



NEW ZEALAND
ASSOCIATION OF
**RESOURCE
MANAGEMENT**

64TH ANNUAL
CONFERENCE

BILL RICHARDSON
**TRANSPORT
WORLD**

INVERCARGILL
10-12 OCTOBER 2017

Managing soil and water interaction through people and science

Proudly hosted by



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ENVIRONMENT SOUTHLAND

is proud to host the
64th NZARM conference

As a regional council we are responsible for the sustainable management of Southland's natural resources – land, water, air and coast – in partnership with the community.

Environment Southland



*A vibrant organisation actively enhancing
the experience of living and working in
a sustainable Southland.*



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Welcome

*Tena koutou e huihui mai nei
E te whenua, tena koe
E te whare, tena koe
Ki a Cyril Gilroy, a Te Ao Marama, Tena koe e Rangatira*

*Ko Te Paki Tararua raua ko Hikurangi oku maunga
Ko Manawatu raua ko Waiapu oku awa
Ko Horowhenua raua ko Tairawhiti oku turangawaewae
Ko Kerry Hudson ahau
No reira tena koutou, tena koutou, tena koutou*

NZARM members, Environment Southland Chair, dignitaries and guests, my name is Kerry Hudson, NZARM President and I feel really privileged to welcome everyone to the 64th New Zealand Association of Resource Management Conference in Invercargill and Southland.

I would like to acknowledge our Honorary Members present with us for the conference. Please welcome Murray Harris, Norm Ngapo, Chris Phillips, Dave Cameron and Alan Campbell.

Three of us have travelled down from Gisborne, First City to See the Sun, Tairawhiti and really look forward to a region and issues so different from ours in Gisborne.

This year's conference theme of *Managing soil and water interaction through people and science* has a really good feel to it. It's very relevant to NZARM and what better place for this theme than in Southland, a region which has and continues to undergo significant change in the primary sector. Since Nathan's promotion of the 2017 conference last year in Hawke's Bay, and ongoing updates to the NZARM executive, there has been a lot to look forward to. LMG had a presentation from Clint Rissmann back in May on physiographic zones and this further increased my appetite to attend.

Our keynote speakers provide further emphasis to our theme: Dr Caroline Saunders on how international drivers of change in agriculture combine to effect change on farms in New Zealand, Mark Julian outlining corporate farming and how this operates in a socially and sustainable manner, and Jonathan Streat ties in the context, history and policy drivers in linking national to local scale activities.

This afternoon's presentations between lunch and afternoon tea look at science in Southland, followed by 'working with people' in the later part of the day.

I am really looking forward to the field trips: forestry, hill country sheep and beef farming, large scale dairying and wintering, the roles of catchment groups, tulip growing, water quality in the Maituna River, the Waituna Lagoon and a good look around Southland.



▲ Kerry Hudson, NZARM President

Julia Crossman mentioned the milestones of 2016 in Hawkes Bay last year, 25 years of the RMA and 75 years since the Soil Conservation and Rivers Control Act. We have all been involved in the National Policy Statement for Freshwater Management 2014 (NPS-FM) and some of us are about to deal with the National Environmental Standard for Plantation Forestry (NES-PF).

Personally, I see the NES as bringing some real opportunities to our council locally. As a result of the NPS we now enter challenging times and NZARM may well have a role in the land management area as regional councils enter into wide ranging farm planning regulatory requirements. The Executive has followed this space closely, has provided a submission to the Proposed Waikato Regional Plan Change 1 pertaining to the Waikato and Waipa River Catchments in regard to land management issues, while we have been involved in a national certification scheme for rural practitioners where NZARM appears to have a niche in soil conservation and sediment control. The Executive is ensuring that if opportunities arise, that NZARM members have a place to participate.

NZARM is quite a different entity from the New Zealand Association of Soil Conservators in 1953, when members were staff from catchment boards, research and educational institutes. With the broadening challenges of the Resource Management Act since 1991 a more holistic approach was required with a wider association and hence NZARM was formed.

Our association grows and prospers and our membership base has broadened significantly to include the traditional regional and unitary council staff, research and educational backgrounds but also industry and government department personnel. NZARM, with this broader focus and membership base, is well placed to face the challenges of the future.

On behalf of the NZARM Executive Committee I would like to thank the local conference organising committee: Nathan Cruickshank, Jim Risk, Karl Erikson, Adrienne Henderson, Nick Round-Turner, Fiona Young, Katrina Robertson, Murray Harris, Janet Gregory and Nikki Tarbutt. Could we also thank Matt Harcombe and Suzanne Hotton, neither of whom can be with us for the conference. Thanks to OnCue in assisting with the conference, an involvement which has spanned several conferences. NZARM would like to thank you all for your support and the immense time committed to the conference, all of which is on a voluntary basis.

The conference is reliant on having employer support and therefore I would like to thank Environment Southland and other entities allowing committee involvement for staff to be involved in this conference.

Having been involved in organising two NZARM Conferences in Gisborne I fully appreciate the challenge in attracting attendance to a distant location. However the attendance list shows Southland has attracted a large diversity of members to take in and engage in lively discussion about the issues we are facing as members.

We also have a number of non-members attending and I would like to extend a warm welcome to you. Please get to know more about NZARM and the way our members add value to the work they do with councils, landowners, industry and research agencies. NZARM is committed to supporting professionals in natural resource management and providing a strong forum for communication and professional development. Finally returning to NZARM members, it is a personal highlight to see you all and thank you for your continued support.

Thanks to all of the sponsors who have assisted NZARM and provided wonderful support to our conference. Congratulations to the organising committee for attracting this sponsorship. Let's all enjoy each other's company and Southland over the next few days.

