

Meeting A Sustainable Future

Farmer Profile

Kingston and Klopper families, Skibbereen – Hinds/ Hekeao Plains

Farming Challenges and Mitigations

Focus: Improving data recording, reducing N losses, managing variable soils and a high water table

This farm is part of DairyNZ's Meeting a Sustainable Future project, which supports farms in the Hinds and Selwyn catchments to reduce their environmental impact while maintaining or improving profitability.

Skibbereen's focus is on gaining a good understanding of where they are at and making the recording process easier so that the information they have access to can be better used. The farm has a large variation in soil types and a high water table with drains throughout the farm. This makes it complex to manage from an environmental point of view.

Bill's knowledge of the farm is important in being able to manage the farm well. There has been a large focus on irrigation infrastructure and efficiency, which has improved the farm's environmental impact and increase profit potential through increased pasture growth.



Why Skibbereen is involved in the project

"Since Skibbereen was converted the farm has been in a continual state of development to keep up with the change in regulations and to improve ease of management - including installing pivot irrigation, effluent upgrades, soil moisture monitoring and riparian and shelter planting. We see this as an on-going process, and implement science proven environmental solutions as they become available. In the past years I estimate we have spent towards \$1 million on improvements. Our farm has joined the Selwyn Hinds partner farm group so we and our staff see what is happening on other farms that can be brought back to continue the improvements at our place." - **Bill Kingston, Skibbereen**



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Selwyn and Hinds | Inspiring High Performance, Low footprint farms

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Introduction

Skibbereen is near the coast at Coldstream, just north of the Rangitata River. The farm has been in the Kingston Family since 1947, and was converted to dairying by Bill and Jessmae in 2010. In the 2020/21 season, Johannes and Maree Kloppers who were previously managing the farm, have started contract milking Skibbereen. There has been a lot of investment in infrastructure over the last ten years including pivots and Variable Rate Irrigation (VRI) going in from 2015 to now, and the plan is to finish this project in the upcoming seasons. Skibbereen is operated with strong family farm values, and it is important to the Kingston Family and the Kloppers that everyone who works at Skibbereen enjoys and is proud of what they do.

Relevant Farm Characteristics		
Soil • 53% Lowc_1a.1, PAW 66 • 29% Wate_2a.1, PAW 78 • 18% Wilb_7a.1, PAW 96 • 75 Average PAW₀₋₆₀	Rainfall & Irrigation • Average 620 mm rainfall annually • 2 groundwater bores • 20/21: 65% pivot, 25% ha Rotorainer, 10% K-line	Effluent System • Above ground storage, with effluent applied through VRI pivots to 22% of the farm
Farm System and Performance – 2019/20		
Effective Hectares • 193 milking platform • 197 total area	Team • 3.3 FTE • 183 cows/FTE, • 85,500 kgMS/FTE	System • 3.3 cows/ha (520 kgLW/c) • 13.7 tDM/ha pasture eaten • 2.8 tDM/ha imported supplement eaten • 2.2 tDM/ha grazing off eaten • 18.7 tDM/ha total feed eaten

