

MANAGING OUR ENVIRONMENT

Manawatu-Wanganui Regional Council One Plan section 35 report: Intensive Farming



July 2018

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Manawatu-Wanganui Regional Council One Plan section 35 report: intensive farming

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1 Executive summary

The purpose of this report is to monitor the effectiveness and efficiency of the intensive farming land use provisions in the Manawatu-Wanganui Regional Council One Plan, as is required by section 35 of the Resource Management Act. The One Plan is a combined Regional Policy Statement (RPS), Regional Coastal Plan and Regional Plan, which become operative on 19 December 2014.

The RPS (specifically Chapters 2 and 5) establishes freshwater quality and value objectives, and also prescribes water quality strategies and a framework under which nutrients, sediment and pathogens from intensive farming land use activities are regulated. The Regional Plan (specifically Chapter 14) gives effect to the RPS by regulating intensive farming land use activities, pursuant to section 9(2) RMA, which contribute to elevated contaminant levels in fresh water. The nitrogen management provisions of the Regional Plan are based on the principle of natural capital in the form of Land Use Capability Class (LUC) and rely on the nutrient modelling software, OVERSEER. Together with LUC and Overseer, nitrogen leaching maxima are set for targeted water management sub-zones where land use (intensive farming) activities are significant contributors to elevated contaminant levels in groundwater or surface water. The intensive farming provisions regulate existing and new farms separately and set nitrogen leaching maxima to those land/ resource users by way of resource (land use) consent.

During the implementation of the intensive farming provisions in the resource consent process, the Council has observed that subsequent updates to OVERSEER have increased the modelled nitrogen loss below the root zone, and as a result the cumulative nitrogen leaching maximum (CNLMs) are not achievable on most farms using good management practices (GMPs). Consequently, applicants for resource consent are unable to meet the conditions of controlled activity Rule 14-1 and Rule 14-3, nor meet the policy test in Policy 14-5. As a consequence of the recent case-law *Davidson Family Trust v Marlborough District Council*¹, the directive wording of the intensive farming provisions requires that intensive farming land use activities are not authorised to exceed the CNLMs in Table 14.2. This is likely to have significant economic and social implications for existing intensive farmers in the Region which cannot obtain resource consent, as it has been shown that for some farms meeting the CNLMs limits would incur a cost that would result in the business becoming unviable. It is unlikely that this was the intention of the Plan; therefore the intensive farming provisions of the Regional Plan are likely to be inefficient in achieving the water quality objectives of the RPS, given the large social and economic cost. It is currently unclear whether an alternative option could achieve the water quality (nutrients) objectives of the One Plan, with a lower cost than the current framework.

The CNLMs in Table 14.2 will not, in isolation, be sufficient to meet the water quality (SIN) targets in the One Plan and as a result, will not achieve for the water quality (nutrients) objectives of the One Plan. It is unlikely that this was the intention of the Plan; however, directive wording in RPS policies means that the Nitrogen leaching maximums must be established which will achieve the strategies for surface water quality. Therefore, the intensive farming provisions of the Regional Plan are ineffective at achieving the water quality objectives of the RPS.

¹ R J Davidson Family Trust v Marlborough District Council [2017] NZHC 52

In conclusion, the intensive farming provisions are ineffective at achieving the water quality strategies in the RPS policies, the CNLMs are not achievable on most farms using GMPs, and the intensive farming provisions are not efficient given their social and economic cost relative to their environmental benefit.

2 Introduction and Background

2.1 History of the One Plan

The Manawatu-Wanganui Regional Council One Plan is a consolidated Regional Policy Statement, Regional Plan and Regional Coastal Plan for the Manawatu-Wanganui Region; and is commonly referred to as the **One Plan**. The One Plan was approved by way of Council resolution on 25 November 2014 and became operative on 19 December 2014.

Plan Change 1 (PC1) became operative on 28 April 2016 which included:

- New Policy 14-9 and amendments to multiple policies and rules in the Regional Plan for alignment with the National Policy Statement for Freshwater Management 2011 and 2014;
- Removal of a rule in the Regional Plan for alignment with the Resource Management (National Environmental Standards for Air Quality) Regulations 2004;
- Removal of reference to restricted coastal activities;
- Minor corrections to cross referencing, typographical and formatting errors.

PC1 is the most recent version of the One Plan and is the version used for this monitoring report.

As per section 59 RMA, the purpose of a regional policy statement is to:

- (1) *...achieve the purpose of the Act by providing an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region.*

Section 63 of the RMA outlines the purpose of a regional coastal plan and regional plan:

- (1) *The purpose of the preparation, implementation and administration of regional plans is to assist a regional council to carry out any of its functions in order to achieve the purpose of this Act.*
- (2) *Without limiting subsection (1), the purpose of the preparation, implementation and administration of regional coastal plans is to assist a regional council, in conjunction with the Minister of Conservation, to achieve the purpose of this Act in relation to the coastal marine area of that region.*

The One Plan identifies surface water quality degradation as one of the four keystone environmental issues, collectively known as the “Big Four”. The One Plan (Chapter 5) states that:

“Run-off of nutrients, sediment and bacteria from farms is the single largest threat to water quality in the Region. Some water bodies are deemed unsuitable for swimming or food gathering, and aquatic life is being damaged.”

The current state and trend of water quality and intensive farming in the Manawatu-Wanganui Region in relation to the One Plan RPS, is explored further in section 3 of this report.

Priority catchments for water quality enhancement are identified in Table 14.1 of the Plan, which identifies the specified Water Management Zones (WMZ) and Sub-zones (WMSZ) as priority catchments where intensive farming land use activities will be specifically managed.

These priority catchments are:

- *Coastal Rangitikei,*

- Lake Horowhenua,
- Mangapapa River,
- Mangatainoka River,
- Upper Manawatu River above Hopelands,
- Waikawa Stream,
- Manawatu River above Gorge,
- Other south-west catchments (Papaitonga), and
- Other coastal lakes (Northern Manawatu).

Since the One Plan became operative in December 2014, it became apparent to Council that there were issues associated with the implementation of the intensive farming provisions. In particular compliance with the limits relating to nitrogen leaching from intensive farming land uses, which are derived from policies 5-8 and 14-5.²

2.2 Scope and purpose of this report

Section 35 of the Resource Management Act 1991 (RMA) requires that Manawatu-Wanganui Regional Council (trading as Horizons Regional Council), hereafter **MWRC**, monitors the efficiency and effectiveness of policies, rules, or other methods in its policy statement or its plan³.

The key questions of this monitoring relate to:

- The effectiveness and the efficiency of the Plan's policies, rules and methods in achieving the objectives of both the plan and the regional policy statement;
- The consistency of the Plan's policies, rules and methods with its objectives;
- Whether the assumptions underpinning the Plan remain valid; and
- Whether the Plan can reasonably be implemented.

Section 67 RMA states that a regional plan must *give effect to* any national and regional policy statement and the New Zealand Coastal Policy Statement. The purpose of this report is to monitor the efficiency and effectiveness of the policies, rules and/or methods in the regional plan, in so far as they relate to intensive farming land uses and in addition to achieving the objectives and policies in the RPS, as they relate to surface water quality and values and Māori values. That is, to monitor the One Plan's intensive farming provisions and their contribution to achieving the One Plan's water quality objectives. This report does not go as far as to observe the actual impact of those provisions on freshwater quality; that is beyond the scope of this report.

This monitoring report takes into account the practice of plan implementation, but this report itself is not a review of implementation. Implementation of aspects of the One Plan has proven difficult and has diverged in places from the management strategy intended by the One Plan. This evaluation proceeds from an understanding of where those difficulties have arisen and why adjustments in implementation have been made (including the Environment Court declarations of 21 March 2017), in order to understand

² Horizons Regional Council (2016), Policy Evaluation Report: Freshwater Quality.

³ This is one, but not the only, requirement of s35(2) RMA.

whether the One Plan is operating effectively and efficiently and whether opportunities exist to improve the One Plan.

This report monitors the intensive farming provisions relating to nitrogen-loss from intensive farming land uses and activities, and does not monitor provisions relating to other nutrients (such as phosphorus), topsoil and sediment erosion and pathogen contamination of water, except to the extent that they are integrated with nitrogen-loss provisions relating to nitrogen loss into water.

2.3 Monitoring efficiency and effectiveness

The contents of regional policy statements is set out in section 62 RMA, and the contents of regional plans is set out in section 67 RMA.

According to section 62(1)(j) of the RMA a “*regional policy statement must state— the procedures used to monitor the efficiency and effectiveness of the policies or methods contained in the statement.*”

Section 67(2)(e) RMA provides that a, “*regional plan may⁴ state— the procedures for monitoring the efficiency and effectiveness of the policies and methods;*”

One Plan RPS Chapter 10 (Administration) states that the Regional Council will regularly check the effectiveness of the policies and methods in this Plan in achieving anticipated environmental results. This will be done every three years at the same time as reporting progress made by the community in achieving community outcomes for the Region, being the Regional Council’s Long-Term Plan (LTP)⁵.

Monitoring and reporting on the effectiveness of the One Plan will be based on the following process:

- a) *Evaluation of the Regional Council’s Annual Reports and the policies and methods in this Plan to assess which policies and methods have been implemented,*
- b) *Evaluation of the LTCCP and Annual Reports to assess actual work done to implement this Plan compared to the intended level of work each year, including consent, compliance and environmental incident response activity,*
- c) *Evaluation of the results of environmental monitoring carried out under the Regional Monitoring Strategy to assess the condition and trends of the Region’s environment, with an emphasis on those parts of the environment where specific work has been done to make improvements, and*
- d) *Assessment of whether changes need to be made to policies and methods where there is slow or no progress toward achieving anticipated environmental results.*

Chapter 10 then continues that changes to the One Plan will be sought when:

- a) *plan effectiveness monitoring identifies the need to enhance progress toward achieving anticipated environmental results, or*
- b) *major resource management developments arise such as significant amendments to the RMA or the adoption of national policy statements or national environmental standards by Government that have major implications for the contents of this Plan, or*

⁴ Note that use of *must* in s62 and *may* in s67.

⁵ Chapter 10 refers to the Regional Council’s Long-Term Council Community Plan (LTCCP).

- c) *the results of new scientific work enhance this Plan and make plan provisions more certain for resource users.*

Changes to the Regional Plan may be requested by any person, including by a Minister of the Crown, the Regional Council or any District Council within, or partly within, the Region. The process used to review and change this Plan is set out in Schedule 1 to the RMA.

In this case:

- a) This plan effectiveness monitoring does identify the need to *enhance progress toward achieving anticipated environmental results*, or
- b) The Environment Court Declarations of 21 March 2017, outlines issues that need to be addressed in the intensive farming provisions of the One Plan.
- c) Changes in the OVERSEER model need to be taken in account in order to made intensive farming plan provisions more certain for resource users.

Therefore, plan review is appropriate in this case.

This policy intention is implemented via Methods 10-1 and 10-2.

2.4 Effectiveness and efficiency assessment methodology

The report has been commissioned by the MWRC Strategy and Policy Team, with input from teams working in regulatory, science, freshwater and rural advice. It is informed by Horizons' science programme focused on water quality state of the environment (SOE) monitoring.

Ideally, policy evaluation would draw on water quality monitoring data to show whether or not the intensive farming provisions of the Regional Plan are achieving the stated objectives of the RPS and NPSFM. Freshwater management is a long-term challenge that requires action in the short term. The test is whether policy interventions are enhancing poor water quality and maintaining good water quality, in order to safe-guard the environment and recognise and provide for the communities values. Significant improvements to water quality occurs on a scale of years to decades, and how that change may have resulted from a particular intervention is difficult to observe. These changes in water quality are possibly explained by:

- 1) The lag effect between changes in land use and corresponding changes in water quality;
- 2) The link between water quality targets (which are quantitative) and the correlation to management values (which are qualitative);
- 3) The complex environment in which water quality is managed. Changes in water quality are a complex outcome of multiple inputs i.e. land use regulation, economic changes in markets and dynamic environmental relationships.

Given the potential impact on social and economic well-being of communities and potential for further water quality deterioration, monitoring as to whether the policies are both environmentally effective and economically efficient needs to be undertaken. MWRC has reached the decision to conduct an evaluation as to whether the relevant parts of the Plan are having the intended environmental results (Horizons Regional Council (2016), Policy Evaluation Report: Freshwater Quality, page 2). This decision was made by Council based on attribution of benefits and costs and the expected lag time between regulation and

water quality change, rather than based on data collection itself. On that basis, this section 35 monitoring report aims to assess the One Plan's policies and rules as to their effectiveness and efficiency of achieving those water quality objectives.

With the aim of monitoring the efficiency and effectiveness of intensive farming land use policies, rules, or other methods in achieving the water quality objectives of the One Plan, the following methods were used.

1. In-person interviews with the following MWRC staff:
 - a. Lynette Baish (Senior Policy Analyst), Barry Gilliland (Policy Manager) and Tom Bowen, (Principal Advisor (Policy));
 - b. Greg Bevin (Regulatory Manager); Andrew Bashford (Team Leader: Consents) and Jasmine Mitchell (Senior Consents Planner);
 - c. Pita Kinaston (Team Leader Consents Monitoring) and Georgia Hodges (Environmental Protection Officer);
 - d. Jon Roygard (Group Manager Natural Resources and Partnerships), Logan Brown (Freshwater and Partnerships Manager), Maree Patterson (Water Quality Scientist) and Abby Matthews (Science and Innovation Manager);
 - e. Ian McNab (Rural Advisor), Helene Lowe (Rural Advisor) and Kate McKinnion (Rural Advisor).
2. Resource consent data and case studies
 - a. Data obtained from the MWRC consenting database IRIS. Data to include number of
 - i. pre-application meetings, applications lodged, applications failed s88 RMA completeness check and returned to Applicant,
 - ii. applications processed as controlled activity under One Plan Rules 14-1 or 14-3, applications processed as restricted discretionary activity under Rules 14-2 or 14-4,
 - iii. applications where section 92 RMA was used and for what reasons;
 - iv. applications non-notified, limited notified, publically notified;
 - v. applications granted and declined
 - vi. decisions appealed;
 - vii. section 357 RMA objections;
 - viii. judicial reviews
 - b. Data obtained from MWRC monitoring team. Data to include
 - i. Number of, or frequency of intensive farming land use monitoring site visits undertaken,
 - ii. Compliance and environmental incident response activity
 - iii. Number of enforcement actions undertaken, enforcement orders, abatement notices, infringement notices
 - c. Case studies of the implementation of the intensive farming land use provisions, including
 - i. Foxton wastewater treatment plant (FWWTP)
 - ii. Examples from the resource consent team of unintended consequences
3. Farm data from MWRC Policy staff, MWRC rural advisory staff and external farm consultants;
 - a. How much will the change in version number of Overseer influence the cumulative nitrogen leaching maximums (CNLMs);
 - b. How much will a change in cumulative nitrogen leaching maximums (CNLMs) change in-river nutrient loads;
 - c. How many intensive farming land uses are in each existing targeted water management sub-zones in Table 14.1;
 - d. How many intensive farming land uses are in each LUC, from One Plan Table 14.2;

- e. How many existing intensive farming land uses in each existing targeted water management sub-zones in Table 14.1 have been consented and how many are not consented but are in breach of rules 14-1 or 14-3? Of those existing unconsented farms, how many would meet Table 14.2 CNLMs.
- f. How much did it cost each farm to gain resource consent, where granted. How much time did this take, including preparing an application and having it considered to a point beyond appeal?
- g. How much did it cost each farm to create on-farm nutrient mitigation in order to meet the Table 14.2 CNLMs? How long will it take each farm to implement this mitigation?

This report aims to integrate several sources of information and analysis in other reports, into one descriptive report; this includes but is not limited to:

- Horizons Regional Council (2016), Policy Evaluation Report: Freshwater Quality (17p);
- Horizons Regional Council (2018), Horticulture Problem Definition (5p);
- Horizons Regional Council (12 Dec 2017), Environment Committee Annex A Science & Innovation Activity (32p);
- Horizons Regional Council (2013), 2013 State of Environment (100p);
- Dr J Roygard on behalf of Horizons Regional Council (undated), section 42A report (217p);
- Enfocus Ltd and Hill Young Cooper Ltd (12 October 2017), Draft report on Options to Change Nutrient Management Provisions of One Plan (6p);
- van Voorthuysen Environmental Ltd (29 June 2017), One Plan – intensive farming land use activities.
- Enfocus Ltd (July 2017), Planning Opinion on consenting pathways for intensive farming: Horizons One Plan (9p);
- Enfocus Ltd (June 2017), Options for Change: One Plan Post Declaration;
- Horizons Regional Council (14 November 2017), Strategy and Policy Committee meeting notes, report 17-220.
- Enfocus Ltd (May 2017), Implications of the Environment Court's declaration on One Plan implementation (14p);
- The AgriBusiness Group (October 2017), Farm Scale Economic Impact Analysis of One Plan Intensive Land Use Provisions (23p);
- Landcare Research (May 2016), Impact of the Horizons One Plan on farmers and the agricultural community (38p);
- KapAg Ltd (01/01/2018), An impact assessment of One Plan policies and rules on farming systems in the Tararua District and the Manawatu Wanganui Region (91p);
- KapAg Ltd (2015), Selecting farm practices and preparing farm plans for land-use consents in the Manawatu-Wanganui region (9p);
- KapAg Ltd (March 2018), Selecting representative dairy farms for the upper Manawatu River catchment (37p);
- KapAg Ltd (May 2018), A comparison of changes to nitrogen loss allowances on dairy in the upper Manawatu River catchment (50p);
- GSL Diagnostic (30 June 2016), The feasibility of nutrient leaching reductions (N leaching) within the constraints of minimum impact on the profitability and production of five dairy farms in the Horizons Region (45p);
- Massey University (February 2018) Sensitivity of values in Table 14.2 of the 'One Plan' to a change in the version of OVERSEER® (40p).

2.5 Limitations of this report

Significant resource management issues identified in Chapter 5 (One Plan page 5-6) have not been assessed. The assumption that these issues remain valid and that the objectives and policies in Chapter 5 address these issues, has been adopted and this monitoring has focused on the effectiveness and efficiency of the intensive farming provisions in the Regional Plan to achieve those objectives and policies. As such this monitoring report does not assess the policies and methods of the RPS in achieving the water quality objectives. Nor will this report assess actual observed water quality monitoring results as part of this evaluation as SOE reporting is not available for analysis at the time of writing this report.

Several matters were identified as requiring further investigation whilst undertaking this monitoring. However, those matters are out of scope of this monitoring report, subject to s35 RMA. Matters that warrant further investigation by MWRC in its wider catchment review process include:

Water quality, nutrient management and agronomy science from MWRC and industry/ research. The following is a list of matters which have been identified during this monitoring which will need to be addressed by the Council through the NPSFM process.

1. Accuracy and certainty of the Overseer and land use capability class (LUC) model for Horticulture;
2. As per One Plan Policy 5-8, are:
 - a. The existing targeted water management sub-zones in Table 14.1 (target catchments) maintaining or improving water quality since 2014;
 - b. All of the target catchments still relevant;
 - c. Any water management sub-zones in One Plan Schedule A that are not listed in Table 14.1, in need of being added to Table 14.1 because of an increase in SIN;
 - d. Of the four existing intensive farming land uses still relevant; do any need to be removed or do any need to be added (i.e. deer, poultry, piggeries)?;
 - e. All of the primary sources of contaminants (nitrogen) being monitored and regulated in targeted WMSZs;
 - f. All of the over-allocated contaminants being monitored and regulated in targeted WMSZs;
 - g. Any contaminants of concern being monitored (and or regulated) in non-targeted WMSZs.

Answers to these questions will be useful in the catchment review process, but are not investigated here.

3 The intensive farming land use situation and water quality environment of the Manawatu-Wanganui Region

3.1 Intensive farming land use in the Manawatu-Wanganui Region

The following land use figures are from Horizons Regional Council (2013) "Embark on a journey into the world around you: 2013 State of Environment". At the time of that 2013 SOE report, sheep and beef farming is the predominant land use in our Region, with sheep and beef farms occupying 51% or 1,144,510 ha of all available land. This is followed by native cover (31% or 689,420 ha) and exotic cover e.g. forestry (7.5% or 169,320 ha). Dairy farming makes up 6.7% or 149,230 ha of all available land in our Region; dairy is the 4th largest land use. The area (at a regional scale) under each land use type is shown in the below Figure 1.

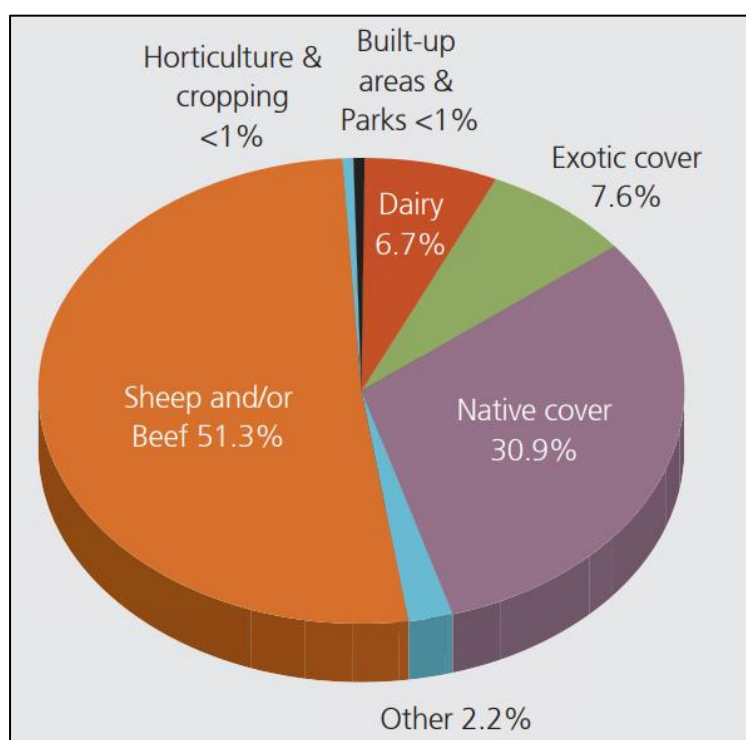


Figure 1: Total area as proportion of regional land use.

One Plan Chapter 5 references "intensification within the agricultural sector". The following are excerpts from pages One Plan 5-2 and 5-4, respectively:

"There has been a substantial intensification within the agricultural sector in recent years. This has contributed to a vibrant and booming regional economy but has also increased pressure on the Region's water resources. There has been a significant increase in irrigation demand and the amount of nutrients leaching to surface water and groundwater. Although the impacts of agricultural intensification are less obvious than those caused by the major point source discharges and abstractions mentioned above, they have increased progressively over time."

