Overseer Limited

SUBMISSION ON ACTION ON AGRICULTURAL EMISSIONS

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Overseer Limited noted references to the Overseer model in consultation documents on proposals to address greenhouse gas emissions from agriculture.

Overseer Limited supports the principle of estimating farm-level emissions to incentivise positive behaviour change for environmental sustainability. Individual farm emissions need to account for individual farm specific characteristics including climate and soil and the farming practices adopted by a specific farm over time.

Farmers need to know where they are, where they could be and how to get there.

To this effect, Overseer Limited has implemented significant improvements in a farm environment planning tool, OverseerFM, that is underpinned by science.

This submission provides further information about OverseerFM to clarify what it estimates and how it is continuously updated.

- OverseerFM is an on-farm, strategic decision support tool for farmers. It is designed to help develop nutrient budgets, examine nutrient efficiency, identify potential environmental risks, and evaluate the effects of mitigation practices – hence incentivising the right behaviour. It is designed to run off data that is readily available to a farmer and uses defaults where available, for a wide range of farm management systems across New Zealand.

- OverseerFM enables a holistic approach to farm environment planning by utilising one set of data created for an individual farm to estimate GHG emissions and nutrients losses – a critical attribute in avoiding pollution swapping.

- As at 30 July 2019, over 9,000 farm accounts have already been created in OverseerFM. This is noteworthy given the total number of farms in NZ and that OverseerFM was deployed only twelve months ago.

- Recent, significant improvements made, that are of particular relevance to the consultation, include; a user-friendly interface with tested efficiency gains of 25-50%\(^1\), a centralised database that enables reporting at an individual and aggregated level, farmer-friendly reporting and visualisation within the software to enable farmers to more readily understand the impact of their current farm management on environmental losses and the ability to test options for different approaches, thus incentivising on-farm change.

- An independent review confirmed that Overseer modelled eight out of the ten GHG emission mitigation options currently available to implement on farm\(^2\). Since that review Urease Inhibitors have been added to OverseerFM (currently in testing to go into production in the next week) and we will continue to incorporate new mitigations as they are developed. Planned enhancements over the next few months include updates to the life cycle analysis emissions factors based on changes internationally and the

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\(^2\) Desk-top review of GHG components of OVERSEER Draft report prepared for the New Zealand Agricultural Greenhouse Gas Research Centre August 2015 by Francis Kellner, Mike Rollo and Ronaldo Vibart
inclusion of carbon sequestration accounting. Science research projects are currently being finalised to update the sheep and beef life-cycle analysis calculations and to update the modelling of farm specific nitrous oxide emissions.

- In terms of science validation, ongoing evaluation and calibration of the sub-models within Overseer occurs to maintain the model’s integrity as new components are included or updates are made to the existing modelling to reflect improved scientific understanding. For GHG components, formal process to ensure alignment is in place between NZ Agricultural GHG inventory model (NZAgInv) and Overseer. This is how Overseer is updated to reflect the available science and data to ensure continuous improvement.

Further information can be found in the attached Overseer GHG emissions brochure.

Overseer Limited is happy to provide further detail if it assists.

Attachment: Learn about your farm’s GHG emissions with OverseerFM
Learn about your farm’s GHG emissions with OverseerFM

Farm specific analyses because every farm is different
- Overseer estimates methane, nitrous oxide and carbon dioxide greenhouse gas (GHG) emissions for your farm, using detailed farm management data and the farm’s physical characteristics.
- Having a farm-specific analysis means you can test management scenarios in OverseerFM to reduce emissions on your farm enabling you to make real change.
- Overseer models nine of the ten GHG emission mitigation options currently available e.g., reducing nitrogen fertiliser applied to soils.
- Most farm systems in New Zealand can be modelled in Overseer.

Avoid pollution swapping
Only one set of farm management data is needed to estimate GHG emissions and the farm’s nutrient budget.
So once your farm is set up in OverseerFM, you will gain a better understanding of how different management strategies impact on the different nutrient loss pathways, enabling you to choose the best options.

Science you can trust
- Overseer models GHG emissions for a farm using a series of equations (all published) following the approach shown in Fig 5.
- Overseer’s GHG calculations are supported by current scientific understanding and have been reviewed by independent scientists.
- We are continuously updating Emission Factors to maintain alignment with New Zealand’s National Greenhouse Gas Inventory whilst maintaining site-specific components to ensure farms can understand their specific emissions.
- Last year, BERG identified some areas to improve, all of which are either completed or in progress. We aim to have updated the farm-specific nitrous oxide modelling in the next financial year as well as incorporating carbon sequestration in our tree blocks.

Our vision: Farms are enabled to be environmentally and economically sustainable
Sign-up at fm.overseer.org.nz or visit overseer.org.nz for more information