict standards and will require consent If direct discharge to water, prohibited or strict standards and will require consent	If discharged to water, prohibited or strict standards and will require consent if discharged to land no change to current regional plan consent status	Permitted onto land Controlled into water if catchment area is urban and >1 hectare, otherwise permitted
Discharge of effluent from an onsite wastewater disposal system	Prohibited or strict standards and will require consent	No change to current regional plan consent status	Permitted (with standards) onto land and prohibited into water
Stockholding areas and feedlots			Permitted, as long as there is no run-off or discharge into surface water and the feed pad is >20m away from the surface water
Stock access to waterways			Only to cross and restricted to no more than twice a month
Offal pits			Controlled in areas with shallow ground water or 100m of any water supply bore or water body, permitted otherwise.
Discharge of fertiliser to land			Permitted outside of the Lake Taupo catchment
Discharge from application of agrichemical		Strict standards and will require consent.	Permitted

5.3.2 Onsite Wastewater Disposal Systems

Under the Waikato Regional Plan, discharges from onsite wastewater disposal systems are a permitted activity when onto land and prohibited when into water. With the proposed amendments to the NES-DW:

- Discharges to land within SWRMA1 would be restricted and will likely require a consent and a risk assessment to take place. However, due to the size of SWRMA1 (5m radius around the bore) it is unlikely that there would be any septic tank discharges in this area.
- There would not be any change to the status for discharges to land from onsite wastewater disposal systems within SWRMA2.
- Discharges to water within SWRMA1 or SWRMA2 would remain as a prohibited activity as per the existing Regional Plan or are less restrictive in the proposed NES-DW.

No additional costs are expected for onsite disposal systems.

5.3.3 Stormwater

Under the Waikato Regional Plan stormwater discharges are permitted onto land and into water, unless from an urban catchment larger than one hectare, in which case discharges to water are controlled. Under the proposed amendments to the NES-DW:

- Stormwater discharges to water become a prohibited or strictly controlled activity within SWRMA1.
- Stormwater discharges to land within SWRMA1 are restricted instead of permitted and will require a resource consent.
- Stormwater discharges to water become restricted within SWRMA2
- Stormwater discharges to land within SWRMA2 remain permitted as per the current Regional Plan

Given that SWRMA1 in this case is a 5m radius around the bore, it is unlikely that there would be any stormwater discharges within this area and can be easily avoided.

There may be small stormwater discharges within the SWRMA2 area, for example from residential properties. The majority of these would discharge to land, and the proposed amendments to the NES-DW would not have an effect. Where these discharge to water, the resource user would be required to have a consent and a risk assessment would need to take place. This is likely to be a straightforward process and a low-complexity consent application.

- Low complexity consent applications: \$10,000 - \$30,000
- Risk assessment: \$30,000.

We would not expect Regional Councils to require monitoring or reporting for this type of activity.

5.3.4 Pastoral Farming

Much of the land in the area of the water supply appears to be used for pastoral farming. Under the current Operative Waikato Regional Plan⁶:

- Stock is currently permitted in water bodies (note that this activity is primarily controlled by the Stock Exclusion Regulations)
- Offal pits are controlled activities in areas with shallow ground water or within 100m of any water supply bore or water body and permitted elsewhere.
- Stockholding areas and feedlots are a permitted activity, as long as there is no run-off or discharge into surface water and the feed pad is more than 20m away from the surface water

⁶ Comments here relate to the Operative Waikato Regional Plan not Proposed Plan Change 1 to the Waikato Regional Plan.

- Fertiliser application is permitted outside of the Lake Taupo catchment
- Application of agrichemicals is a permitted activity.

Under the proposed changes to the NES-DW these would all become prohibited or restricted within SWRMA1 but would retain their current status within SWRMA2, except for application of agrichemicals which would have strict standards and would require consent within SWRMA2.

These activities are unlikely to be currently occurring within SWRMA1 (which is a 5m radius around the water supply bore) so there are not expected to be any material changes for Resource Users within SWRMA1 from the proposed amendments to the NES-DW.

The larger size of SWRMA2 means that it may not be practicable for Resource Users to avoid carrying out the application of agrichemicals. We have assumed that the Resource User would elect to apply for resource consent and carry out risk assessments for the application of agrichemicals within SWRMA2 at a cost of \$10,000 - \$30,000 for a low complexity resource consent application and \$30,000 for a risk assessment. Drilling and bore construction may also be required for pastoral land use. Under the Waikato Regional Plan, drilling and bore construction is controlled. Under the proposed amendments to the NES-DW, this would change to having strict standards and require resource consent and a risk assessment within SWRMA1 and SWRMA 2 and may be prohibited within SWRMA1. The change from controlled to restricted is a minor and not expected to incur any additional costs. A change to prohibited will not have any effect as it is not possible for a second bore to be constructed with the SWRMA1 area.