“The intensification in agriculture during the past 10 to 15 years has been especially marked in the dairy sector. Raising stock numbers increases the quantity of dairy shed effluent requiring disposal, the quantity of stock urine produced (a concentrated source of nutrients) and the opportunities for stock to access water bodies and their beds. The agricultural sector is recognising the impact it is having on the nation’s water bodies and has started to act. The dairy sector was the first to respond, with the Dairying and Clean Streams Accord (an agreement between Fonterra, the Ministry for the Environment, Regional Councils and others on an approach to enhance water quality). Such voluntary approaches are one way of lowering nutrient and faecal levels in the Region’s water bodies and the Regional Council supports them, although further improvements are needed. Further improvements will require a mix of regulatory and non-regulatory approaches that may alter over time.”

The above assumptions need to be retested for their relevancy in the current situation. It is also important to clarify what is meant by *intensification* and whether that is to increase the intensity and or scale of the same operation, or whether this also includes *conversion* from an extensive land use to an intensive land use (or between intensive land uses). *Intensification*, in its simplest form i.e. increasing intensity of the same land use, is not captured within the One Plan intensive farming provisions. That is different from *conversions*, which are also a form of intensification but involves either the change of land use from extensive to intensive, or between intensive land uses. Conversions are captured within One Plan rules 14-3 and 14-4. However, an assessment of resource consent data presented in section 5.1 of this report shows that Rules 14-3 and 14-4 have been used significantly less than rules 14-1 and 14-2, meaning that either:

- conversions (as a form of intensification) may not be as common as anticipated by the One Plan; or
- the intensive farming provisions of the One Plan are inefficient and or restrictive for conversions.

This is investigated further in sections 5.1 and 5.3.3 of this monitoring report.

Comparing DairyNZ data between the following two reports shows that dairy intensification in the Manawatu and Tararua districts is inconsistent with what is assumed in the above One Plan quotes (presumably based on a trajectory observed before the One Plan came into effect).

- Livestock Improvement Corporation Limited & DairyNZ Limited (2008), *New Zealand Dairy Statistics 2007-08*; and
- Livestock Improvement Corporation Limited & DairyNZ Limited (2017), *New Zealand Dairy Statistics 2016-17*.

Table 3.3: Herd analysis by district in 2007/08

Region	District	Total herds	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Wellington	Wanganui	21	7,363	2,819	351	134	2.67
	Rangitikei	85	31,000	10,540	365	124	2.9
	Manawatu	267	89,099	32,220	334	121	2.79
	Palmerston North City	39	13,936	5,301	357	136	2.66
	Horowhenua	121	42,869	15,830	354	131	2.73
	Kapiti Coast	19	5,290	2,092	278	110	2.56
	Upper Hutt City	4	646	343	162	86	1.87
Wairarapa	Tararua	312	95,348	35,336	306	113	2.72

Table 3.3: Herd analysis by district in 2016/17

Region	District	Total herds	Number of owner-operators	Number of share-milkers	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Manawatu	Wanganui	20	15	5	7,861	3,080	393	154	2.55
	Rangitikei	88	77	11	40,555	15,063	461	171	2.69
	Manawatu	249	191	58	93,943	34,270	377	138	2.74
	Palmerston North City	50	41	8	20,570	7,889	411	158	2.61
	Horowhenua	117	92	25	44,478	15,794	380	135	2.82
	Kapiti Coast / Upper Hutt	18	16	2	5,409	2,209	301	123	2.45
Wairarapa	Tararua	294	219	75	97,392	36,006	331	122	2.70

Total effective hectares in the Manawatu district in 2007/08 was 32,220 Ha compared to 34,270 Ha in 2016/17. Average cows per hectare in the Manawatu district in 2016/17 was 2.74, which is a small change from 2.79 in 2007/08. Likewise for the Tararua district, total effective hectares in 2007/08 was 35,336 Ha compared to 36,006 Ha in 2016/17 and average cows per hectare in 2007/08 was 2.72 compared to 2.70 in 2016/17. The total effective hectares under dairy use in the Rangitikei district has grown 42% between 2007/08 and 2016/17.

In conclusion, a brief literature search has shown that the scale and nature of intensive farming in the Manawatu-Wanganui Region may be different, or has changed from what has been anticipated in the One Plan. This warrants further investigation in the Manawatu, Tararua and Rangitikei districts.

3.2 State and trend of water quality in the Manawatu-Wanganui Region

3.2.1 Water quality in Chapter 5

One Plan Chapter 5 identifies water quality as a significant resource management issue.

Chapter 5 (pg. 5-4) states

“In the past, the biggest threats to water quality were municipal (eg., sewage), industrial (eg., meat works and fellmongers) and agricultural (eg., dairy shed effluent) discharges. Although considerable improvements have been made to discharges to water, further improvement is still possible and necessary.”

Chapter 5 (pg. 5-4) states that the overall state of fresh water quality in the Region is as follows:

“Groundwater quality within the Region varies according to both depth and location. Generally, deeper groundwater is of higher quality. For example, shallow groundwater within the Horowhenua District near Levin has high concentrations of nitrates, which are believed to be the result of septic tank discharges and fertiliser use on market gardens. There have been no significant changes in groundwater quality over the length of the Regional Council’s monitoring record (more than 15 years). There is no evidence that groundwater quality is deteriorating.*

The overall state of fresh water quality in the Region is as follows:

- (a) The middle reaches of many rivers are unsafe to swim in because of bacterial contamination, or are unpleasant to swim in because of slime (periphyton) growth (Figure 5.1). Elevated nitrate and phosphate levels promote slime growth. The slime also impacts on fish and instream invertebrate communities.*
- (b) The lower reaches of many rivers have high concentrations of bacteria, nitrates, phosphates and sediments, and these levels are increasing.*
- (c) There is minimal contamination of surface water from heavy metals, hydrocarbons and other toxic substances.*
- (d) The quality of groundwater in the Region is generally suitable for stock needs and irrigation, with a low sodium hazard and a low-medium salinity hazard.*
- (e) Nitrate levels are high in shallow groundwater in parts of the Region, but the levels have not changed during the period of monitoring.*
- (f) Groundwater is free of herbicides and pesticides.”*

3.2.2 Surface water quality state and trend (SOE) report

Horizons Regional Council (2013) State of Environment⁶ reports on the state and trends in Regional water quality, specifically nitrogen at pages 16-19. The 2013 SOE report presents the following figures, of catchments in relation to nitrogen grading.

⁶ Horizons Regional Council (2013) *“Embark on a journey into the world around you: 2013 State of Environment”*



Figure 2: Water quality SOE classifications

Nitrogen can be present in water in a number of forms (nitrate, nitrite, ammoniacal and organic nitrogen) all of which can be measured individually or together as total nitrogen (TN). Nitrate, nitrite and ammoniacal nitrogen make up the plant available component, soluble inorganic nitrogen (SIN) that contributes to plant and algal growth. The regional state and trend analysis is currently under preparation for the State of Environment 2018 Council report. The two tables below are indicative results of that SOE water quality monitoring (Horizons Regional Council, 2017).⁷

The Manawatu catchment is particularly relevant, as that is where many targeted water catchments⁸ are located. In the Manawatu catchment total oxidised nitrogen shows an improving trend of 34% of 32 sites

⁷ Horizons Regional Council (2017) Environment Committee 12/12/2017 Report 17-247 Annex A Science & Innovation Activity

⁸ One Plan Table 14.1

improved. This improvement within the Manawatu catchment is consistent with the regional average of 35% of 59 sites showing improvements in TON levels. The unreported proportion of sites will either be data deficient, or no statistically significant change in quality was detected. For completeness, *E. coli*, DRP and turbidity have also improved, both within the Manawatu catchment and regionally.

10 YEARS OF WATER QUALITY TRENDS JANUARY 2007 - DECEMBER 2016				
	MANAWATŪ - 32 SITES		REGIONAL - 59 SITES (including Manawatū)	
	IMPROVING	DECLINING	IMPROVING	DECLINING
E-coli ¹	19%	0%	17%	0%
Total oxidised nitrogen ²	34%	0%	35%	2%
Dissolved reactive phosphorus ²	34%	0%	22%	7%
Turbidity ³	28%	0%	17%	2%

¹ E. coli is a swimability indicator ² TON and DRP are both nutrient indicators ³ Turbidity is a sediment indicator

Figure 3: 10-year SOE water quality trends

Horizons Regional Council (2017)⁹ report presents the

“results of the updated 10-year trend analysis by Freshwater Management Unit (FMU) for 59 sites in the monitoring network. Ten degrading trends (declining water quality) have been identified in the analysis, two for clarity (Manawatu at Hopelands and Tamaki at Tamaki Reserve, measured as black disc), one for turbidity (Rangitikei at Kakariki), one for total oxidised nitrogen and one for total nitrogen (both at Mangaehuehu upstream of Rangataua STP), one for total phosphorus (Whangaehu upstream of Winstone Pulp), and four for dissolved reactive phosphorus (Whangaehu upstream of Winstone Pulp, Whanganui at Cherry Grove, Whanganui at Pipiriki and Whanganui at Te Rewa).”

The table below from Horizons Regional Council (2017)¹⁰ provides the water quality results for individual sites and parameters; note the green upward pointing arrows indicate significant meaningful improvement and the red downward pointing arrows indicate significant meaningful decline.

⁹ Horizons Regional Council (2017) Environment Committee 12/12/2017 Report 17-247 Annex A Science & Innovation Activity

¹⁰ Horizons Regional Council (2017) Environment Committee 12/12/2017 Report 17-247 Annex A Science & Innovation Activity

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Table 2 10 year trends in key water quality indicators in the Horizons Region (2007-2016).

FMU	SITE NAME	BDISC	TURB	ECOLI	NH4	TN	TON	TP	DRP
East Coast	Owahanga at Branscombe Bridge	N/A	~	~	N/A	~	↑↑	~	N/A
	Ohau at Gladstone Reserve	~	~	~	N/A	~	↑↑	↑↑	~
Horowhenua	Waikawa at Huritini	↑↑	~	~	↑↑	~	~	~	↑↑
	Waikawa at North Manakau Road	~	~	~	N/A	~	~	~	~
Manawatu	Makakahi at Hamua	~	~	↑↑	N/A	~	~	~	↑↑
	Makakahi at Motor Camp	~	↑↑	~	N/A	↑↑	↑↑	~	N/A
	Makuri at Tuscan Hills	~	~	~	N/A	~	~	~	~
	Manawatu at Hopelands	↓↓	↑↑	↑↑	N/A	↑↑	~	~	~
	Manawatu at Opiki Br	N/A	~	~	↑↑	~	~	~	↑↑
	Manawatu at Teachers College	N/A	~	~	N/A	~	~	~	~
	Manawatu at u/s PNCC STP	~	~	↑↑	N/A	↑↑	~	~	~
	Manawatu at u/s PPCS Shannon	N/A	↑↑	~	↑↑	~	~	~	↑↑
	Manawatu at Upper Gorge	~	~	~	N/A	~	~	~	~
	Manawatu at us Fonterra Longburn	N/A	~	~	~	~	~	~	↑↑
	Manawatu at Weber Road	N/A	~	↑↑	N/A	↑↑	↑↑	~	~
	Manawatu at Whirokino	N/A	↑↑	~	~	~	~	↑↑	↑↑
	Mangaatua at u/s Woodville STP	~	~	~	N/A	~	↑↑	~	↑↑
	Mangahao at Ballance	N/A	~	~	N/A	~	~	~	N/A

FMU	SITE NAME	BDISC	TURB	ECOLI	NH4	TN	TON	TP	DRP
	Mangaore at u/s Shannon STP	~	↑↑	~	N/A	↑↑	~	~	N/A
	Mangapapa at Troup Rd	~	~	~	N/A	↑↑	↑↑	~	↑↑
	Mangarangiora Trib at US Norsewood STP	N/A	~	~	N/A	~	~	~	↑↑
	Mangatainoka at Brewery - S.H.2 Bridge	↑↑	~	~	N/A	~	~	~	~
	Mangatainoka at Larsons Road	~	~	~	N/A	~	↑↑	~	N/A
	Mangatainoka at u/s Pahiatua STP	N/A	~	~	N/A	~	~	~	~
	Mangatera at Dannevirke	~	↑↑	~	N/A	~	~	~	~
	Mangatera at u/s Manawatu confluence	N/A	↑↑	~	~	~	~	~	~
	Mangatoro at Mangahei Road	N/A	~	~	N/A	↑↑	↑↑	~	~
	Oroua at Almadale	↑↑	~	~	N/A	~	↑↑	~	~
	Oroua at Awahuri Bridge	↑↑	~	↑↑	~	~	~	↑↑	↑↑
	Oroua at U/S AFFCO Feilding	~	~	~	N/A	~	~	~	~
	Oroua at U/S Feilding STP	~	N/A	N/A	N/A	N/A	~	N/A	N/A
	Oroua Trib at U/S Kimbolton STP	N/A	~	~	N/A	↑↑	↑↑	~	↑↑
	Oruakeretaki at S.H.2 Napier	N/A	↑↑	~	N/A	~	~	↑↑	↑↑
	Pohangina at Mais Reach	↑↑	~	~	N/A	~	↑↑	~	~
	Tamaki at Tamaki Reserve	↓↓	↑↑	↑↑	N/A	↑↑	↑↑	↑↑	~
	Tokomaru River at Horseshoe bend	~	~	~	N/A	~	↑↑	~	~
	Rangitikei	Hautapu at Alabasters	~	~	↑↑	N/A	~	↑↑	~
Hautapu at US Rangitikei River Conf		~	~	~	N/A	~	↑↑	~	~
Rangitikei at Kakariki		~	↓↓	~	~	~	~	~	~
Rangitikei at Mangaweka		~	~	~	N/A	~	↑↑	~	~
Rangitikei at McKelvies		N/A	~	~	N/A	~	↑↑	~	~
Rangitikei at Onepuhi		N/A	~	~	N/A	~	↑↑	~	~
Whangaehu	Rangitikei at Pukeokahu	~	~	~	N/A	~	↑↑	~	N/A
	Makotuku at Raetihi	~	~	~	N/A	~	~	~	N/A
	Mangaehuehu at u/s Rangataua STP	~	~	↑↑	N/A	↓↓	↓↓	↑↑	~
	Mangawhero at Pakihi Rd Bridge	↑↑	~	~	N/A	~	~	~	~
	Mangawhero at Raupui Road	~	~	~	N/A	~	~	~	~
	Mangawhero at u/s Ohakune STP	~	~	~	N/A	~	↑↑	~	~
Whanganui	Tokiahuru at Junction	~	~	↑↑	N/A	~	↑↑	~	N/A
	Whangaehu at u/s Winstone Pulp	N/A	↑↑	N/A	~	~	~	↓↓	↓↓
	Mowhanau Stream at Footbridge	N/A	~	~	↑↑	~	~	~	~
	Ohura at Tokorima	~	~	↑↑	N/A	~	~	~	↑↑
	Ongarue at Taringamotu	~	~	~	N/A	~	~	~	~
	Whanganui at Cherry Grove	~	~	~	N/A	~	~	~	↓↓
	Whanganui at Paetawa	~	~	~	~	~	~	~	~
	Whanganui at Pipiriki	~	~	~	N/A	~	~	~	↓↓
Whanganui at Te Maire	~	~	~	N/A	~	~	~	~	
Whanganui at Te Rewa	~	~	~	N/A	~	~	~	↓↓	
Whanganui at Wades Landing	~	~	~	N/A	~	~	~	~	

Figure 4: SOE water quality trends

Groundwater

The Horizons Regional Council (2013) Water Quality SOE Report¹¹ states that

“Of the 27 bores analysed for nitrate levels over the past five years [up to 2013], most showed either no significant change or reduction (improvement) in nitrate levels. One shallow bore did show signs of increasing nitrate levels and further investigation will be carried out.

Over the past two decades (up to 2013), nitrate concentrations in six of the monitored bores that were previously above the acceptable limit have decreased. These sites now meet New Zealand Drinking Water Standards; a positive sign of effective nitrate management.”

However,

“Water quality at six bore sites quarterly in areas of high nitrate concern near Lake Horowhenua.”

Manawatū River

An update on the state and trends, and work history and schedules for the Manawatū River is presented in the Manawatū River Leaders' Accord Action Plan 2016 – 2021.¹²

Conclusion

The above section provides a summary on the state and trend of water quality information to date, although is indicative pending Council SOE reporting in the later period of 2018. Based on the brief look at SOE data it is currently unclear whether the water quality assumptions in the One Plan remain accurate and representative of the current state and trend of water quality across the Region. This warrants further investigation, particularly in target catchments.¹³ The scope of this report cannot measure effectiveness and efficiency of intensive farming provisions against actual water quality for this reason; rather this report aims to assess the effectiveness and efficiency of Regional Plan intensive farming provisions in relation to water quality objectives. Changes in water quality are difficult to attribute to causes; changes in water quality are caused by multiple influences including by not limited legacy effects and lag times, regulatory intervention, market responses and technological changes.

¹¹ Horizons Regional Council (2013) *“Embark on a journey into the world around you: 2013 State of Environment”* page 41

¹² www.manawaturiver.co.nz/assets/Uploads/MRLA-Action-Plan-2016-21.pdf

¹³ Catchments as identified in One Plan Table 14.1.

4 The planning framework – intensive farming land use provisions of the One Plan

4.1 Policy intent of intensive farming land use provisions

The One Plan water quality objectives set out to maintain or enhance freshwater quality in order to safeguard life-supporting capacity and recognise and provide for the freshwater management values (Schedule B) which are used by the community. The existing One Plan policies manage sources of diffuse discharge of contaminants (especially nutrients nitrogen and phosphorus, topsoil and sediment erosion, and pathogens such as *E. coli*) from intensive farming land uses.

This report acknowledges the technical work undertaken to support the policy development of the One Plan, in order to address water quality degradation, which is based on (but not limited to) the following pieces of work:

- a) Proposed One Plan - Section 42A Report of Dr Jonathon Roygard on behalf of Horizons Regional Council (Sept. 2009);
- b) Established physical management units, known as water management zones and sub-zones (McArthur et al., 2007)¹⁴;
- c) Identified water body values for each unit (zone) (Ausseil & Clark, 2007a)¹⁵;
- d) Derived water quality standards to protect the values (Ausseil & Clark, 2007b)¹⁶; and
- e) Constructed a framework for managing non-point source and point source nutrient inputs in relation to water quality (Roygard & McArthur, Oct 2008)¹⁷.

The Water Management Zone and values framework are the keystones around which the water allocation and water quality strategies in the One Plan have been built (Roygard, 2009). The Water Management Zones and Values and common catchment expiry dates provide spatially defined tools to provide a water management regime for a large and variable Region; the spatial framework of the Water Management Zones and values provide a mechanism for integrated catchment management within a local area and in relation to the broader catchment (Roygard, 2009)¹⁸.

¹⁴ McArthur K.J., Roygard J., Ausseil O. and Clark M. 2007: Development of Water management zones in the Manawatu-Wanganui Region. Technical report to support policy development. Horizons Regional Council Report No. 2006/EXT/733.

¹⁵ Ausseil O. and Clark M. 2007a: Identifying Community Values to guide Water Management in the Manawatu-Wanganui Region. Technical Report to Support Policy Development. Horizons Regional Council Report No. 2007/EXT/786,

¹⁶ Ausseil O. and Clark M. 2007b: Recommended Water Quality Standards for the Manawatu-Wanganui Region. Technical Report to Support Policy Development. Horizons Regional Council Report No. 2007/EXT/806,

¹⁷ Roygard & McArthur, Oct 2008, A Framework for Managing Non-Point Source and Point Source Nutrient Contributions to Water Quality Technical Report to Support Policy Development. 2008/EXT/792

¹⁸Roygard (September 2009), Proposed One Plan - Section 42A Report of Dr Jonathon Roygard on behalf of Horizons Regional Council, page 9, para 10.

4.2 Intensive farming land use and associated activity definitions

The following intensive farming land use definitions are from the One Plan (2016) and are used throughout the plan, including rules 14-1 – 14-4:

- **Agrichemical** means any substance, whether inorganic or organic, man-made or naturally occurring, modified or in its original state, that is used to eradicate, modify or control flora and fauna. For the purposes of this Plan, it includes agricultural compounds but excludes fertilisers, vertebrate pest control products and oral nutrition compounds.
- **Animal effluent** means faeces and urine from animals other than humans, including associated process water, washdown water, contaminants and sludge, excluding poultry farm litter or pig farm litter.
- **Biosolids** means a sewage or sewage sludge, derived from a sewage treatment plant, that does not include animal effluent or products derived from industrial wastewater treatment plants and that has been treated or stabilised to the extent that it is able to be safely and beneficially applied to land.
- **Cropping** means using an area of land in excess of 20 ha to grow crops. A “crop” is defined as cereal, coarse grains, oilseed, peanuts, lupins, dry field peas or dry field beans. This definition does not include crops fed to animals or grazed on by animals on the same property.
- **Cultivation** means preparing land for growing pasture or a crop and the planting, tending and harvesting of that pasture or crop, but excludes:
 - direct drilling of seed
 - no-tillage practices
 - recontouring land
 - forestry
 - the clearance of woody vegetation and new tracking in a Hill Country Erosion Management Area.
- **Commercial vegetable growing** means using an area of land greater than 4 ha for producing vegetable crops for human consumption. It includes the whole rotational cycle, being the period of time that is required for the full sequence of crops, including any pasture phase in the rotation. Fruit crops, vegetables that are perennial, dry field peas or beans are not included.
- **Composting (or compost)** means the biological treatment or decomposition of organic material under controlled conditions to produce a stabilised product which is potentially beneficial to plant growth with compost as the resulting material.
- **Cumulative nitrogen leaching maximum** means the total kilograms of nitrogen leached per hectare per year for the total area of a farm (including any land not used for grazing) and is calculated using the values for each land use capability class specified in Table 14.2.
- **Dairy farming** means using any area of land greater than 4 ha for the farming of dairy cattle for milk production. This includes land used as a dairy cattle grazing runoff but excludes any dairy grazing arrangement. A dairy grazing arrangement is a third party commercial arrangement between the owner of dairy cattle and another landowner for the purpose of temporary grazing.
- **Feedpad** means an area of artificially sealed land used principally for feeding animals.
- **Fertiliser** means any substance or mix of substances that is described as or held to be suitable for sustaining or increasing the growth, productivity or quality of plants (or animals indirectly) through the application to plants and soils of:
 - the following major nutrients: nitrogen, phosphorus, potassium, sulphur, magnesium, calcium, chloride and sodium
 - the following minor nutrients: manganese, iron, zinc, copper, boron, cobalt, molybdenum, iodine and selenium
 - non-nutrient attributes of the materials used in fertiliser

- fertiliser additives
- gypsum and lime

but does not include biosolids, animal effluent, compost or poultry farm litter or pig farm litter.