No reira tena koutou, tena koutou, tena koutou katoa

Our Land, Our Future

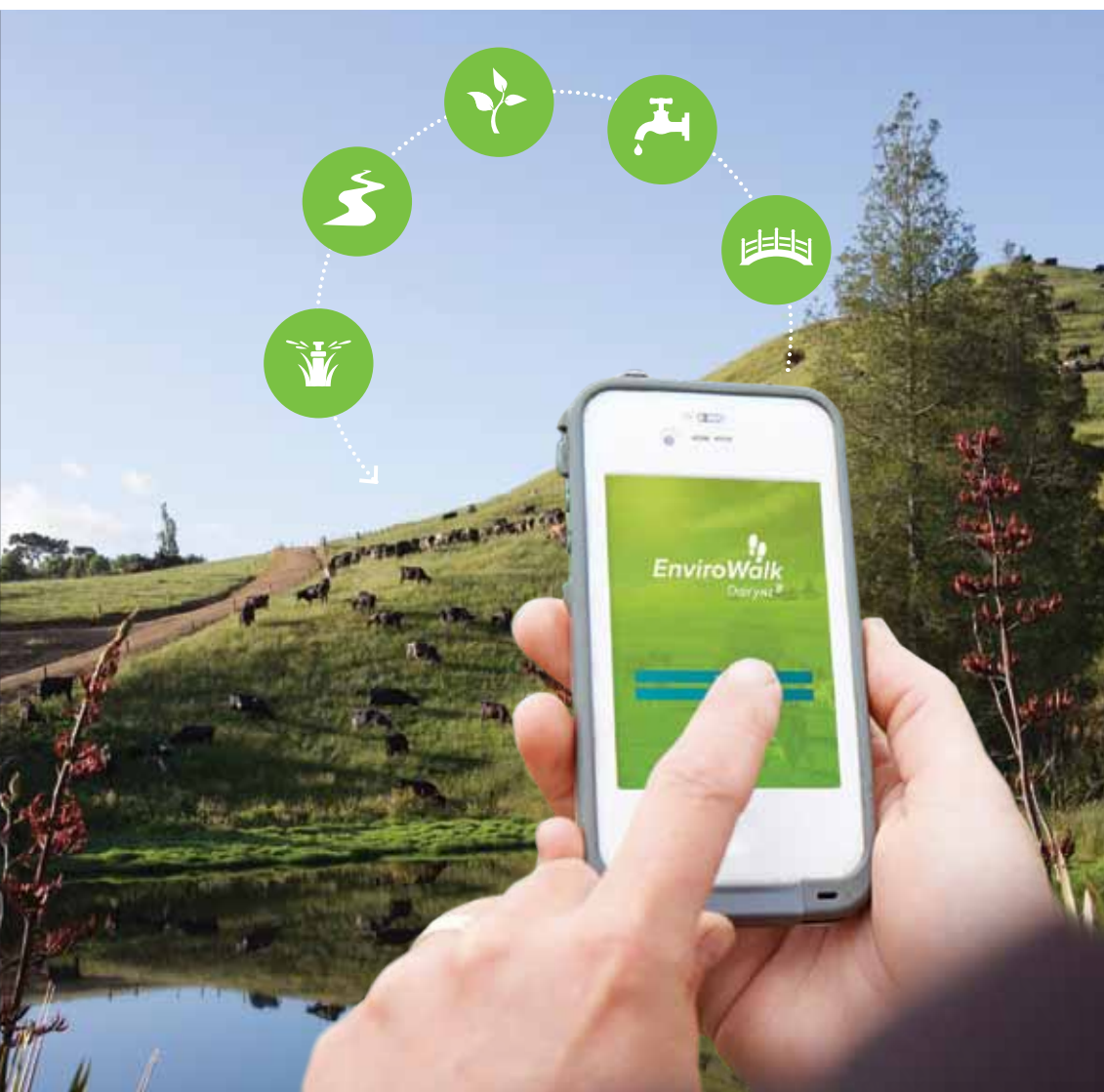
Tō tātou whenua, mō āpōpō

A key focus of our science and research is the development of knowledge, tools, technology and practices to enable the sustainable and wise use of our land, soil and water resources.

We are proud to sponsor the NZARM 2017 conference.

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Step ahead - take an *EnviroWalk*

The EnviroWalk app is an easy-to-use tool that helps farmers quickly identify ideas of environmental risk.

Recently released by DairyNZ, the app allows farmers to assess their farm's environmental impact and create a customised action plan while they walk. The app can be used across all areas of the farm or specific areas that need more attention.

Download from the App Store or Google Play.



▲ Longridge North, Northern Southland (PHOTO: LES LADBROOK)

A little about Southland

Southland is New Zealand's southern-most region and has a total land area of 3.2 million hectares (or 12% of New Zealand). Of this total area, 59% is land in indigenous vegetation – 42.3% of which is within Fiordland and Stewart Island.

Southland is shaped by some of the country's most complex geology and it has one of the widest assemblages of soils. The region's northern boundary is marked out by the Livingstone, Eyre, and Garvie Mountains (in Southland) and the Blue Mountains (in Otago). The Southland Syncline (formed by geological faulting) is a geological fold in the earth's surface that creates a thick 'belt' running on a north-west to south-

east axis from Lumsden through to the Catlins coast, and is partially buried beneath the Southland Plains.

Around 96,500 people call Southland home. Invercargill is the only city in the region with around 50,000 people. Other main townships include Gore in eastern Southland, Riverton along the southern coast, and Te Anau, near Fiordland in western Southland. Just over 30% of Southland's population live in rural areas, which is high for New Zealand (13%). The relatively high proportion of people living rurally reflects Southland's reliance on primary sectors, and particularly agriculture.

Southland contains a large amount of freshwater, both as surface water and groundwater. The region has six of New Zealand's 25 largest lakes (as measured by surface area), including Lakes Te Anau, Manapōuri, and Hauroko (which are also New Zealand's three deepest lakes). There are also tens of thousands of kilometres of rivers and streams, including the Waiau, Aparima, Ōreti, and the Mataura Rivers. Together the catchments of these four rivers drain 1.85 million hectares or 62% of the Southland mainland.

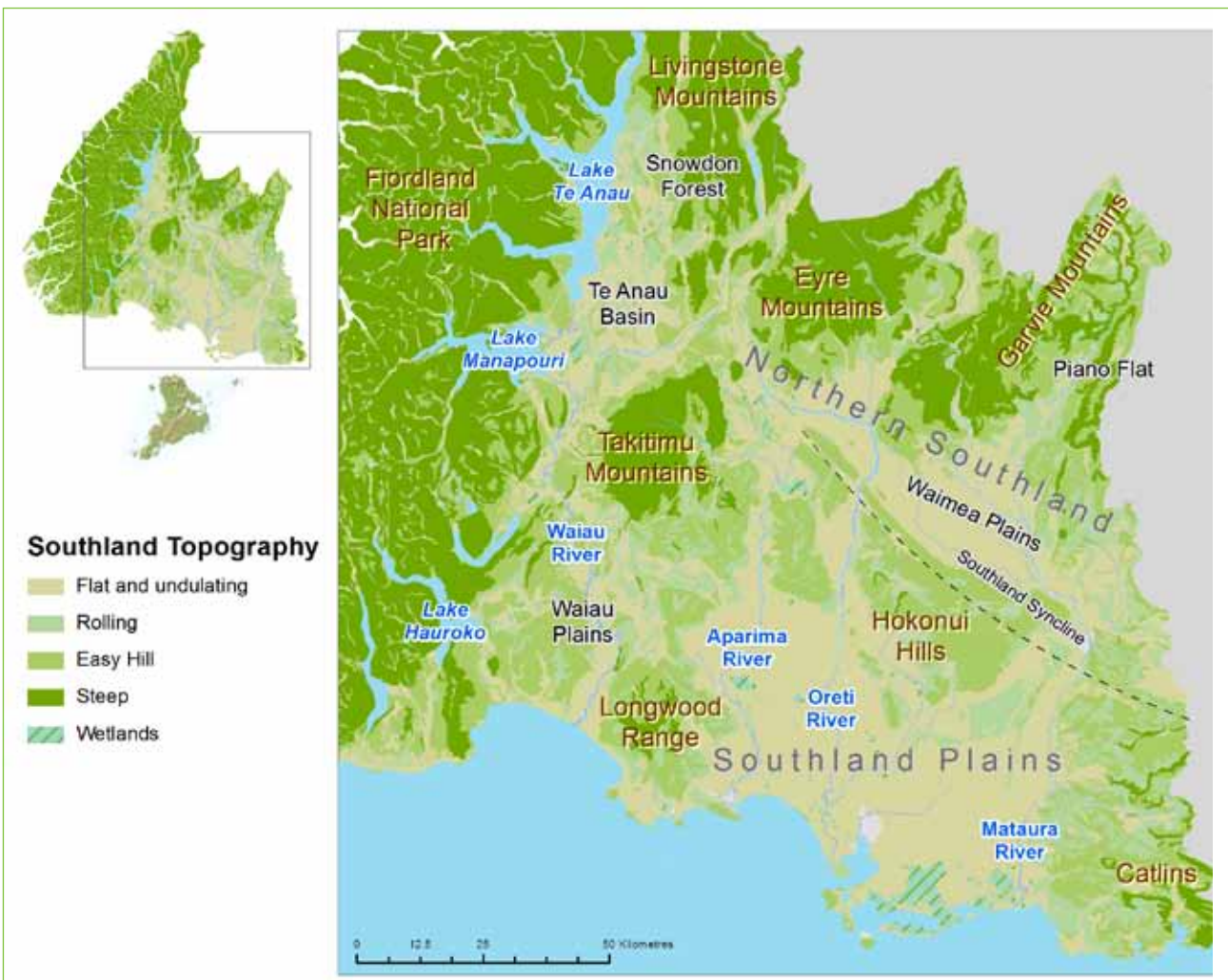
Before Māori arrival, around 268,500 hectares of land in Southland were in wetlands and swamps, most of it across the Southern Plains. Wetlands perform a significant cleansing role in the environment and are also important connectors between surface water and groundwater. Since 1840, it is estimated that the area of wetlands on privately owned land reduced from around 220,000 hectares to 8,486 hectares (or 3.2%) by 2015. The installation of tile and mole drains to enable farming has created direct channels (or pathways) for losses of nutrients to enter surface water, bypassing some natural processes.