5.3.5 Horticulture

There may be a small amount of land used for horticulture in the area of the water supply (although none is visible on the land use map availableError! Bookmark not defined.). Application of fertiliser and agrichemicals are permitted activities within the Waikato Regional Plan with some restrictions. As previously discussed for pastoral farming, the proposed amendments to the NES-DW prohibit or place strict standards on these activities within SWRMA1, but application of fertiliser or agrichemicals is unlikely to be currently occurring within SWRMA1 (which is a 5m radius around the water supply bore) and if it does only a small fraction cannot be fertilised or treated. However, the proposed amendments to the NES-DW will also require strict standards and resource consent for application of agrichemicals (but not fertiliser) within SWRMA 2 and we have assumed that the Resource User will apply for a resource consent to continue this activity should it be occurring.

As for pastoral farming, we have assumed that there are no effects to bore drilling activities.

5.4 Farm 1 Case Study Costs

The effects of the proposed amended NES-DW amendments on specific activities within the Farm 1 drinking water supply catchment are summarised in Table 5-2.

Table 5-2 Summary of Case Study Specific Effects for Farm 1 Water Supply

Resource user	Activity	Effect of amended NES-DW	Likelihood	Cost description	Change in Cost	Type of Cost
Farm 1	Remediation of bore head	No effect		NA	NA	NA
Households	Onsite wastewater disposal	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Discharge of stormwater	No effect where discharge is to land. If discharge to water than resource consent required	Considered unlikely that there are discharges to water	NA	NA	NA
Pastoral Farmer	Offal pits, stockholding areas, feedlots, application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, possible within SWRMA2	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Drilling and bore construction	No material effect from change to controlled to restricted	Not possible within SWRMA1, possible within SWRMA2	NA	NA	NA
Horticulture	Application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, not likely within SWRMA2 based on land use	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Drilling and bore construction	No material effect from change to controlled to restricted	Not possible within SWRMA1, possible within SWRMA2	NA	NA	NA

6 Rural Case Study - Farm 2

6.1 Context

Farm 2 is 950ha beef and sheep farm in the Waikato region. It has separate water supplies and water sources for stock and for household drinking water. The household drinking water supply system is fed from a spring and serves two-three houses, a woolshed, and a cattle yard. The water is filtered, and UV disinfected. The owner reports no issues with water quality or quantity.

The Waikato Regional Plan does not currently include special considerations for drinking-water source protection zones. Proposed Plan Change 1 – Waikato and Waipa River Catchment which introduces new rules to manage farming activities within the Waikato and Waipa River catchments would apply to this case study⁷.

Under the proposed amendments to the NES-DW, for this water supply, SWRMA1 is a 5m radius around the bore on the owner's property. A 2.5km radius has been assumed for SWRMA2 and this extends to the outskirts of a nearby town and includes several (more than thirty) land parcels and numerous waterways. From the Waikato regional land use map, land use within the SWRMA2 area is primarily pastoral farming with a small amount indigenous vegetation, plantation forestry and urban.

6.2 Regional Plan Review

Table 6-1 summarises the potential effects of the amended NES-DW on activities within the Farm 2 water supply catchment.

Plan Change 1 to the Waikato Regional Plan applies in this location and introduces specific controls for farming activities, including requiring Farm Environment Plans which will assess the risk of diffuse discharges of nitrogen, phosphorus, sediment and microbial pathogens and specify actions to reduce those risks in order to bring about reductions in the discharges of those contaminants. These plans will be certified and monitored by Waikato Regional Council.

Under the proposed amendments to the NES-DW additional restrictions would be placed on activities that discharge to water and within SWRMA1, and for the application of agrichemicals within SWRMA2, but other activities would not be affected.

6.3 Effects of Changes to Activity Status

6.3.1 Farm 2 Water Supply

Under the amendments to the NES-DW, activities carried out by water suppliers within SWRMA1 are proposed to be more permissive. For a groundwater supply, the types of activities that a water supplier might need to carry out are things like remediation work on bores. This is covered by the drilling and bore construction activity in the Waikato Regional Plan which also covers the maintenance of bores, and there is assumed to be no effect from the proposed amendments to the NES-DW.

⁷ Noting this Plan Change is currently subject to Environment Court appeals.