- **Grade Aa biosolids** means a high quality biosolid where the concentration of pathogen and vector attracting compounds has been reduced or removed to provide for contaminant concentrations that are at or below the levels specified in Table 4.4 of the Guidelines for the Safe Application of Biosolids to Land in New Zealand, New Zealand Water and Waste Association, August 2003.
- **Intensive sheep and beef farming** refers to properties greater than 4 ha engaged in the farming of sheep and cattle, where any of the land grazed is irrigated.
- **Land use capability class (LUC)** means a classification of a parcel of land in terms of five characteristics or attributes (rock, soil, slope, erosion, vegetation). The land use capability class can be derived either from the New Zealand Land Resource Inventory (NZLRI) or by a suitably qualified person specifically assessing and mapping the land use capability classes for a particular parcel of land. Where the LUC is assessed by a suitably qualified person, that person may use the more favourable classification of the land available applying the 3rd or 2nd edition of the Land Use Capability Survey Handbook.
- **Natural capital** means the potential animal stocking rate that can be sustained by a legume-based pasture fixing nitrogen biologically, under optimum management and before the introduction of additional technologies. Using the “Attainable Physical Potential” in stock units/ha for each land unit listed in the extended legend of the LUC worksheets as a proxy for the soil’s natural capital, these stocking rates are transformed to pasture production and used in the Overseer nutrient budget model to calculate nitrogen leaching losses under a pastoral use.
- **Nutrient management plan** means a plan prepared annually in accordance with the Code of Practice for Nutrient Management (NZ Fertiliser Manufacturers’ Research Association 2007) which records (including copies of the Overseer® input and output files used to prepare the plan) and takes into account all sources of nutrients for intensive farming and identifies all relevant nutrient management practices and mitigations, and which is prepared by a person who has both a Certificate of Completion in Sustainable Nutrient Management in New Zealand Agriculture and a Certificate of Completion in Advanced Sustainable Nutrient Management from Massey University.
- **Pig farm litter** means a mixture of spent bedding and solids from pig production sheds which produces no liquid loss when squeezed in the hand.
- **Poultry farm litter** means solid poultry manure, bedding and composted material from poultry farm sheds.
- **Property** means one or more adjacent allotments that are in the same ownership. A legal road is considered a property for the purposes of this Plan.
- **Water Management Zone** means a Water Management Zone as described in Schedule A or the Seawater Management Zone as described in Schedule I. **Water Management Sub-zone (WMSZ)** means a Water Management Sub-zone as described in Schedules A or I.
- **Water quality target** means an objective or result for water quality towards which efforts are directed. The word “target” in the One Plan does not have the same meaning ascribed to it by the National Policy Statement for Freshwater Management 2011.

In the One Plan, the following terms have their ordinary meaning as per RMA:

discharge, land, production land, water, contaminants

4.3 One Plan Schedules - water value and quality management

4.3.1 Schedule A (Surface Water Management Zones and Sub-zones)

One Plan Schedule A splits the hydrological catchments of the Region into *parent catchments*, these are:

Manawatu; Rangitikei; Whanganui; Whangaehu; Turakina; Ohau; Owahanga; East Coast; Akitio; West Coast; and Lake Horowhenua.

The parent catchments are then split (hydrologically) into 44 surface Water Management Zones (WMZ), which are presented in One Plan Table A.1 and Figure A:1. These 44 WMZ are then split into further 117 Surface Water Management sub-Zones (WMSZ). These are presented in One Plan Schedule A. The zones are catchment or part-catchment based and encompass the waterways within the zones and the surrounding land area.

(Full text of all Chapters are attached as **Appendix 1**).

4.3.2 Schedule B (Surface Water Management Values)

One Plan Schedule A assigns management values to each Surface Water Management sub-Zone (WMSZ). These values are either zone-wide values or site/ reach-specific values.

These values are:

Region-wide value	<p>LSC: Life-supporting Capacity*.</p> <p>*Key for LSC Classes: UHS: Upland Hard Sedimentary, UVA: Upland Volcanic Acidic, UVM: Upland Volcanic Mixed, ULi: Upland Limestone, HM: Hill Mixed, HSS: Hill Soft Sedimentary, LM: Lowland Mixed, LS: Lowland Sand. The LSC Classes are listed as the geology of the catchment influences water quality and life-supporting capacity</p>
Zone-wide values	<p>AE: Aesthetics; CR: Contact Recreation; Mau: Mauri; IA: Industrial Abstraction; I: Irrigation; SW: Stockwater; EI: Existing Infrastructure; CAP: Capacity to Assimilate Pollution;</p>
Site/ reach-specific values	<p>NS: Natural State; SOS-A: Sites of Significance - Aquatic; SOS-R: Sites of Significance - Riparian; IS: Inanga Spawning; AM: Amenity; WM: Whitebait migration; SOS-C: Sites of Significance - Cultural; TF: Trout Fishery*; TS: Trout Spawning; WS: Water Supply; DFS: Domestic Food Supply; FC/D: Flood Control and Drainage.</p> <p>*Key for Trout Fishery Classes: I: Outstanding, II: Regionally Significant, III: Other Trout Fishery</p>

(Full text of all relevant provisions mentioned in this report are attached as **Appendix 1**).

The spatial distribution of these values is shown in One Plan Part B.3 and mapped in Schedule B.

4.3.3 Schedule E (Surface Water Quality Targets)

Schedule E provides surface water quality targets in the following manner:

- *Table E.1: Region-wide Water Quality Targets that apply to all Rivers;*
- *Table E.2: Water Quality Targets for Rivers in each Water Management Sub-zone (WMSZ)*
- *Table E.3: Additional Water Quality Targets that apply 1 May to 30 September (inclusive) to all specified sites/ reaches of rivers with a Trout Spawning (TS) Value*
- *Table E.4: Lake Water Quality Targets*
- *Table E.5: Water Quality Targets full wording*

(Full text of all relevant provisions mentioned in this report are attached as **Appendix 1**).

Water quality target means an objective or result for water quality towards which efforts are directed. The word “target” in the One Plan does not have the same meaning ascribed to it by the National Policy Statement for Freshwater Management. The Schedule E targets are Regional Plan methods for identifying whether the RPS objectives for water quality (Objectives 2-1, 5-1 and 5-2) will be met.

For completeness, Schedule C (surface water quantity) and Schedule D (groundwater quantity) form part of the wider water management framework, but are not directly relevant to this monitoring report.

4.4 Regional Policy Statement (Chapter 2: Te Ao Maori)

The relationship of Maori and their culture, and traditions with their ancestral lands, water, sites, waahi tapu and other taonga is a matter of national importance that shall be recognised and provided for in relation to the management, use, development and protection of natural and physical resources, under section 6(e) RMA. The purpose and principles of the RMA incorporate the principles of the Te Tiriti o Waitangi (Treaty of Waitangi); Chapter 2 of the One Plan gives effect to these principles, as is required by s62(1) RMA. The RMA requires the Regional Council to take into account the principles of the Te Tiriti o Waitangi in exercising its functions and powers. The key principles of the Te Tiriti o Waitangi in which are relevant to natural resource management include:

- principle of active protection,*
- duty to act in good faith,*
- duty to make informed decisions through consultation,*
- principle of redress and a duty not to create new grievances,*
- principle of reciprocity, and*
- principle of mutual benefit.*

The Council does this in the objectives and policies in Chapter 2 and throughout the rest of the One Plan. One Plan Chapter 2 is fundamental to the development of the intensive farming provisions in Chapter 14, including those relating to intensive farming land use.

Chapter 2 incorporates several important values to Maori.

Mauri means

“essential life force or principle; a metaphysical quality inherent in all things, both animate and inanimate”

All things, both animate and inanimate, have been imbued with the *mauri* generated from within the realm of te kore. Nothing in the natural world is without this essential element - *mauri* represents the interconnectedness of all things that have being. Humans have an added responsibility to ensure that the *mauri* inherent in natural resources is maintained. Inappropriate use of resources, for example, discharge of sewage to water impacts directly on the *mauri* of *water*, and therefore all factors associated with it. The natural balance which exists amongst all things is disturbed and, in many cases, irreversibly damaged.

Taonga means

“all things prized or treasured, both tangible and intangible”

The concept of taonga relates to anything that is prized, treasured or valued for what it is, where it came from and what its potential is. The cultural and spiritual relationship of Māori with their ancestral lands, water, sites, wāhi tapu and other taonga is referred to in the RMA as a matter of national importance. This implies that the word taonga incorporates not only the stated resources in s6(e) RMA, but also anything that is highly prized - physically, mentally, spiritually and culturally. Physically, taonga include traditional forms of food and natural material harvested for traditional purposes. Adverse effects on these would not only see the demise of the physical taonga (food and weaving materials), but the demise of spiritual and cultural taonga also. Hapū and iwi are concerned that resources of cultural and spiritual significance be protected.

Wāhi tapu means

“a site sacred to Māori in the traditional, spiritual, religious, ritual, or mythological sense and includes rua kōiwi”

Tikanga Māori is defined in the RMA as meaning

“Māori customary values and practices”

Tikanga Māori not only encompasses the lore, customs and practices of Māori but also the guiding principles of social, economic and political life - a way of life that accounts for all these factors whilst practising a close affinity with nature. Tikanga Māori also gives physical expression, through social norms and behaviour, to the concepts of kaitiakitanga and mana.

Kaitiakitanga is defined in the RMA as meaning

“the exercise of guardianship by the tangata whenua of an area in accordance with tikanga Māori in relation to natural and physical resources; and includes the ethic of stewardship”

Kaitiakitanga is a section 7 RMA matter. The concept of kaitiakitanga is based on spiritual and physical guardianship met within the social norms and everyday practices of tikanga Māori. Recognition of the mauri held by particular resources also necessitates communication with the spiritual kaitiaki (guardian) to whom that resource is dedicated. The physical responsibility of kaitiakitanga is met by the recognition

of the interconnectedness of all elements - mauri and wairua, tapu and noa, mana and tikanga Māori. Therefore, the ethics that underpin hapū and iwi responsibility to practise kaitiakitanga are based on spiritual and cultural practices and wise resource management to ensure a healthy environment for future generations.

4.4.1 Scope and significant resource management issues

Water quality and demand is identified as resource management issue 2-1 of significance to hapū and iwi. Primarily, the management of water quality throughout the Region does not provide for the special qualities significant to Māori and nitrate run-off needs to be better managed to avoid contaminants entering water. Lakes and streams (for example, Punahau (Lake Horowhenua) which is a targeted water management sub-zone in Table 14.1) have suffered degradation which continues and are considered culturally unclean. The following matters are also resource management issues significant to hapū and iwi:

- Access to and availability of clean water to exercise cultural activities such as food gathering and baptismal rituals have diminished; and
- Marae groundwater bore supply is affected in some areas during seasonal drought; and
- Sewage disposed to water, in treated form or otherwise, is culturally abhorrent. Land-based treatment is preferred.

Water quality and demand (issue 2-1) is coupled with land use and management (issue 2-2). Adverse effects of land use continue to have a detrimental effect on traditional food gathering areas, native habitats and ecosystems. As a result, land management plans need to be encouraged to ensure consistent land management practices region-wide.

4.4.2 Objectives and policies

These issues lead into Objective 2-1 (Resource management):

To have regard to the mauri of natural and physical resources to enable hapū and iwi to provide for their social, economic and cultural wellbeing.

Kaitiakitanga must be given particular regard and the relationship of hapū and iwi with their ancestral lands, water, sites, wāhi tapu and other taonga (including wāhi tūpuna) must be recognised and provided for through resource management processes.

(Full text of all relevant provisions mentioned in this report are attached as **Appendix 1**).

Objective 2-1 sets long-term goals for having regard to mauri and for particular regard to be had to kaitiakitanga and for recognising and providing for s6(e) RMA relationships.

In relation to intensive farming land use provisions, objective 2-1 is to be achieved by

Policy 2-1: Hapū and iwi involvement in resource management

Policy 2-3: Mauri of water

Policy 2-4: Other resource management issues

To achieve this the Regional Council must enable and foster kaitiakitanga and the relationship between hapū and iwi and their ancestral lands, water, sites, wāhi tapu and other taonga (including wāhi tūpuna) through increased involvement of hapū and iwi in resource management processes. Regional Council must have regard to the mauri of water by implementing Policy 2-1(a) – (i). Policies 2-1(c)-(e) and (h) provide options for hapū and iwi to be actively involved in resource management decision-making via

catchment-based forums, research, monitoring, seminars or training and resource consent and planning processes. This policy is consistent with clause 3B of Schedule 1 to the RMA for the Regional Council to consider ways in which to foster iwi capacity.

Wai Māori (pure water) is essential to hapū and iwi in the Region to ensure activities conducted for cultural purposes, such as spiritual cleansing, baptismal rituals and food gathering, are achievable. Human activities, application of impure agents, loss of water capacity and contaminants all affect the ability of the mauri to perform its role effectively; therefore, resulting in a standard of water not suitable for hapū and iwi to perform their relevant tikanga Māori or cultural activities associated with its use.

Policy 2-4 and Table 2.1 identifies the objectives and policies the One Plan which address the resource management issues of significance to hapū and iwi that are described above. These issues are addressed in the following parts of the One Plan:

- Objective 2-1, Policy 2-3, Chapter 2 Methods, and
- Objectives 5-1 and 5-2, Policies 5-1 to 5-11, Chapter 5 Methods, and
- Rules in Chapter 14 (Discharges to Land and Water).

4.4.3 Anticipated environmental results

Also see the anticipated environment results from Chapter 5 for cultural values specific to water quality.

Anticipated Environmental Result	Link to Policy <i>Ngā Hononga Kaupapa</i>	Indicator <i>Ngā Tohu</i>	Data Source <i>Ngā Puna Raraunga</i>
<i>Te Hua Ka Tūmanakotia</i> <i>Mā Te Taiao</i>			
Increased involvement of Māori in achieving environmental outcomes across the Region. <i>Ko te piki ake o te whakauru a te Māori ki te whakatutuki i ngā putanga taiao huri noa i te Rohe.</i>	<ul style="list-style-type: none"> • Policies 2-1, 2-3 and 2-4 • <i>Kaupapa 2-1, 2-3 me 2-4</i> 	<ul style="list-style-type: none"> • Number of environmental projects developed, funded and implemented with <i>hapū, iwi, marae committees</i> or other Māori organisations • Number of monitoring programmes developed with <i>hapū</i> and <i>iwi</i> • Number of seminars or research projects conducted with <i>hapū</i> or <i>iwi</i> catchment collectives 	Regional Iwi Environmental Projects Fund <i>Ko tētahi putea e kīia nei ko te Regional Iwi Environmental Projects Fund</i>
Improved working relationships with <i>hapū</i> and <i>iwi</i> to achieve mutually acceptable environmental outcomes.	<ul style="list-style-type: none"> • Policies 2-1 and 2-4 • <i>Kaupapa 2-1 me 2-4</i> 	<ul style="list-style-type: none"> • Number of environmental partnership agreements with <i>hapū</i> and <i>iwi</i> • Improved localised environmental results 	Memoranda of partnership <i>Ko ngā manatū rangapū</i> <i>Iwi management plans</i> <i>Ko ngā mahere whakahaere ā-iwi</i>

Any assessment of the effectiveness and efficiency of the intensive farming provisions in Chapter 14 has to be undertaken in the context of Chapter 2 (Te Ao Maori).

4.5 Regional Policy Statement (Chapter 5: Water)

The purpose of the RMA is to promote the sustainable management of natural and physical resources. That means (among other matters) to sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations and to safeguard the life-supporting capacity of water (and air, soil and ecosystems). On this basis, One Plan Chapter 5 identifies resource management issues in the Region and policies to achieve integrated management of water and discharges to land, holistically. Discharges and land uses have the potential to adversely affect ground- and surface water quality if not managed well. Chapter 5 identifies three types of discharges of concern:

- *point source discharges to land (including domestic wastewater),*
- *point source discharges to water (including industrial discharges and treated sewage) and*
- *non-point source discharges to land (from agricultural land uses).*

All these types of discharges will be managed to meet the objectives and policies for water values and quality (Objectives 5-1 and 5-2, Policies 5-1 to 5-5), including intensive farming land uses (policies 5-7 and 5-8) and discharges to water (Policy 5-9) and land (Policy 5-10).

Agricultural land uses contribute to some of the Region's water bodies not meeting water quality targets for nutrients, faecal contamination and sediment levels. These need to be targeted for control in problem catchments and through the regulation of intensive farming as well as non-regulatory partnership methods.

One Plan Chapter 5 addresses the management of freshwater across the Region. As far as is relevant to intensive farming land uses and water quality, Chapter 5 covers:¹⁹

- **Water Management Zones and Sub-zones and Values** - *the establishment of Water Management Zones and Sub-zones and associated water management Values for each Sub-zone, for the purpose of managing water quality, water quantity and activities in the beds of rivers and lakes.*
- **Surface water quality** - *the establishment of water quality targets for rivers and lakes, in order to give effect to the Values, together with a policy regime of maintaining water quality in those Water Management Sub-zones that meet their water quality targets, and improving water quality over time in those Water Management Sub-zones that do not.*
- **Groundwater quality** - *the maintenance of existing groundwater quality and its improvement where it is degraded.*
- **Discharges and land use activities affecting water quality** - *the management of discharges into surface water, discharges onto or into land, and diffuse run-off and other land use activities affecting surface water and groundwater quality.*

4.5.1 Scope and significant resource management issues

Based on the information stated above, water quality across the region is identified as a significant resource management issue in the One Plan.

Issue 5-1 (water quality) states that:

¹⁹ Chapter 5 also covers surface water quantity and allocation, groundwater quantity and allocation, and bores, beds of rivers and lakes, land adjacent to the beds of rivers and lakes.

The quality of many rivers and lakes in the Region has declined to the point that ecological values are compromised and contact recreation such as swimming is considered unsafe. The principal causes of this degradation are:

- (a) nutrient enrichment caused by run-off and leaching from agricultural land, discharges of treated wastewater and septic tanks*
- (b) high turbidity and sediment loads caused by land erosion, river channel erosion, run-off from agricultural land and discharges of stormwater*
- (c) pathogens from agricultural run-off, urban run-off, discharges of sewage, direct stock access to water bodies and their beds and discharges of agricultural and industrial waste.*

Shallow groundwater in areas of intensive land use in the Horowhenua and Tararua Districts has elevated nitrate levels in excess of the New Zealand drinking water standard. However, the quality of groundwater in the Region is generally suitable for stock needs and irrigation and there has been no evidence of deteriorating groundwater quality during the past 15 years.²⁰

As shown in section 3, above, it is unclear whether this remains an accurate description of the issues, since the One Plan became operative.

4.5.2 Objectives and policies

The above narrative describes the current state of water quality in the Region and from that situation the community of the Region developed the following objectives in the RPS:

(Full text of all relevant provisions mentioned in this report are attached as **Appendix 1**).

Objective 5-1: Water management Values

Objective 5-2: Water quality

To implement the above objectives, and objectives in other chapters (such as Chapter 2 *et al.*) the One Plan includes the following policies:

Policy 5-1: Water Management Zones and Values

Policy 5-2: Water quality targets

Policy 5-3: Ongoing compliance where water quality targets are met

Policy 5-4: Enhancement where water quality targets are not met

Policy 5-5: Management of water quality in areas where existing water quality is unknown

Policy 5-6: Maintenance of groundwater quality

Policy 5-7: Land use activities affecting groundwater and surface water quality

Policy 5-8: Regulation of intensive farming land use activities affecting groundwater and surface water quality

Policy 5-10: Point source discharges to land

²⁰ One Plan, Chapter 5, introduction, p5 - 6

For the purposes of managing water quality²¹, the river catchments in the Region have been divided into surface water management zones (WMZ) and surface water management sub-zones (WMSZ), as identified in One Plan Schedule A. Likewise, groundwater has been divided into Groundwater Management Zones in One Plan Schedule D.

The objectives and policies of Chapter 5 require that rivers and lakes and their beds must be managed in a manner which safeguards their life supporting capacity and recognises and provides for the SWM values identified in One Plan Schedule B and to either maintain, or enhance water quality to meet water quality targets in One Plan Schedule E. Where water quality meets the water quality targets, then water quality must be maintained to ensure on-going compliance²². Where water quality does not meet the water quality targets, then water quality must be improved to meet the targets that are not met. In circumstances where there is insufficient data to enable an assessment against surface water quality targets, the existing water quality must be maintained or enhanced with regard to the relevant SWM values from One Plan Schedule B. The One Plan, notably, does not contain timeframes for meeting Schedule E targets.

In relation to groundwater, discharges and land use activities must be managed in a manner which maintains the existing groundwater quality, or where groundwater quality is degraded/ over allocated as a result of human activity, quality is enhanced. An exception may be made where a discharge onto or into land better meets the purpose of the RMA than a discharge to water, provided that the best practicable option is adopted for the treatment and discharge system.

This, above, describes the **strategy** for surface water quality set out in Policies 5-2, 5-3, 5-4 and 5-5 and the strategy for groundwater quality in Policy 5-6.

One Plan RPS Policy 5-7 states that the management of land use activities affecting groundwater quality and surface water quality must give effect to the above strategy by managing diffuse discharges of contaminants. That is to be achieved in the following manner:

- a) identifying, in the regional plan, targeted surface water management sub-zones where land use activities are significant contributors to elevated contaminant levels in groundwater or surface water; and
- b) identifying, in the regional plan, intensive farming land use activities that (either individually or collectively) make a significant contribution to elevated contaminant levels in the targeted WMSZ's identified in (a), above; and
- c) Actively managing those intensive farming land use activities identified in (b), including through regulation in the regional plan, in the manner specified in Policy 5-8; and
- d) The Regional Council must continue to monitor ground and surface water quality in WMSZ's not identified in (a) and rural land uses not identified in (b). Where monitoring shows the thresholds in (a) and (b) are met then the regional plan must be amended so that those further WMSZ's and rural land uses are included in the management regime set out in (c).

Basically, MWRC must identify those sub-catchments with degraded water quality, identify intensive land uses that contribute to degraded water quality in those sub-catchments, manage those land uses through Regional Plan provisions and monitor other sub-catchments and other land uses that may be included at a later change. This describes the process that has occurred in the development of Tables 14.1 & 14.2, Policies 14-5 and 14-6 and Rules 14-1 to 14-4 (and other provisions to a lesser extent).

²¹ Also water quantity and activities in the beds of rivers and lakes

²² Presumably this does not preclude enhancement of water quality

One Plan RPS Policy 5-8 sets out a framework for managing nutrients, faecal contamination and sediment in the Regional Plan. While faecal contamination and sediment remain an important factor in the water quality management framework, this report is limited to the management of nutrients (particularly nitrogen) from intensive farming land uses into water. As a result, this report is limited in its assessment of Policy 5-8 to *nutrients* (a) and not *faecal contamination* (b) or *sediment* (c). Policy 5-8(a) is an important piece of the management framework in Chapter 14. Nitrogen leaching maximums must be established in the Regional Plan which:

- A. *Take into account all the non-point sources of nitrogen in the catchment;*
- B. *Will achieve the strategies for surface water quality set out in policies 5-2, 5-3, 5-4 and 5-5 and the strategy for groundwater quality in policy 5-6;*
- C. *Recognise the productive capability of land in the water management sub-zone;*
- D. *Are achievable on most farms using good management practices;*
- E. *Provide for appropriate timeframes for achievement where large changes to management practices or high levels of investment are required to achieve the nitrogen leaching maximums.*

Policy 5-8(a) states that *existing* intensive farming land use activities must be regulated in targeted water management sub-zones, to achieve the nitrogen leaching maximums established by the above described process (A – E, above). *Existing* intensive farming land use activities which are not in targeted water management sub-zones need not be regulated. *New* intensive farming land use activities must be regulated throughout the Region, to achieve the nitrogen leaching maximums established by the above described process (A – E, above).