Southland has a mosaic of unconfined, shallow aquifers that exchange groundwater to surface water relatively quickly. Approximately 47% of all of the water in Southland streams is groundwater from these aquifers. The shallow groundwater table, together with a cool humid climate, mean that groundwater within unconfined aquifers are young, with an average residence time or age of less than 10 years.

Eventually, the region's freshwater flows into 23 estuaries before entering Foveaux Strait and the Southern Ocean.

Southland's water and land is highly connected in comparison to other regions. The environment has influenced the development of agriculture and forestry and, in turn, it has been altered by the expansion of these sectors.

This information has been summarised from the Agriculture and Forestry Report (2017), which is an output of the Southland Economic Project. To read the full report go to www.es.govt.nz, and search for Agriculture and Forestry Report.



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Together, Creating the Best Soil and Feed on Earth

DAY 1

Tuesday 10 October

*MANAGING SOIL AND WATER
INTERACTION THROUGH
PEOPLE AND SCIENCE*

**Transport World
Invercargill**



Setting the scene

Throughout Day 1 of the conference you will hear from speakers on a global, national and regional scale. You will learn more about the innovative science programme happening in Southland, particularly the Physiographics of Southland project. The region has been grouped into different zones according to factors such as water origin, soil type, geology and topography. This work is now being used in the planning and extension areas of Council. Recommendations for good on-farm management practices are tailored as each zone is different in the way contaminants build up and move through the soil and aquifers, and into streams and rivers.

While still at the early stages of the freshwater engagement process, Southland's catchment groups are setting themselves up and taking a practical approach to promoting and adopting good management practices.

▶ **9:00 – Registration desk opens**

Tea and coffee available

▶ **10:00 – Karakia**

Cyril Gilroy – Kaumatua Ngāi Tahu

▶ **10:05 – Conference opening**

Kerry Hudson (NZARM President)

▶ **10:15 – Setting the scene for Southland**

Rob Phillips (Environment Southland Chief Executive)

Welcome to Southland and the NZARM conference – some of the challenges faced for land and water management in Southland and how community and council are responding.

▶ **10:25 – Conference welcome**

Nathan Cruickshank (Conference chairman)

Details about the day and the conference.

Keynote Speakers

▶ **10:30am – Global and national perspectives on sustainable agriculture**

Facilitated by Chris Phillips (Landcare Research)

▶ **10:35am – Global drivers of the agricultural sector on land and water**

Dr Caroline Saunders (Lincoln University)

International drivers of change in the agricultural sector, with a focus on sheep, dairy and arable farming. How are these combining to effect change on farms in NZ?

▶ **11:10am – Landcorp farming and business**

Mark Julian - GM Dairy (Landcorp)

Corporate farming in NZ – how land, soil, people and science interact to allow Landcorp to operate in a social and environmentally sustainable way.

▶ **11:45am – Context, history, policy drivers – Linking national to local scale**

Jonathan Streat, Director of Operations (Environment Southland)

Institutions matter and people are not islands. Context, history and lessons to help deal with contemporary challenges.

▶ **12:20pm – Platinum sponsor talk**

Alastair Taylor – Ballance Agri-nutrients

12:25 – Lunch

▶ **1:30pm – Science of Southland**

An overview of science relating to land and water management in Southland – some of the uniquely Southland work that has been done or is underway.

Facilitated by Graham Sevicke-Jones, Director of Science and Information (Environment Southland)

▶ **1:35pm – Physiographic Zones of Southland – Overview**

The Physiographics of Southland project – the genesis of the project, how the zones were generated, and what story they tell the community.

Dr Clint Rissmann (E3 Scientific Ltd)

▶ **1:55pm – Natural capital – Ecosystem service approach to resource management**

Dr Alec Mackay - Principal Scientist, Farm Systems & Environment (AgResearch)

Building a natural capital-ecosystem service approach into land evaluation and farm planning processes

▶ **2:10pm – Topoclimate – Science and contaminant pathways**

Dr Sam Carrick - Research Leader – Soil mapping and modelling (Landcare Research)

The topoclimate work – a brief overview of the topoclimate project (what were the drivers in the mid 90s?), links to s-map and how to fill in the gaps for the demands of 2017

▶ **2:25pm – Aligning good management practices with Southland's physiographic zones**

Dr Ross Monaghan – Senior Scientist (AgResearch)

Taking the physiographic zones work to the farm scale – recommendations for good practice based on characteristics of specific physiographic zones.

▶ **2:40pm – Questions**

3:05pm – Afternoon tea

▶ 3:30pm – Working with People

Facilitated by Simon Stokes – Eastern Catchment Manager (Bay of Plenty Regional Council)

An overview of work underway in Southland by individuals and communities to effect change in land and water management. Facilitated by Simon Stokes – Eastern

▶ 3:35pm Iwi connections – Nga Kete o te Wananga

Dr Jane Kitson – Director (Kitson Consulting Ltd)

Resource management within a cultural framework – Maori world views and practices as a setting. Nga Kete o te Wananga as an example.

▶ 3:50pm – Farming in a challenging environment – Lake Catchment Project – Farm planning, water quality and change

Chris Arbuckle (Aspiring Environmental)

Overview of a Beef+Lamb NZ funded project to work with high country farmers in Otago on environmental and financial management. Detailing the nexus in farm scale environmental management and improvements in catchment water quality.

▶ 4:05pm – Establishing and running catchment groups – the Southland scene

Suzanne Hanning – Dairy Farmer, Co-chair (Hedgehope Catchment Group)

Showcasing a catchment group in Southland (Hedgehope catchment group) – Why and how they began, successes and challenges.

▶ 4:20 pm Extension – How do we effect change on farm?

Simon Sankey – Regional Team Coach (DairyNZ)

What is extension and how do we effect change at a farm level? What are the thought processes of decision-makers. Why are changes not made, are there regional differences?

▶ 4:35pm – Questions

▶ 4:55pm – NZARM Bay of Plenty 2018

Paul Greenshields

▶ 5:05 NZARM certification

Kerry Hudson

▶ 5:10pm Day 1 ends

▶ 5:15pm NZARM AGM

Cash Bar 17:15 – 18:00)

▶ 6pm -7pm Happy hour

Drinks and canapés – sponsored by NZARM

SESSION 1: 10.30am

GLOBAL AND NATIONAL PERSPECTIVE ON SUSTAINABLE AGRICULTURE

Facilitated by Chris Phillips (Landcare Research)

Chris Phillips leads the research portfolio “Managing Land & Water” at Manaaki Whenua Landcare Research and is based at Lincoln.

His primary research interests are in erosion processes, how vegetation mitigates erosion and sediment transport and integrated catchment management (ICM).

