

19 November 2021

Paul Barrett
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Dear Paul

RE: Summary of Plantation Dairies Tranche 2 proposal

As requested, below is a summary of the Plantation Dairies Tranche 2 FEMP proposal.

Introduction

Plantation Road Dairies Ltd (Plantation Dairies) is seeking Tranche 2 water sufficient to irrigate 412 ha of dairy support land. Approximately 80% of the farm sits with the DIN limited Kahahakuri catchment and requires resource consent under the Tukituki Catchment Plan. Farms within DIN limited catchments are required to employ industry good management practice and reduce nitrogen (N) loss over time.

A detailed Farm Environment Management Plan has been developed that represents the planned farm system utilising the additional irrigation water. Gross N loss from the proposed farm system is modelled to be 23% less than the 2019-20 farm system.

Between the 2019-20 year and when the proposed farm system is enacted, the area farmed is expected to change. Considering all land farmed in either period, a reduction of 11% or 4,421 kg N/y has been conservatively calculated.

Plantation Dairies Ltd – the current farm system

Plantation Dairies operate a 1077 ha farm consisting of 465 ha of dairy platform, 578 ha of support blocks and 34 ha of riparian strips, tracks and sheds etc. Of this approximately 200 ha is within the Waipawa catchment with the remaining 877 ha sitting within the Kahahakuri catchment.

At 635 ha, the majority of the farm is considered Land Use Capability (LUC) class 1. The remaining area is a mix of classes 2, 3, 4 and 6. All except the 5.4 ha of class 6 land is considered suitable for arable cropping.



Of the 465 ha dairy platform, 377 ha is irrigated under pivots with a further 37 ha being irrigated using movable sprinklers. A further 106 ha of support land is irrigated under a pivot.

The 2019-20 farm system utilised 214 ha of crops and 3450 tonnes dry matter (t DM) of imported supplement and farm grown pasture to support the production system. An average of 154 kg N/ha and 36 kg P/ha was applied in fertiliser over the productive area.

Plantation Dairies Limited – the proposed farm system with Tranche 2 water

The proposed farm system differs from the 2019-20 farm system as follows:

- The removal of 170 ha land from dairy support unit and the addition of 89 ha of dairy support land giving a net reduction in farmed area of 81 ha.
- The addition of 264 ha of irrigation under pivots and 42 ha of irrigation under movable sprinklers.
- A reduction in purchased supplements of 800 t DM
- An increase in the area receiving effluent from 342 ha to 588 ha
- A reduction in fertiliser N applied of 37%
- A reduction in fertiliser P applied of 58%
- A reduction in cow numbers of 13%
- A reduction in cropped area of 83 ha
- Utilises and maintains 10% plantain in the dairy platform pastures

Overseer N loss predictions and 5.4.1D leaching rates

The properties 2019-20 predicted nitrogen loss rates using OverseerFM version 6.4.1 are shown in Table 1. Also in Table 1 are the Table 5.4.9 D leaching rates for the property using Overseer 5.4 and Overseer 6 equivalents¹. In the 2019-20 year the property's predicted N loss exceeds the Table 5.4.1D limits however it would likely be within these limits if Table 5.4.1 D was expressed in the same version of Overseer.

Table 1: Overseer predicted N leaching rates for the 2019- 20 farm system vs the Table 5.4.1D leaching rates for the property

2019-20 farm system and Table 5.4.1 D leaching rates	Waipawa catchment N loss (kg N/ha/y)	Kahahakuri catchment N loss (kg N/ha/y)	Whole of property N loss (kg N/ha/y)
2019-20 Farm system (Ovr 6.4.1)	36.3	37.3	37.1
LUC nitrogen leaching rate (Ovr 5.4)	26.3	28.3	27.9
LUC nitrogen leaching rate (Overseer 6 eq)	43.8	47.7	47.0

In the same manner, Table 2 compares the proposed farm system nitrogen loss rates with to the Table 5.4.1 D LUC leaching rates. Comparing the two tables, it is evident that on the 200 ha within the Waipawa catchment a small increase in N leaching is predicted. On a whole of

¹ Calculated using the conversion factors from the Hawkes Bay Regional Council Tukituki Catchment Plan (PC6) Procedural Guidelines – September 2020.

property basis and within the Kahahakuri catchment, N loss/ha is predicted to reduce by 14% and 19% respectively.

Table 2: Overseer predicted N leaching rates for the proposed farm system vs the Table 5.4.1D leaching rates for the property

Proposed farm system and Table 5.4.1 D leaching rates	Waipawa catchment N loss (kg N/ha/y)	Kahahakuri catchment N loss (kg N/ha/y)	Whole of property N loss (kg N/ha/y)
Proposed farm system (Tranche 2) (Ovr 6.4.1)	39.2	30.2	32.0
LUC nitrogen leaching rate (Ovr 5.4)	26.2	27.9	27.5
LUC nitrogen leaching rate (Overseer 6 eq)	43.8	47.0	46.3

Catchment impacts

There is a change in some land parcels and a subsequent reduction in the net farm area between the current and proposed Plantation Dairies farm enterprise. As such, the aggregate impact on the Kahahakuri catchment from the farm system changes associated with all the relevant properties, both acquired, retained and disposed of, needs to be considered. As per Table 3, based on (a) the current N leaching rates of the land being acquired and (b) that the land being disposed of achieves a conservative 10% reduction in N leaching rates under its new management, a net reduction in N loss to the Kahahakuri catchment of 4,421kg N is anticipated.

Table 3: Calculated changes in N loss from all relevant properties

Aggregate fam area in catchment	2019-20 farm systems (kg N/y)	Proposed farm systems (kg N/y)	% change
Waipawa	7361	7903	7%
Kahahakuri	34243	29280	-14%
Total	41604	37183	-11%

Yours sincerely,

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