Policies 5-7 and 5-8 describe how the nutrient management framework, including targeted catchments (Table 14.1) and CNLMs (Table 14.2), are to be established in the Regional Plan. These policies do not provide a methodology for these frameworks to be revised or restructured in the event that the underlying assumptions (including Overseer and natural capital) evolve or become different in scale or nature (i.e. software updates).

4.5.3 Methods

Method 5-6 sets out a framework for improving water quality in Lake Horowhenua and other coastal lakes and identifies that intensive farming land uses are part of that programme, including sediment control and fertiliser application. The method will include utilising industry codes of practice as a means of enhancing and protecting water quality e.g., the Code of Practice for Commercial Vegetable Growing in the Horizons Region.

Method 5-9 sets out a non-regulatory framework to addressing water quality. The Regional Council and other agencies will work with landowners to protect and enhance the water quality of the Region's water bodies. Landowners in those Water Management Sub-zones, where the nutrient management (non-point source discharge) control rules are to be introduced will receive the highest priority for assistance.

Method 5-11 sets out MWRC's water (fluvial resources, quality and quantity) research, monitoring and reporting programme that defines the current state of the natural character of the Region's rivers and measure changes in natural character, including habitat and morphological diversity.

4.5.4 Anticipated Environmental Results

The anticipated environmental result from the above framework is that water quality will maintain the values set in the One Plan and that the strategies for surface and ground water quality (as described above) are met.

Anticipated Environmental Result	Link to Policy	Indicator	4.6 Data Source
<p>During the life of this Plan, water quality and quantity maintain the Values set in this Plan.</p> <p>In <i>Water Management Sub-zones</i>:</p> <ul style="list-style-type: none"> where <i>water quality targets</i> are met prior to this Plan becoming operative, they continue to be met where <i>water quality targets</i> are not met prior to this Plan becoming operative, they are either met or improved from the current state where targeted for action or, where not targeted for action, they are no worse than prior to this Plan becoming operative. 	<p>Water Policies: 5-1, 5-2, 5-3, 5-4, 5-5, 5-8, 5-9, 5-10, 5-11, 5-12, 5-13, 5-14, 5-15, 5-17, 5-19, 5-22, 5-23, 5-24, 5-25 and 5-26</p> <p>Land Policies: 4-1, 4-2 and 4-3</p> <p>Living Heritage Policies: 6-1, 6-2, 6-3, 6-4 and 6-8</p>	<ul style="list-style-type: none"> Measured water quality compared to <i>water quality</i> targets, especially measures for “muddy waterways”, “safe swimming”, “safe food gathering” and “aquatic ecosystem health” in priority catchments Incidents where surface water quality is confirmed as unfit for use Measured flows of surface water compared to the allocation and minimum flow regime outlined in this Plan 	<ul style="list-style-type: none"> The Regional Council’s State of Environment water quality and quantity monitoring programme The Regional Council’s incidents database Ministry of Health raw water monitoring
<p>By 2017, the natural, physical and cultural qualities of the beds of rivers are suitable for specified <i>Water Management Sub-zone*</i> Values.</p>	<p>Water Policies: 5-1, 5-22, 5-23, 5-24, 5-25 and 5-26</p>	<ul style="list-style-type: none"> Confirmed incidents of damage to the beds of rivers <p>Consents granted for activities in beds of rivers and lakes</p>	<ul style="list-style-type: none"> The Regional Council’s incidents database <p>The Regional Council’s consents database</p>

Any assessment of the effectiveness and efficiency of the intensive farming provisions in Chapter 14 has to be undertaken in the context of Chapter 2 (Te Ao Maori) and Chapter 5 (Water).

4.7 Regional Plan (Chapter 14: Discharges to Land and Water)

Section 67 RMA states that a regional plan must *give effect to* any national and regional policy statement and the New Zealand Coastal Policy Statement.

Environmental Defence Society Incorporated v The New Zealand King Salmon Company Limited [2014] NZSC 38 at [77] states that

[77] The Board was required to “give effect to” the NZCPS in considering King Salmon’s plan change applications. “Give effect to” simply means “implement”. On the face of it, it is a strong directive, creating a firm obligation on the part of those subject to it. As the Environment Court said in Clevedon Cares Inc v Manukau City Council:¹⁰⁷

[51] The phrase “give effect to” is a strong direction. This is understandably so for two reasons:

[a] The hierarchy of plans makes it important that objectives and policies at the regional level are given effect to at the district level; and

[b] The Regional Policy Statement, having passed through the [RMA] process, is deemed to give effect to Part 2 matters.

One Plan Chapter 14 intensive farming land use provisions must give effect to, or implement, the water quality and value objectives in Chapter 5.

4.7.1 Objectives and Policies

One Plan Chapter 14 gives effect to the above intensive farming land use and water quality framework in the following objectives and provisions:

(Full text of all relevant provisions mentioned in this report are attached as **Appendix 1**).

Objective 14-1: Management of discharges to land and water and land uses affecting groundwater and surface water quality

Policy 14-2: Consent decision-making for discharges to land

Policy 14-5: Management of intensive farming land uses

Policy 14-6: Resource consent decision-making for intensive farming land uses

Policy 14-9: Consent decision making requirements from the National Policy Statement for Freshwater Management

Objective 14-1 states that discharges and land use activities affecting groundwater and surface water quality are managed in a manner that:

- a) safeguards the life supporting capacity of water and recognises and provides for the Values and management objectives in Schedule B,
- b) provides for the objectives and policies of Chapter 5 as they relate to surface water and groundwater quality, and
- c) where a discharge is onto or into land, avoids, remedies or mitigates adverse effects on surface water or groundwater.

Objective 14-1 largely reiterates the objectives and policies of Chapter 5 as they relate to surface water and groundwater quality, especially objectives 5-1 and 5-2.

In order to give effect to RPS Policies 5-7 and 5-8, intensive farming land use activities affecting groundwater and surface water quality, are to be managed in a manner that is consistent with Policy 14-5.

As per Policy 5-7(a), the sub-zones where land use activities are significant contributors to elevated contaminant levels in ground and surface water are identified in Table 14.1. These subzones are targeted water management sub-zones; referred to informally as *target catchments*.

One Plan Table 14.1

Catchment	Water Management Sub-zone*	Date the Rules of the Plan have legal effect in relation to Rule 14-1
Mangapapa	Mangapapa Mana_9b	1 July 2014
Waikawa	Waikawa West_9a Manakau West_9b	1 July 2014
Other south-west catchments (Papaitonga)	Lake Papaitonga West_8	1 July 2014
Mangatainoka	Upper Mangatainoka Mana_8a Middle Mangatainoka Mana_8b Lower Mangatainoka Mana_8c Makakahi Mana_8d	1 July 2015
Other coastal lakes	Northern Manawatu Lakes West_6 Kaitoke Lakes West_4 Southern Wanganui Lakes West_5	1 July 2015
Coastal Rangitikei	Coastal Rangitikei Rang_4	1 July 2015
Lake Horowhenua	Lake Horowhena Hoki_1a Hokio Hoki_1b	1 July 2015
Upper Manawatu above Hopelands	Upper Manawatu Mana_1a Mangatewainui Mana_1b Mangatoro Mana_1c Weber-Tamaki Mana_2a Mangatera Mana_2b Upper Tamaki Mana_3 Upper Kumeti Mana_4 Tamaki-Hopelands Mana_5a Lower Tamaki Mana_5b Lower Kumeti Mana_5c Oruakeretaki Mana_5d Raparapawai Mana_5e	1 July 2016
Manawatu above gorge	Hopelands-Tiraumea Mana_6 Upper Gorge Mana_9a Mangaatua Mana_9c	1 July 2016

There is currently uncertainty in the meaning of Table 14.1 and the relationship between column three, which contains the heading

“Date the Rules of the Plan have legal effect² in relation to Rule 14-1”

and the footnote from that heading

“²The Plan has legal effect in the case of dairy farming from 24 August 2010 and for commercial vegetable growing*, cropping* and intensive sheep and beef* it has legal effect from 9 May 2013.”*

This creates uncertainty as to when existing intensive farming land use activities in targeted water management sub-zones are to apply for resource (land use) consent.

The first interpretation is that existing farms in catchment is required to apply for resource consent (Rule 14-1) by the date in Table 14.1. However, this does not align with Table 14.2 which applies from 2010 for dairy and 2013 for commercial vegetable growing, cropping and intensive sheep and beef. Therefore for, say, the ‘Manawatu above Gorge’ applications for resource consent were due to be lodged by 1 July 2016, however applicants at that time would be in year-6 for Table 14.2, and realistically would have to show compliance with year 10 figures. Further to this, the 4-year grace period in Policy 14-6(b) would not apply as it relates to table 14.2, and not 4-years from the dates in Table 14.1.

As per Policy 5-7(b), the intensive farming land use activities that (either individually or collectively) make a significant contribution to elevated contaminant levels in the target catchments (listed above) are identified in Policy 14-5 as being:

- i. Dairy farming
- ii. Commercial vegetable growing
- iii. Cropping
- iv. Intensive sheep and beef

(Full definitions provided above and in appendix)

As per Policy 5-7(c) and Policy 5-8(a)(ii) and (iii), the four identified intensive farming land use activities are regulated in Policy 14-5(b), as follows:

(d) The intensive farming land use activities are existing intensive farming land uses, in the targeted Water Management Sub-zones identified in Table 14.1 (above).

(e) The intensive farming land use activities are new (i.e. established after the Plan has legal effect²³) intensive farming land uses, in all Water Management Sub-zones in the Region.

Policy 14-5(c) establishes nitrogen leaching maximums in Table 14.2, as per Policy 5-8(a)(i).

Existing intensive farming land uses must be managed to ensure that the leaching of nitrogen, from those land uses does not exceed the cumulative nitrogen leaching maximum (CNLM) values for each year contained in Table 14.2, unless the circumstances in Policy 14-6 apply.

New intensive farming land uses must be managed to ensure that the leaching of nitrogen from those land uses, does not exceed the cumulative nitrogen leaching maximum values for each year contained

²³ The Plan has legal effect in the case of dairy farming from 24 August 2010 and for commercial vegetable growing, cropping and intensive sheep and beef it has legal effect from 9 May 2013.

in Table 14.2. Note that the exceptions in Policy 14-6 do not apply to new intensive farming land uses as they do for existing intensive farming land uses.

Policy 14-5 requires that cattle²⁴ must be excluded from a wetland or lake that is a rare, threatened or at-risk habitat and any river that is permanently flowing or has an active bed²⁵ width greater than 1 metre. All places where cattle cross a river, that is permanently flowing, or has an active bed width greater than 1 metre must be culverted or bridged and those culverts or bridges must be used by cattle whenever they cross the river.

The above narrative sets out the framework for management of intensive farming land uses under the Regional Plan.

When making decisions on applications for resource consent and setting consent conditions for intensive farming land uses, the Regional Council must have regard to the matters in Policy 14-6, as follows.

- (a) *Ensure the nitrogen leaching from the land is managed in accordance with Policy 14-5 (set out above).*
- (b) *An exception may be made to (a) for existing intensive farming land uses in the following circumstances:*
 - (i) *where the existing intensive farming land use occurs on land that has 50% or higher of LUC Classes IV to VIII and has an average annual rainfall of 1500 mm or greater; or*
 - (ii) *where the existing intensive farming land use cannot meet year 1 cumulative nitrogen leaching maximums in year 1, they shall be managed through conditions on their resource consent to ensure year 1 cumulative nitrogen leaching maximums are met within 4 years.*
- (c) *Where an exception is made to the cumulative nitrogen leaching maximum the existing intensive farming land uses must be managed by consent conditions to ensure:*
 - (i) *Good management practices to minimise the loss of nitrogen, phosphorus, faecal contamination and sediment are implemented.*
 - (ii) *Any losses of nitrogen, which cannot be minimised, are remedied or mitigated, including by other works or environmental compensation. Mitigation works may include but are not limited to, creation of wetland and riparian planted zones.*

Basically, Policy 14-6(a) shall apply to existing intensive farming land uses, unless 14-6(b) applies, in which case apply 14-6(c) to mitigate nitrogen loss. Policy 14-6(b) sets out two situations during which exceptions can be made to *existing* intensive farming land uses not meeting nitrogen leaching maximums in Table 14.2, as required by Policy 14-5. Again, note that these two exceptions only relate to existing farms, rather than new farms. The concept of good management practices (GMPs) to minimise the loss of contaminants from intensive farming land uses is carried from Policy 5-8(a)(i)(D), though these are not established in the Regional Plan.

²⁴ Note that this relates to cattle and not stock in general

²⁵ Active bed means the bed of a river that is intermittently flowing and where the bed is predominantly un-vegetated and comprises sand, gravel, boulders or similar material.

Council staff have observed that the circumstance identified in Policy 14-6(b)(i), relating to soil and climatic conditions in which an exception can be made to compliance with the CNLMs in Table 14.2, are uncommon in practice. Few dairy farms are located on LUC IV land (and V – VIII) and also have rainfall rates higher than 1,500mm. The Upper Manawatu and Mangatainoka WMSZs are where it would potentially apply (higher rainfalls and more sloping dairy country). This calls into question whether the framework holds true to the concept of natural capital because each farming system should comply, regardless of LUC/rainfall circumstances.

Policies 14-5 and 14-6 do not provide a methodology for these frameworks to be revised or restructured in the event that the underlying assumptions (including Overseer and natural capital) evolve, or become different in scale or nature (i.e. software updates).

Policy 14-9 applies to a new discharge, or a change or increase of any discharge (including a diffuse discharge from any person or animal). Policy 14-9 is a deeming provision from Policy A4 of the NPSFM 2014. This was the interim policy the NPS required to be included without going through the Schedule 1 process. That was done by the Council in December 2015. The Council also included this Policy as a matter for discretion in Rules 14-2 and 14-4, through a plan change (PC1). This is reinforced by the Environment Court declaration of 21 March 2017.

Summary

Plan Policies 14-5 and 14-6 are to give effect to Policies 5-7 and 5-8 by implementing the nutrient leaching management framework, including targeted catchments (Table 14.1) and CNLMs (Table 14.2). Plan Change 1 added new Policy 14-9, which applies to intensive farming land use activities and is identified as a matter of discretion.

4.7.2 Rules

As per Policies 5-7(c), 5-8(a)(ii) and (iii), 14-5(b), the regional plan contains the following rules to regulate intensive farming land use activities.

Rule 14-1 (Controlled) Existing intensive farming land use activities

Rule 14-2 (Restricted Discretionary) Existing intensive farming land use activities not complying with Rule 14-1

Rule 14-3 (Controlled) New intensive farming land use activities

Rule 14-4 (Restricted Discretionary) New intensive farming land use activities not complying with Rule 14-3

Note that Rules 14-1 to 14-4 also contain any of the following discharges, pursuant to s15 RMA, associated with that intensive farming land use:

- (a) *the discharge of fertiliser onto or into land*
- (b) *the discharge of contaminants onto or into land from*
 - (i) *the preparation, storage, use or transportation of stock feed on production land*
 - (ii) *the use of a feedpad*
- (c) *the discharge of grade Aa biosolids or compost onto or into production land*
- (d) *the discharge of poultry farm litter onto or into production land*

(e) *the discharge of farm animal effluent onto or into production land (or upon expiry or surrender of any existing consent for that discharge) including:*

- (i) *effluent from dairy sheds and feedpads*
- (ii) *effluent received from piggeries*
- (iii) *sludge from farm effluent ponds*
- (iv) *poultry farm effluent*

Rules 14-1 – 14-4 do not include the following as activities associated with intensive farming land use activities:

- The discharge of grade Ab, Ba or Bb biosolids onto or into production land
- Offal holes and farm dumps

Rules 14-1 (existing) and 14-3 (new) as controlled activities have the same conditions/ terms/ standards and the same matters over which control is reserved and also the same non-notification clause²⁶. The conditions/ terms/ standards are reflective of Policy 14-5 in relation to nitrogen leaching maximums, cattle exclusion from waterways and then employing various standards from Rules 14-5, 14-6, 14-7, 14-9, 14-11.²⁷

Notably, Rules 14-1 (existing) and 14-3 (new) require that:

(a) *A nutrient management plan must be prepared for the land and provided annually to the Regional Council.*

(b) *The activity must be undertaken in accordance with the nutrient management plan prepared under (a).*

(c) *The nutrient management plan prepared under (a) must demonstrate that the nitrogen leaching loss from the activity will not exceed the cumulative nitrogen leaching maximum specified in Table 14.2.*

As a result, any intensive farming land use that cannot demonstrate compliance with Table 14.2, by way of a nutrient management plan, will not comply with the conditions/ terms/ standards of the controlled activity rule and will then be a restricted discretionary activity.

Rules 14-2 (existing) and 14-4 (new) as restricted discretionary activities, have same matters over which discretion is restricted. Rules 14-2 and 14-4 have no conditions/ standards/ terms and therefore cannot be considered as a discretionary (unrestricted) activity under Rule 14-30.

Other rules related to intensive farming land use activities

The regional plan also contains rules 14-5 through 14-11 for discharges onto and into land, and into water for activities that are ancillary to intensive farming land use activities.

Rule 14-5 (Permitted) Fertiliser

²⁶ Following the Resource Legislation Amendment Act 2017, controlled activities are precluded from public notification in section 95A(5)(b), unless special circumstances apply.

²⁷ Excluding rule 14-8 Grade Ab, Ba or Bb biosolids and Rule 14-10 Offal holes and farm dumps

Rule 14-6 (Permitted) Stock feed including feedpads

Rule 14-7 (Permitted) Discharges of grade Aa biosolids and compost to production land

Rule 14-8 (Restricted Discretionary) Grade Ab, Ba or Bb biosolids

Rule 14-9 (Permitted) Discharges of poultry farm litter or pig farm litter and associated temporary stockpiling

Rule 14-10 (Permitted) Offal holes and farm dumps

Rule 14-11 (Controlled) Farm animal effluent including effluent from dairy sheds, poultry farms and piggeries

An application for resource consent for an intensive farming land use, which does not meet the standards of rules 14-1 – 14-4, cannot be classified as a discretionary (unrestricted) activity under the default (catch-all) rule 14-30 because that rule specifically regulates discharges and does not provide for land use activities, which Rules 14-1 – 14-4 are regulated as.

Rule 14-30 (Discharges[^] of water[^] or contaminants[^] to land[^] or water[^] not covered by other rules[^] in this Plan or chapter):

The discharge[^] of water[^] or contaminants[^] into surface water[^] pursuant to s15(1)(a) RMA or discharge[^] of contaminants[^] onto or into land[^] pursuant to ss15(1)(b), 15(1)(d) or 15(2A) RMA which are not regulated by other rules[^] in this Plan, or which do not comply with the permitted activity[^], controlled activity[^] or restricted discretionary activity[^] rules[^] in this chapter.

This is not assisted by the rule guide on page 14-22 which reads

(a) Discharges not covered by rules - Agricultural discharges pursuant to ss15(1) RMA that are not covered by the rules above are a discretionary activity under Rule 14-30.

(b) Activities that do not comply - Except for Rule 14-3, activities pursuant to ss15(1) or 15(2A) RMA that do not comply with the permitted or controlled activity rules above are a discretionary activity under general Rule 14-30.

Again, the intensive farming land use activities are land uses pursuant to ss9(2) RMA and not discharges pursuant to ss15(1) or 15(2A) RMA. Therefore Rule 14-30 is not appropriate for the regulation of a land use activity.

There are no non-regulatory methods in Chapter 14.

4.8 The current impasse with intensive farming land uses and the provisions of Chapters 5 and 14

Following the Environment Court declarations²⁸ of 21 March 2017, MWRC has not considered an application for resource consent for an intensive farming land use which does not comply with the CNLMs in Table 14.2. The reasons for this are explained below and are based on the above described planning framework of Chapter 2, 5 and 14.

²⁸ Environment Court Decision [2017] NZEnvC 37 ENV-2016-WLG-000038 Wellington Fish and Game Council and Environmental Defence Society Inc. vs Manawatu-Wanganui Regional Council (21 March 2017).

Four pathways exist, to consider a land use consent for an intensive farming land use through the rules 14-1 to 14-4.²⁹

These four pathways are:

1. A *new or existing* intensive farming land use that meets CNLMs in Table 14.2 and meets all other standards of either rule 14-1 or 14-3 and therefore must be granted as per s104 and s104A RMA; or
2. A *new or existing* intensive farming land use that meets CNLMs in Table 14.2 but does not meet any other standard(s) of either rule 14-1 or 14-3 and therefore is considered as a restricted discretionary activity (RDA) under either rule 14-2 or 14-4 and can either be granted or declined, as per s104C and s104 RMA; or
3. An *existing* (but not new) intensive farming land use³⁰ that does not meet CNLMs in Table 14.2, but one or two of the two exceptions listed in Policy 14-6(b) apply, that is
 - a. existing intensive farming land use occurs on land that has 50% or higher of LUC Classes IV to VIII and has an average annual rainfall of 1,500 mm or greater; or
 - b. existing intensive farming land use cannot meet year 1 CNLMs in year 1, they shall be managed through conditions on their resource consent to ensure year 1 CNLMs are met within 4 years.If one or two of these two exceptions apply to an existing intensive farming land use, then the application will be considered as a restricted discretionary activity under rule 14-2 and can either be granted or declined, as per s104C and s104 RMA.
4. An *existing* intensive farming land use that does not meet CNLMs in Table 14.2 and neither of the two exceptions listed in Policy 14-6(b) apply, OR any *new* intensive farming land use that does not meet CNLMs in Table 14.2,³¹ is to be considered as a restricted discretionary activity under either rule 14-2 or 14-4 and can either be granted or declined, as per s104C and s104 RMA.

However, in Pathway 4 (above) a policy barrier exists stemming from Policy 14-5(d) and (e) in that;

- (d) *Existing* intensive farming land uses regulated in [the targeted Water Management Sub-zones identified in Table 14.1] must be managed to ensure that the leaching of nitrogen from those land uses does not exceed the cumulative nitrogen leaching maximum values for each year contained in Table 14.2, unless the circumstances in Policy 14-6 apply, which in Pathway 4, no such circumstances exist; and
- (e) *New* intensive farming land uses regulated in [all Water Management Sub-zones in the Region] must be managed to ensure that the leaching of nitrogen from those land uses does not exceed the cumulative nitrogen leaching maximum values for each year contained in Table 14.2.³²

Regional Plan Policy 14-5(d) and (e) give effect to RPS Policy 5-8(a)(ii) and (iii).