He is an Honorary Member of NZARM, past Director of the Australasian Chapter of International Erosion Control Association (IECA), a Board Member of ecorisQ - a global community of professionals working on natural hazard risk management and is the current Chair of the Styx Living Laboratory Trust in Christchurch.



▲ Chris Phillips

► *Global drivers of the agricultural sector on land and water*

International drivers of change in the agricultural sector, with a focus on sheep, dairy and arable farming. How are these combining to effect change on farms in New Zealand?

Dr Caroline Saunders (Director of AERU, Lincoln University)

Dr Caroline Saunders has 30 years research expertise in the UK and New Zealand and has over 300 publications. Her current research includes assessment of international markets, policies and their impact. She has undertaken research for a wider range of private and public bodies both in New Zealand and overseas.

Dr Saunders was awarded Economist of the Year in 2007 and made an Officer of the New Zealand Order of Merit in 2009.



▲ Dr Caroline Saunders

► *Landcorp farming and business*

Corporate farming in New Zealand – how land, soil, people and science interact to allow Landcorp to operate in a social and environmentally sustainable way.

Mark Julian (GM Dairy, Landcorp)

Mark Julian was appointed to his current position of General Manager - Dairy Operations in October 2014. He joined Landcorp as a Business Manager in Wellington before moving south spending two years on the West Coast as a Farm Business Manager, then returning to Wellington in 2011 as a Senior Business Manager until taking up his new appointment.

Mark is a Massey University alumni, completing a Bachelor of Applied Science with a major in Agriculture, followed by a postgraduate year focused on dairy production and farm management. In the final year of his degree Mark was awarded the prestigious William Gerrish Memorial Prize in Farm Management, awarded to a top farm management student.

On leaving university Mark worked for DairyNZ as a Consulting Officer in the Central Plateau and was involved in working with farmers around nutrient management issues with Lake Rotorua and Taupo and forest to farm conversions. In 2013 Mark won the Young Executive of the Year award at the Deloitte Top 200 Business awards.

Mark's responsibilities as General Manager - Dairy operations include the incorporation, development and execution of the Landcorp's dairy business strategy on Landcorp owned dairy farms, and those farms Landcorp manages on behalf of external owners. Recent challenges Mark has led are the removal of quad bikes from all Landcorp dairy farms, stopping the use of palm kernal as a supplementary feed and leading the project to halve the dairy conversions Landcorp have undertaken in the central North Island.



▲ Mark Julian

► *Context, history, policy drivers – Linking national to local scale*

Institutions matter and people are not islands. Context, history and lessons to help deal with contemporary challenges.

Jonathan Streat (Director of Operations, Environment Southland)

Jonathan Streat is currently Director of Operations at Environment Southland. He has worked in Natural Resource Management in Australia and New Zealand over the past 20 years.

Prior to joining Environment Southland, Jonathan's experience and education has been successfully applied to a range of natural resource management policy, implementation and operational challenges, at local, regional and national scales.

Jonathan has worked in both the government and private sectors, managing projects and programmes to restore riverine and groundwater systems, set policy for natural resource management and led organisational change projects to set up natural resource management institutions and arrangements. Organisations he has worked for include Greater Wellington



▲ Jonathan Streat

Regional Council, Auckland Council, New South Wales National Park and Wildlife Service, the Department of Water, Land and Biodiversity Conservation, South Australia, NSW Farmers Association and State Forest of NSW. His qualifications include a Master of Environmental Science (University of Auckland) Master of Natural Resources and a Bachelor of Science (University of New England).

Jonathan is an alumni of the International Water Centre (IWC) Water Leadership Programme, University of Queensland. Jonathan lives in Winton, Southland, with his wife Pippa, his dog Dixie Blue, and his two pigs, Cleveland and Harry.



▲ Alastair Taylor

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► **Platinum sponsor talk**

Ballance Agri-nutrients (Alastair Taylor)

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12:25pm – Lunch

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SESSION 2: 1:30pm

SCIENCE OF SOUTHLAND

An overview of science relating to land and water management in Southland – some of the uniquely Southland work that has been done or is underway.

Facilitated by Graham Sevicke-Jones (Director of Science and Information, Environment Southland)

Graham initially worked in the primary sector as an industrial chemist for the meat processing industry before taking on the role of Environmental Scientist for firstly South Canterbury Catchment Board, Environment Canterbury, and then Hawke's Bay Regional Council.

In these roles he principally managed freshwater and marine water quality and ecological programmes and worked closely with communities on establishing limits to assist in resource management through statutory processes.

Graham spent 15 years working in science management for the Hawke's Bay and Greater Wellington Regional Councils prior to moving into the position of Director - science and communication at Environment Southland. Graham has been involved in enabling collaborative processes for limit setting to meet national and community outcomes at the regional scale. Graham has extensive knowledge on environmental monitoring programmes, transfer of science into policy and effective measurements.



▲ Graham Sevicke-Jones

Graham has been involved in numerous national steering groups (including the National Environmental Monitoring and Reporting project), contributed to the National Environmental Monitoring and Reporting forums (and its successor EMaR) and has provided feedback on the RMA changes and proposed Bill on Environmental Monitoring and Reporting.

Graham has also participated in the government appointed Land and Water Forum and Ministry for the Environment National Objectives Framework provisions for the NPS-FM amendments.

Previously Graham was the convenor of the Surface Water Integrated Management Group, (a regional council special interest group) for 10 years. This special interest group, consisting of regional council policy staff and freshwater scientists has a strong emphasis on integrated and collaborative science processes. Graham is also past president of the Hawke's Bay Branch of the Royal Society of New Zealand.

► *Physiographic zones of Southland overview*

The Physiographics of Southland project – the genesis of the project, how the zones were generated, and what story they tell the community.

Dr Clint Rissmann (E3 Scientific Ltd. Adjunct Senior Fellow, Waterways Centre for Freshwater Management, University of Canterbury and Lincoln University)

Clint Rissmann is a Senior Adjunct Fellow to the Waterways Centre at the University of Canterbury and Lincoln University and Director of the Land and Water division of E3 Scientific Ltd.

Clint holds an undergraduate degree and post-graduate qualifications in soil pedology, geomorphology, biogeochemistry and environmental toxicology from Lincoln University; Masters of Science in hydrogeology and both aqueous geochemistry and isotope geochemistry from the University of Texas, and; a PhD in fluid chemistry (liquids and gases) and geology from the University of Canterbury.

He has held positions as a Teaching Fellow at Lincoln University, the University of Texas and a Post-Doctoral position at the University of Canterbury. Clint has also worked as a Senior Scientist (hydrochemist) for GNS Science and is currently a Project Scientist for the National Science Challenge – Our Land and Water. Clint has worked at Environment Southland as a Scientist, Principal Scientist and for a period as Science Manager.

His interests lie in identifying and conceptualising the controls over physical, chemical and biological process within the natural environment. This has included work and research on the controls over water composition and water quality, including the Physiographic's of Southland project. Clint believes he is lucky to live in Southland and is married with three young children.



▲ Dr Clint Rissmann

► *Natural capital – Ecosystem service approach to resource management*

Building a natural capital-ecosystem service approach into land evaluation and farm planning processes.

Dr Alec Mackay (Principal Scientist, Farm Systems & Environment, AgResearch)

Alec is a Principal Scientist in AgResearch based on the Grasslands campus in Palmerston North. He has a B Agric Sci (Hons) and a PhD in Soil Science both from Massey University and is a Fellow and Past President of the New Zealand Society of Soil Science. He was recently awarded the Ray Brougham Trophy by the New Zealand Grasslands Trust for outstanding national contributions to pastoral farming industries.

