

**MEMORANDUM**

**Job 10690**

**To:** Darren de Klerk (Central Hawke's Bay District Council)

**From:** Sam Morris (Lowe Environmental Impact)

**Date:** 14<sup>th</sup> of April 2021

**Subject:** T:C.14b Drummond Overseer & Planning Assessment

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This memo supplements the 'Existing Farming System' (LEI, 2021:T:B.13)<sup>1</sup> and 'Existing/Future Farming System and OverseerFM Analysis' (LEI, 2021:T:C.14a)<sup>2</sup> memos. This summarises relevant objectives, policies, and rules from the Tukituki Plan Change 6 (PC6), a plan change from the Hawke's Bay Regional Resource Management Plan (RRMP), relating to the land application of wastewater from the Takapau Wastewater Treatment Plant (WWTP) to a property owned by the Drummond family. It also outlines the proposed land use consenting activity for this.

**HAWKE'S BAY REGIONAL RESOURCE MANAGEMENT PLAN (RRMP)**

The Regional Resource Management Plan (RRMP) can be described as *'the most significant resource planning document for all resource users in Hawke's Bay. It includes the Regional Policy Statement (RPS) and sets out a policy framework for managing resource use activities in an integrated manner across the whole of the Hawke's Bay region. The RRMP was prepared under the Resource Management Act 1991. The RRMP also incorporates all plan changes that have since become operative.'*<sup>3</sup> This document overarches all policy matters relating to the land use consent and acts as the greatest regulatory document governing land application of wastewater to which the Tukituki Plan Change 6 is a part of.

**TUKITUKI PLAN CHANGE 6 (PC6)**

The Tukituki Plan Change 6 (PC6)<sup>4</sup> is one of these plan changes incorporated within the RRMP, signed on the 21<sup>st</sup> of September 2015, becoming operative from the 1<sup>st</sup> of October 2015. This plan change is specific to water quality and quantity issues for all properties and land uses within the Tukituki River catchment. Although this plan change is a component of the larger RRMP, the rules, policies and objectives outlined within PC6, have greater authority than those outlined within the overarching RRMP.

**OBJECTIVES AND POLICIES**

There are a series of objectives and policies relating to land management and wastewater management detailed within Tables 1 and 2. Objectives briefly summarise the aspirations of what PC6 aims to achieve, with policies outlining how these will be achieved in detail. Relevant objectives for the land application of wastewater are included within Table 1, with Table 2 highlighting relevant policies. Due to these policies being extensive in content, only the heading

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<sup>1</sup> LEI. (2021:T:B.13). *Existing Farming System*

<sup>2</sup> LEI (2021:T:C.14a). *Existing/Future Farming System and OverseerFM Analysis*

<sup>3</sup> HBRC. (2021). *Regional Resource Management Plan*. Sourced: <https://www.hbrc.govt.nz/documents-and-forms/rrmp/>

<sup>4</sup> HBRC. (2015). *Plan Change 6 to Hawke's Bay Regional Resource Management Plan: Tukituki River Catchment*. (HBRC Report No. SD 15-08-4767).



names of these have been included for simplicity. For the full policy description, please see Section 5.9.2 of PC6.

**Table 1: PC6 Objectives for Land and Wastewater Management as they relate to discharges from the Takapau community**

No	Objective	Comments
OBJ TT1	<i>To sustainably manage the use and development of land, the discharge of contaminants including nutrients, and the taking, using, damming, or diverting of fresh water in the Tukituki River catchment so that: (a) Groundwater levels, river flows, lake and wetland levels and water quality maintain or enhance the habitat and health of aquatic ecosystems, macroinvertebrates, native fish and trout; ... (f) The taking and use of water for primary production and the processing of beverages, food and fibre is provided for.</i>	Community wastewater is sustainably reused through irrigation supplementing existing freshwater irrigation and fertiliser use, enabling nutrients once derived from the land and would previously be discharged directly to a surface water body, to be beneficially returned to the land, increasing pasture growth and farm productivity.
OBJ TT2	<i>Where the quality of fresh water has been degraded by human activities to such an extent that Objective TT1 is not being achieved, water quality shall not be allowed to degrade further and it shall be improved progressively over time so that OBJ TT1 is achieved by 2030.</i>	A land discharge will see nutrients directly removed from entering a surface water body and pass through land first, with land essentially acting as a filter, removing nutrients through plant uptake.
OBJ TT4A	<i>To recognise that industry good practice for land and water management can assist with achieving Objectives TT1, TT2 and TT4.</i>	With the inclusion of wastewater irrigation to supplement pre-existing irrigation, careful management practices will be adopted by the landowner.
OBJ TT5	<i>Subject to Objectives TT1, TT2 and TT4, to enable the development of on-farm storage and Community Irrigation Schemes that improve and maximise the efficient allocation and efficient use of water.</i>	Wastewater flows are continuous meaning storage will be required, when irrigation cannot occur, reducing discharges to the river. This scheme is to service the community of Takapau and aims to maximise the efficient use of water.