**Further info on Overseer versions, information sources etc can be found at the end of this document*

Skibbereen EM Soil Map

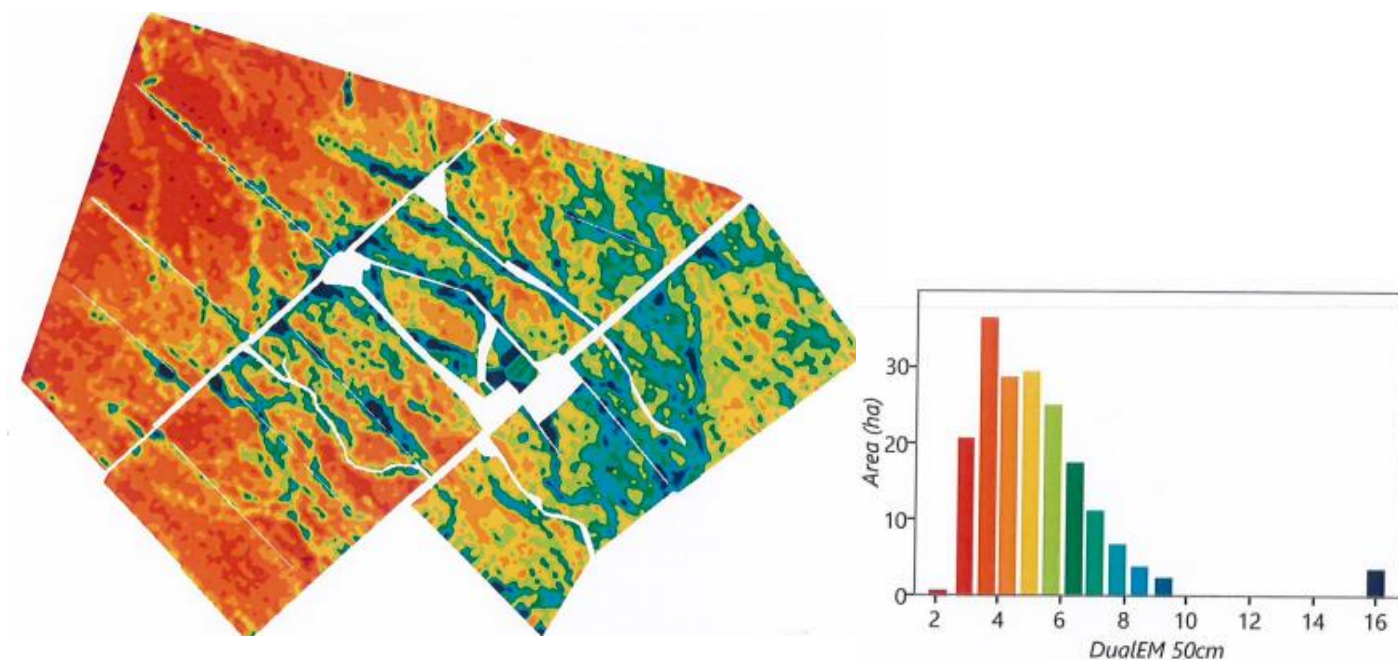


Figure 1: Skibbereen Soil Map (AgriOptics)