²⁹ Council initially identified five pathways in Report 17-143 (09 August 2017), however, the authors of this report present that the consenting pathways are better represented in four arms, rather than five.

³⁰ Existing use only and not any new farm as per the wording in Policy 14-5(d) compared to (e).

³¹ No exceptions apply to new intensive farming land use that doesn't meet the table 14.2 CNLM

³² No exceptions apply to new intensive farming land use that doesn't meet the CNLM in Table 14.2.

From the above framework, any intensive farming land use (regardless of being new or existing) that complies with the CNLMs in Table, can be considered as a controlled activity under rules 14-1 (existing farm) or 14-3 (new farm), subject to compliance with other standards/conditions/terms of the rule and must be granted under s104A RMA. Where an intensive farming land use does not comply with the CNLMs in Table 14.2, the activity is to be considered as a restricted discretionary activity under rules 14-2 or 14-4 and therefore can be granted or declined, under s104C RMA.

The intensive farming provisions of Chapter 14, as they relate to intensive farming land use, originate from Objectives 5-1 and 5-2 and policies 5-1 – 5-10 and therefore ultimately relate to maintaining, or enhancing water quality in order to *safeguard* the life-supporting capacity, *recognise and provide for* the SWM values of One Plan Schedule B and to ensure that the water quality targets of One Plan Schedule E are *met*. Therefore, while an intensive farming land use may exceed the CNLM in Table 14.2, a resource consent may still be granted for the activity where it can be shown that the activity will not individually or cumulatively make a significant contribution to elevated contaminant levels and where water quality targets are met and SWM values are recognised and provided for. On this basis, Council is (hypothetically) able to grant resource consent for an *existing* intensive farming activity under Pathway 4, if it could show that good progress was being made towards water quality targets, notwithstanding the granting of consents. In reality, this application process places onerous obligation on both the applicant and the Council. Any credible attempt to assess the effect of a single intensive farming operation on surface water quality, within a catchment, would be difficult, costly and in some aspects at least, not technically possible with currently available tools (Enfocus, 2017).

Council, as a consent authority, would have difficulty granting a resource consent for a new intensive farming activity under Pathway 4, though there may be opportunity to grant resource consent for such an activity if it occurred in a catchment where the water quality targets were met (with headroom) and would continue to be met if the application was granted. However, this would be subject to the same standard of application as is described above. Clearly, Policy 14-6 does not apply to new intensive farming land uses in any situation and therefore, new land uses are subject to a higher threshold than existing land uses.

There has been debate as to whether Pathway 4 (described above) is an ineffective pathway because while applications in Pathway 4 can, theoretically, be granted in reality the relevant policies are directive in that the intensive farming activity must be managed to ensure the leaching table maximums are met and this aligns with the policy direction in the RPS. This approach follows the *Davidson v Marlborough District Council*³³ principle as to the weight given to directive policies and there being no recourse to Part 2, except in particular circumstances.³⁴ Therefore, Pathway 4 is not a valid consenting pathway because applications cannot be granted in that situation. As such, the current construct of the rules is in effect a default prohibited activity.

Following the Environment Court declarations³⁵ of 21 March 2017, MWRC commissioned reports from Enfocus Limited and van Voorthuysen Environmental Limited. The Enfocus reports set out the implications of the Environment Court's declaration on One Plan implementation and the options available to MWRC for both plan implementation, change and current consenting pathways. Those reports are

³³ R J Davidson Family Trust v Marlborough District Council [2017] NZHC 52

³⁴ "In King Salmon the Supreme Court held that, absent invalidity, incomplete coverage or uncertainty of meaning in the statutory planning documents, there is no need to look at Part 2 of the RMA" NZHC 52 at [63]

³⁵ Decision [2017] NZEnvC 37 ENV-2016-WLG-000038

both detailed and accurate, and relied on in the preparation of this s35 RMA monitoring report. The details of those reports are not repeated here.

As identified in Enfocus 2017³⁶,

While, individually, none of the characteristics of One Plan are necessarily unique, the combination of features make One Plan implementation technically and politically challenging. Those peculiarities are discussed as follows.

Enfocus (2017) identifies several challenging aspects of the One Plan intensive farming land use provisions in Chapters 5 and 14. These are summarised below:

- Firstly, the One Plan's suite of objectives and policies, as it affects intensive farming activities both in Chapters 5 and 14, lacks any recognition of the social and economic benefit of intensive farming so that decision-makers having regard to One Plan's objectives and policies can place no weight on ensuring that activity continues in a viable form. This issue is not unique to the One Plan situation and is observed in other plans. Largely, social and economic benefit of resource use have been given regard to, through an assessment of the purpose and principles of the RMA (Part 2). In some respects, the approach adopted by One Plan is understandable and reflects the philosophy that the purpose of the plan is to manage natural resources to achieve environmental objectives. It does not aim to achieve economic or social outcomes and hence, economic and social objectives are neither necessary, nor appropriate in a plan. However, post *Davidson Family Trust v Marlborough District Council*³⁷, there is no ability to go back to Part 2 RMA while considering an application for resource consent, unless the plan is *invalid, incomplete* or contains an *uncertainty in meaning*. Plans, without policies which enable decision makers to have regard to the social and economic benefits of resource use, allow no weight to be placed on ensuring that activity continues in a viable form.
- Secondly, a similar but separate issue is that the One Plan intensive farming land use provisions (specifically Policies 14-5, 14-6 and Rules 14-2 and 14-4), do not provide for consideration of the feasibility, practicality and cost of intensive farming land uses meeting CNLMs in Table 14.2. This relates back to the *starting point* of the land use and whether its baseline is near or far from the Table 14.2 maximums.
- Thirdly, Rules 14-2 and 14-4 have no 'upper-limit' on nitrogen leaching from intensive farming land uses and therefore no guidance as to what is an acceptable 'extent of non-compliance'. Therefore, any farm that cannot comply with the CNLMs in Table 14.2 is to be considered as an RDA, regardless of whether the farm model is near or far from the limit, or has any intention or ability to reach the limit and remain viable. Some resource users will find it easier to comply (and/or can do so more quickly) than others and this calls into question an issue of fairness of cost and performance. The variation between nitrogen leaching rates occurs because of variability in (amongst other things):
 - geographic, climatic and soil factors;
 - the nature of the existing farming system (how the farm operates and the infrastructure in place);
 - and

³⁶ Enfocus (16 June 2017) Draft report to Horizons Regional Council

³⁷ NZHC 52 [2017]

- the starting position of the farm (i.e. how far from meeting the Table 14.2 limits a farm is when it applies for consent).

Here it is important to consider that resource consent may be granted in two circumstances in which an exception may be made for an existing farm to exceed Table 14.2 maxima; these are listed in Policy 14-6(b). However, providing a resource user with a timeframe (in this case four years) to reach specified maximums (Table 14.2) alters the maximum from a limit, which is to be complied with, to a target, which is to be aimed for. Which, again, calls into question an issue of fairness of cost and performance and effectiveness in achieving Policy 5-8(a). This suggests that rules 14-1 – 14-4 do not implement Policies 14-5, 14-6 and 5-8.

One Plan Rule 14-1 provides that any existing intensive farming land use that meets all of the conditions/ standards/ terms (including compliance with CNLMs from Table 14.2) of Rule 14-1 is a controlled activity. Following that, Rule 14-2 provides that any existing intensive farming land use that does not meet one or more of the conditions of Rule 14-1 is an RDA. However, Policy 14-5(d) and (e) requires that all existing intensive farming land use does not exceed CNLMs in Table 14.2 (unless exceptions apply) and that all new intensive farming land use does not exceed CNLMs in Table 14.2. Hence, if an intensive farming land use does not comply with the Table 14.2 leaching limits, it is to be considered as an RDA. That is the case:

- Whether there is a reduction or an increase in nitrogen leaching proposed.
- Regardless of the extent of non-compliance (i.e. There is no upper limit)
- If the inability to comply is a matter of timing (i.e. a farm may comply in 4 years but not immediately) or an inability or (alleged) intent to ever comply.

There is no situation in the rule framework, that an intensive farming land use is considered under a more strict activity status than RDA.

Enfocus (2017) notes that is both unusual and problematic from a planning perspective, because Policy 14-6 only anticipates granting exceptions to exceed Table 14.2 limits in the narrow circumstances, already outlined above. Therefore, a gap exists in the One Plan, as to how to consider an application that does exceed the CNLMs in Table 14.2 and for which the specified exceptions do not apply. This situation is a planning illogicality in a framework that requires consent as an RDA, if the activity cannot meet specified limits, but then expects those activities to meet those same limits through the RDA consent process. Logically, if an activity could meet the CNLMs, it would do so as a controlled activity and would not need be considered as an RDA. If an activity cannot meet the CNLM limits as a condition of the controlled activity rule, it should not be required to achieve the same limits as an RDA.

Policies 14-5 and 14-6, do not contemplate the need to consider an application for resource consent for an existing intensive farming land use activities that cannot meet the CNLMs in Table 14.2, except in the circumstances set out in Policy 14-6(b). Accordingly, Rule 14-2 does include “*the extent of non-compliance with the cumulative nitrogen leaching maximum specified in Table 14.2*” as a matter to which discretion is restricted. Presumably this extent of non-compliance only applies to existing intensive farming land uses to which the policy exception(s) apply. This framework denies the possibility that some farms (other than any that fit into the express exception of Policy 14-6(b)) may be unable to comply, while remaining viable operations. In light of *Davidson vs Marlborough DC* case-law, Policy 14-5 is directive and places a high threshold for intensive farming land use applications to meet. Either the land use activity meets the CNLMs in Table 14.2, or where those limits cannot be met, then the activity should not be

authorised. If this is the policy intention, the rule framework may be more efficient as a controlled activity for activities which meet the CNLMs and a 'higher' activity status for activities which exceed limits.³⁸

As noted above, the consenting pathway 4 for the 'consideration of intensive farming land use activities that do not meet CNLMs' is not currently able to be granted, due to the wording in Policy 14-5. Pathway 4 (described above) is unviable, as resource consent cannot be granted in this situation.

Based on RPS Policy 5-8(a)(i), that is not the policy intention of the regional policy statement (to which the Regional Plan must give effect), which reads that nitrogen leaching maximums must be established in the Regional Plan which:

- (D) *are achievable on most farms using good management practices*
- (E) *provide for appropriate timeframes for achievement where large changes to management practices or high levels of investment are required to achieve the nitrogen leaching maximums.*

This brings into scope potential issues with the One Plan intensive farming land use provisions, these are:

- Whether CNLMs in Table 14.2 will achieve the strategies for surface water quality set out in Policies 5-2, 5-3, 5-4 and 5-5 and the strategy for groundwater quality in Policy 5-6; and
- Whether CNLMs in Table 14.2 *are achievable on most farms*; and
- What are *good management practices*; and
- How long is *appropriate timeframes* for achieving CNLMs *where large changes to management practices or high levels of investment are required*

These matters are now addressed below

4.8.1 Policy 5-8(a)(i) and Policies 14-5 and 14-6

Policy 5-8(a) states that:

- (i) *Nitrogen leaching maximums must be established in the regional plan which:*
 - (A) *take into account all the non-point sources of nitrogen in the catchment*
 - (B) *will achieve the strategies for surface water[^] quality set out in Policies 5-2, 5-3, 5-4 and 5-5 and the strategy for groundwater quality in Policy 5-6*
 - (C) *recognise the productive capability of land[^] in the Water Management Sub-zone**
 - (D) *are achievable on most farms using good management practices*
 - (E) *provide for appropriate timeframes for achievement where large changes to management practices or high levels of investment are required to achieve the nitrogen leaching maximums.*
- (ii) *Existing intensive farming land[^] use activities must be regulated in targeted Water Management Sub-zones* to achieve the nitrogen leaching maximums specified in (i).*
- (iii) *New intensive farming land[^] use activities must be regulated throughout the Region to achieve the nitrogen leaching maximums specified in (i).*

Therefore, in order for Policies 14-5 and 14-6 to give effect to Policy 5-8, they must establish CNLMs which:

³⁸ Presumably as a prohibited activity.

- a) *take into account all the non-point sources of nitrogen in the catchment*
- b) *will achieve the strategies for water quality set out in the RPS*
- c) *recognise the productive capability of land*
- d) *are achievable on most farms using good management practices*
- e) *provide for appropriate timeframes for achievement where large changes are required*

Water quality strategies

Throughout the preparation of this monitoring report it has been observed that there is a disconnect between the CNLMs in Table 14.2 and the water quality strategies in the RPS (Policies 5-2 to 5-6) as far as they relate to SIN. That is, the reduction of in-river nitrogen load (SIN) that would be achieved by adherence to the CNLMs in Table 14.2, would not solely achieve a sufficient reduction of in-river nitrogen load to meet (Schedule E) water quality targets and provide for (Schedule B) water management values; therefore, not achieving the strategy for surface and ground- waters in Policies 5-2 to 5-6 as is required by Policy 5-8(A)(i)(B). This is explained further in section 7.1 of this report.

The key assumptions influencing the year 20 nitrogen leaching maxima are likely to be:

- a. On-farm economic achievability and viability;
- b. Overseer modelling;
- c. River flow statistic used to calculate the maximum amount of SIN specified by the target;
- d. Nutrient measured loads as at 2012; and
- e. Assumed attenuation or transmission co-efficient between discharge onto land and what the river sees.

It is worth noting that in the absence of timeframes in Objective 5-2 and Policies 5-2 and 5-4, it is unclear whether the purpose of Policy 5-8 and Policy 14-5 is to meet those water quality (SIN) targets, or whether contribution towards meeting the targets is satisfactory enough to be considered 'effective'.

It is also important to compare the wording in Policy 5-8(a)(i)(B) "will achieve" the strategies for water quality in policies 5-2 to 5-5, compared to the wording in Policy 5-9 (point source discharges to water) which must "have regard to" the strategies for water quality in policies 5-3 to 5-5 (note the absence of Policy 5-2). The wording "will achieve" in Policy 5-8 is more directive than the wording "have regard to" in Policy 5-9. Therefore, while Policy 5-8 is to be read in the context of the wider One Plan provisions, including Policies 5-9, 5-10 and 5-11, more weight is placed on Policy 5-8 in reaching the water quality objectives of the RPS.

This matter is discussed further in section 7.1 of this report.

Good Management Practice

The One Plan does not provide any guidance as to what Good Management Practices (GMPs) are on the four types of intensive farming land use. As per Policy 14-6, each time an application for resource consent is considered under Rule 14-2 and an exception has been made to the CNLMs, the processing planner has to consider what GMPs for the farm are on a case-by-case basis. This is often based on information from agricultural consultants and the Council Rural Advice team. As per Policy 14-3, Council staff look to relevant industry based standards, guidelines and codes of practice to provide these GMPs. These may include:

- HorticultureNZ (2010/2) Code of Practice for Commercial Vegetable Growing in the Horizons Region;
- HorticultureNZ (2014) Code of Practice for Nutrient Management
- HorticultureNZ (2014) Erosion & Sediment Control Guidelines for Vegetable Production

- Fertiliser Association of New Zealand's Code of Practice for Nutrient Management (2017)³⁹
- DairyNZ (2016) Good management practices. A guide to good environmental management on dairy farms.
- DairyNZ (September 2015 v2) A farmer's guide to managing farm dairy effluent. A good practice guide to land application systems.
- DairyNZ Guide to Good Irrigation Part 1 and Guide to Good Irrigation Part 2 (09/2011 v1)
- DairyNZ Reducing nitrogen loss. A guide to good management practices.
- Foundation for Arable Research (FAR) Farm Environment Plan (FEP) template for arable farmers

The websites of Hawke's Bay Regional Council, Waikato Regional Council, Canterbury Regional Council and Southland Regional Council have compiled information on industry-agreed GMPs relevant across New Zealand and largely consistent across industries. Most industry groups (dairy, outdoor pigs, deer, sheep and beef, arable and horticulture) have information on GMPs on their websites in either publication or webpage format.

It is appropriate to refer to industry-based GMPs in Policy 14-3 because of the flexibility in updating the GMPs when new technology and science emerges, rather than entering into a plan change (if the GMP was included in a plan). Using industry-based GMPs also utilises expertise from the industry and reduces the cost to Councils. In the case of the One Plan, Policy 14-3 provides for the examination of relevant industry-based standards. Likewise, Policy 14-6(c)(i) allows for the consideration of GMPs. However, the wording in Policy 14-3 "to the extent that those standards address the matters in Policies... 14-5" notably excludes Policy 14-6. Likewise, Policy 14-6 does not refer back to Policy 14-3. This creates an uncertainty as to how much weight can be placed on Policy 14-3 when making a decision in Policy 14-6(b) and setting conditions in Policy 14-6(c).

Appropriate timeframes for change

Policy 5-8(a)(i)(E) provides that where large changes to management practices or high levels of investment are required to achieve the nitrogen leaching maximums, appropriate timeframes are provided for achievement of the appropriate reductions. This is achieved by providing a progressive reduction of CNLMs in Table 14.2 (years 1, 5, 10 and 20). Further to this, policies 14-5 and 14-6 provide that an exception may be made to existing intensive farming land uses, allowing them to exceed the CNLMs contained in Table 14.2, within 4 years. This exception only applies to intensive farming land uses in target catchments that existed at the date when the provision became operative; this exception does not apply to any new intensive farming land use across the Region. For dairy, year 20 is 2030, and for cropping, commercial vegetable growing and intensive sheep and beef year-20 is 2033. 20 years may be an appropriate quantity of time to allow for large scale change and investment. The 4-year grace period in Policy 14-6(b) no longer applies in 2018.

There is currently uncertainty in the meaning of Table 14.1 and the relationship between column three which contains the heading

"Date the Rules of the Plan have legal effect² in relation to Rule 14-1"

and the footnote from that heading

"²The Plan has legal effect in the case of dairy farming from 24 August 2010 and for commercial vegetable growing*, cropping* and intensive sheep and beef* it has legal effect from 9 May 2013."*

³⁹ Superseding the 2013 version

This creates uncertainty as to when existing intensive farming land use activities, in targeted water management sub-zones, are to apply for resource (land use) consent.

Policy 14-6(b)(ii) provides four years to satisfy the “appropriate timeframes for achievement where large changes to management practices or high levels of investment are required” section of Policy 5-8. It is unclear whether this timeframe is *appropriate* and warrants further investigation into its efficiency.

4.8.2 Overseer

Freeman et al (2016)⁴⁰ provides information and advice for the use of Overseer, in forming the establishment of freshwater objectives, in relation to nutrient management. The recommendations of Freeman et al (2016)⁴¹ are relevant and useful in this monitoring context. Those recommendations are not repeated here except in summary as is useful for context and understanding:

[5] Plan objectives and policies specific to nutrient water quality need to be clear and directive to ensure the environmental results sought by the plan are clear and to provide clear guidance for resource consent decisions that involve OVERSEER nutrient loss estimates.

[6] The specification of a source nutrient load in plan provisions (e.g., objectives and/or policies) provides a high level of transparency and certainty. However, this is contingent on a robust mechanism to deal with improving information and model version change where the specified load is largely reliant on OVERSEER estimates.

[8] OVERSEER version changes are an essential consequence of improvements to the accuracy of OVERSEER estimates, broadening of its applicability and improving its usability and/or user interface. However, OVERSEER version changes (excluding usability and user interface changes) can result in significant changes to estimates of N and/or P loss. The consequential changes in nutrient loss estimates can vary significantly from property to property, depending on the level of similarity of soils, climate, climate patterns, topography, farm systems, etc.

[9] OVERSEER version changes can potentially affect the understanding of source nutrient losses that was relied on in the plan-making process and can potentially affect the status of activities under regional rules and/or resource consents. A range of methods can be used in regional plan provisions and resource consent conditions to avoid or minimise the consequences of version changes (see Sections 3 & 4).

[10] Uncertainty in OVERSEER nutrient loss estimates is inevitable and regional plan and resource consent decisions need to acknowledge and endeavour to reduce uncertainty. Uncertainty is not a reason to take no action. Rather, the higher the uncertainty, the greater the need for robust monitoring and review processes for plan provisions and resource consents.

⁴⁰ Freeman, M; Robson, M; Lilburne L; McCallum-Clark, M; Cooke, A; & McNae, D. (2016) Using OVERSEER in regulation - technical resources and guidance for the appropriate and consistent use of OVERSEER by regional councils, August 2016. Report prepared by Freeman Environmental Ltd for the OVERSEER Guidance Project Board. 130p

⁴¹ Freeman, M; Robson, M; Lilburne L; McCallum-Clark, M; Cooke, A; & McNae, D. (2016) Using OVERSEER in regulation - technical resources and guidance for the appropriate and consistent use of OVERSEER by regional councils, August 2016. Report prepared by Freeman Environmental Ltd for the OVERSEER Guidance Project Board. Page ii

Recommendations – Plan-making (Section 3)

[2] Regional plan provisions should have clear and directive objectives and policies specific to nutrient water quality (e.g., receiving water nutrient concentrations and algal biomass) and catchment nutrient limits to ensure the environmental results sought by the plan are clear. This would provide clear guidance for any resource consent application process that involves OVERSEER nutrient losses estimates.

[4] Take account of the potential implications of OVERSEER version changes by:

(a) incorporating a process in an implementation plan (see sections 3.2, 3.3 & 3.4) to assess the implications of OVERSEER version changes on estimates of catchment source nutrient loads and any other relevant improved catchment information (e.g., hydrological information) for plan provisions,

(b) avoiding the use of fixed numerical thresholds with no OVERSEER version management method in permitted activity and prohibited activity rules that require OVERSEER estimates to determine compliance with those thresholds,

(c) ensuring that there is a robust method of managing the effects of an OVERSEER version change if thresholds are used in any rules classifying activity categories that require OVERSEER estimates to determine compliance with those thresholds (see Section 6),

(d) to the extent the methods referred to in (c) above are not fully effective in managing the effects of OVERSEER version change, minimising the reliance on activity status definition thresholds that depend on OVERSEER estimates e.g., by minimising the number of classes of activities defined by such thresholds to minimise the risk of a land use or discharge changing activity status as a consequence of an OVERSEER version change,

(e) considering the use of a mechanism to minimise the impact of OVERSEER version changes on regional rule (and resource consent) thresholds, including, but not limited to, a link to an external calculator or reference files, but recognising that (as at July 2016) there is no case law on this type of linked external mechanism (see Section 6), and

(f) recognising that methods of using OVERSEER in regional plans and resource consents are still developing and that approaches adopted by some plans have not been fully tested.

When using OVERSEER in the regional plan-making and implementation processes, regard must be given to uncertainty in estimating both source and receiving water nutrient loads and temporal averaging of inputs.