Table 6-1 Summary of Activities within the Farm 2 Water Supply Catchment

Activity	Amended NES-DW		Waikato Regional Plan (including Proposed Plan Change 1)
	SWRMA 1	SWRMA 2	
Disturbance of riverbed Works in riparian areas	Permitted for water suppliers to enable a safe water supply Otherwise, prohibited or strict standards and will require consent	No change to current regional plan consent status	Discretionary Discretionary
Drilling and bore construction	Permitted for water suppliers to maintain water supply. Otherwise, prohibited or have strict standards and will require consent.	Prohibited or have strict standards and will require consent.	Controlled if more than 50m from surface water body
Discharge of stormwater	If discharged to land, strict standards and will require consent. For direct discharge to water prohibited or strict standards and will require consent	If discharged to water, prohibited or strict standards and will require consent If discharged to land no change to current regional plan consent status	Permitted onto land Controlled into water if catchment area is urban and >1 hectare, otherwise permitted
Discharge from an onsite wastewater disposal system	Prohibited or strict standards and will require consent	No change to current regional plan consent status	Permitted onto land and prohibited into water
Stockholding areas and feedlots			Small and low intensity farming and farming with a Farm Environment Plan as part of a Certified Industry Scheme is permitted Existing commercial vegetable production is controlled
Stock access to waterways		Farming with a Farm Environment Plan but not part of a Certified Industry Scheme is controlled Farming not otherwise authorised is restricted discretionary.	
Offal pits			
Discharge of fertiliser to land			
Discharge from application of agrichemical		Strict standards and will require consent.	

6.3.2 Onsite Wastewater Disposal Systems

Discharges from onsite wastewater disposal systems are a permitted activity when onto land and prohibited when into water under the Waikato Regional Plan. With the proposed amendments to the NES-DW:

- Discharges to land within SWRMA1 would be restricted and will likely require a consent and a risk assessment to take place. However, due to the size of SWRMA1 it is unlikely that there would be any septic tank discharges in this area.
- There would not be any change to the status for discharges to land from onsite wastewater disposal systems within SWRMA2.
- Discharges to water within SWRMA2 or SWRMA1 would remain as a prohibited activity as per the existing Regional Plan.

No additional costs are expected for onsite disposal systems.

6.3.3 Stormwater

Under the Waikato Regional Plan stormwater discharges are permitted onto land and into water, unless from an urban catchment larger than one hectare, in which case discharges to water are controlled. Under the proposed amendments to the NES-DW:

- Stormwater discharges to water become a prohibited or strictly controlled activity within SWRMA1.
- Stormwater discharges to land within SWRMA1 are restricted instead of permitted and will require a resource consent and risk assessment.
- Stormwater discharges to water become restricted within SWRMA2
- Stormwater discharges to land within SWRMA2 remain permitted as per the current Regional Plan

Given that SWRMA1 in this case is a 5m radius around the spring intake structure, it is unlikely that there would be any stormwater discharges within this area.

There may be small stormwater discharges within the SWRMA2 area, for example from houses. The majority of these would discharge to land, and the proposed amendments to the NES-DW would not have an effect. Where these discharge to water, the resource user would be required to have a consent and a risk assessment would need to take place. This is likely to be a straightforward process and a low-complexity consent application.

- Low complexity consent applications: \$10,000 - \$30,000
- Risk assessment: \$30,000.

We would not expect Regional Councils to require monitoring or reporting for this type of activity.

If there is an existing stormwater discharge from the town within SWRMA2 (considered unlikely) this would already be a controlled activity. Under the proposed amendments to the NES-DW, this activity would most likely be prohibited in SWRMA1 but there would be no change to the current regional plan consent status in SWRMA2.

6.3.4 Pastoral Farming

Much of the land in the area of the water supply appears to be used for pastoral farming. Under Proposed Plan Change 1 to the Waikato Regional Plan (which would apply to Farm 2) rules for farming activities are as follows:

- Small and low intensity farming and farming with a Farm Environment Plan as part of a Certified Industry Scheme is permitted.
- Existing commercial vegetable production is controlled.
- Farming with a Farm Environment Plan but not part of a Certified Industry Scheme is controlled.

- Farming not otherwise authorised is restricted discretionary.

Under the proposed amendments to the NES-DW, stockholding areas, feedlots, stock access to waterways, offal pits and discharge of fertiliser and agrichemicals would all become restricted within SWRMA1 but would retain their current status within SWRMA2, except for application of agrichemicals which would have strict standards and would require consent within SWRMA2.

These activities are unlikely to be currently occurring within SWRMA1 (which is a 5m radius around the water supply bore) so there are not expected to be any material changes for Resource Users within SWRMA1 from the proposed amendments to the NES-DW.

The larger size of SWRMA2 means that it may not be practicable for Resource Users to avoid carrying out the application of agrichemicals. We have assumed that the Resource User would elect to apply for resource consent and carry out risk assessments for the application of agrichemicals within SWRMA2 at a cost of \$10,000 - \$30,000 for a low complexity resource consent application and \$30,000 for a risk assessment.