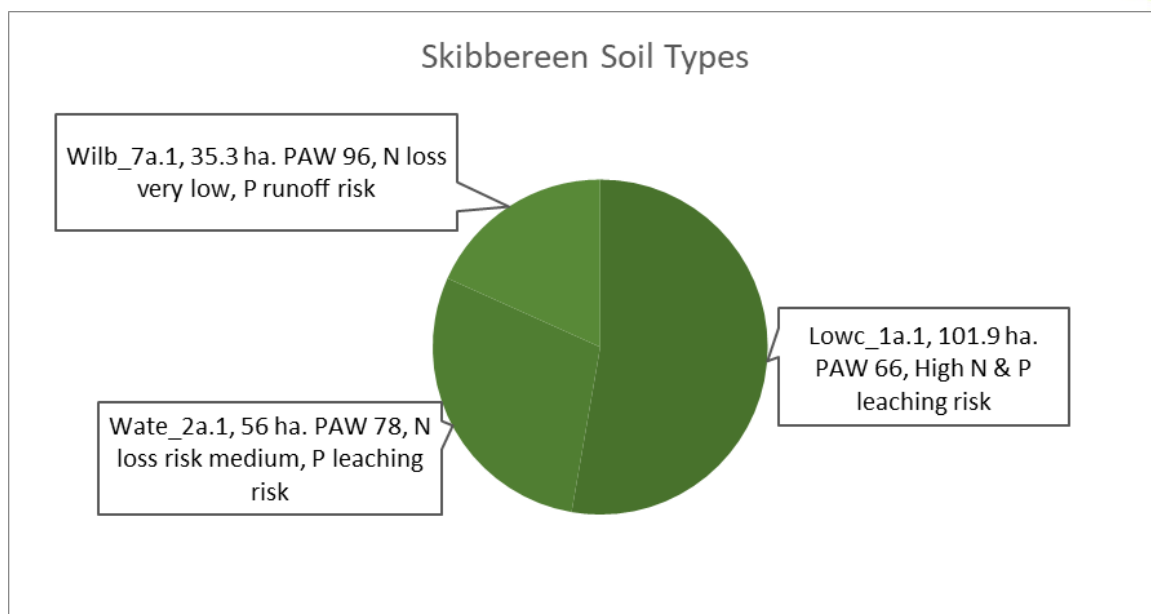


Figure 2: Skibbereen Soil Types – from SMaps as updated Sept 2020

Key environmental information

Nitrogen Loss

Skibbereen comes under Mayfield Hinds Valetta Irrigation scheme (MHV), as they have access to a small amount of MHV water, and their nutrient allocation is managed through the scheme. Bill and Jessmae were interested to know how they would be tracking compared to a 2012 baseline. This was modelled in Overseer and is shown in the table below. It includes a 30% reduction for 2019/20 – this is mainly due to a reduction in drainage through infrastructure changes and irrigation management. In the Hinds catchment farmers are required to make N loss reductions of 15% by 2025 and 25% in 2030. The farm has 50 hectares of mixed pastures that include plantain. This has not been modelled in Overseer but potentially could further reduce N losses on the farm.

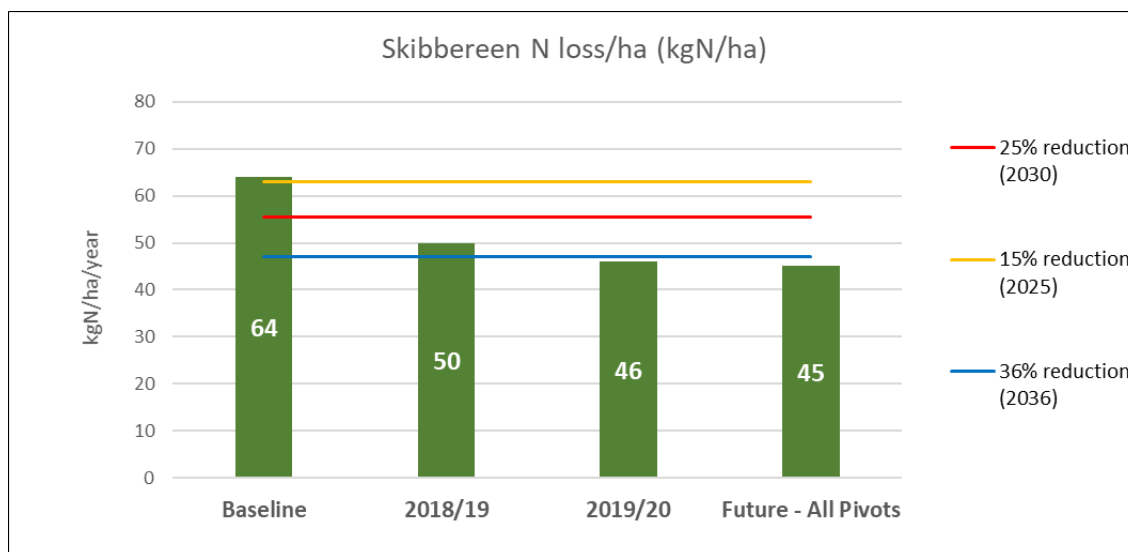


Figure 3: Skibbereen N loss over time, Overseer v6.3.4

Catchment and Mahinga Kai

Skibbereen is in the Hinds Hekeao Plains catchment, and they are very aware of their impact on Mahinga kai, as they have drains running through the farm and are committed to making sure these drains are well looked after including riparian planting. The team at Skibbereen take a real interest in the drains, and often see eels and carp in them. Bill is part of the Hinds Drains Working Group, and this group looks at how they can improve Mahinga kai and biodiversity across the lower part of the catchment.