He leads research on refinements to land evaluation and farm systems modelling and planning tools, the impact of intensive pasture agriculture practices on soil organic matter, pore function and biology as it influences both the soils provisioning and regulating services, methodology for quantifying and valuing the ecosystem services of pastoral agricultural systems and the use of a natural capital-ecosystem service approach to resource management.

Options for the inclusion of ecosystem services, as part of the land evaluation processes, is a current project, as is the development and testing of a new generation farm systems modelling capability with the capacity to optimise the farm system within defined ecological boundaries. He has published 120+ refereed journal articles and 220+ conference papers and has a long history of post-graduate student supervision.



▲ Dr Alec Mackay

► *Topoclimate – Science and contaminant pathways*

The Topoclimate work – a brief overview of the topoclimate project (what were the drivers in the mid 90's?), links to s-map and how to fill in the gaps for the demands of 2017.

Dr Sam Carrick (Research Leader – soil mapping and modelling, Landcare Research)

Dr Sam Carrick is a soil scientist at Landcare Research, leading research in the areas of soil mapping and soil physics. Sam cut his teeth leading the soil survey team in the Topoclimate project in the late 1990's, before heading over the border to complete the Otago regional soil survey as part of the Grow Otago project.

Sam then returned to Lincoln University to complete a PhD in soil physics, before returning to Landcare Research in 2009. His work is now split across the land resource assessment and soil water domains, working on a range of collaborative multi-agency projects. One area of active research is through a number of projects that are improving our knowledge on the soil water storage behaviour of New Zealand soils.

Sam is also passionate about spreading the good word on soil, through support of industry extension activities and his work at Lincoln University, lecturing and supervising post-graduate students.



▲ Dr Sam Carrick

► **Aligning good management practices with Southland’s physiographic zones**

Taking the physiographic zones work to the farm scale – recommendations for good practice based on characteristics of specific physiographic zones.

Dr Ross Monaghan (Senior Scientist, AgResearch)

Dr Ross Monaghan is a soil scientist specialising in nitrogen cycling in grazed dairy systems and is based at AgResearch’s Invermay campus near Mosgiel. Much of his current research focuses on quantifying nitrogen (N) and phosphorus (P) losses to water and assisting end user groups with policy development and/or management guidelines that can reduce these losses.

He has been closely involved in research undertaken within the national Dairy Catchments study, an Industry-led initiative that benchmarked soil and water quality in 5 contrasting catchments located in the country’s key dairy regions.

He has also been heavily involved in a wide range of dairy industry-funded research projects that seek to develop on-farm mitigation practices that allow for profitable dairy farming whilst meeting regionally-based targets for water quality.



▲ Dr Ross Monaghan

► **Question time**

3:05pm – Afternoon tea

SESSION 3: 3.30pm

WORKING WITH PEOPLE

An overview of work underway in Southland by individuals and communities to effect change in land and water management.

Facilitated by Simon Stokes (Eastern Catchment Manager, Bay of Plenty Regional Council)

Simon Stokes is the Eastern Catchment Manager at the Bay of Plenty Regional Council. He currently manages the integrated catchment management programmes for the Rangitāiki River, Ōhiwa Harbour and Eastern river catchments.

He has had a 21-year career in resource management in New Zealand working for Manawatu-Wanganui Regional Council (Horizons), Hawke’s Bay Regional Council, and currently the Bay of Plenty Regional Council. He has also worked with Central Government agencies and non-Government Agencies, Crown Research Institutes, Iwi and Maori Trusts, and many landowners.



▲ Simon Stokes

He has been President of the New Zealand Association of Resource Management and was on the executive for 10 years. Simon also led the New Zealand Deer Farmers Association Environmental Awards programme for 4 years in the mid 2000's.

Simon has recently been appointed as a Trustee to the New Zealand Poplar and Willow Research Trust, and the New Zealand Farm Environment Trust which runs the Ballance Farm Environment Awards programme. He has recently resigned after several years as convener of the regional sectors Land Managers Group for Regional Councils and Unitary Authorities.

He currently supports and provides advice to the Ministry for Primary Industries and Ministry for the Environment when required, on a range of land management and land use planning, and building resource management capability and capacity under their various programmes.

He is currently spending half of his time as the lead for the natural and rural environment programme in the Whakatāne District Recovery plan, post Cyclone Debbie and Cook. Before entering management at the Bay of Plenty Regional Council, Simon specialised in farm planning, soils, catchment management, soil conservation and working with the community.



► *Iwi connections – Nga Kete o te Wananga*

Resource management within a cultural framework – Maori world views and practices as a setting. Nga Kete o te Wananga as an example.

Dr Jane Kitson (Director Kitson Consulting Ltd)

Jane is an ecologist and environmental scientist who has previously worked for Te Waiarau Mahika Kai Trust, Southland Regional Council, Te Ao Marama Incorporated (Ngāi Tahu ki Murihiku natural resource management agency), Te Rūnanga o Ngāi Tahu and currently runs her own environmental consultancy company.

She has worked on a range of research and management projects including doctoral research on traditional ecological knowledge and harvest management of tītī/muttonbirds; microbial food webs in lakes; research on kanakana/lamprey, coastal and freshwater environmental science; and managing the State of Southland Environment reporting on the freshwater and coastal marine environments. The projects she has enjoyed most are the ones where she has been able to work with whānau to bring science and mātauranga together.

Jane hails from Murihiku and is a member Ōraka-Aparima Rūnanga and has whakapapa links to Waihōpai and Awarua Rūnanga. Jane is married to Zane and they have two sons Luke (11) and Trent (9). Her family has a strong interest in hunting and mahinga kai pursuits e.g. trout and salmon fishing, duck and deer hunting, kaimoana gathering and tītī/muttonbird harvesting.



▲ Dr Jane Kitson

► ***Farming in a challenging environment – Lake Catchment Project – farm planning, water quality and change.***

Overview of a Beef + Lamb NZ funded project to work with high country farmers in Otago on environmental and financial management – detailing the nexus in farm scale environmental management and improvements in catchment water quality.

Chris Arbuckle (Aspiring Environmental)

Chris was born and bred in Otago, spending his formative years in Wanaka and then latterly Dunedin. His teenage children are at university and secondary school in Dunedin. His professional career has focused on science, policy and leadership; including senior roles in both central (Ministry for Primary Industries) and regional government (in Otago and Southland) working on policies and science primarily around the ‘management’ of freshwater.

In 2013, he returned to self-employment and now works with CRI’s, regional councils, industry bodies, farmers and the wider community on a suite of environmental projects focused primarily on freshwater, land and catchment management.

His interests include walking, tramping and photography. His passions embrace mountain biking and “dancing with wolves”.

.....

► ***Establishing and running catchment groups – the Southland scene***

Showcasing a catchment group in Southland (Hedgehope catchment group) – Why and how they began, successes and challenges.

Suzanne Hanning (Dairy farmer, Co-chair Hedgehope Catchment Group)

Born in Canada, Suzanne grew up on a family dairy farm in south western Ontario. When she finished studying veterinary technology, she came to New Zealand on a working holiday where she met her husband Maurice.

Together with Maurice, and in partnership with his parents, she helped run the family sheep and beef farm while working various off-farm jobs to support their farming habit. These included working for Ballance Agri-nutrients as a soil tester and livestock improvement as an Artificial Breeding Technician and Sales Rep. During this time, Suzanne and Maurice had three daughters, Nicole, Rebecca and Naomi.

In 2007, they converted the family farm to dairy with the aim of not being one of “those dirty dairies”. Careful thought was put into establishing suitable infrastructure so the business would be sustainable for future generations. Another aim was to get the dairy herd into the top 5% for BW and PW in New Zealand.