Drilling and bore construction may also be required for pastoral land use. Under the Waikato Regional Plan, drilling and bore construction is controlled. Under the proposed amendments to the NES-DW, this would change to having strict standards and require resource consent and a risk assessment within SWRMA1 and SWRMA 2 and may be prohibited within SWRMA1. The change from controlled to restricted is a minor and not expected to incur any additional costs. A change to prohibited will not have any effect as it is not possible for a second bore to be constructed with the SWRMA1 area.

6.3.5 Horticulture

There may be a small amount of land used for horticulture in the area of the water supply (although none is visible on the Waikato land use map available). Under Proposed Plan Change 1 to the Waikato Regional Plan, the activity status for application of fertiliser and agrichemicals will depend on the type of farming operation. As previously discussed for pastoral farming, the proposed amendments to the NES-DW prohibit or place strict standards on these activities within SWRMA1, but application of fertiliser or agrichemicals is unlikely to be currently occurring within SWRMA1 (which is a 5m radius around the water supply bore) and if it does only a small fraction cannot be fertilised or treated. However, the proposed amendments to the NES-DW will also require strict standards and resource consent for application of agrichemicals (but not fertiliser) within SWRMA 2 and we have assumed that the Resource User will apply for a resource consent to continue this activity should it be occurring.

As for pastoral farming, we have assumed that there are no effects to bore drilling activities.

6.4 Farm 2 Case Study Costs

The effects of the proposed amended NES-DW amendments on specific activities within the Farm 2 drinking water supply catchment are summarised in Table 6-2.

Table 6-2 Summary of Case Study Specific Effects for Farm 2 Water Supply

Resource user	Activity	Effect of amended NES-DW	Likelihood	Cost description	Change in Cost	Type of Cost
Farm 2	Remediation of bore head	No effect		NA	NA	NA
Households	Onsite wastewater disposal	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Discharge of stormwater	No effect where discharge is to land. If discharge to water than resource consent required	Considered unlikely that there are discharges to water	NA	NA	NA
Pastoral Farmer	Offal pits, stockholding areas, feedlots, and application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, possible within SWRMA2	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Drilling and bore construction	No material effect from change to controlled to restricted	Not possible within SWRMA1, possible within SWRMA2	NA	NA	NA
Horticulture	Application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, not likely within SWRMA2 based on land use	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Drilling and bore construction	No material effect from change to controlled to restricted	Not possible within SWRMA1, possible within SWRMA2	NA	NA	NA

7 Rural Case Study - Farm 3

7.1 Context

Farm 3 is a dairy farm located in the Bay of Plenty Region. The surrounding area is largely horticultural with a few small towns located nearby. The water supply consists of three shallow wells and supplies four houses and a cowshed in an on-demand system with only the cowshed having UV disinfection.

The Bay of Plenty Regional Natural Resources Plan does not currently include special considerations for drinking-water source protection zones. There is also a separate On-Site Effluent Treatment (OSET) Regional Plan.

Under the proposed amendments to the NES-DW, for this water supply, SWRMA1 is a 5m radius around each of the bores, which are all located on the same property. A 2.5km radius around each bore has been assumed for SWRMA2 and this combined area extends to include part of a nearby town and includes numerous (50-100) land parcels and waterways. From Bay of Plenty Regional Council's land use map, land use within the SWRMA2 area is primarily dairy, with kiwifruit orchards, lifestyle blocks, and urban.

7.2 Regional Plan Review

Table 7-1 summarises the potential effects of the amended NES-DW on activities within the Farm 3 water supply catchment.

Under the proposed amendments to the NES-DW additional restrictions would be placed on activities that discharge to water and within SWRMA1, and for the application of agrichemicals within SWRMA2, but other activities would not be affected.

Table 7-1 Summary of Activities within the Farm 3 Water Supply Catchment

Activity	Amended NES-DW		Bay of Plenty Regional Natural Resources Plan
	SWRMA 1	SWRMA 2	
Disturbance of riverbed	Permitted for water suppliers to enable a safe water supply Otherwise, prohibited or strict standards and will require consent	No change to current regional plan consent status	Permitted, restricted discretionary, of discretionary depending on volume/area.
Maintenance of borehead			Permitted
Works in riparian areas			Depends on slope and area, can be permitted, controlled or discretionary.
Drilling and bore construction	Permitted for water suppliers to maintain water supply. Otherwise, prohibited or have strict standards and will require consent.	Prohibited or have strict standards and will require consent.	Controlled
Discharge of stormwater	if discharged to land, strict standards and will require consent. For direct discharge to water, prohibited or strict standards and will require consent	If discharged to water, prohibited or strict standards and will require consent. If discharged to land no change to current regional plan consent status	For discharges to water or land the activity is restricted discretionary where the rate of discharge is greater than 125 litres per second for a 10-minute duration 10% AEP storm event, otherwise permitted
Discharge from an onsite wastewater disposal system	Prohibited or strict standards and will require consent	No change to current regional plan consent status.	Permitted (for new and existing systems), as long as the land application area is not less than 20m away from any drinking bore or from any surface water.
Stockholding areas and feedlots			Not mentioned
Stock access to waterways			Permitted with an Environmental Programme or Property Plan, else discretionary
Offal pits			Permitted more than 50m from a waterway or bore
Discharge of fertiliser to land			Permitted
Discharge from application of agrichemicals		Strict standards and will require consent.	Permitted on land, conditions applied to application within riparian areas