Challenges

The farming and environmental challenges this farm has are:

- Complex soil and irrigation interactions, with the soils on farm ranging from a PAW of 51 to 123. Some of these soils are at high risk for P leaching, which isn't common in Canterbury. The farm has both gley soils that are very poorly drained and are prone to waterlogging and Pallic soils that tend to be dry in summer, wet in winter and have high N leaching potential.
- Making sure value is gained from the information recorded
- Drains on the farm that need to be considered and maintained. There is also an area of heavier soil with tile drains

Farm History and Improvements

The Kingston family has farmed Skibbereen since 1947. Initially Bill's father and uncle developed the farm into a successful sheep operation including drainage, shelter and new pastures, which was common good practice at the time. Bill joined his father in 1976 and continued farming sheep and beef with the accepted practices at the time. Bill took over the farm and in 1996 installed the first irrigation well 8m deep. They had one rotorainer, and a deep well and another rotorainer were added soon after.

In 2009 the decision was made to convert to dairy and so another well was drilled and a third rotorainer arrived along with major investment in dairy infrastructure, all done to meet good practice at the time.

Since the conversion to dairy the farm has been in a continual state of development to keep up with the change in regulations and to make it easier for the farm team to manage. Two Variable Rate Irrigation (VRI) pivots were installed on the main block and an effluent separator was added, which enables the effluent to be spread over a larger area via the mainline of the big pivot. Increased effluent storage of 2 million litres was developed to allow effluent to be better utilised. Drains were fenced off before the conversion, and there have now been drainage upgrades along with riparian, amenity and shelter trees planted. Two soil moisture tapes were installed in 2010, with a third in 2020.



Mitigations

Irrigation Infrastructure

The Kingstons have focused on improving their irrigation infrastructure. In the 2020/21 season the farm now has 65% of its irrigators as pivots. Both pivots have Variable Rate Irrigation (VRI) to reduce drainage and suit variable soils. Another pivot was also installed at the end of 2019/20. From here, there is a plan in place for some smaller pivots to go in over time.

“Having VRI on our variable soils and with our drains is making our management so much more precise,” says Bill. “We are feeling more confident that we are doing the right thing, from a pasture growth, environmental, and profit point of view. It also reduces the workload for our team who are not moving as many Rotorainers, and we look forward to when we have put in the two smaller pivots across the road.”

However due to the heavy nature of the soils on the remaining Rotorainer area, there may not be as much of an advantage as initially thought in changing this area to pivots from an N loss perspective, as the drainage isn’t reduced. There are many other benefits which deliver advantages that may not be captured in Overseer. The main ones are labour savings and the ability to turn water off over drains, troughs, wet areas and gateways.