▲ Chris Arbuckle



▲ Suzanne Hanning

In recent years, Suzanne has developed a passion for spreading the ‘cleaner dairying’ message through establishing a Facebook page ‘Bristol Grove Dairies’, showing and explaining topical points of interest on her families own dairy farm. The page has a modest following and Suzanne hopes it will continue to grow organically as people want to learn more about what actually happens and why on a dairy farm. She encourages questions and offers factual, accurate responses which are aimed to bring a better understanding of agricultural processes.

In the same vein as the Facebook page, Suzanne has helped establish a catchment group in the Hedgehope Dunsdale area. The aim of the group is fourfold – find out what the water quality in the catchment is and create a data set, help to support and spread information on sustainable farming to other farmers, communicate with council while advocating for the local community and help the wider community get a better understanding of what the farming sector is doing to improve our environment.

In her spare time, Suzanne enjoys acrylic painting and gets great satisfaction donating profits from sales to local charities, a favourite being the Southland Rural Support Trust. She also enjoys supporting her children in their sporting and educational pursuits and traveling to visit family.

► **Extension – How do we effect change on farm?**

What is extension and how do we effect change at a farm level? What are the thought processes of decision-makers. Why are changes not made, are there regional differences?

Simon Sankey – Regional Team Coach, DairyNZ

Simon Sankey has been involved with the New Zealand dairy industry for over 20 years. Brought up on a farm in Mid-Canterbury, he studied Agricultural Science at Lincoln University and has been involved since then both in extension and development with the dairy industry.

Simon has had stints as a Consulting Officer in Northland, Nelson and Canterbury. As part of his role in development, he was involved with both improving HR practices (HR toolkit) and farm systems (Pasture Plus and Whole Farm Assessment).

Since 2010 Simon has been the Extension Team Coach for DairyNZ, supporting Consulting Officers and Regional Leaders. He also contributes internally and externally to programme design, extension/facilitation and Whole Farm Assessment training. Simon’s current role gives him the opportunity to work with farmers, extension agents and programmes to bring about on-farm change.

He was awarded the 2015 APEN Award for Excellence in Extension for an Experienced Professional.



▲ Simon Sankey

► **Question time**

▶ **NZARM Bay of Plenty 2018**

Paul Greenshields

▶ **NZARM certification**

Kerry Hudson

▶ **5:10pm – Day 1 wrap-up**

Nathan Cruickshank

▶ **5:15–6pm – NZARM Annual General Meeting**

Cash bar available

▶ **6–7pm – Happy hour**

Drinks and canapés sponsored by NZARM



Rayonier Matariki Forests

is recognised for its environmental stewardship and with a focus on advanced genetics, forest nutrition and forest health, we manage our forests to the very highest standards.

Working alongside our communities to look after the land, we are committed to sustainable timber management practices to ensure the protection of valuable resources for future generations.

For more information visit:

www.matarikiforests.co.nz





Poster Paper Abstracts

► Farm environment plans and the challenge of resilience

**Hamish G. Rennie – Lincoln University,
Tyler Barton – University of Canterbury and
David Wither – University of Otago**

Farm environment plans (FEP) have been developed with a focus on how to reduce the effects farming has on the environment, but is this sufficient to address the effects of the environment on farm resilience? In this poster we present preliminary analyses of FEP templates and ask if there is potential to extend their content in a way that makes them more valuable to the farmer as a useful tool for improving their farm's resilience rather than as a tool for regulatory compliance.

Email the author: Hamish.rennie@lincoln.ac.nz

► Farmer led community catchment groups

Julia Christie – DairyNZ

Farmer led community catchment groups have evolved in Southland over the last few years and have a common purpose of increasing awareness of water quality issues and environmental policy changes. They are all independent, grass roots driven and have a desire to protect water quality, and their agricultural businesses for now and for future generations.

► Farm Environment Management Plans in the Hawke's Bay region

Nicola McAffie – Hawkes Bay Regional Council

The Tukituki Plan Change 6 (operative 2015) is the first of the NPS-FM plans in place for the Hawkes Bay region. We are rapidly approaching the May 2018 deadline where all of the land owners above four hectares require a FEMP. This poster outlines the successes and sticking points of implementing Plan Change 6.

► Wharekopae Water Quality Enhancement Project

Alice Trevelyan - Gisborne District Council

The Wharekopae River is a significant tourist destination, home to both the Rere Rockslide and Rere Falls. Water quality at these sites is degraded with *E.coli* levels frequently exceeding safe swimming standards, resulting in the installation of permanent signage advising people not to swim.

The project is collaborative, with Gisborne District Council, Ministry for the Environment, Beef and Lamb and the Wharekopae Farming Community. Driven by a common goal of restoring water quality in the Wharekopae River, and the removal of permanent signage at the Rockslide and Falls, the project has seen high levels of community engagement, and attracted attention of both the public and regional authorities in both Gisborne and across New Zealand.

To reduce *E.coli* levels, the project has investigated and implemented *E.coli* mitigation methods at the farm level through Farm Environment Planning. A model has also been developed by Richard Muirhead (AgResearch) and Graeme Doole (Waikato University) to investigate reduction-economic tradeoffs for a range of mitigation methods.

This is a long term project, reductions in *E.coli* levels are not going to be instantaneous, however, to date the project has already seen some exciting tangible results. Farmers voluntarily conduct water quality samples on farm, with weekly results assessed against on farm activities, such as stock crossings, fenced areas and use of cattle yards. All 21 farms in the upper Wharekopae Catchment have voluntarily completed, or are signed up to complete a Farm Environment Plan. With the assistance of GDC funding, mitigation methods including fencing, riparian planting, water reticulation systems and sediment traps have been constructed across the catchment.

► Belief and riparian planting of drains in the Lake Ellesmere/ Te Waihora Catchment

Hamish G. Rennie, Ella Shields, Jill Thomson (for Waihora Ellesmere Trust and Lincoln University)

As part of its Sustainable Drains Management project the Waihora Ellesmere Trust obtained funding to provide riparian planting site plans for twenty landowners in the Lake Ellesmere/ Te Waihora catchment.

This poster presents the results of a survey to assess progress on plan implementation and to see if underlying belief systems might be a factor in implementation.

► Focus Activity Farm Plans

Anastazia Raymond – Environment Southland

Land sustainability officers at Environment Southland produce environment management plans recommending good management practices based around land management activities we have identified as a focus in Southland. We call our plans *Focus Activity Farm Plans*. The plans place particular emphasis on riparian management, nutrient management and wintering practices.

Land sustainability officers spend time one-on-one discussing environmental practices and attitudes, followed by time on the property mapping and identifying landscape features and practices for good management practice recommendation. The landowner is supplied with a folder containing maps of collected features of the property and factsheets for best practices.

Landowners have the opportunity to apply for an enablement grant to progress the recommendations. Officers follow up at two-yearly intervals to check on progress with good management practices and gauge changing attitudes to environmental practices.



Poster Paper Abstracts

► Envirowalk

Adam Duker – DairyNZ

EnviroWalk is a known, trusted tool now revamped by DairyNZ to an online environmental risk self-assessment which aligns with good management practices. It links to further information and suggested actions to generate an action plan. Completing an EnviroWalk will inform and empower the farmer to be proactive in addressing environmental issues on farm, and will be particularly useful in regions where there is no regulatory requirement to have an environmental farm plan.