7.3 Effects of Changes to Activity Status

7.3.1 Farm 3 Water Supply

Under the amendments to the NES-DW, activities carried out by water suppliers within SWRMA1 are proposed to be more permissive. For a groundwater supply, the types of activities that a water supplier might need to carry out are things like remediation work on bores. This is covered by the drilling and bore construction activity in the Bay of Plenty Regional Natural Resources Plan which also covers the maintenance of bores, and there is assumed to be no effect from the proposed amendments to the NES-DW.

7.3.2 Onsite Wastewater Disposal Systems

Discharges from onsite wastewater disposal systems to land are currently permitted if they are more than 20 metres away from any drinking bore or surface water. With the proposed amendments to the NES-DW:

- Discharges to land within SWRMA1 would be restricted and will likely require a consent and a risk assessment to take place. However, due to the size and locations of the SWRMA1 (5m radius around each bore) it is unlikely that there would be any septic tank discharges in these areas.
- There would not be any change to the status for discharges to land from onsite wastewater disposal systems within SWRMA2.
- Discharges to water within SWRMA1 or SWRMA2 are not mentioned in the OSET Regional Plan but would become prohibited or have strict standards. Discharges of wastewater to water are not likely to be currently permitted, so it is assumed this is not a change from the status quo.

No additional costs are expected for onsite disposal systems.

7.3.3 Stormwater

Under the Bay of Plenty Regional Natural Resources Plan urban stormwater discharges are permitted activities up to a limit. Over this limit they become restricted discretionary activity. Under the proposed amendments to the NES-DW:

- Stormwater discharges to water become prohibited or require strict standards within SWRMA1. However, due to the size of SWRMA1 (5m radius around each bore) it is unlikely that there would be any discharges to land in this area or can be easily avoided.
- Stormwater discharges to water would be restricted within SWRMA2.
- Stormwater discharges to land within SWRMA2 remain permitted as per the current Regional Plan for small discharges.

There may be small stormwater discharges within the SWRMA2 area, for example from houses. The majority of these would discharge to land, and the proposed amendments to the NES-DW would not have an effect. Where these discharge to water, the resource user would be required to have a consent and a risk assessment would need to take place. This is likely to be a straightforward process and a low-complexity consent application.

- Low complexity consent applications: \$10,000 - \$30,000.
- Risk assessment: \$30,000.

We would not expect Regional Councils to require monitoring or reporting for this type of activity.

If there is an existing stormwater discharge from the town (or one required in the future) within SWRMA2 that exceeds the discharge limit, this would already be a controlled activity and the proposed amendments to the NES-DW would have little additional effect.

7.3.4 Pastoral Farming

From Bay of Plenty Regional Council's land use map, much of the land in the area of the water supply appears to be used for pastoral farming. Under the Bay of Plenty Regional Natural Resources Plan:

- Stock accessing waterways is permitted with an Environmental Programme or Property Plan, otherwise discretionary.
- Offal pits are a permitted activity more than 50m from water body or bore.
- Fertiliser application is permitted.
- Application of agrichemicals is a permitted activity.

Under the proposed amendments to the NES-DW, these activities would all be restricted within SWRMA1 but would retain their current status within SWRMA2, except for application of agrichemicals which would have strict standards and would require consent within SWRMA2.

These activities are unlikely to be currently occurring within SWRMA1 (which is a 5m radius around each bore) or easily avoided so there are not expected to be any material changes for Resource Users within SWRMA1 from the proposed amendments to the NES-DW.

The larger size of SWRMA2 means that it may not be practicable for Resource Users to avoid carrying out the application of agrichemicals. We have assumed that the Resource User would elect to apply for resource consent and carry out risk assessments for the application of agrichemicals within SWRMA2 at a cost of \$10,000 - \$30,000 for a low complexity resource consent application and \$30,000 for a risk assessment.

Drilling and bore construction may also be required for pastoral land use. Under the Bay of Plenty Regional Natural Resources Plan, drilling and bore construction is controlled. Under the proposed amendments to the NES-DW, this would change to having strict standards and require resource consent and a risk assessment within SWRMA1 and SWRMA 2 and may be prohibited within SWRMA1. The change from controlled to restricted is a minor and not expected to incur any additional costs. A change to prohibited will not have any effect as it is not possible for a second bore to be constructed with the SWRMA1 area.