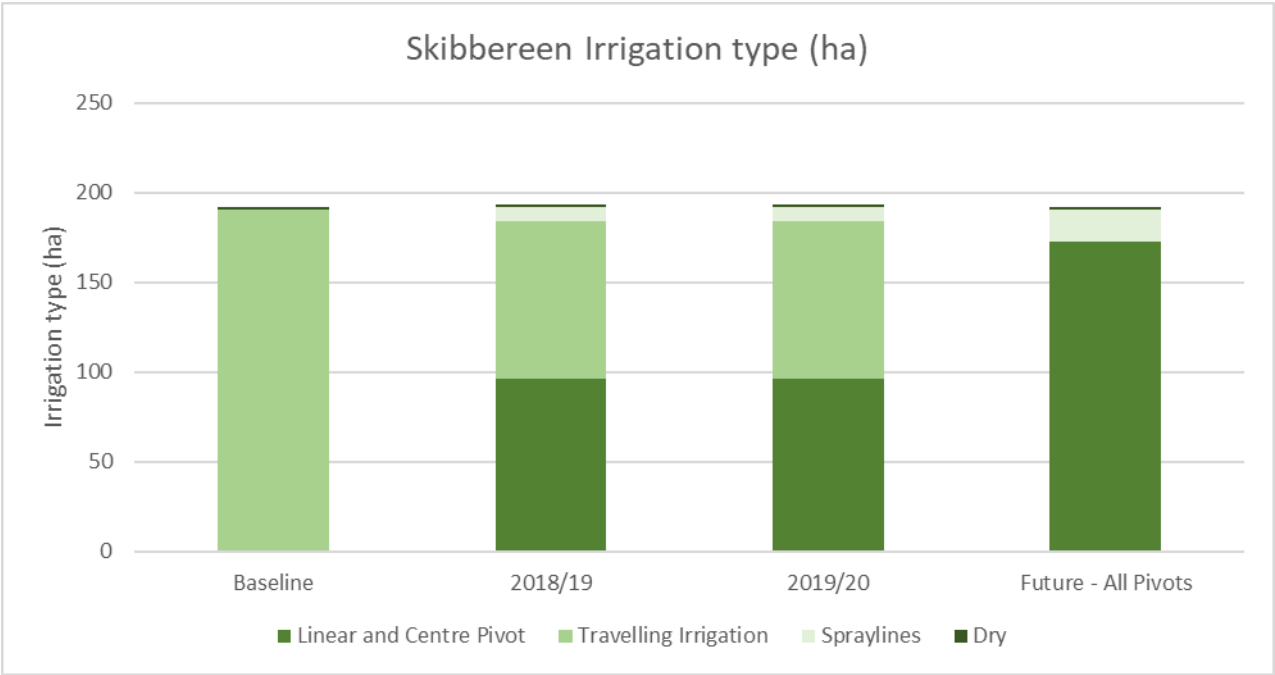


Figure 4: Skibbereen Irrigation Infrastructure over time



Figure 5: Skibbereen proposed pivot plan when complete

Irrigation and Effluent Management

Moving from Rotorainer to pivots with VRI has meant increased options for irrigation management. With shallow and variable soils, and management around wet areas due to drains, the VRI is put to very good use. Bill and Johannes are able to see the difference due to changes in the wet spots on farm. “Where we used to have puddles and pugging, we are now seeing these areas performing like the rest of the paddock,” Bill says.

The effluent system includes two large above ground tanks and a solid separator. Effluent is now injected into the pivot and the team can apply effluent at low rates to a larger area, which on the shallow soils is beneficial and a good use of the nutrients in the effluent.

Information Management

Currently the team at Skibbereen are working to streamline the information recorded so that it can be accessed in one place. This will make it useful for management decisions, rather than just being used for compliance. Bill says they had so much information but interpreting it was difficult, and they had to use many different systems to access it. By bringing everything together, they will be able to easily access information to make better decisions.



Pasture Management and Purchased N Surplus

To assist pasture management and reduce the use of nitrogen fertiliser and purchased supplementary feed, the farm uses LIC Space pasture cover monitoring to develop feed wedges and predict pasture covers for 3 weeks in advance. This has contributed to better feed utilisation and less supplementary feed use. Over two years the farm has reduced N fertiliser use by 50 kg N/ha down from 245 kg N/ha/yr to 196 kg N/ha/yr while increasing production and has reduced the purchased N surplus from 211 kg N/ha to 152 kg N/ha.



Figure 6: Pasture cover map

Further Information

For further information on this farm and the changes they are making, as well as the project:

- Virginia Serra, DairyNZ. Project Lead for Meeting a Sustainable Future, 021 932 515
virginia.serra@dairynz.co.nz
- [Meeting a Sustainable Future Partner Farms Page](#)
- [Meeting a Sustainable Future project page](#)
- [Evaluating your irrigation system](#)

Information Sources:

Figure	Season/s	Source
Current N loss (predictive estimate)	2019/20	Overseer FM v 6.3.4 Oct 2020
Physical farm system information	2019/20	DairyBase

This page was updated November 2020