Massey University was commissioned by MWRC to research the effect of the Overseer version change, from v5.2.6 to v6.2.3, on the derived N transmission coefficient and what effect this has on Table 14.2. The Massey University report can be referred to for methods and assumptions made by the research staff. Massey University (2018)⁴² estimated that the Year-1 numbers in Table 14.2 appear to have been derived directly from values calculated using Overseer version 5.2.6 (2007 version) or earlier. The current version of Overseer is v6.3.0; an update in March 2018 from 6.2.3. The One Plan CNLMs in Table 14.2

⁴² Fertilizer and Lime Research Centre, Massey University (Jan. 2018) "Sensitivity of values in Table 14.2 of the 'One Plan' to a change in the version of Overseer".

were reproduced by Massey University, using Overseer 6.2.3, as if Overseer 6.2.3 was available in 2007. The N leaching maximums obtained with Overseer v6.2.3, using the v5.2.6 defaults, were 32.5 - 66.0% higher than the original One Plan Table 14.2 values (Table 2). Massey University researchers recommend that for comparisons of the N losses to water between the two Overseer versions are best made using the v 5.2.6 defaults for both versions⁴³. In the below Table from Massey University (2018), the row titled Original (v 5.2.6) is the year-1 CNLMs in the operative One Plan; the row titled Revised (v 6.2.3) is One Plan Table 14.2 year-1 re-calculated in Overseer v 6.2.3 with the same defaults as Overseer v 5.2.6.

Table 2: Original and revised (v 6.2.3 using v5.2.6 defaults) N leaching maximums

	LUC I	LUC II	LUC III	LUC IV	LUC V	LUC VI	LUC VII	LUC VIII
Original (v 5.2.6)	30	27	24	18	16	15	8	2
Revised (v 6.2.3) v5.2.6 defaults	49.8	44.4	35.7	26.2	22.7	21.6	10.6	3.3*
Increase	66.0%	64.4%	48.8%	45.6%	41.9%	44.0%	32.5%	65.0%

*Native trees (pines are 2.7 kg N/ha loss to water)

Based on the above estimates from Massey University (2018 Pt A), it has been shown that the CNLMs in Table 14.2 are sensitive to changes in the version of updating Overseer from v5.2.6 to v6.2.3. This exercise could be repeated for Overseer 6.3.0, which is provisionally known⁴⁴ to have increased CNLMs from version 6.2.3 (above). For completeness, the Massey University (2018 Pt B) report showed that the nitrogen (N) transmission coefficient⁴⁵ was also sensitive to changes in the current version of OVERSEER (v6.2.3).

Currently there are no methods identified in the policies of Chapter 14 that provide for the revision of CNLMs in Table 14.2 following a change in Overseer version. Further to this, when Overseer version reference changes then earlier versions are no longer available to the public for use in the regulatory process. When existing base files are opened in a newer version of Overseer, this is known to change the modelled nutrient loss rates. This is problematic against the static tables 14.1 and 14.2 of the One Plan. Other councils have accounted for this by using dynamic limits, and comparison between nutrient management files (reference files).

Managing updates of Overseer is known to be problematic for MWRC. It is recorded in official guidance⁴⁶, that any standard or limit that is derived from Overseer modelling (whether in a plan or resource consent condition) needs to be updated when a new version of Overseer is released. If One Plan is to hold true to the principle of natural capital, then the Table 14.2 limits should be updated each year as Overseer is updated (Enfocus, 2017). That would provide an up to date understanding of true leaching from land used to, but not beyond, its natural capital. To the extent that updating Overseer might produce leaching limits

⁴³ Using the v6.2.3 defaults instead of the v5.2.6 defaults made minimal difference to the N leaching maximums obtained. The pasture intakes provided for each LUC class by Overseer v6.2.3, using the v5.2.6 defaults, were close to those obtained with v5.2.6.

⁴⁴ Work undertaken by MWRC in 2018

⁴⁵ The 'transmission coefficient' is defined as the proportion of N leached from the soil root zone, as estimated by OVERSEER that is measured in the river.

⁴⁶ Freeman *et al.* (2016) Using OVERSEER in regulation - technical resources and guidance for the appropriate and consistent use of OVERSEER by regional councils, August 2016.

that result in progress towards the Schedule E water quality target different from that expected when One Plan is designed, can be regarded as a flaw in the allocation methodology. Not updating the Table 14.2 limits in order to preserve a false understanding of the relationship between land used at natural capital and water quality would be a perverse outcome (Enfocus, 2017). It is considered best practice that reference within a plan or policy statement to an external model or tool must specify a particular version and or date of the model.

In conclusion, the above work from Massey University shows that year-1 CNLMs from Table 14.2 are influenced by version change (from v5.2.6 to v6.2.3) of Overseer. The year-5 and year-10 CNLMs appear to be step-down modifications of the year-1 CNLMs.

4.8.3 Conclusion

In order for Policies 14-5 and 14-6 to give effect to Policy 5-8, they must establish CNLMs which:

- a) *take into account all the non-point sources of nitrogen in the catchment*
- b) *will achieve the strategies for water quality set out in the RPS*
- c) *recognise the productive capability of land*
- d) *are achievable on most farms using good management practices*
- e) *provide for appropriate timeframes for achievement where large changes are required*

Based on the assessment of Policies 14-5 and 14-6 set out above, it is considered that those policies are ineffective and inefficient at giving effect to Policy 5-8 for the following reasons:

- a) As point-sources of nitrogen are converted to non-point sources (i.e. direct discharge converted to land irrigation) the non-point source load will increase and therefore CNLMs in Table 14.2 may not *take into account all the non-point sources of nitrogen in the catchment*. This is not to say that the CNLM will not provide for an improvement in water quality (SIN) in surface water.?
- b) There is a disconnect between the CNLMs in Table 14.2 and the water quality targets in the One Plan (Schedule E) and therefore the CNLMs will not *achieve the strategies for water quality set out in the RPS*. Although, there remains an uncertainty around timeframes, when the targets are to be met by and whether contribution is sufficient to be 'effective' in achieving the objective.
- c) The current CNLMs in Table 14.2 are not *achievable on most farms using good management practices*. In order for CNLMs in Table 14.2 to be amended in order to *achieve the strategies for water quality set out in the RPS* would require large scale change to the intensive farming industry across the region (as shown in the One Plan decision reports) and would further not be *achievable on most farms using good management practices*.
- d) It is unclear whether 4-years is sufficient time to provide for achievement of CNLMs *where large changes are required*.

5 Implementation of the intensive farming land use provisions through resource (land use) consents

One method used in this report to monitor the effectiveness and efficiency of the intensive farming land use provisions is to assess their implementation through the resource consent process.

5.1 Resource consent data

IRIS is a database used by the MWRC Catchment Information team and the MWRC Regulatory team for the purpose of collecting information relating to the receipt, processing and considering of applications for resource consent. As part of this monitoring, data relating to resource consents was mined from IRIS for the purpose of better understanding how the intensive farming land use provisions of the plan were being implemented efficiently. Of the 306 resource consents that have been granted for intensive farming land use activities, a random sample of 10% were reviewed as part of this monitoring report.

The following is a summary of the resource consent data from IRIS.

- **Applications for resource consent:** Council has received 368 individual resource consent applications for intensive farming land use ranging from March 2011 to March 2017.⁴⁷ Currently there are 14 applications in progress, 31 applications withdrawn, 17 were returned as incomplete under s88(3) RMA and 306 applications granted.
- **Resource consent authorisations:** IRIS contains 270 authorisation numbers relating to 'nutrient management'; of which 247 are active, 4 have been surrendered and 19 to which an s127 RMA variation applies.
- **Activity status:** 69 applications were considered as a controlled activity, 185 were considered as a restricted discretionary activity and 12 applications were considered as a discretionary activity, 4 applications had no recorded activity status.
- **New vs existing land uses:** 265 applications were recorded to be existing farm activities and 5 applications were recorded to be for new activities.
- **Water management sub-zones:** 148 applications were in a targeted water catchment(s), 121 applications were not in targeted water catchment, 1 application was part in and part out of targeted catchment. This spatial distribution is not accurate because the WMZs identified in One Plan Schedule-A are at a coarse scale and therefore nearly all farms fall into two or more sub-zones. Considering that sub-zones are to be based on, amongst other factors, hydrological catchments, Council staff ground-truthed these sub-zone boundaries so that farms were categorised into which physical watershed that they contribute to. This is not, however, accurately implementing One Plan Schedule A and therefore those provisions are at a spatial-scale which is considered to be inefficient and ineffective.

⁴⁷ Resource consents applications for intensive farming land use with a restricted discretionary activity status have not been considered to a point beyond appeal, following the release of declarations from the Environment Court on 21 March 2017.

- **Land use type:** 261 applications were for dairy farming, 4 applications were for intensive sheep and beef, 2 applications were for vegetable growing (three applications were for bore drilling and it is unclear why these rules were triggered).
- **s91 RMA Deferral pending application for additional consents:** Four intensive farming land use applications were placed on hold under section 91 while other applications were made. This number is inaccurate because it does not capture other applications (water permits and discharge permits) that were also placed on hold under section 91 RMA while intensive farming land use consent(s) were applied for.
- **s92 RMA Further information:** Section 92(1) was used 158 times for various reasons relating to intensive farming and inconsistencies within the applications. These reasons are identified below.
- **s95E RMA Affected persons:** Section 95E RMA was used by Council in 12 separate applications to obtain written approval from affected persons.
- **s104(1)(b) RMA consideration:** There is no consistent record of what objectives, policies and rules were used during the consideration of applications for resource consent.
- **Decisions:** All 306 applications that were granted, were considered on a non-notified basis.
- **s123 RMA Duration:** The expiry dates range from 01/07/2022 to 01/07/2047; ranging from 6 years to 31 years with a median duration of 16 years across the 263 resource consents for which duration data was available.⁴⁸ 32 expiry dates did not align with the common catchment expiry date, 232 expiry dates did align with the common catchment expiry date, this information was not available for 6 resource consents.
- **Council invoiced cost of resource consent processing:** Application had deposit costs and expenditure allocated to them, combining these figures the minimum cost was \$117.49, median cost of \$1,204.00, mean cost of \$1,495.34 and maximum costs was \$5,020.70.⁴⁹

Section 92(1) RMA was used mostly for information relating to technical farm operation, including:

- Soil information
- Overseer modelling and version changes, including base files and target files
- Stock numbers
- Land parcel information
- Irrigation rates
- Nutrient management plans and future nutrient mitigations and trajectories
- Dairy effluent storage calculations (DESC) and storage facilities
- Plans and maps
- Fertiliser application information
- Surface water bodies and fencing
- Land cover, including pasture and cropping and stock feed

The following information is taken from the information held by the MWRC Rural Advice team, for the purpose of complementing the above information to assess how the plan is functioning.

- There are 132 known existing intensive farming land uses in the Manawatu WMZ and 35 known existing intensive farming land uses in the Rangitikei-Coastal Lakes WMZs, which do not have resource consent under Rules 14-1 or 14-2. These known existing intensive farming land uses are all dairy farm land

⁴⁸ The 25th percentile of duration data was 14 years and 75th percentile was 19 years. 43 resource consent applications were not linked to an authorisation in the database.

⁴⁹ These are Council costs and are separate from those presented in KapAg Ltd (2018) which estimate the cost of preparing the application and working with the resource user.

uses. No estimation exists for existing but unconsented intensive sheep and beef, commercial vegetable growing or cropping land uses.

- Base leaching rate, for the those farms whom provided a base file to Council, had estimated leaching rates of 9 Kg N/ha/yr to 91 Kg N/ha/yr. Base leaching rates ranged from 68% to 212% of the target leaching rates.
- Of the 39 resource consents sampled, all of those resource consents held the leaching rates in a nutrient management plan (NMP) or a sustainable milk plan (SMP). The NMP and or SMP are required by conditions of consent, but the nitrogen leaching limits are not in the conditions, themselves. Of the 39 resource consents sampled:
 - 19 consents contained a *flat line* leaching rate,
 - 2 consents contained a *negative linear* leaching rate,
 - 12 consents contained a *step-down* leaching rate,
 - 4 consents contained a *step-up* leaching rate (as the base leaching rate was less than the target leaching rate); and
 - 1 consent had a *step-up* then *step-down* leaching rate.
- Of the 39 resource consents sampled, 35 resource consents contained a nitrogen leaching rate that did not meet the 5, 10 and 20 reductions over time. 3 resource consents did meet leaching maximums over time and 1 did not state either way.

5.1.1 Matters of discretion under Rules 14-2 and 14-4

As shown above, it is reasonably expected that under the current planning framework, applications for resource consent will be processed as a restricted discretionary activity, under either Rule 14-2 or Rule 14-4. This is typically what has been observed by the Council. Therefore, this section only assesses the matters to which discretion has been restricted^{50,51} under Rules 14-2 and 14-4 rather than the matters over which control has been reserved⁵² under Rules 14-1 and 14-3.

Under (RDA) rules 14-2 and 14-4, discretion is restricted to:

- a) *preparation of and compliance with a nutrient management plan for the land*
- b) *the extent of non-compliance with the cumulative nitrogen leaching maximum specified in Table 14.2*
- c) *measures to avoid, remedy or mitigate nutrient leaching, faecal contamination and sediment losses from the land*
- d) *measures to exclude cattle from wetlands and lakes that are a rare habitat or threatened habitat and rivers that are permanently flowing or have an active bed width greater than 1m*
- e) *the bridging or culverting of rivers that are permanently flowing or have an active bed width greater than 1 m that are crossed by cattle*
- f) *the matters referred to in the conditions of Rules 14-5, 14-6, 14-7 and 14-9*
- g) *the matters referred to in the conditions of Rule 14-11 and the matters of control in Rule 14-11*
- h) *avoiding, remedying or mitigating the effects of odour, dust, fertiliser drift or effluent drift*
- i) *provision of information including the annual nutrient management plan*
- j) *duration of consent*

⁵⁰ These matters are identical between Rules 14-2 and 14-4.

⁵¹ Pursuant to section 104C RMA

⁵² Pursuant to section 104A RMA

- k) review of consent conditions
- l) compliance monitoring
- m) the matters in Policy 14-9.

Nutrient management plan is considered to be sufficiently defined in the One Plan for the purpose of Rule 14-1, because that definition is comprehensive and includes:

- To be prepared in accordance with the Code of Practice for Nutrient Management (NZ Fertiliser Manufacturers' Research Association 2007)⁵³ and
- To include records (including copies of the Overseer input and output files used to prepare the plan) and
- Takes into account all sources of nutrients for intensive farming and identifies all relevant nutrient management practices and mitigations,
- Is prepared by a person who has both a Certificate of Completion in Sustainable Nutrient Management in New Zealand Agriculture and a Certificate of Completion in Advanced Sustainable Nutrient Management from Massey University.

In Rules 14-2 and 14-4, Clause (b) provides for the consideration of “the extent of non-compliance” with the CNLMs in Table 14.2. Where Clause (b) is currently included in Rule 14-2 is logical as Policy 14-5(d) and Policy 14-6(b) and (c) do anticipate that in two situations an exception can be made to CNLMs listed in Table 14.2.⁵⁴ In Rule 14-2, a decision maker considering an application for resource consent for an intensive farming land use activity, currently has no guidance as to what is an *acceptable* extent of non-compliance with the CNLM specified in Table 14.2 and what is an unacceptable exceedance. However, where Clause (b) is currently included in Rule 14-4 is contrary with Policy 14-5(e)⁵⁵, as no exceedance on new farms is permissible and no policy exceptions apply for new farms to exceed the CNLMs, as they do for existing farms (Policy 14-6(b)). Therefore, a decision maker should not have that discretion to “consider the extent of non-compliance”. This is considered to be both inefficient and ineffective and could be better achieved by other means, such as a rule framework that greater restricts or prohibits new intensive farming land use activities which exceed the CNLMs in Table 14.2. If this is not the policy intention of the Plan, then the RPS will need be revisited, along with a new rule framework where a discretionary (unrestricted) activity is coupled with policy direction as to in what circumstances a non-compliance with CNLMs listed in Table 14.2 is acceptable; introduction of best practicable option or adaptive management tools; or stepped levels of non-compliance related to mitigations or time periods for introducing mitigations towards achieving compliance.⁵⁶

Generally, Clause (c) which provides for consideration of measures to avoid, remedy, or mitigate nutrient leaching, faecal contamination and sediment losses, is appropriate however, like Clause (b), the provisions provide an officer with no guidance as to what is, or is not, appropriate or acceptable. Therefore, Clause (c) could be improved by requiring consideration of good management practices (GMP's) and having these defined by industry standards.

⁵³ The 2007 Code of Practice has now been superseded with the 2013 version.

⁵⁴ The two circumstances where an exception can be made are listed in Policy 14-6(b)(i) and (ii).

⁵⁵ And Policy 5-8(a)(iii)

⁵⁶ This s35 assessment is limited in scope to the monitoring required to establish if the One Plan provisions are efficient and effective, rather than being the s32 evaluation of the necessity a provision and whether it is the most appropriate in terms of efficiency and effectiveness.

Clauses (d) and (e), largely implement Policy 14-5(e) and (f), respectively. However, the rules could be more accurate in their wording to implement the policy intention e.g. not only the construction of culverts and or bridges (which is subject to sec 13 RMA) but also the use of these crossings, once constructed.

Clauses (f) and (g) include the permitted activity standards for Rules 14-5 (Fertiliser), 14-6 (stock feed and feedpads), Rule 14-7 (Grade Aa biosolids and compost) and Rule 14-9 (poultry and piggery litter) and also the controlled activity conditions and matters of control in Rule 14-11 (Dairy, poultry and piggery effluent). This is appropriate as those rules are either permitted or controlled activities, except where undertaken in association with a use of land controlled under Rules 14-1 to 14-4.

Clause (h) is self-explanatory, requiring that the effects of odour, dust, fertiliser drift or effluent drift are avoided, remedied or mitigated.

Clauses (i) to (l) are administrative matters and provide for:

- (i) provision of information including the annual nutrient management plan
- (j) duration of consent
- (k) review of consent conditions
- (l) compliance monitoring

Clause (m) was added by Plan Change 1 to the One Plan, as part of the NPSFM. Policy 14-9 gives effect to the NPSFM 2014 and applies to a new discharge, or a change or increase in any existing discharge that may result in that contaminant entering fresh water.

As discussed above, and based on Enfocus (2017), matters relating to feasibility, practicality and cost are notably absent from the matters of discretion in Rules 14-2 and 14-4.⁵⁷ Currently, the matters of discretion listed in Rule 14-2 relate purely to the extent of non-compliance with Table 14.2 and the management of adverse environmental effects. They do not identify the matters previously considered by the Council in consent processes (such as the feasibility, practicality and cost of compliance with Table 14.2). This absence of feasibility, practicality and cost in the matters of discretion under Rules 14-2 and 14-4 is alike to the policy problems described above and in Enfocus (2017), being:

- Lack of recognition of social and economic benefit of the affected land use;
- Lack of recognition of the practicality, feasibility and cost of compliance with limits;
- CNLMs in Table 14.2 applying to both controlled and restricted activity Rules, with no rule framework for an activity that exceeds CNLMs.

In conclusion, some of the matters in Rule 14-2 [(a), (g) and (h)] to which discretion is restricted are effective, however others such as [(b), (c) and (m)] are ineffective, while some others [(d) and (e)] would benefit from minor changes to align with policy wording. Matters relating to social and economic feasibility, practicality and cost are absent from the Rules.

5.1.2 Policies 5-8(a), 14-5(e) and Rule 14-4

According to Policy 14-5(e), new farms across the region must be managed so that they do not exceed Table 14.2 values. Rule 14-4 provides discretion for consideration of the extent of non-compliance with

⁵⁷ Enfocus Ltd and Hill Young Cooper Ltd (12 October 2017), Draft report on options to change nutrient management provisions of One Plan (6p);

CNLMs in Table 14-2. It is currently unclear how this discretion is available to a decision maker, and is potentially contrary to Policy 14-5(e).

5.2 Non-regulatory methods – partnerships

When developing the draft One Plan, Council undertook a methods-based approach of identifying issues where the water quality improvements could be made, e.g. managing intensive farming land use and municipal wastewater as implementation priorities to address soluble inorganic nitrogen (SIN) through the rules in the Regional Plan and employing non-regulatory methods like Sustainable Land Use Initiative (SLUI) to manage sediment erosion in hill country. An assessment of the One Plan intensive farming provisions against the NPSFM is provided in section 6 of this report, below.

It is noted that there is an emphasis on non-regulatory methods to manage intensive farming land uses and water quality, in non-targeted WMZs. The effectiveness of these methods is dependent on willingness and investment by landowners and resource users with the financial capability for co-funding environmental enhancement. Engagement can be limited by the economic climate at the time and therefore, one potential evaluation outcome is to give consideration to changes in funding models to encourage engagement with landowners and resource users and faster uptake of non-regulatory methods. This engagement will require investment from industry groups to facilitate the relationship between resource users and Council, this is not a matter of consideration under s35 RMA.

5.3 Learnings and case studies from implementation

The following is a section on the unforeseen consequences and case studies using the intensive farming land use provisions in the resource consent process.

5.3.1 Horticulture

Commercial vegetable growing (a.k.a. horticulture) land uses tend to be spatially and temporally dynamic given the need for cropping and vegetable production to be rotated to avoid susceptibility to pests and disease, e.g. potatoes require a lapse period of at least five years between crops in the same area. In many cases horticultural activities are mixed with other land uses and can be under-represented as a result. Additionally, horticultural production is typically underpinned by the principle of rotation for plant and soil health, and is based on leasehold and short term occupancy; this creates a dilemma for regulation of the land use.

Horizons Regional Council Policy Staff produced a report titled “Horticulture Problem Definition”, which is adopted here. That report is not repeated, but the main points are summarised here.

The problem for horticulture, in the context of the One Plan intensive farming land use provisions, is that growers are likely to have the greatest extent of non-compliance with the CNLMs. Several aspects related to horticultural production result in high nitrogen leaching and relative inefficiency of nitrogen uptake by plants, when compared to other pastoral land uses⁵⁸. The main factors responsible for nitrogen leaching in these horticultural systems are:

⁵⁸ The AgriBusiness Group (2017) Nutrient performance and financial analysis of horticultural systems in the Horizons Region.

*high nitrogen application and use (fertiliser and manure) rates, frequent cultivation, relatively short periods of plant growth (compared to pasture), low nutrient use efficiency by many vegetable crops and crop residues remaining after harvest*⁵⁹.

The sparsity of vegetable root systems means that crops take up fertiliser inefficiently, particularly when grown through the winter season, when nitrogen up-take and energy needs of the plants are slower⁶⁰. The recovery of applied nitrogen (either fertiliser or manure) by vegetable crops is often less than 50% and can be as low as 20%.⁶¹

The Lake Horowhenua and Hokio targeted WMSZ catchments contains large areas of LUC 1 and 2 soils, which are the *highly versatile* soils.⁶² These soils are capable of growing a wide range of crops suited to the particular climate of an area and possess little, or no limitations in terms of productive capabilities; for instance flat, well-draining, potential for good root depth, high structural stability and free of flooding, erosion and salt contamination. As a result, these soil characteristics are desirable for the commercial vegetable production (including asparagus, brassicas, leafy green salad varieties leeks and potatoes, for both processing and export) in areas of the Horowhenua, Rangitikei and in Ruapehu. Unlike Rangitikei and Ruapehu however, the Horowhenua catchment is identified through Policy 5-8 and Table 14.2 as being a targeted WMSZ catchment where the management of existing (and new) intensive farming land uses must be specifically controlled due to the degraded quality of water arising from the over allocation of nitrogen (particularly SIN).