7.3.5 Horticulture

There is some land used for horticulture in the area of the water supply. In the regional plan application of fertiliser and agrichemicals are permitted activities. As previously discussed for pastoral farming, the proposed amendments to the NES-DW prohibit or place strict standards on these activities within SWRMA1, but application of fertiliser or agrichemicals is unlikely to be currently occurring within SWRMA1 (which is a 5m radius around the water supply bore) and if it does only a small fraction cannot be fertilised or treated. However, the proposed amendments to the NES-DW will also require strict standards and resource consent for application of agrichemicals (but not fertiliser) within SWRMA 2 and we have assumed that the Resource User will apply for a resource consent to continue this activity should it be occurring. As for pastoral farming, we have assumed that there are no effects to bore drilling activities.

7.4 Farm 3 Case Study Costs

The effects of the proposed amended NES-DW amendments on specific activities within the Farm 3 water supply catchment are summarised in Table 7-2.

Table 7-2 Summary of Case Study Specific Effects for Farm 3 Water Supply

Resource user	Activity	Effect of amended NES-DW	Likelihood	Cost description	Change in Cost	Type of Cost
Farm 2	Remediation of bore head	No effect		NA	NA	NA
Households	Onsite wastewater disposal	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Discharge of stormwater	No effect where discharge is to land. If discharge to water than resource consent required	Considered unlikely that there are discharges to water	NA	NA	NA
Pastoral Farmer	Offal pits, stockholding areas, feedlots, and application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1.	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, possible within SWRMA2	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Drilling and bore construction	No material effect from change to controlled to restricted	Not possible within SWRMA1, possible within SWRMA2	NA	NA	NA
Horticulture	Application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, possible within SWRMA2	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Drilling and bore construction	No material effect from change to controlled to restricted	Not possible within SWRMA1, possible within SWRMA2	NA	NA	NA

8 Marae Case Study - Marae 1

8.1 Context

Marae 1 is located in the Waikato Region. The marae has a legal easement on neighbouring farmland to a spring which is the source of their water. The supply serves five houses, the marae and the marae office. The supply has filtration and UV disinfection. The marae trust reports that there have been no issues with water quality or quantity.

The water intake is from a dam just downstream of the spring. A spring is generally the surfacing of ground water and can be thought of as both a surface and ground water source. Under the proposed amendments to the NES-DW, this water supply has been treated as a modified bore, with SWRMA1 being a 5m radius around the intake structure and extending 5m landward upstream to the spring and 5m landward for 100m downstream located on the neighbour's property. However, for SWRMA2, a 2.5km radius has been assumed, in line with the definition set out for a bore, and this includes numerous (more than 50) land parcels and waterways. From the Waikato regional land use map, land use within the SWRMA 2 area is primarily pastoral farming with some plantation forestry and a small amount of horticulture and cropping.

The Waikato Regional Plan does not currently include special considerations for drinking-water source protection zones. Proposed Plan Change 1 – Waikato and Waipa River Catchment which introduces new rules to manage farming activities within the Waikato and Waipa River catchments would apply to this case study.

8.2 Regional Plan Review

Table 8-1 summarises the potential effects of the amended NES-DW on activities within the Marae 1 water supply catchment.

Proposed Plan Change 1, which applies in this location, introduces specific controls for farming activities, including requiring Farm Environment Plans which will assess the risk of diffuse discharges of nitrogen, phosphorus, sediment and microbial pathogens and specify actions to reduce those risks in order to bring about reductions in the discharges of those contaminants. These plans will be certified and monitored by Waikato Regional Council.

Under the proposed amendments to the NES-DW additional restrictions would be placed on activities that discharge to water and within SWRMA1 and for the application of agrichemicals within SWRMA2, but other activities would not be affected.

Table 8-1 Summary of Activities within the Marae 1 Water Supply Catchment

Activity	Amended NES-DW		Waikato Regional Plan (including Proposed Plan Change 1)
	SWRMA 1	SWRMA 2	
Disturbance of riverbed	Permitted within SWRMA 1 for water suppliers to enable a safe water supply Otherwise, prohibited / strict standards (consent necessary)	No change to current regional plan consent status	Discretionary
Works in riparian areas			Discretionary
Drilling and bore construction	Permitted for water suppliers to maintain water supply. Otherwise, prohibited or have strict standards and will require consent.	Prohibited or have strict standards and will require consent.	Controlled if more than 50m from surface water body
Discharge of stormwater	If discharged to land, strict standards and will require consent For direct discharge to water prohibited or strict standards and will require consent	If discharged to water, prohibited or strict standards and will require consent If discharged to land no change to current regional plan consent status	Permitted onto land Controlled into water if catchment area is urban and >1 hectare, otherwise permitted
Discharge from an onsite wastewater disposal system	Prohibited or strict standards and will require consent	No change to current regional plan consent status.	Permitted onto land and prohibited into water
Stockholding areas and feedlots			Small and low intensity farming and farming with a Farm Environment Plan as part of a Certified Industry Scheme is permitted Existing commercial vegetable production is controlled
Stock access to waterways			
Offal pits		Strict standards and will require consent.	Farming with a Farm Environment Plan but not part of a Certified Industry Scheme is controlled Farming not otherwise authorised is restricted discretionary.
Discharge of fertiliser to land			
Discharge from application of agrichemical			