**Table 2: PC6 Policies for Land and Wastewater Management**

No	Policy	Comments
POL TT1	<i>Surface water quality limits, targets and state indicators</i>	The Drummond property is located within Water Management Zone 3 and will therefore need to abide by surface water parameters outlined within Table 5.9.1A and 5.9.1B at the discharging location.
POL TT3	<i>Receiving environment limits for point source discharges</i>	The continuation of a partial river discharge (point source) when storage is at capacity and soil conditions do not permit irrigation, means that this policy becomes relevant. Here, Tables 5.9.1A and B must be met, with limits around QMCI, ScBOD <sub>5</sub> , POM, TNH <sub>3</sub> -N and water clarity all being included.
POL TT3A	<i>Managing existing community wastewater discharges</i>	The existing wastewater discharge is to the Makaretu River, however a discharge land to be used for



		increased pasture production may be considered a better alternative.
POL TT4	<i>Implementing the nitrogen limits and targets</i>	The Drummond property will need to conform with Table 5.9.1D to be considered a permitted activity with an updated FEMP and OverseerFM model provided.
POL TT5	<i>Implementing the phosphorus limits and targets</i>	The Drummond property will need to conform with DRP limits outlined in Table 5.9.1B. A Phosphorus Management Plan will need to be produced within the accompanying FEMP.
POL TT6	<i>Decision-making criteria – Use of production land</i>	This policy differs to a traditional community irrigation scheme in that water is not being applied to multiple properties to increase production, but rather a single community containing multiple wastewater sources, being discharged to a single location. From this, limits outlined within Table 5.9.1B need to be met.

## RULES

From the outlined Objectives and Policies above are a series of rules relating to farming activities and production land use. These activity classes are Permitted, Restricted Discretionary and Non-complying. Each of these activities are discussed with reference to existing farming operations and proposed future operations involving wastewater application. A summary of each of these rules is included within Table 3.

**Table 3: PC6 Rules for Production Land Use**

	<b>Activity</b>	<b>Classification</b>	<b>Comments</b>
TT1 Production land use	The use of production land on farm properties or farming enterprises in the Tukituki River catchment pursuant to s9(2) RMA.	Permitted	Please see Section 6.9.1 of PC6 – Land Use and Water Quality
TT2 Production land use	The use of production land on farm properties or farming enterprises pursuant to s9(2) RMA within the Tukituki River catchment that does not comply with Rule TT1.	Restricted Discretionary	
TT2A Production land use	The use of production land pursuant to s9(2) RMA within the Tukituki River catchment that does not comply with Rule TT2.	Non-complying	

### **Permitted Activity (PA):**

For a permitted activity, the property must comply with Table 5.9.1D (PA row of Table 4) of PC6. This outlines permitted nitrogen losses (kg) per ha for each LUC class over a rolling four year period. The proposed land application area owned by the Drummonds (45 Burnside Road + 4292 SH2) is LUC 2 and 3, with the large majority being LUC 3. Therefore, in order to qualify as being a PA, the property must have an N loss of 24.8 (25) kg N/ha. Leaching below these rates per LUC class does not require resource consent.

**Table 4: PC6 N Loss Limits per LUC (kg N/ha)**

	LUC 1	LUC 2	LUC 3	LUC 4	LUC 5	LUC 6	LUC 7	LUC 8
PA	30.1	27.1	<b>24.8</b>	20.7	20	17	11.3	3
RDA	39.1	35.2	<b>32.2</b>	26.9	26	22.1	14.7	3.9

**Restricted Discretionary Activity (RDA):**

If the property does not comply with Table 5.9.1D (PA row of Table 4) but is within 30% of these values (RDA row of Table 4) then Rule TT2 states that the property will require resource consent and will be classified as a Restricted Discretionary Activity. For the land application area to operate as a RDA, N losses need to be no higher than 32.2 (32) kg N/ha over a rolling four year period.

**Non-Complying Activity (NCA):**

If a property does not meet either the PA or RDA limits over a rolling four year period, it is deemed to be non-complying and will require resource consent. A non-complying activity is harder to get consent for than a restricted discretionary activity.

