

Hi Luka

Further to your email dated 1 May 2017, Crusader Meats can offer the following additional mitigations to help improve water quality in the catchment and avoid public notification of the consent application.

Land Area Increase

By the earlier of 1 October 2020 or within 12 months of the lease being renewed, Crusader Meats proposes to increase the available land area for irrigation by 21.7 ha. This will involve fencing and planting the wetland areas in sites H9-H13, to enable these areas to be used for irrigation. (Note: in the further information provided in my letter dated 1 September 2016 the total area of sites H9 to H13 was mistakenly stated to be 28.5 ha.)

As significant investment is needed for this improvement, Crusader Meats proposes to defer this upgrade until the lease has been renewed. In the further information dated 1 September 2016, this upgrade was proposed as to be undertaken before any significant production increase at the site. Now this upgrade will occur regardless of whether production increases. Further, this increased land area will be necessary to meet a proposed reduction in the nitrogen application limit to 150 kg N/ha as described below.

Reduction in Nitrogen Limits

Crusader Meats also proposes to accept new lower nitrogen application limits for grazed pasture such that any increase in production at the site above historic peak levels will require the company to increase the land available for irrigation and/or remove the additional nitrogen applied in wastewater or slurry by harvesting and removing herbage or a crop.

A staged reduction in the nitrogen application rate to grazed pasture from the current 200 kg N/ha to an average of 150 kg N/ha is proposed as outlined in the following draft consent condition.

Proposed Consent Condition Relating to Nitrogen Application

The permit holder must ensure that the net nitrogen loading, defined as the nitrogen loading resulting from the discharge of wastewater and slurry onto and into land, less the nitrogen loading in harvested material removed from the areas to which the wastewater or slurry is applied, does not exceed the following criteria:

	<i>Maximum in any 12-month period</i>
<i>Before the earlier of 1 October 2020 or the date that is 12 months after the date the lease is renewed:</i>	
<ul style="list-style-type: none"><i>Net nitrogen load for any single wastewater or slurry application site</i>	<i>200 kg N/ha</i>
<ul style="list-style-type: none"><i>Average net nitrogen load for all application sites that have received wastewater or slurry</i>	<i>175 kg N/ha</i>
<i>After the earlier of 1 October 2020 or the date that is 12 months after the date the lease is renewed:</i>	
<ul style="list-style-type: none"><i>Net nitrogen load for any single wastewater or slurry application site</i>	<i>200 kg N/ha</i>

<ul style="list-style-type: none"> • Average net nitrogen load for all application sites that have received wastewater or slurry 	150 kg N/ha
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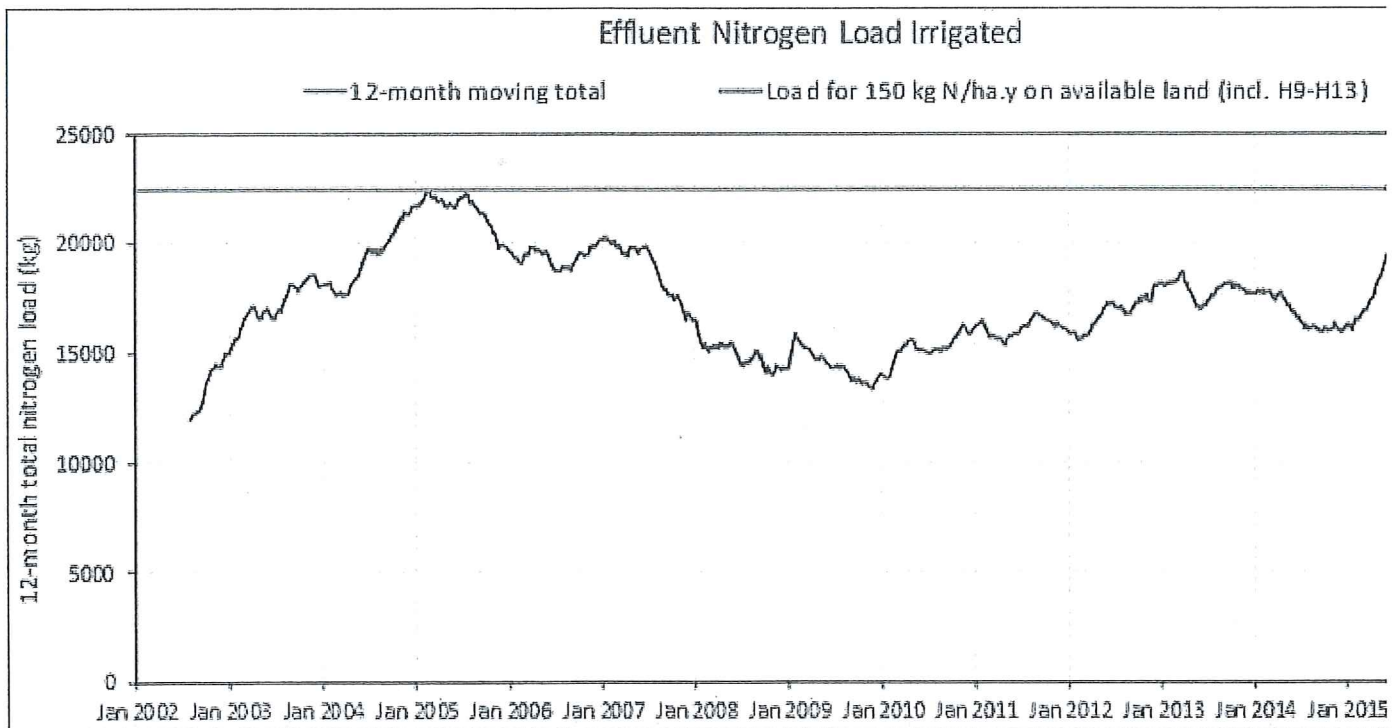
Advice notes:

- The lease referred to above is the permit holder's lease on areas in the Te Hape B and Tiroa E Blocks, which expires on 30 September 2019. The permit holder shall advise the Regional Council of the lease renewal date within 1 month of the lease being renewed.
- The wastewater and slurry application sites referred to above are defined in the Assessment of Environmental Effects dated 22 February 2016 and shown on the attached plan titled Crusader Meats Land Treatment System Site Plan.
- Total nitrogen loadings over and above the grazed maximum loads specified above require harvesting of hay or silage, or some form of crop removal.
- The nitrogen loading in harvested material shall be calculated for each irrigation site by recording the mass of herbage or crop removed and its nitrogen concentration. Only harvested material taken off the farm or fed outside the application sites shall be included in this calculation.
- For each irrigation site, any nitrogen load removed in harvested material shall be recorded as occurring on the date when irrigation commenced on that site in the last irrigation rotation preceding the harvest.

The 175 kg N/ha initial average loading limit with the currently available irrigation land area (127.9 ha) enables Crusader Meats to discharge up to 22,383 kg N/ha/year in wastewater without harvesting any herbage or crops.

The 150 kg N/ha loading limit that takes effect after the lease has been renewed and after sites H9-13 have become operational (giving 149.6 ha total irrigable land area) allows for Crusader Meats to discharge up to 22,440 kg N/ha/year in wastewater without harvesting any herbage or crops.

These annual loadings compare with historical peaks of 22,498 kg in 2005 and 21,837 kg in 2016, as shown in the graph below. Thus, with the proposed new nitrogen discharge limits, any significant increase in nitrogen load above these peaks will require Crusader Meats to further increase the irrigation area and/or remove the additional nitrogen in harvested herbage or crops.



Crusader Meats proposes to retain the 200 kg N/ha/year application limit for individual irrigation sites in any 12 month period to allow operational flexibility. For example, if the an irrigation application of say 50 kg/ha falls within

a few days of the end of a 12-month period that has already received 150 kg/ha N, this minor timing issue would not cause a non-compliance.

I consider that the above proposed mitigations in combination with other mitigations already proposed will result in a significant reduction in adverse effects of the activity.

The full suite of mitigations proposed is summarised as follows:

- Within 12 months of the lease being renewed, complete the fencing and planting of wetland areas adjacent to sites H9-H13 (21.7 ha), to enable irrigation to commence on these sites.
- Limit the average net nitrogen application rate for wastewater and slurry to 175 kg/ha in any 12-month period. This limit reduces to 150 kg N/ha within 12 months of the lease being renewed.
- Increase maximum daily discharge volume limit from 900 to 1500 m³, to enable more wastewater to be applied when soil conditions are ideal to receive it.
- Irrigate available supplementary water during dry periods to enhance nutrient uptake by the pasture.
- Within 18 months of the lease being renewed, increase effluent pond storage capacity to the DESC 90% probability storage volume, to further improve the scheduling of irrigation to suit soil conditions.
- An 18.4 ha increase land area for slurry spreading (new sites H101 and H102).
- Annual nutrient budgeting, and Improvements to soil and water monitoring.

I look forward to your feedback on this proposal.

Regards
Albert

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