8.3 Effects of Changes to Activity Status

8.3.1 Maraë Water Supply

Under the amendments to the NES-DW, activities carried out by water suppliers within SWRMA1 are proposed to be more permissive. For example, for a spring supply the water supplier may need to disturb the spring or stream bed from time to time to maintain the dam and intake structure. These activities are currently discretionary in the Waikato Regional Plan and would require the water supplier to make a consent application. This is estimated to cost in the range of \$10,000 - \$30,000 but would be avoided under the proposed amendments to the NES-DW.

8.3.2 Onsite Wastewater Disposal Systems

Discharges from onsite wastewater disposal systems are a permitted activity when onto land and prohibited when into water under the Waikato Regional Plan. With the proposed amendments to the NES-DW:

- Discharges to land within SWRMA1 would be restricted and will likely require a consent and a risk assessment to take place.
- There would not be any change to the status for discharges to land from onsite wastewater disposal systems within SWRMA2.
- Discharges to water within SWRMA2 or SWRMA1 would remain as a prohibited activity as per the existing Regional Plan.

There does appear to be a property within, or adjacent to the SWRMA 1 area, that may have a septic tank. However given that SWRMA 1 is defined as being within 5m of waterway, it is considered unlikely that a septic tank system (if it exists) would discharge to land or water within the SWRMA 1 area, and costs have not been assessed. If it does then the property owner would need to either move the discharge location or apply for a resource consent.

8.3.3 Stormwater

Under the Waikato Regional Plan stormwater discharges are permitted onto land and into water, unless from an urban catchment larger than one hectare, in which case discharges to water are controlled. Under the proposed amendments to the NES-DW:

- Stormwater discharges to water become restricted within SWRMA1.
- Stormwater discharges to land within SWRMA1 are restricted instead of permitted and will require a resource consent and risk assessment
- Stormwater discharges to water become restricted within SWRMA2 and require a resource consent and risk assessment.
- Stormwater discharges to land within SWRMA2 remain permitted as per the current Regional Plan.

There may be a stormwater discharge from the property within/adjacent to the SWRMA 1 area, however it is likely that this would be to land and given that SWRMA 1 is defined as being within 5m of waterway, it is unlikely that this discharge is occurring within the SWRMA 1 area. If the discharge (if it exists) is to land within the SWRMA 2, then it would remain as a permitted activity.

There may be other small stormwater discharges within the SWRMA2 area, for example from houses. The majority of these would discharge to land, and the proposed amendments to the NES-DW would not have an effect. Where these discharges are to water, the resource user would be required to have a consent and a risk assessment would need to take place. This is likely to be a straightforward process and a low-complexity consent application.

- Low complexity consent applications: \$10,000 - \$30,000.
- Risk assessment: \$30,000.

We would not expect Regional Councils to require monitoring or reporting for this type of activity.

8.3.4 Pastoral Farming

Much of the land in the area of the water supply appears to be used for pastoral farming from the Waikato Land Use Plan. Under Proposed Plan Change 1 (which would apply to Marae 1) the rules for farming activities are as follows:

- Small and low intensity farming and farming with a Farm Environment Plan as part of a Certified Industry Scheme is permitted.
- Existing commercial vegetable production is controlled.
- Farming with a Farm Environment Plan but not part of a Certified Industry Scheme is controlled
- Farming not otherwise authorised is restricted discretionary.

Under the proposed amendments to the NES-DW, stockholding areas, feedlots, stock access to waterways, offal pits and discharge of fertiliser and agrichemicals would all be restricted within SWRMA1 but would retain their current status within SWRMA2, except for application of agrichemicals which would have strict standards and would require consent within SWRMA2.

These activities are unlikely to be currently occurring within SWRMA 1 (which is a narrow area within 5m of the spring and waterway to 100m downstream) so there are not expected to be any material changes for Resource Users within SWRMA1 from the proposed amendments to the NES-DW.

The larger size of SWRMA2 means that it may not be practicable for Resource Users to avoid carrying out the application of agrichemicals. We have assumed that the Resource User would elect to apply for resource consent and carry out risk assessments for the application of agrichemicals within SWRMA2 at a cost of \$10,000 - \$30,000 for a low complexity resource consent application and \$30,000 for a risk assessment.