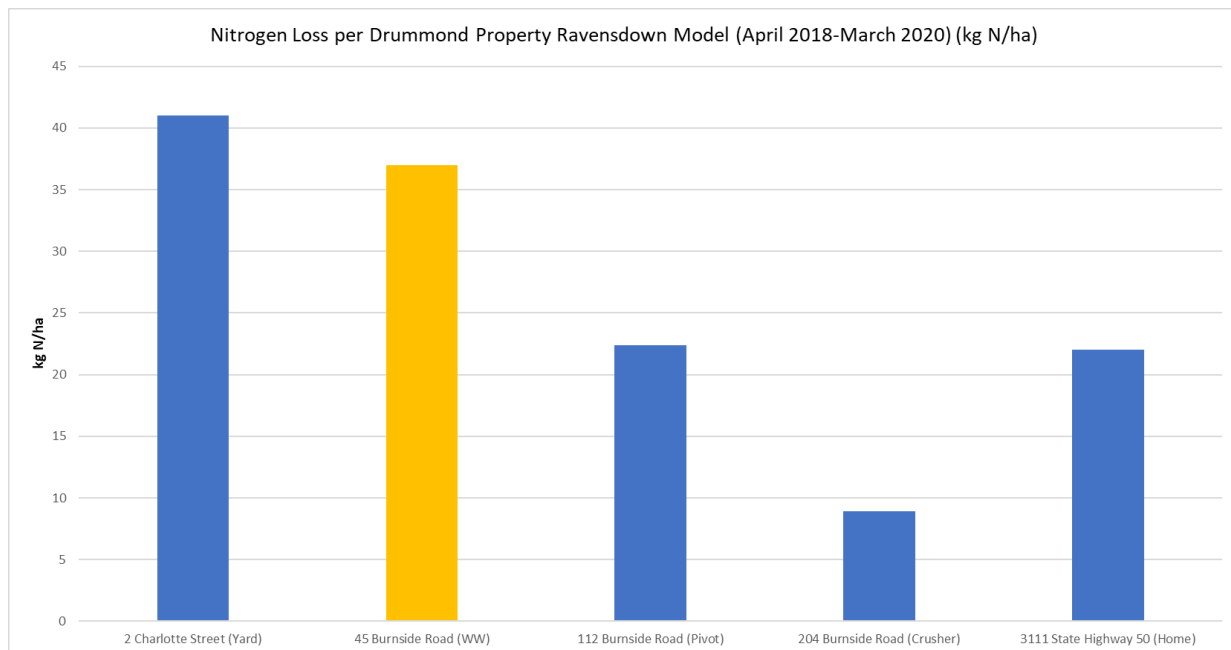
**RAVENSDOWN OVERSEERFM MODEL**

Part of PC6 coming into effect was the requirement for a Farm Environment Management Plan (FEMP) to be produced by the 1<sup>st</sup> of June 2018, with the FEMP becoming operative from the 1<sup>st</sup> of June 2020. Part of the FEMP process was the requirement of a nutrient budget to be produced outlining N losses for all land owned and managed as a single enterprise. A nutrient budget was prepared by Ravensdown and pre-dates investigations relating to wastewater application. This model provides a good historical summary of N losses across Drummond owned land and provides a baseline model to which future farm systems can be compared.

Land leased by the Drummonds was not included within this FEMP or the nutrient budget, with the approach taken that both the FEMP and nutrient budget were solely land owned by the Drummonds.

A summary of the baseline modelling with regards to PC6 is as follows:

- An OverseerFM model was produced for the Drummonds by Colin Tyler (Ravensdown) for the period of April 2018 to March 2020.
- This incorporates 5 land parcels as outlined within (LEI, 2021:T:B.13).
- The collective N loss per ha for these properties was 26 kg N/ha, qualifying as a **restricted discretionary activity**.
- As this cumulative N loss is a weighted average, some properties contain N losses greater and less than this 26 kg N/ha (Figure 1).
- Of these five properties, only one (45 Burnside Road) is proposed to receive wastewater. This property had a calculated N loss of 37 kg N/ha (Figure 1). On its own, this property is considered to be **non-complying with Table 5.9.1D and Rule TT2**.



**Figure 1: Nitrogen Losses (kg N/ha) for each Drummond Property**

Figure 1 outlines N losses for each block included within the existing OverseerFM model, collectively resulting in a whole farm N loss of 26 kg N/ha. The yellow bar represents the proposed parcel of land proposed to be irrigated with wastewater, which has a baseline N loss of 37 kg N/ha for the period April 2018-March 2020.