The level of nitrogen lost from horticultural intensive land use activities means that any application for resource (land use) consent will be firmly in the restricted discretionary activity classification, for which the plan provides an unviable consenting pathway (as shown in section 4.8 above and also in Enfocus (2017)). There is a risk of existing horticultural land use activities over 4 ha and cropping activities over 20ha, within the two Lake Horowhenua targeted catchments not being able to gain land use consent. One land use consent for commercial vegetable growing has been granted within the Waikawa (West_9) water management zone.

Across the wider Horizons Region, the Horticultural sector contributes 120 growers, contributes \$85 million, or 1% of the regional economy and approximately 875 jobs. The horticulture sector is strong in the Horowhenua District, where the industry accounts for 5% of all jobs (Manawatu-Wanganui Growth Study, 2015).

It is likely that the level of nitrogen loss mitigation required of intensive horticultural land use activities, in order to meet the CNLMs of Table 14.2, would have implications for profitability and viability of most growers. To address this, MWRC commissioned an on-farm impact analysis of horticultural land use

⁵⁹ Horizons Regional Council (undated) Horticulture definition problem

⁶⁰ *ibid*

⁶¹ *ibid*

⁶² LUC 1 and 2 versatile soils largely comprise (but not limited to) the following soil series: Egmont, Kiwitea, Westmere, Manawatu, Karapoti, Dannevirke, Ohakune, Kairanga, Opiki and Te Arakura.

activities (The AgriBusiness Group, 2017).⁶³ The 2017 study aimed to calculate the economic impact for each of the following grower models, to implement a range of mitigations to reduce nitrogen loss from farm into water, to a level that would comply with the CNLMs of Table 14.2:

- Cash cropping
- Intensive vegetable production
- Market Garden

Three types of nitrogen-related mitigation were analysed:

- Mitigation 1 – Limiting N application. This mitigation technique limited any one application of N to 80 kg N / ha per month.
- Mitigation 2 – Altering the amount of N and the yield. This mitigation option altered the amount of N applied to the crop in 10% deductions from 0 to a 30% reduction in the amount of N applied.
- Mitigation 3 – The use of cover crops.

The results of the financial modelling undertaken by The AgriBusiness Group (2017) indicate that the impact of the degree of mitigation required, in order to not exceed CNLMs, is a deterioration of the financial performance of each of the rotations as a result of the restrictions on the amount of N used. This is particularly so for the intensive farming land uses identified, in AgriBusiness Group (2017), as *'intensive vegetable production'* and *'market gardens'*. The most effective means of mitigation to ensure that continued intensive horticultural land uses do not exceed CNLMs is to purchase areas of additional land (to either retire or operate cut and carry systems). The AgriBusiness Group (2017) finds that the required levels of nitrogen mitigation, in order for intensive horticultural land uses in the Horowhenua WMSZ catchment to meet the CNLMs of Table 14.2, would have implications for profitability and viability of most growers. On this basis, the intensive farming land use provisions of One Plan Chapter 14, namely Policy 14-5, Policy 14-6 and Rules 14-1 and 14-2 are inefficient in achieving the water quality objectives of the RPS, because of the social and economic cost required to achieve the benefit.

Given the high rates of nitrogen leaching from commercial vegetable growing and cropping, it is unlikely that those two groups of intensive farming land uses will be removed from the One Plan frameworks. Accordingly, the regulatory framework will need to be revised as it is currently inefficient, but some form of management of this land use will be integral to achieving freshwater quality objectives of the NPSFM and the One Plan.

The Code of Practice for Commercial Vegetable Growing in the Horizons Region (Horticulture NZ, 2010)⁶⁴ is currently under-developed and not used by the Council in managing commercial vegetable growing in the Region. Further research needs to be undertaken by Horticulture New Zealand (HortNZ) and MWRC to assess whether an LUC-based regulatory framework is appropriate for vegetable growing, given that LUC is a pasture based classification system. It is currently unknown (with a high level of certainty) what the N-loss rates from commercial vegetable growing is likely to be, in relation to Table 14.2. It is shown in section 5.1 of this report that few resource consents have been granted for commercial vegetable growing. This is known to be because N-loss rates from commercial vegetable growing systems exceeds the CNLMs in Table 14.2 and due to the wording on policies in Chapter 14 (and also chapter 5) that resource consent cannot be granted to those users. This calls into question whether the framework holds

⁶³ The AgriBusiness Group (Oct. 2017). Farm scale economic impact analysis of One Plan intensive land use provisions. The Agribusiness Group.

⁶⁴ Horticulture New Zealand (2010) Code of Practice for Commercial Vegetable Growing in the Horizons Region. Best Management Practices for Nutrient Management and Minimising Erosion on Cultivated Land (Version 2010/2). 32p

true to the concept of natural capital because each farming system should comply regardless of land use type.

5.3.2 Dairy support and beef feedlots

An observed issue in the One Plan intensive farming land use provisions is the management of dairy support / runoffs and also beef feedlots.

In the One Plan, dairy farming means

Using any area of land greater than 4 ha for the farming of dairy cattle for milk production. This includes land used as a dairy cattle grazing runoff but excludes any dairy grazing arrangement. A dairy grazing arrangement is a third party commercial arrangement between the owner of dairy cattle and another landowner for the purpose of temporary grazing.

Dairy support blocks can be operated as a dairy grazing arrangement where the support block is not included in the nutrient budget and management plan to be assessed against the CNLMs in One Plan Table 14.2. This is problematic from a nutrient management perspective because the scale and nature of land use, and therefore the leaching of nutrients, can be similar in nature to a dairy block and hence having a similar effect on water quality.

Similarly, beef feedlots are primary production land uses that are not considered as an intensive farming land use under the One Plan. This is problematic from a nutrient management perspective because beef feedlots are small⁶⁵ land areas with high stocking rates and as a result have the potential to be contributors to non-point source leaching and runoff of nutrients, bacteria and sediment.

Dairy support blocks and beef feedlots are identified, in this monitoring report, as potential land uses which warrant further investigation for management and or regulation in the future of the One Plan.
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5.3.3 Intensification and conversions

This section carries on from section 3.1, above.

An observed issue in the One Plan intensive farming land use provisions is the management of farming 'conversions'. Conversions are land use changes from a non-intensive land use, into an intensive farming land use or from one type of intensive farming land use to another type⁶⁶. It has been observed that non-intensive land users (forestry, or non-irrigated sheep and beef, deer, horse, outdoor piggeries and poultry) will convert existing low-intensity land use into an intensive farming land use. Likewise, it is common for a property⁶⁷, or collection of properties, to rotate or alternate land uses both spatially and temporally. This could include growing crops on a dairy farm or a sheep and beef farm and is particularly common in commercial vegetable growing (see more on horticulture below). As the One Plan currently operates, the intensive farming provisions and definitions do not specifically provide for intensification (other than conversion, which is captured in Rule 14-3 or 14-4), or spatially and temporally dynamic land uses, as either new or existing intensive farming land uses. This is considered to be ineffective in contributing to water quality objectives and inefficient of both the applicants and Council resources.

⁶⁵ Small land areas relative to operative sheep and beef intensive farming land uses.

⁶⁶ Intensive farming land use includes dairy farming, intensive sheep and beef, commercial vegetable growing and cropping

⁶⁷ As defined in the One Plan

Policy 5-8(iii) requires that intensive farming land use activities that are established after the Plan has legal effect⁶⁸ in all WMSZ's across the Region, are regulated. Under Policy 14-5(e), when a land use consent expires for a new intensive farming land use (including conversion), that land use is not then considered to be existing; e.g. a new farm in 2018 with a 10 year land use consent will be considered to be *new* in 2028, rather than *existing*. There is no provision in the Regional Plan allowing for the transition from new to existing farms, following a resource consent period. This is potentially appropriate in the non-targeted sub-zones, because *existing* farms are not regulated in the non-targeted sub-zones.

Following from the above point, a further known issue relates to intensification i.e. intensive farming land use activities that were established before the Regional Plan had legal effect increasing intensity and therefore nutrient leaching below the root zone e.g. a dairy farm outside of targeted water management sub-zone with a number of cattle in 2009 is existing, and then could have more cattle in 2019 without triggering any resource consent. Depending on the level of growth, and the spatial extent of the farm, this could be considered to be new, if it was significantly different in scale.

Currently, intensification of an existing land use is not regulated in the One Plan framework. Compared to conversions between land use types, which are regulated as new land uses. The above issues raise issues of fairness and the definition of *new* intensive farming land uses.

An issue is with the wording in Policy 14-5 (which gives effect to Pol 5-8) in that the Policy refers to "intensive farming land uses" "in all Water Management Sub-zones". This definition is problematic as it calls into question what context the definition of 'property' has in this context.⁶⁹ The One Plan does not provide guidance as to the applicability of "intensive farming land uses" or "Water Management Sub-zones" at the individual property scale and therefore whether any given land use existing on a property within a sub-zone as of the plan having legal effect, is questionable.

5.3.4 Irrigated sheep and beef

An observed issue with the intensive farming land use provisions is the lack of a threshold for the depth or area of *irrigation* in the definition and context of *intensive sheep and beef*. It has been observed in the implementation of One Plan intensive farming provisions, through the resource consent process, that industrial discharges of contaminants onto and into land (subject to section 15(1) and (2A) RMA) were triggering intensive farming land use provisions. Examples include the discharge of contaminants from industrial or trade premises (such as meat works, stock-truck wash facilities and vegetable wash facilities) and primary production premises (indoor poultry sheds) onto or into land. In certain examples, the land was not used as a commercial and productive sheep and beef intensive farming land use; rather the area that was to be irrigated with wastewater contained stock and was over 4 hectares in area. The volumes of wastewater discharge were, in some cases, minimal and management of the operation as an intensive farming land use was seen to be unnecessary. In any case, the applications need be deferred, under section 91 RMA, while a land use consent application is lodged.

⁶⁸ The Plan has legal effect in the case of dairy farming from 24 August 2010 and for commercial vegetable growing, cropping and intensive sheep and beef it has legal effect from 9 May 2013.

⁶⁹ In the One Plan, Property means 'one or more adjacent allotments[^] that are in the same ownership. A legal road[^] is considered a property for the purposes of this Plan.'

6 Regulations and national level policy affecting water quality

6.1 Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007

Section 44A RMA requires that every local authority and consent authority must observe national environmental standards (NES) and must enforce the observance of an NES to the extent to which their powers enable them to do so. The Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007 (hereafter NESSHDW) is a regulation made under the RMA that sets requirements for regional plans and conditions on resource consents for protecting sources of human drinking water from becoming contaminated. The NESSHDW came into force on 20 June 2008. The NESSHDW applies to groundwater sources such as aquifers or springs, rivers, lakes and other natural waters that are sources of human drinking water. However, the NESSHDW only applies to water sources before they are abstracted by a drinking water treatment plant. After the water treatment plant, Ministry of Health legislation and standards apply. The NESSHDW also only applies to sources from which water is abstracted for use in registered drinking water supplies. These supplies are those recorded in the drinking water register maintained by the Ministry of Health. The NESSHDW has three main components:

- The first part of the NESSHDW, Regulations 6, 7 and 8, applies to discharge permits and water permits issued by regional councils and unitary authorities (Regulations 7 and 8).
- The second part of the NESSHDW applies to permitted activity rules in regional plans, to ensure that they will not allow for an activity that may contaminate drinking water sources (Regulations 9 and 10).
- The third part of the NESSHDW relates to emergency notification conditions that may be placed on any resource consents that have potential to contaminate drinking water sources (Regulations 11 and 12).

The declarations made by the Environment Court⁷⁰ on 21 March 2017 reiterated that

“in considering and granting applications for resource consent under Rules 14-1 to 14-4 of the One Plan, the Council must not grant consents contrary to the Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007.”

Sources of Human Drinking Water are represented in the One Plan as the SWM value of ‘water supply (WS) value’.⁷¹ This SWM value comes with the objective of:

The water is suitable, after treatment, as a drinking water source for human consumption

This SWM value applies in catchments above surface water takes for community water supply as is shown on Figure B:10 (page B-73) and Table B.10 (pages B-75 to B-80).

The presence, or absence, of this SWM value is to be deliberated by a decision maker while considering an application for resource consent, including for intensive farming land use. Drinking water, as a SWM

⁷⁰ Decision [2017] NZEnvC 37 ENV-2016-WLG-000038 at para 186

⁷¹ One Plan Schedule B

value, itself is not implemented in any standalone rule of Chapter 14 (e.g. a protection zone), other than to the extent the SWM value is included in the standards/terms/conditions.

Given the complex processes (including nutrient attenuation and lag time) that occur in the soil and groundwater environments, between an identified land use and a surface water body, it is difficult to assess the adverse effect, either individual or cumulative effect, of a diffuse discharge from an intensive farming land use on a waterbody and the use of that waterbody as a human drinking water source. While implementing the intensive farming land use provisions of the One Plan, it is currently onerous to undertake such an assessment and therefore the provisions do not efficiently achieve the drinking water outcomes sought by that part of the plan.

6.2 New Zealand Coastal Policy Statement 2010

The New Zealand Coastal Policy Statement (NZCPS) is a national policy statement under the RMA. The purpose of the NZCPS is to state policies in order to achieve the purpose of the Act in relation to the coastal environment of New Zealand. Section 67 RMA states that a regional plan must give effect to any New Zealand coastal policy statement. The intensive farming land use provisions of the One Plan relate to land use (section 9(2) RMA) and do not relate to the coastal environment (or marine area) except to the extent that discharges into the coastal environment has deteriorated water quality to a state that it is having a significant adverse effect on ecosystems and other uses associated with that environment. The intensive farming land use provisions in the Regional Plan are derived from the water quality strategies for ground- and surface waters in Policies 5-2 to 5-6 One Plan. This does not include coastal water quality and therefore a full analysis as to whether the intensive farming provisions of Chapter 14 give effect to the NZCPS has not been undertaken. The National Policy Statement for Freshwater Management is a more directly relevant policy statement to the intensive farming provisions.

6.3 National Policy Statement for Freshwater Management 2017

The National Policy Statement for Freshwater Management 2017 (NPSFM) sets out the objectives and policies for freshwater management under the Resource Management Act 1991. The NPSFM came into effect on 1 July 2011 (with a further version in August 2014) and amendments made in August 2017 took effect on 7 September 2017. Section 67 RMA states that a regional plan must give effect to any national policy statement.

Both in terms of National Policy Statement for Freshwater Management (NPSFM) requirements and evaluating the effectiveness of the One Plan, one question is whether the One Plan provides the right suite of tools to achieve freshwater quality outcomes. Those tools need not solely take the form of rules, but those tools do need to provide an effective and efficient response to the issues, as they are understood at the time and provide a method for monitoring and revising those tools.

One of the challenges of any regulatory framework is that these issues and the scientific, social and cultural understanding of them, continues to evolve through time. At the time that the One Plan was developed, there was a focus on nitrogen, bacteria and sediment as degraders of water quality. That philosophy has evolved towards catchment management and thinking about freshwater systems as a whole and dynamic system. As the scientific, social and cultural understanding of the dynamics of

freshwater systems develops, communities will be required to look at how well the suite of regulatory and non-regulatory tools employed by plans require (or allow) those resources to be managed. For example, emerging science around the drivers of periphyton growth suggests that processes relating to algae growth and proliferation are complex; substrate dynamics, flow rates and instream nutrient cycling processes play important roles in where periphyton grows, or doesn't grow. Research into these mechanisms is continuous and dynamic, and in collaboration with catchment accounting/ allocation research to ensure that any explicit limits and/or targets achieve the water quality outcomes set by the community.

The recent focus on swimmable water is a good example of this shift in industry focus. Since the One Plan becoming operative, there has been increased provision for swimmable water and public health outcomes at a national scale; the NPSFM was amended in August 2017 to achieve a target of 90% of rivers and lakes to be swimmable by 2040. While point-source discharges are regulated in all WMZs across the Region (both non-target and target WMZs), the One Plan is potentially less effective in achieving its SWM value because some management options, such as stock exclusion on existing farms, are not available in non-targeted WMZs.

The purpose of this report is to assess the effectiveness and efficiency of the intensive farming land use provisions in achieving the relevant objectives of the plan and RPS. This report does not focus on whether the One Plan gives effect to the NPSFM. Horizons Regional Council (2017)⁷² provides a comparison of the One Plan against the NPSFM. That information is not repeated here; however, a summary is provided as to assist with the effectiveness and efficiency assessment.

While preparing this report and taking into account Horizons Regional Council (2017), it has been observed that further work is required to align the One Plan with the NPSFM 2017. The One Plan does not explicitly state the equivalent of NPSFM limits or targets, nor does it explicitly state timeframes for addressing resource over-allocation, where it is identified. Horizons Regional Council (2017) tested whether the CNLMs in One Plan Table 14.2 constitute limits (or targets) for the purpose of the NPSFM.

Table 14.2 provides the means of identifying nitrogen leaching limits for consideration, during application for resource consent, made by intensive farming land users. It is also used as a standard/ term/ condition (effectively a limit) for controlled activities under One Plan Rules 14-1 and 14-3 and also a matter over which discretion has been reserved (effectively a target) when processing restricted discretionary activities (Rules 14-2 and 14-4). CNLMs may be considered as NPSFM limits or targets, if it is plausible that the NPSFM is to be applied at a farm scale level; there is no strong evidence that this is the intent. The basic spatial scale for setting objectives and limits and for freshwater accounting in the NPSFM is the freshwater management unit (FMU), which is defined as a waterbody, multiple water bodies or any part of a waterbody. It is also evident that the limit or target defines the allocation available to all resource users, e.g. non-point source and point source dischargers. It seems more likely that Table 14.2 is a method of assessing nitrogen loss from land-use, rather than an NPSFM limit or target, in itself.

Future work to be undertaken by Council will need to re-asses the following questions, as part of the NPSFM work:

As per One Plan Policy 5-8:

- Is water quality within the targeted water management sub-zones in Table 14.1 maintaining or improving since 2014;

⁷² Horizons Regional Council (2017) Policy Evaluation Report: Freshwater Quality. 17p

- Are all of the targeted water management sub-zones in Table 14.1 still required to be regulated in order to meet water quality objectives;
- Are any other water management sub-zones listed in One Plan Schedule A, that are not listed in Table 14.1, in need of being added to Table 14.1 because of declining water quality (SIN);
- Are the four existing intensive farming land uses still required to be regulated because of their contribution of contaminants and deterioration of water quality, do any of the intensive farming land uses need to be removed, or do any intensive farming land uses need to be regulated (i.e. non-intensive sheep and beef, deer, poultry, piggeries);
- Are all of the primary sources of contaminants (nitrogen) being monitored and regulated in targeted WMSZs;
- Are all of the over-allocated contaminants being monitored and regulated in targeted WMSZs; and
- Are any contaminants of concern being monitored in non-targeted WMSZs, which need to be regulated because of the deteriorating water quality.

The Environment Court decision⁷³ at para [5-190] notes that the proposed One Plan did not give effect to the NPSFM 2011, as the POP was drafted before those provisions were implemented by Council. Plan Change 1 introduced provisions to the One Plan in order to give effect to the NPSFM.

The purpose of this monitoring report is not to assess whether the One Plan gives effect to the NPSFM, however, this assessment must be undertaken in light of the NPSFM and the ongoing work by the Council to implement the NPSFM, given the overlap between the intensive farming land use provisions of the One Plan and the water quality objectives of the NPSFM.

⁷³ Environment Court decision: Part 5 – surface water quality non-point source discharges

7 Effectiveness and efficiency

7.1 Effectiveness

The One Plan Hearings Panel (Water Hearing) report provides further commentary on whether the LUC approach to setting allowable nitrogen leaching levels is efficient and effective. The Hearings Panel noted that:⁷⁴

“On balance, we find that the LUC nitrogen leaching approach embodied in Table 13.2 is not appropriate for existing dairy farms for the following reasons:

- (a) Dr Mackay’s “natural capital” approach is not based on technological changes that have enabled farmers to lift productivity levels since the 1980s;*
- (b) For existing farms, the “natural capital” approach therefore ignores existing land use and existing levels of farm production. That is inequitable and impracticable;*
- (c) The officers have taken Dr Mackay’s scientifically derived values and arbitrarily amended them to address point (b) which has resulted in Table 13.2 lacking scientific robustness;*
- (d) The year 5, 10 and 20 nitrogen leaching reduction values were derived arbitrarily and do not relate to the achievement of the Schedule D water quality standards;*
- (e) Around 20% of targeted dairy farms will not be able to meet the year 20 leaching values in a practicable and affordable manner;*
- (f) The achievement of the year 20 leaching values will not resolve the actual environmental issues of concern (namely the high soluble inorganic nitrogen levels and levels of periphyton in the affected rivers) for those few rivers where Council has been able to assess the effect of Rule 13-1. In some of the target catchments which we have decided should remain in Table 13.1, we have no idea how effective the rule will be; and*
- (g) The implementation of Rule 13-1 will impose a significant cost on the farming community.”*

The Environment Court⁷⁵ states that:

“[5-155] Fonterra raised concerns that economic considerations were not factored into the development of the Schedule D limits and that the nutrient parameters in particular are overly conservative and largely unachievable. However, the evidence of witnesses for the Council, and particularly Associate Professor Death, satisfied us that the Schedule D limits were set in a pragmatic way and represent a good, rather than excellent or perfect level of protection for water quality values. We accept that the nutrient limits were established recognising the need for trade-offs between what would be an ideal ecological outcome and social, practical and economic considerations. We recognise that no regime proposes meeting the Schedule D limits at all flows.

⁷⁴ One Plan Hearings Panel Decision on Submissions Report – Water Hearing Volume 1 – Part 8. Section 8.6.9.4 Pages 8-40 to 8-47

⁷⁵ Environment Court decision: part 5 - surface water quality - non-point source discharges, Pg 5-56, Para 5-155 and 5-156

[5-156] *We are satisfied that the Schedule D limits represent environmental bottom lines, which are intended to achieve the objectives of the Plan.*

Therefore, if

the nutrient limits were established recognising the need for trade-offs between what would be an ideal ecological outcome and social, practical and economic considerations

and

that no regime proposes meeting the Schedule D limits at all flows.

The Schedule D limits represent environmental bottom lines, which are intended to achieve the objectives of the Plan,

it could be inferred that the nitrogen leaching maximums, that were established in the regional plan, will not achieve the strategies for surface water quality set out in Policies 5-2 to 5-5 and the strategy for groundwater quality in Policy 5-6. As a result, Policy 14-5 is not effective in achieving Policy 5-8 and objectives 5-1 and 5-2.