► Fonterra Farm Environment Plans

Paige Lewis – Fonterra

The poster outlines how Farm Source's Sustainable Dairying Programme, Tiaki, supports Fonterra farmers via producing Farm Environment Plans. We are highlighting the work done in our FEP pilot programme, how our FEPs were received by farmers and the conclusions from this work. The pilot demonstrated that our Sustainable Dairying team is able to produce FEP reports at scales that are tailored to each farm's needs, incorporate visual aids and provide clear actions for farmers to follow.

► Spot the hotspot

Anne-Maree Jolly – Opus

What is the difference between a CSA and a 'hotspot'? How are tracks an issue? What is the risk with stockyards and what can be done about? The Opus Rural take on these questions and more. Highlighting the good and the not so good, farmers can be provided with a detailed farm plan identifying farm practices and infrastructure which are environmentally sound, and other which need improvements. Realistic advice and solutions provided in addition to support of implementation if required.

► Using LiDAR for more Automated Land Resource Inventory/Land Use Capability Mapping

James Barringer

Traditional farm-scale LUC mapping is a well-established manual process but is subjective, can have variable quality, and is difficult to scale up to larger areas. We tested new mapping techniques that drew on field observations, LiDAR, and GIS-based spatial modelling to provide a more consistent, quantitative and potentially automated approach to delivering fit-for-purpose land information. The diverse Northland landscape, geology, hydrology and soils provided a challenging environment to test this approach. In this poster we outline how single factor inventory layers were combined into a multifactor LUC map, and the end product is compared with traditional farm-scale LUC maps.

► Farm plans in the Horizons region

William McKay – Horizons Regional Council

In the 11 years of Horizons Regional Councils Sustainable Land Use Initiative (SLUI) over 500,000 ha of Hill Country has been mapped at farm scale on more than 650 farms, and over 30,000 ha of erosion control works have been funded on these properties. Key findings both socially and environmentally of the programme to date will be presented, drawing on farmers experiences with the farm plans and modelled regional outcomes.

► Environmental baseline assessment of freshwater resources and characteristics of soils surrounding proposed rapid infiltration site, Lake Rotoiti, New Zealand

Ricky V. Singh, Megan R. Balks - University of Waikato, Hamilton, New Zealand.

To help protect and restore Lake Rotoiti it is proposed to replace existing septic tanks with a reticulated sewage system. Domestic wastewater is to be treated and discharged to land via rapid infiltration on the margin of Lake Rotoiti on land owned by Ngati Te Rangiunuora. A baseline assessment of waters and land use potential at the site was undertaken. Water was sampled from five puna (springs) and the lake. The springs had a higher nutrient content compared to the surrounding lake water, indicative of possible contamination of ground water from septic tanks. The soils generally comprised gravelly sand, with low dry bulk density, high root penetration, low water retention and low concentration of nutrients and cations. There is potential to use nutrients and water from treated effluent to irrigate productive niche crops at the site. Steep slopes and potential for erosion limit options on some parts of the area. Potential productive options for steeper slopes included permanent vegetation such as native forest, pine forest or for manuka cultivation whereas the rolling slopes can be used for harvestable permanent crops such as harakeke, or energy crops. The undulating areas can either be used for all the options mentioned for the other slope classes, or for intensive horticulture or an exclusive tourist venture as the location has attractive views and can be incorporated with cultural experience.

Email the author: rickyvsingh@yahoo.com

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DAY 2

Wednesday 11 October

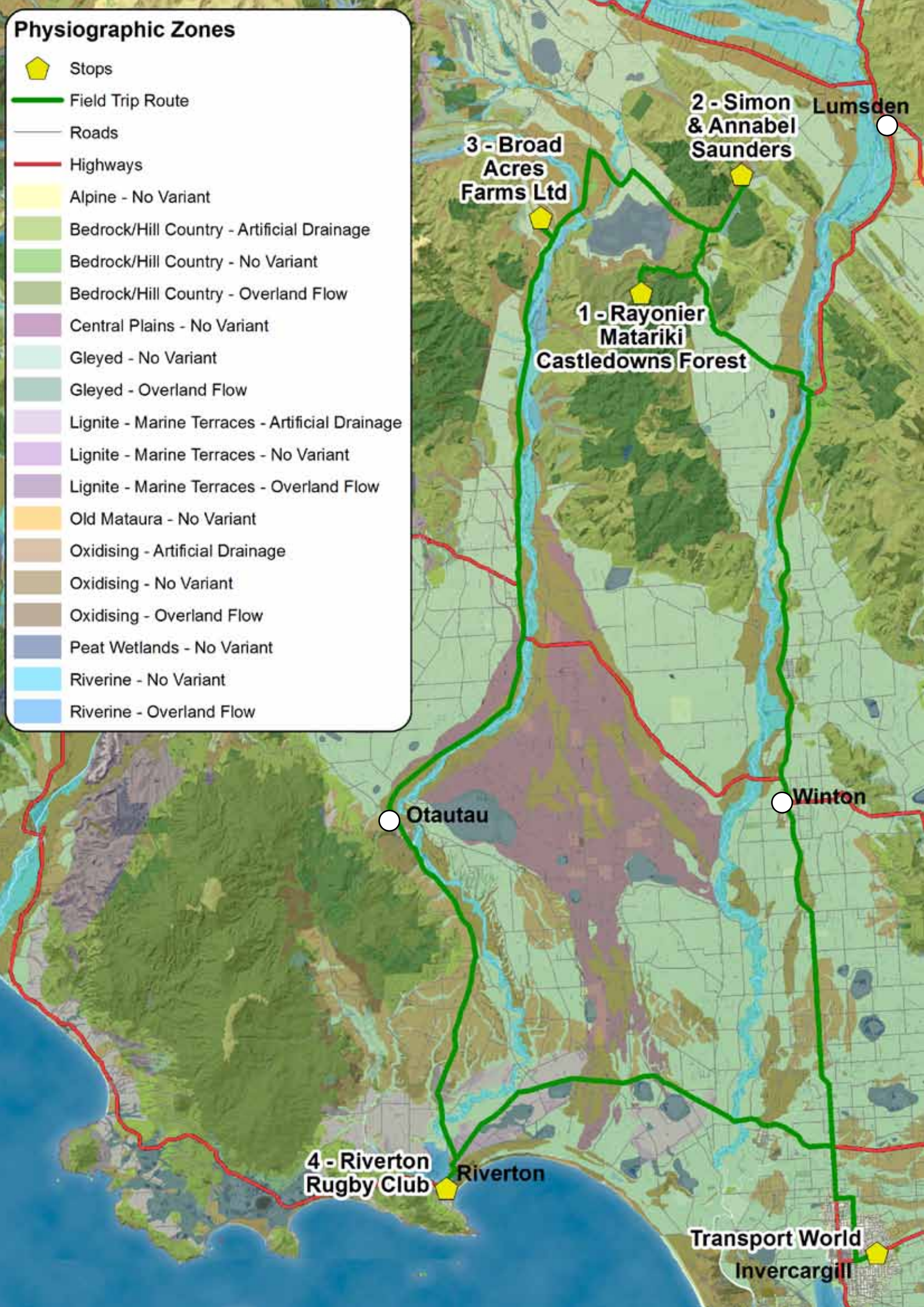
FROM THE MOUNTAINS TO THE SEA

FIELD DAY

Central and Western Southland

Physiographic Zones

- Stops
- Field Trip Route
- Roads
- Highways
- Alpine - No Variant
- Bedrock/Hill Country - Artificial Drainage
- Bedrock/Hill Country - No Variant
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- Oxidising - Overland Flow
- Peat Wetlands - No Variant
- Riverine - No Variant
- Riverine - Overland Flow



Wetlands, Forestry and Farming

▶ **8am – Meet at Transport World**

▶ **8.15am – Depart**

Travel by bus following the Oreti River upstream

▶ **9.20am – Rayonier Matariki Forests**

Mark Grover, Steve Chandler, David Saathof, Steven Ledington from Rayonier Matariki Forests

▶ **10.20am – Hill country sheep and beef property, Simon and Annabel**

Simon Saunders

Morning tea

▶ **11.05am – Depart**

▶ **11.50am – Large scale dairying and wintering in the Aparima River headwaters, Broad Acres Farms Ltd**

Phillip Van der Bijl; John Laing; Dr Clint Rissmann; Ian Power

12.40pm – Lunch

▶ **1.10pm – Depart**

Follow the Aparima River downstream to Riverton

▶ **2.10pm – Panel discussion – People involved in soil and water management**

Facilitated by Ian Tarbotton to explore the role of catchment groups, linkages to science and limit setting.

