INDUSTRY OVERSEER NUTRIENT BUDGET (OVERSEER) WORKING GROUP DECISIONS REGISTER

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Consistency in Overseer Terminology

Overseer is to be referenced as Overseer (in general), or OverseerFM (for the new software).

Providing Formal Advice to Overseer Limited

If the Industry Overseer Working Group (the Group) has reached a consensus on a request this shall be documented (including names of those who agreed) and passed to Overseer. If the Group is unable to reach a consensus, Overseer Limited shall be provided with a majority and minority view.

Nitrogen Baselines

Q: Where data is missing or unavailable (e.g. in circumstances where a property has changed hands through a sale), how should nitrogen baselines be prepared?

A: The following hierarchical process should be followed when preparing an overseer budget where data is missing or unavailable:

1. Contact the previous owner to see if they can provide the information.
2. If available review farm accounts (typically provided through the sale and purchase agreements)
3. Contact the fertiliser representative. For privacy reasons the fertiliser representative is unable to release details on the previous fertiliser/land use for the property without permission from the previous property owner. However they may be able to contact the previous owner, and seek permission to release the information.
4. Contact the neighbours to find out what previously occurred at the property.
5. Base the overseer budget on the state of the property at the time the purchase occurred.

Some information may be available on the sales prospectus.

All reasonable steps should be used to produce an overseer budget which most accurately represents the farming activity that occurred. Where a budget has been prepared with missing data, the person preparing the budget should document the steps taken to obtain the data in order to justify that a robust budget has been prepared.

Q: What is the appropriate method for preparing a nutrient baseline?

(a) Prepare four individual nutrient budgets (one for each year) and then use the average of those four years as your N-baseline/N-loss calculation; or
(b) Use average inputs over the four-year period and construct a single nutrient budget based on these inputs?

A: Either method would meet the definition in the plan. In some situations, preparing four individual budgets and averaging the result will be quicker/easier, than creating a budget that represents "average inputs (i.e. a synthesised budget). However, this will come down to the complexity of the farming system and the number of blocks needing to be created.

Where average inputs from the four-year period are used to create a single budget, you would need confidence that the proportion of crops will remain the same across that period.

Nutrient Budgets

Q: What happens when nutrient budgets can't be prepared in time for consenting timelines?

A: Farmers should be directed to ECan's Customer Services staff to register their request. Those preparing budgets are encouraged to send in their waiting lists to Andy Barbati at Andy.Barbati@ecan.govt.nz advising names, location and nutrient zone (red, orange, green).

Being on the list does not negate the need to comply with other requirements such as preparation of a Farm Environment Plan. Having ones name on the list means farmers will not be approached for nutrient budgets unless other factors drive that e.g. complaints received.

Q: How long does an Overseer budget remain valid for consenting purposes following a version change?

A: It depends on several factors. These are:

Applicant is applying for their nitrogen baseline

Examples of when relevant: 2009-2013 losses under the LWRP or 2013 losses under the HWRRP

Overseer modelling can be provided in any version, provided that the full input parameters, nutrient budget, nitrogen loss report and pasture production reports are

provided with the application. In this case, the consent document will note the nitrogen loss based on the specific Overseer version (i.e. N loss was 25 kg N/ha/yr, when modelled in Overseer version 6.2.0).

If there are any issues with the Overseer modelling that require revising (see examples below), the Overseer file will then need to be updated to the current Overseer version.

- the Overseer modelling has been completed/revised after the date the new version was available;
- the potential effects of the proposal on the environment warrants it; and
- an application is scheduled for a hearing.

Applicant is meeting a specific threshold

Examples of when relevant: increasing in an orange zone by no more than 5 kg N/ha/yr or below 15 kg N/ha/yr in Selwyn etc

In the instance where the applicant needs to meet a certain numeric threshold in a Plan, Overseer modelling is required to be in the current Overseer version. Where a version change has recently occurred, we will accept modelling in the previous version for two months after the new Overseer version was released provided that the full input parameters, nutrient budget, nitrogen loss report and pasture production reports are provided with the application. However, if there are any issues with the Overseer modelling that require revising (see examples below), the Overseer file will then need to be updated to the current Overseer version.

- the changes to Overseer address a particular bug or operation that is present in the supplied modelling;
- the Overseer modelling has been completed/revised after the date the new version was available;
- the potential effects of the proposal on the environment warrants it; and
- an application is scheduled for a hearing.

Cropping Rotations

Q: How should cropping systems be represented in Overseer, given a cropping system is time-consuming to produce, complex and crop rotations will change over the four-year period?

A: FAR have suggested that for complex cropping systems, a “synthetic” budget be produced which accurately represents the rotation in effect during that period. To adopt this the user would need confidence that over the four-year period the proportion of crops in the rotation remains similar, and it may be simpler in some situation to model the actual process. Group suggested rules around the “synthesised crop rotation” be produced.