Drilling and bore construction may also be required for pastoral land use. Under the Waikato Regional Plan, drilling and bore construction is controlled. Under the proposed amendments to the NES-DW, this would change to having strict standards and require resource consent and a risk assessment within SWRMA1 and SWRMA 2 and may be prohibited within SWRMA1. The change from controlled to restricted is minor and not expected to incur any additional costs. A change to prohibited may require existing bores within SWRMA1 to be relocated or abandoned.

8.3.5 Horticulture

The marae reports that there is some land used for horticulture in the area of the water supply. Under Proposed Plan Change 1 to the Waikato Regional Plan, the activity status for application of fertiliser and agrichemicals will depend on the type of farming operation. As previously discussed for pastoral farming, the proposed amendments to the NES-DW prohibit or place strict standards on these activities within SWRMA1, but application of fertiliser or agrichemicals is unlikely to be currently occurring within SWRMA1 (which is a 5m radius around the water supply bore) and if it does only a small fraction cannot be fertilised or treated. However, the proposed amendments to the NES-DW will also require strict standards and resource consent for application of agrichemicals (but not fertiliser) within SWRMA 2 and we have assumed that the Resource User will apply for a resource consent to continue this activity should it be occurring. As for pastoral farming, we have assumed that there are no effects to bore drilling activities

8.4 Marae 1 Case Study Costs

The effects of the proposed amended NES-DW amendments on specific activities within the Marae 1 drinking water supply catchment are summarised in Table 8-2.

Table 8-2 Summary of Case Study Specific Effects for Marae 1 Water Supply

Resource user	Activity	Effect of amended NES-DW	Likelihood	Cost description	Change in Cost	Type of Cost
Marae 1	Upgrade of intake structure	This activity is more permissive for water suppliers		Avoided resource consent application	-\$10,000 - \$30 000	Per consent
Households	Onsite wastewater disposal	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Discharge of stormwater	No effect where discharge is to land. If discharge to water than resource consent required	Considered unlikely that there are discharges to water	NA	NA	NA
Pastoral Farmer	Offal pits, stockholding areas, feedlots, and application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, possible within SWRMA2	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Drilling and bore construction	No material effect from change to controlled to restricted	Possible	NA	NA	NA
Horticulture	Application of fertiliser	Prohibited or restricted within SWRMA1, no effect in SWRMA2	Very unlikely to be occurring within SWRMA1	NA	NA	NA
	Application of agrichemicals	Prohibited or restricted within SWRMA1, strict controls and resource consent required in SWRMA2	Very unlikely to be occurring within SWRMA1, possible within SWRMA2	Resource consent application	\$10,000 - \$30,000	Per consent
				Risk assessment	\$30,000	Per consent
	Drilling and bore construction	No material effect from change to controlled to restricted	Possible	NA	NA	NA

9 Discussion

These five case studies represent small water supplies in rural settings across three regions of New Zealand. A mixture of land uses has been identified in the areas surrounding the water supplies, primarily pastoral farming, with smaller amounts of horticulture and forestry, and in some cases residential areas. One of the water supplies has a surface water source, one has a spring source and the remainder have groundwater sources.

The case studies demonstrate that the proposed amendments to the NES-DW are unlikely to have significant effects on typical pastoral farming, horticultural and household activities in the SWRMAs, except the application of agrichemicals within SWRMA2, which would require consent.

In two of the case studies, it is likely that the proposed amendments to the NES-DW will make some activities related to maintaining a water supply (e.g. maintaining intake structures or discharging process water) more permissive and would reduce costs associated with resource consent applications for water suppliers.

The effects of the proposed amendments to the NES-DW would appear to be more pronounced for Resource Users in the areas surrounding surface water supplies because the area covered by SWRMA1 will be larger. This is demonstrated in rural case study 1 where onsite effluent disposal systems within SWRMA1 would potentially require consent.

The Marae 1 case study highlighted that some additional thought may be required around the delineation of SWRMAs for springs, but that a hybrid of the bore and surface definitions may be workable.

Under the current proposed activity rules, there are no anticipated additional costs for onsite effluent discharges (to water or land), pastoral farming activities and application of fertiliser within SWRMA2 in these case studies. Since the SWRMA2 areas are quite large, it may not be practicable for Resource Users to avoid carrying out the application of agrichemicals. The costs associated with application of agrichemicals is estimated to be \$10,000-\$30,000 for the resource consent application and \$30,000 for a risk assessment.

However, the proposed amendments to the NES-DW restrict discharges to water within SWRMA1. Stormwater discharges to water have been identified as one activity where the proposed amendments could create greater restrictions, however in the rural areas of these case studies, stormwater discharges are few, and more likely to go to land.