However, this is further complicated by the absence of timeframes in Policy 5-4 and therefore brings into question by when Schedule E targets must be met.⁷⁶ Therefore, while Policies 14-5 and 14-6 and Rules 14-1 to 14-4 make a contribution towards meeting Schedule E targets, it is unclear whether this contribution is to be read as being effective at achieving Objective 5-2, i.e. whether the One Plan aims to meet the water quality targets within the lifetime of the One Plan, or rather start a journey.

It is unclear whether the intention of the nutrient management provisions was to solely achieve water quality objectives, rather than in combination with water quality policies, e.g. RPS policies 5-9 to 5-11, and also with the non-regulatory programmes. In light of recent case-law *Environmental Defence Society Incorporated v The New Zealand King Salmon Company Limited* the directive wording of plans is now interpreted differently to when the One Plan was drafted and heard. One Plan RPS policy 5-8(a) is worded in such a way that

(i) Nitrogen leaching maximums must be established in the regional plan which:

(B) will achieve the strategies for surface water^A quality set out in Policies 5-2, 5-3, 5-4 and 5-5, and the strategy for groundwater quality in Policy 5-6

RPS Policy 5-8(a)(i) is directive, and in applying *King Salmon* is read that nitrogen leaching maximums must/ will achieve the strategies for water quality. It has been shown above that the nitrogen leaching maximums are not effective at achieving water quality targets. However, the nitrogen leaching maximums are part of the One Plan package which, in combination, contribute to or achieve water quality targets, it is the directive wording in Policy 5-8(a)(i) which is problematic.

As noted in section 4.8 (above), it is important to compare the wording in Policy 5-8(a)(i)(B) “will achieve” the strategies for water quality in policies 5-2 to 5-5, compared to the wording in Policy 5-9 (point source discharges to water) which must “have regard to” the strategies for water quality in policies 5-3 to 5-5 (note the absence of Policy 5-2). The wording “will achieve” in Policy 5-8 is more directive than the wording “have regard to” in Policy 5-9. Therefore, while Policy 5-8 is to be read in the context of the wider One Plan provisions, including Policies 5-9, 5-10 and 5-11, more weight is placed on Policy 5-8 in reaching the water quality objectives of the RPS. Therefore, as the CNLM in Table 14.2 (particularly year-

⁷⁶ Also Policy 5-3 and 5-5

20) do not reduce in-river N-loads sufficiently to achieve One Plan water quality targets (SIN), and in the context of the directive wording of the Policy 5-8, policy 14-5 is ineffective in giving effect to policy 5-8.

During this monitoring and based on the above excerpts it has been observed that the CNLMs in Table 14.2 do not align with the water quality standards in Schedule E and will not provide for the values in Schedule B. That is to say, that if all intensive farming land use activities were to not exceed Table 14.2, there would be an insufficient reduction of in-river SIN to meet the water quality standards in Schedule E. Therefore, Policy 14-5(c) and the CNLMs in Table 14.2 are ineffective in achieving the water quality strategies of Policies 5-2 to 5-6, as is required by Policy 5-8(a)(i)(B). This is, in-part, due to the directive wording in policy 5-8 ('achieve') compared to that in policies 5-9 and 5-10 ('have regard to').

Structure

The intensive farming land use rules are subject to section 9(2) RMA and are not considered to be discharges for the purpose of s15 RMA, though the overall intensive farming land use may include ancillary discharges. Despite being land use activities subject to s9(2) RMA, the intensive farming provisions are positioned in Chapter 14 (Discharges to Land and Water), rather than in Chapter 13 (Land Use Activities). This is accounted for by Objective 14-1 managing the discharge of contaminants into both land and water and also land uses that affect water quality. If intensive farming land use provisions were relocated within the plan to, say, Chapter 13, this would require cross-referencing that may prove more inefficient than retaining land use provisions in a *discharge* chapter (the intension of the chapter is to implement the water quality objectives of Chapter 5).

With the National Planning Standards being released in second-quarter of 2019, any assessment of structure may be affected by those standards.

7.2 Efficiency and cost

Monitoring of efficiency must take into account the benefits and costs of the intensive farming provisions, in relation to the water quality objectives.

Costs

For the purpose of this monitoring, an assessment of costs has been divided into three categories:

1. What are the Council costs of processing and considering applications for land use consent, including administration but excluding compliance?
2. What are the likely (approximate) costs to an Applicant who is preparing an application for resource consent and assessment of environmental effects, to a level of detail that is necessary in order to allow assessment of cumulative effects?
3. What are the wider cost implications of the intensive farming land use provisions on the primary sector and community?

In order to address (Question 1) the costs of Council processing and considering applications for land use consent, data was pulled from the IRIS database. Analysis from IRIS data shows that the Council costs associated with the processing and consideration of the intensive farming land use applications are as follows:

- Minimum cost of \$117.49,
- Median cost of \$1,204.00,

- Mean cost of \$1,495.34 and
- Maximum cost of \$5,020.70.

In order to address (Question 2), KapAg Ltd (2018)⁷⁷ analysed the costs associated with application for intensive farming land use activities and the economic impact of mitigations to reduce nitrogen leaching likely to be incurred as a result of the recommended/ required improvements in the resource consent process. KapAg Ltd (2018) is a small scale study of on-farm economic impacts associated with Council's intensive land use consenting and policy framework and focuses on four dairy farms in the Tararua District and two arable farm systems in the Rangitikei District.

KapAg Ltd (2018) selected suitable farm systems, determining the changes needed in those systems for them to apply to the Council for a consent and then evaluating the costs of introducing those changes. The farms were not existing farms. Instead each model farm was created around a particular farm system. The models were synthesised from many different farms known to exist in the region and adjusted to represent dairy farming systems that can be found in the Tararua District and arable farms in the Rangitikei District. These districts were selected because that is where most of the unconsented farms can be found.

The following is a summary of KapAg Ltd (2018).

“Farm Model: Self-contained dairy farm

The farm started with leaching 32 kgN/ha and was modified to be leaching only 18 kgN/ha, a reduction of 44%. These changes reduced the expected farm profit from \$1,627/ha to \$629/ha, a drop of over 60%. The return on assets dropped from 5.3% to 2.0%. The self-contained farm model has had to reduce its labour but it has surplus pasture available for alternative landuses and therefore its adaptability might increase overall. Nitrogen conversion efficiency has increased to 66% and so it can be expected to be more sustainable in its use of natural resources. However, its profitability is not enough to support the level of debt found on many farms in this region. The return on assets is insufficient to attract off-farm investment, should that be required for future improvements. Unless farms like this have less than half the amount of debt as the model farm, they will not survive the changes required to address Table 14.2 .

Farm Model: Low-intensity dairy farm

The farm started with leaching 42 kgN/ha and was modified to be leaching only 17 kgN/ha, a drop of 60%. These changes reduced the expected farm profit from \$1,848/ha to \$1,064/ha, a drop of over 40%. The return on assets dropped from 6.4% to 3.7%.

The low intensity farm model has not reduced its labour and it has surplus pasture available for alternative landuses. It's adaptability might increase overall. Nitrogen conversion efficiency has increased to 56% and so it can be expected to be more sustainable in its use of natural resources. However, its profitability is not enough to pay tax and support the level of debt found on many farms in this region. The return on assets is insufficient to attract off-farm investment, should that be required for future improvements. Unless farms like this can reduce the amount of debt below that of the model farm they will not survive the changes required to address Table 14.2 .

Farm Model: Moderate-intensity dairy farm

⁷⁷ KapAg Limited, (January 2018) An impact assessment of One Plan policies and rules on farming systems in the Tararua District and the Manawatu Wanganui Region.

The farm started with leaching 54 kgN/ha and was modified to be leaching only 17 kgN/ha, a drop of almost 70%. These changes reduced the expected farm profit from \$2,283 /ha to \$1,745/ha, a drop of almost 25%. The return on assets dropped from 7.0% to 5.0%.

The moderate intensity farm model has not reduced its labour but it has had to increase its overall pasture utilisation. Its adaptability might therefore decrease overall. Nitrogen conversion efficiency only increases slightly to 27% and so there is not much improvement expected in the sustainable use of natural resources. However, the profitability of this farm is sufficient to support its expected level of debt and it has sufficient return on assets to provide financial security for its owners.

Farm Model: Irrigated high-intensity farm

The farm started with leaching 64 kgN/ha and was modified to be leaching only 17 kgN/ha, a drop of over 70%. These changes reduced the expected farm profit from \$2,456/ha to \$1,850/ha, a drop of 25%. The return on assets dropped from 6.8% to 4.8%. The irrigated high intensity farm model has not reduced its labour but it has had to increase its overall pasture utilisation. Its adaptability might therefore decrease overall. Nitrogen conversion efficiency only increases slightly to 28% and so there is not much improvement expected in the sustainable use of natural resources. However, the profitability of this farm is sufficient to support its expected level of debt and it has sufficient return on assets to provide financial security for its owners.

Farm Model: Arable farm with livestock

Both the arable farms are larger than the typical farms to be found in the Manawatu. The changes required to meet Table 14.2 in the One Plan are to dispose of all the livestock and harvest as silage and hay the permanent pasture and ryegrass green crop. The area in barley had to be reduced from 100ha to 70 ha. Over a whole year 1,399 tonnes of pasture dry matter was made and exported from the farm. The farm started with leaching 39 kgN/ha and was modified to be leaching only 24 kgN/ha, a drop of almost 40%. These changes decreased the expected farm profit from \$915/ha to \$477/ha, a decrease of 47%. The return on assets dropped from 2.6% to 1.3%.

The arable with livestock farm model has not reduced its labour but it has become dependent on the supplementary feed market. Its adaptability might therefore decrease overall. Nitrogen conversion efficiency has increased to 89% and so natural resource sustainability has also increased. The profitability of this arable farm is insufficient to support its expected level of debt and it has insufficient return on assets to provide much financial security for its owners.

Farm Model: Arable farm with potatoes

The changes required for meeting Table 14.2 in the One Plan included reducing the amount of nitrogen fertiliser going on to the potato rotation (332 kgN/ha) and better timing fertiliser applications to align with crop requirements. A new rotation growing barley for grain was introduced to replace some of the area originally in a high nitrogen feeding crop (potatoes). To reduce drainage from excess irrigation a moisture probe was installed and a water budget put in place. This reduced the amount of water needed to 380mm/yr.

The farm started with leaching 60 kgN/ha and was modified to be leaching only 25 kgN/ha, a drop of almost 60%. These changes reduced the expected farm profit from \$3,192/ha to \$1,152/ha, a drop of over 64%. The return on assets dropped from 8.2% to 3.0%. The arable with potato farm model has some reduction in casual labour and it has had to increase the range of crops being grown. Its adaptability might therefore increase overall. Nitrogen conversion

efficiency has increased to 94%, a big improvement in the sustainable use of its natural resources. However, the profitability of this farm is insufficient to support its expected level of debt and it has insufficient return on assets to provide financial security for its owners.

Costs of Consents

There are expected to be four consent application pathways for farmers:

- An existing farm may already be able to meet the conditions and standards of a controlled activity in the One Plan. That means that it can show that it will be able to meet the cumulative nitrogen leaching maximum in Table 14.2 of the One Plan and has appropriate mitigation of waterway contamination from phosphorus, sediment and E.coli. The application will need to provide enough evidence from Overseer® to support the Council approving a controlled consent. The main costs will be for an agricultural consultant to describe the existing farm system and carry out a standard AEE. This should show that the farming business can operate within the effects anticipated by the One Plan. The total cost for a consent application is likely to be about \$8,200.
- Some existing farms may be able to meet the leaching caps in Table 14.2 of the One Plan and mitigate any potential waterway contamination from phosphorus, sediment and E.coli but their mitigations cannot be calculated using Overseer. These will require extra preparation work to quantify the benefits of these mitigations. Such farms will need to apply for a restricted discretionary consent that shows calculations of the effectiveness of their mitigations. Generally the size of the benefits from these mitigations will be quite site specific and so information about the site as well as the mitigation will need to be provided. For example, the use of high carbon ditches to intercept nitrogen leaching will depend on the hydrology of the site. An agricultural consultant working with a farmer can provide the Council with this information with the support of industry scientists. The total cost for a consent application is likely to be about \$12,500.
- Farms that can meet the nitrogen leaching caps in Table 14.2 within four years will need to address through their AEE the effects of the four year delay in meeting the Table. The additional costs for these farmers are generated from needing the advice of a professional ecologist and obtaining information about the cumulative effects for the catchment. The total cost for a consent application is likely to be about \$22,000.
- The farms that are not anticipated to meet the nitrogen caps in Table 14.2 will need to apply for a restricted discretionary consent and prepare a very robust AEE. They will need to employ technical expertise to show that their effects on the environment are less than minor. The total cost for a consent application is likely to be about \$25,500. It is probable that these applications could be publically notified and an additional deposit for this will need to be made to Horizons. The deposit may be around \$20-30,000 in addition to these costs.

These costs could vary by 20% either up or down depending upon the complexity of the work involved.”

The Council processing costs (Question 1) are not considered to be unreasonable, in comparison to other types of resource consents related to intensive farming land uses such as water take, or works in the

beds of lakes and rivers and discharge onto land. However, when considered in combination with the findings (Question 2) of KapAg Ltd (2018) for intensive farming land uses that do meet the CNLMs in Table 14.2, will need to apply for a restricted discretionary activity resource consent and prepare a robust AEE. Those Applicants will need to employ technical expertise in order to adequately assess their adverse effects on the environment; KapAg Ltd (2018) estimates that the cost of applications for land uses in this situation is likely to be in the order of \$25,500 ± 20%. If these applications are publically notified, that could add an additional \$20-30,000, putting the total cost estimate at \$40-60,000. Taking into consideration that many of the remaining un-consented existing farms in the Upper Manawatu are anticipated to exceed the CNLMs in Table 14.2 (estimated to be 130 - 140 dairy farms) and therefore require a resource consent under Rule 14-2, this will place a large cost on that sector. Likewise, commercial vegetable growing in the Horowhenua are currently anticipated to be sufficiently above the CNLMs in Table 14.2 that compliance with the limits is unobtainable, without farm system change, then this sector will also receive a large cost associated with seeking resource consent; however, this is currently unquantified.

In order to address (Question 3) the impact of the intensive farming land use provisions on the community, Landcare Research (2016)⁷⁸ estimated and assessed the economic cost to existing intensive farming land use activities of implementing Rules 14-1 and Rule 14-2. The estimation of costs involved of determining the changes in materials and services required for each existing farm with a resource (land use) consent to perform agreed mitigation actions, establishing the prices of these materials and services and calculating the costs and savings associated with the mix of agreed mitigation actions to estimate the net cost. Landcare Research (2016) estimated that:

- The mean and median estimated costs per hectare for consented farmers were \$20.46 and \$4.85, respectively.
- The mean and median estimated costs per kilogram of nitrogen reduced were \$9.76 and \$2.84, respectively.
- Consented farms able to meet Rule 14-1 incurred lower costs on average than consents meeting Rule 14-2. Consents meeting Rule 14-1 (controlled activity consents) were estimated as having a median per hectare cost of \$0.26 and consents meeting Rule 14-2 (restricted discretionary consents) were estimated as having a median per hectare cost of \$5.36.
- The Coastal Rangitikei, Mangapapa and Waikawa water management sub-zones were the comparatively 'low' cost sub-zones and the Lake Horowhenua and Mangatainoka water management sub-zones were the comparatively 'high' cost sub-zones, though overall, costs in general were low for all sub-zones.

7.2.1 Cost conclusion

Landcare Research (2016) estimated that applicants meeting Rule 14-1 (controlled activity consents) were estimated as having a median cost of \$0.26/ha and consents meeting Rule 14-2 (restricted discretionary consents) were estimated as having a median cost of \$5.36/ha. Given that the CNLMs are currently not achievable on most farms using GMPs, then most existing farms that are operating without a land use consent will be classified as a restricted discretionary activity. This will incur a significantly higher cost compared to those applicants whom do not exceed the CNLMs. Therefore, the intensive farming land use provisions are inefficient in achieving the water quality objectives of the RPS. In combination with the Overseer assessments presented in section 4.8, it can be shown that the CNLMs

⁷⁸ Landcare Research (May 2016) Impact of the Horizons One Plan on farmers and the agricultural community. Prepared for Horizons Regional Council. 38p

in Table 14.2 are not currently *achievable on most farms using good management*, both from a financial viability or modelling perspective.

8 Observations and Recommendations

This section relates to specific parts of the One Plan that are operating ineffectively and or inefficiently.

- The Regional Plan does not currently fully give effect to the Regional Policy Statement, particularly Policy 5-8 and therefore Objectives 5-1 and 5-2. Policy 14-5 and 14-6 and Rules 14-1 – 14-4 does not give effect to Policy 5-8 which requires the nitrogen leaching maximums to “achieve the strategies for surface and ground- water quality set out in the RPS”, be “achievable on most farms using good management practices” and provide appropriate timeframes where change is required.
 - The CNLMs in Table 14.2, as established by Policy 14-5(c), in order to give effect to Policy 5-8(a)(i), insufficiently reduce in-river nitrogen in order to achieve the strategies for surface water quality set out in Policies 5-2 to 5-5 and the strategy for groundwater quality in Policy 5-6. A nitrogen reduction ‘gap’ remains between what year-20 CNLMs will achieve in-river and what is required by the water quality targets in order to provide for the water management values. This is uncertain when considering that Schedule E targets are not time-bound.
 - The CNLMs in Table 14.2, as established by Policy 14-5(c) in order to give effect to Policy 5-8(a)(i), are not achievable on most farms using GMPs.
 - Further, the dates in Table 14.1 has since passed and are now superseded.
 - It is unlikely that 4 years is an appropriate timeframe where large change (reduction) is required to meet the CNLMs. Regardless of this, the 4-year exception in Policy 14-6(b) has since passed (2014 for dairy and 2017 for non-dairy farms)
 - Massey University has estimated that a change in Overseer version may account for a 30% - 60% increase in year 1 CNLMs in Table 14.2.
 - Notably absent from the One Plan is a process for reviewing and amending CNLMs in Table 14.2 following a update in Overseer, or other progression in the science on which the nutrient management framework is based.
 - Horticulture is estimated to leach nitrogen below the root zone at rates which exceed Table 14.2 CNLMs and at a rate which reduction to the CNLMs is beyond what is achievable. Policy 5-7 requires that horticulture is regulated because horticulture makes “a significant contribution to elevated contaminant levels in the targeted water management sub-zones”. Policy 14-5 and 14-6, and Rules 14-1 – 14-4 is an inefficient and ineffective framework for managing diffuse nutrient discharges from commercial vegetable growing intensive farming land use activities.
 - Rule 14-4 is ineffective in implementing Policy 5-8(a)(iii) which requires that “new intensive farming land use activities must be regulated throughout the Region to achieve the nitrogen leaching maximums specified in Policy 5-8(a)(i)”. Policy 5-8(a)(iii) requires that the regional plan includes rules which do not authorise intensive farming land use activities to exceed the maxima in Table 14.2. Policy 14-5 and Rule 14-3 give effect to this RPS policy direction. However, it is unclear whether this policy intention aligns with a resource consent (RDA) process, which lists a matter of discretion to consider the extent of non-compliance with the CNLMs. The same reasoning applies to Policy 5-8(a)(ii) in relation to existing intensive farming land uses, however there are two situations listed in Policy 14-6 that provide for an existing intensive farming land use to exceed CNLMs.
 - The following two issues raise issues of fairness and the definition of new farms:

- Policy 14-5(b) requires that intensive farming land use activities, that are established after the Plan has legal effect⁷⁹ in all WMSZ's across the Region are regulated. This is inefficient because there is no provision in the regional plan allowing for the transition from new to existing farms, following a resource consent period.
- Following from the above point, intensification is not regulated in the One Plan framework. Compared to conversions between land-use types, which are regulated as *new* land uses. Theoretically, a situation exists where an *intensification* of land use could contribute a higher load of contaminants into water than a *conversion* would.
- An observation made in the One Plan, which is not restricted to land use and nutrient management, is the use of directive and prescriptive structuring. In light of recent case-law *Davidson Family Trust vs Marlborough DC* [NZHC 52] and the inability to undertake an 'over-all broad judgement' subject to Part 2, the consistent wording and structure of the One Plan provides no consideration of wider matters such as timeframes, viability and implications. Taking into account the above noted absence of enabling policies in the RPS, as far as it relates to land use and nutrient management, the only objectives of the Regional Plan policies are to safe-guard water management values, to maintain or enhance water quality and to provide for Te Ao Māori. It is unclear whether this was the policy intention of the One Plan.
- There are no policies that manage the integration of intensive farming land use activities and infrastructure and physical resources of regional and national importance. There are no policies that provide for overall balancing when permitting farms to exceed the CNLMs would better achieve the water quality strategies i.e. removing point source discharges.
- With extensive (non-intensive) sheep and beef farms occupying 51% of the Region, or 1,144,510 hectares (Ha), it is worth questioning whether non-intensive sheep and beef meet the test of Policy 5-7 (specifically [b]) and are required to be regulated because of the contribution to elevated contaminant levels. This point is supported by the Environment Court decision on the One Plan, in summary at point [J]. Policies 14-5 and 14-6 and Rules 14-1 to 14-4 are not an effective and efficient framework to manage non-intensive sheep and beef (Dr J Roygard, *pers. comms.*)
- Definitions in the One Plan glossary have led to unintended consequences in relation to intensive farming land use activities. Examples include;
 - Absence of a depth, or area trigger value for the definition of irrigation in relation to intensive sheep and beef; and
 - The definition of cropping does not explicitly state whether cut and carry / grass hay export off-farm is included or excluded from the definition;
- The management of diffuse N-losses from intensive farming land uses is ineffective in the following areas:
 - The One Plan is silent on groundwater quality standards (or limits) or values;⁸⁰
 - Wai tapu, tauranga waka and mahinga kai values from the NPSFM are absent from the One Plan. Values including, but not limited to, mauri and mahinga kai are required under the NPSFM. The Regional Plan does not currently fully give effect to the NPSFM 2017; this requires further assessment, but is beyond the scope of this monitoring report.
 - Sources of human drinking water is currently not integrated into the intensive farming land use provisions other than the presence of WMZ values and is currently inefficient to assess during

⁷⁹ The Plan has legal effect in the case of dairy farming from 24 August 2010 and for commercial vegetable growing, cropping and intensive sheep and beef it has legal effect from 9 May 2013.

⁸⁰ For example as is present in One Plan Schedules B and E, for surface water.

a resource consent process. Care will need to be exercised to not duplicate the NESSHDW. The NESSHDW is currently being reviewed by MfE.

8.1 Tāngata whenua involvement

Council is currently consulting with tāngata whenua in target catchments and will continue to work with tāngata whenua through-out the plan evaluation process and any resulting change process. Tāngata whenua involvement in resource management is vital and is being undertaken by Council parallel to this monitoring.

9 Appendix 1 – Relevant sections of the One Plan (2016)

- Chapters 2, 5, 14 One Plan; and
- One Plan Glossary; and
- Schedule B and E One Plan.



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