Mitigations outside of Overseer

Q: How should mitigations that aren't accounted for in Overseer be handled? Should some allowance/discounting be given for farmers that incorporate mitigation measures that reduce nitrogen leaching, but which haven't been accounted for in Overseer?

A: Mitigation measures would need to be reviewed by a science informed advisory panel to determine whether adjustments should be applied to the Overseer output. This approach incentivises innovation, while still ensuring an appropriate level of robustness for prepared nutrient budgets and consistency amongst practitioners.

It is noted that the plan enables the use of an alternative to Overseer to calculate the nitrogen baseline and nitrogen loss calculation. If the mitigation measures are sufficiently robust there is a pathway open in the plan to have these alternative models approved by the CEO.

Crops not listed in OVERSEER

Q: How should crops not listed in OVERSEER® be factored into the model?
A: Appendix 6 of the OVERSEER® Best Practice Data Input Standards provides a list of crops and management options not supported by the OVERSEER® model and a list of recommended substitutes to be used. For crops not listed in Appendix 6 there may be a need to develop a register to which new crop species are added (however this would require guidance from the Foundation of Arable Research (FAR). **NB.** This is now covered in the Overseer Knowledgebase.

DCD Use

Q: Where DCD (nitrification inhibitor) has been used during the baseline period, how should this be accounted for when preparing a nutrient budget using Overseer?

A: Where DCD use has occurred during the baseline period, the nutrient budget should be prepared on the assumption DCD use did not occur. This aligns with the recommendations in the Overseer Best Practice Data Input Standards (refer to section 1.9 of the standard).

Wetlands

Q: Where a wetland has been extended on a property, what protocols should be followed to ensure that the reduction in nitrogen leaching provided for by the wetland is accounted for in the model?

A: Where a wetland is completely fenced off from grazing, the extended area of the wetland could be created in Overseer as a separate ungrazed block. This will ensure that **some** reduction in nitrogen leaching is accounted for by the model.

Rounding

Q: Where the nutrient budget output from Overseer is not a whole number, how should the figure be adjusted?

A: Whole numbers should be used, and the concept of Swedish rounding should apply.

Phosphorus Loss

Q: Where Overseer predicts an increase in phosphorus loss, but there is no actual connection to groundwater, how should this be handled? (This is relevant to resource consent applications in Hurunui Waiau area where the area is already at its P-load limit)

A: The HWRRP relies on the outputs from Overseer (i.e. N & P) to determine whether a resource consent is required. If the model indicates P is lost to water, then a resource consent will still be required, however the consents planner will take advice from the relevant scientists on whether a connection to water exists, and make a recommendation on whether the consent should be granted based on the actual effects.

Input Advice

Q: Is there an agreed means of entering into Overseer a single ryegrass crop that is grazed and taken for seed over several years, four years, for example. If so, what is it and can this be circulated to achieve greater commonality?

A: Choose 2nd year seed crop for Prior history. Add grazing's and seed yields as happens. Further guidelines are scheduled to come out in the BPDIS appendices after the next Overseer release due in November 2016.

Q: Is there an agreed means to entering into Overseer an autumn or winter crop which includes some longer-term species? The issues being that there is in fact no additional cultivation or sowing events, but Overseer assumes the crop runs out when the annual component has been grazed. If there is a common means of entering this situation into Overseer, what is it?

A: This needs to be dealt with on a case by case basis but the basic principle is to sow the annual crop first and input all management activities in the month that they occur (fertiliser, grazing's/harvest, irrigation) and then immediately after harvest/final grazing of the annual crop sow the perennial crop using direct drill as the cultivation method and input any subsequent management activities. Enter all management activities, fertiliser, irrigation, grazing/harvest (except for the sowing of the perennial crop) in the months that they occurred.

Q: What is the best option for modelling green feed oats or barley under-sown with annual ryegrass? *(August 2017)*

A: Model as a mixed crop (i.e. 50:50 or to the proportions sown).

Modelling Gorse – *May 2017*

Q: How do I model gorse and broom, given it's a plant pest I'm required to control; and if I model as "Trees and Scrub" the low N loss does not allow me to convert to farming without increasing N loss which may breach my limit.

A: Model gorse and broom as low productivity dryland sheep. This will result in the N loss being slightly higher than if modelled as "Trees and Scrub" and will allow land to be cleared and lightly grazed without exceeding N loss limit.

Nutrient Budgeting Consistency Expectations – *May 2017/May 2018*

Meeting held 25th May 2017 noted that a protocol has been prepared for irrigation schemes (RDRML, BCIL, CPW and WIL) in consultation with nutrient budget providers. It covers averaging, 'work-arounds' and has a greater level of detail than the Input Standards. The same meeting also agreed to send the protocol to the Inputs Standards Group for possible inclusion. The updated Expectations was discussed at the May 2018 meeting. IOWG agreed with all items within the document, except items 5.0 and 6.0 where it was agreed more work was required. *(See below for extracts – added by Overseer Limited)*

Overseer Robustness – August 2017

The purpose of this report is to extract key information from OverseerFM to assist auditors carry out a basic robustness assessment in preparation for their audit of the property and field-validate key inputs.