### **LOWE ENVIRONMENTAL IMPACT OVERSEERFM MODEL**

As part of the investigation work into using the Burnside property for wastewater application, an updated nutrient balance has been prepared. This enabled better understanding of current N losses, prior to wastewater application commencing and allowed the development of wastewater application scenarios. A summary of this modelling is as follows:

- Over the past year, the Drummonds indicated they had been more intensive regarding cropping. This updated scenario included winter grazing and cultivation of leafy turnips, as well as two cultivation events over the reporting year.
- Following site investigations, an updated soil map was used differing slightly to Smap soil boundaries of previous modelling. This soil map is discussed within (LEI:2020:T:B.15)<sup>5</sup>.
- Due to these factors, especially the winter grazing of leafy turnips, N losses for this property increased from **37 kg N/ha to 80 kg N/ha**, meaning it was still a non-complying activity, but with greater losses. This 80 kg N/ha includes existing fertiliser and freshwater irrigation use.
- The variation in N losses from the baseline to the current non-wastewater model are entirely due to the type, timing and defoliation method of crop rotations (particularly the leafy turnip crop).
- After considering various wastewater irrigation scenarios, if the same farming system is used, the inclusion of wastewater to 45 Burnside Road (and substituting fertiliser and freshwater irrigation use) increases N losses from **80 kg N/ha to 95 kg N/ha**.
- Assuming N losses on the remaining four properties were to remain the same, inclusion of this now 80 kg/ha loss property from the Burnside Road property increases the **whole farm N loss from 26 kg N/ha to 35 kg N/ha. This means collectively all five**

<sup>5</sup> LEI (2020:T:B.15). *T:B.15 Evaluation of Soils Receiving Takapau Wastewater.*



**properties would be a non-complying activity, rather than a restricted discretionary activity.**

As mentioned within LEI (2021:T:B.13) and LEI (2021:T:C.14a), the Drummonds lease a neighbouring land parcel from Mike Dalby of 18.9 ha at 4292 SH2, adjacent to the 45 Burnside Road property. This land parcel is also proposed to receive wastewater and has been included within investigations. Due to being leased, this property was not included within the Ravensdown model. Details relating to this block are as follows:

- This parcel is primarily run as a cut and carry block of ryegrass where all growth is exported off farm as silage.
- Estimated N losses for this leased property are low at 10.4 kg N/ha, with this increasing to 15.3 kg N/ha following wastewater application to a proportion of the property.
- Due to being leased, we have not been able to access an updated Overseer model for this property to date, therefore these N losses cannot be compared to an existing model, however these losses are expected to be low.
- Discussions with Mike Dalby need to be made regarding how to deal with the land use consent for this block, however given this is already currently low, it is likely that this block will be below the permitted activity N loss from PC6 and alone will not need a land use consent.

**RECOMMENDATIONS (PROPOSED CONSENTING OPTION)**

As shown in LEI (2021:T:B.13) and LEI (2021:T:C.14a), the Drummonds operate over a number of properties land north of Takapau. Owned land has been included within the same FEMP and OverseerFM budget, despite having differing addresses. Only one of these parcels is proposed to receive Takapau's wastewater.

Updated information from the Drummonds and inclusion of wastewater for this property has substantially increased farm N losses, confirming the activity status with regards to land use underlined in Table 5.9.1D and Rule TT2. A summary of the preferred consenting option is as follows:

- The proposed land use consenting option for wastewater application to 45 Burnside Road is to **remove this property from the upcoming FEMP and OverseerFM renewal. This would see the remaining four properties treated separately to the 45 Burnside Road property.**
- By removing 45 Burnside Road, assuming the farm system remains the same on remaining properties, the total farm N loss across the remaining four properties will **reduce from 26 kg N/ha to 24 kg N/ha** and is now considered to be a **permitted activity** and does not require resource consent.
- The removal of this non-complying block allows the wastewater application to be addressed and monitored separately, without influence from other land parcels owned by the Drummonds.
- Due to involving the land application of a community wastewater scheme which previously discharged to a surface water body, proposing a non-complying activity is likely to be acceptable (securing of a non-complying activity consent is likely), although with appropriate management.
- Due to being non-complying, and with assistance of appropriate management, **a target N loss for the land use consent for this single block at 45 Burnside Road property will be 95 kg N/ha.**
- It is possible that while separate ownership, the Burnside Road property and the neighbouring Darby property could be used collectively for wastewater. Separate land



use consenting requirements would apply, but a **combined discharge resource consent could be used.**

- With addition of irrigation, the neighbouring Darby property has a sufficiently low nitrogen leaching rate to maintain its status as a **Permitted Activity and no land use consent will be required.**

Table 5 shows the estimated N losses for the two properties to receive wastewater and the collective N loss between these if they were to be combined.

**Table 5: N loss Summary for 45 Burnside Road and 3292 SH2 Properties (kg N/ha)**

	<b>45 Burnside Road (23.5 ha)</b>	<b>4292 SH2 (18.9 ha)</b>	<b>Combined (42.4 ha)</b>
Ravensdown (Apr 2018-Mar 2020)	37	-	-
LEI (Apr 2019-Mar 2021)	80	10.4	49
WW Irrigated (Worst Case)	95	15.3	60

If you have any questions, please do not hesitate to get in contact.

Yours sincerely,

### **Low Environmental Impact**

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