Meeting agreed that if those preparing budgets provided the information set out in the template signed off by the farmer (client) that would be accepted as useful for audit. A copy of the template can be viewed on the Office 365 Sharepoint Site.

Modelling Walnuts in Overseer – May 2018

Q: There is no option for modelling a walnut orchard within OverseerFM. Is it appropriate to model them as avacados as they seem the closest fit to walnuts out of the fruit tree choices?

A: Yes, we will accept this modelling approach from a CRC perspective.

Nitrogen baseline affix to the land – May 2018

Q: Can the nitrogen baseline be adjusted when water is transferred between properties?

A: No the nitrogen baseline cannot be adjusted when water is transferred between properties. Nitrogen baselines are based on the actual land use, and (except for schemes) are then formalised via land use consents – land use consents affix to the land and cannot be transferred. There is no mechanism to move those baselines around; Farming Enterprises and Irrigation Scheme discharge consents enable those baselines to be "shared" for the duration of the consent, but the baseline remains with the original land.

Overseer workarounds – May 2018

All workarounds should be documented on the 'Farm Scenario – General' page within the Overseer model. This is so that any files that required workarounds at the time they were prepared can be accurately corrected in the future; even if being updated by a different Overseer user.

Modelling seed crops in Overseer 6.3.0 – May 2018

Q: After the update to Appendix 6 of the BPDIS following the release of Overseer 6.3.0, there has been inconsistency with the modelling of seed crops. How should seed crops be modelled in Overseer 6.3.0?

A: Revert to the Overseer version 6.2.3 BPDIS guidance (input seed crops as ryegrass seed). While the crop selected will be 'ryegrass seed', model the inputs (management, timing, fertiliser etc) to reflect what actually happened. All workarounds are to be recorded.

Nutrient Budget Consistency Expectations

1.0 Averaging Year-End Data:

Averaging of Year-End Data	
Examples of Averaged Data	**Not Averaged**
• **Irrigation** – exclude any irrigation events which appear to be abnormalities, e.g. Irrigation events in shoulder months. Include these events if they consistently appear in records each year. • **Fertiliser** – Exclude fertiliser inputs which are abnormalities (E.g. May/Aug) • **Crop Yields and Harvest Dates** – use average yields and harvest dates where climatic conditions were unusual	• **Stock Numbers** • **Crop Rotations**

Where data has been averaged, nutrient budget to include a supporting note to explain the variation between actual activity and modelled activity.

2.0 General Protocol for Averaging Irrigation:

2.1 IrriCalc:

- Check Climate information is the same
- Choose Irrigation Type
- Use "Average Year"
- Adjust input/decision rules to reflect the average, provided they are within the capabilities of the irrigation system design

Note: Differences between IrriCalc and OVERSEER – IrriCalc assumes an 80% efficiency while OVERSEER assumes a 100% efficiency.

2.2 Suggested Steps:

Step 1: Model what the farm does (regardless of probes/non-probes) on average, based on information provided by the Shareholder

Step 2: Sense Check Modelled Irrigation applications with either (in order):

1. Water use data
2. IrriCalc. Average year and system capability
3. On Farm Average Irrigation Records
4. Consent Volumes & Rates

Step 3: Adjust to within (+/-) 100mm, using decision rules within capability of irrigation system design.

3.0 Workarounds – ME Errors & Changes to Ryegrass Seed Crops:

Workarounds are inputs which are not what it appears. E.g. use of ryegrass as a proxy for radish seeds etc

- Most ME errors now resolved, if errors arise, first re-check data and inputs (e.g. stock numbers and yields) are correct and reasonable
- Check pasture yields for crops are within:
  - 5-8TDM Ryegrass Seed (Annual)
  - <5TDM for grass seed
  - <2TDM for clover
- *"Most suitable crop"* proxies are still to be confirmed with FAR

Process if a Workaround is Still required:

Step 1: Enter model as told by Farmer, save xml as an original file

Step 2: Copy File, note assumptions made

Step 3: Add pasture (1ha) (100% arable workaround), redistribute stock

Step 4: Try to make the file work within reason (balancing invoicing vs. achieving a representative file)

Step 5: Use off-farm animals method if pasture block method is not successful.

Step 6: Record changes made to original file.

Where a crop proxy or workaround has been used, nutrient budget to include a supporting note to explain the variation between actual activity and modelled activity.

NB. The Years in Pasture calculation agreed by schemes, differs from that provided in the Overseer Knowledgebase.
Overseer Limited advise that the Knowledgebase article details the information which the model requires. Other guidance should be viewed in that context.

4.0 Years in Pasture:

4.1 Preferred Scheme Agreed Method:

Years in Pasture is to be averaged based on the proportion of restorative vs depletive crops in the reporting year. This is to be included in the report, including a note where "ryegrass seed" has been used as a proxy for other crops.