Panel includes Nick Ward (Environment Southland), Julia Christie (DairyNZ), Ewen Mathieson (Dairy farmer, Pourakino Catchment), Blake Holgate (RaboBank), Andrew Morrison (Sheep farmer and Beef + Lamb New Zealand).

Afternoon Tea

▶ **4pm – Depart for Invercargill**

▶ **4.30pm – Drop off at motels and Transport World**

▶ **5.30pm – Transport World tour**

▶ **6pm – Drinks and canapes**

▶ **7pm – Guest speaker**

Mayor of Invercargill, Tim Shadbolt

▶ **7.40pm – Conference dinner**

Field days kindly sponsored by:



Ministry for the
Environment
Manatū Mo Te Taiao



▲ Rayonier Matariki Castledown forest.

Rayonier Matariki Forests

Rayonier began operating in New Zealand in 1988 and significantly expanded its presence in 1992 with the purchase of 108,000 hectares of forests from the government.

In 2005, Rayonier became a partner in, and the manager of Matariki Forests, a 143,000-hectare forest estate that is New Zealand's third largest forest company. Regional offices are located in Whangarei, Tauranga, Napier, Christchurch and Invercargill, with the head office located in Auckland.

Rayonier Matariki Forests own and manage 40,000ha in the Southland/South Otago region. Approximately 8,000 hectares is unstocked or in biological covenants or are significant ecological areas which are actively managed.

The Southland region employs nine full time staff and a further 150 people on contract. Many more are employed indirectly in Southland and Otago's local mills through domestic sales, and in marshalling and stevedoring operations at Bluff and Port Chalmers.

Locally, Rayonier is about to increase their harvest to approximately 500,000 tonnes per annum (the equivalent of 70 logging trucks a day). This will be



a sustainable level of cut for the next 20 years. Sixty percent of the production is exported to China and India. The balance is supplied to the domestic market, which they intend to grow. They replant every hectare harvested, taking care to ensure to match the best crop types to the various sites in the estate.

They conduct their business with a strong commitment to health and safety and the environment. They have adopted responsible forestry practices that confirm this commitment.

Rayonier Matariki Forests has Forest Stewardship Certification® (FSC®) across all their regional operations. FSC® guides their activities in all forest operations in New Zealand. These principles are the foundation of their efforts to protect and grow value. They also help to meet all regulatory requirements and the environmental expectations of investors, customers, employees and other stakeholders.

Castledowns Forest

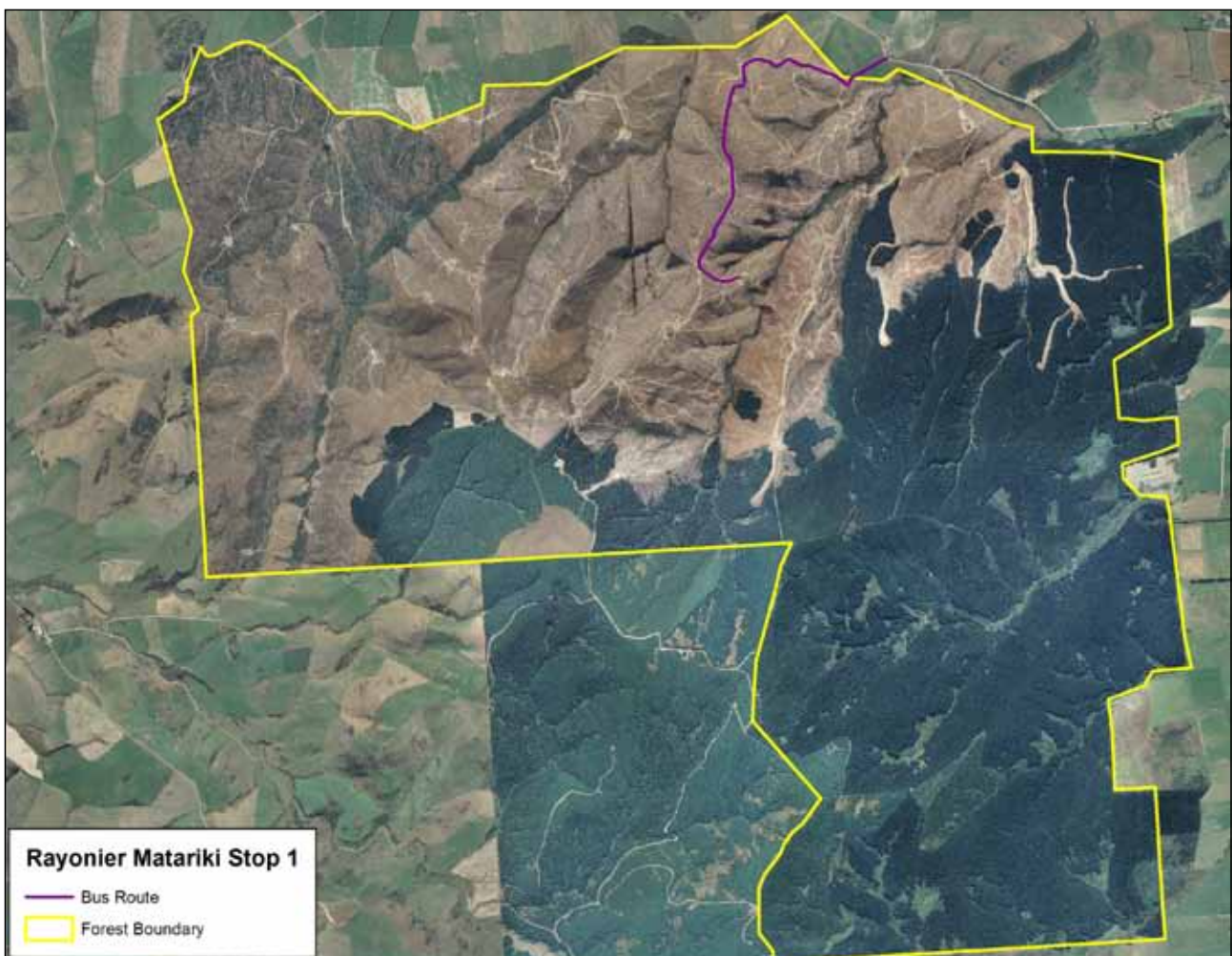
Located at the northern end of the Taringatura Hills, Castledowns Forest is 3,276 ha in size, of which 2,706 ha are in production.

The general topography is rolling hill country, ranging from 250 to 650 masl. Rainfall in the area typically averages 900-1000 mm per annum. Mossburn hill soils dominate the lower slopes, while Taringatura hill soils prevail generally above 350 metres. Both soil types are well suited to forestry.

Castledowns Forest drains into the Aparima catchment to the west and the Oreti catchment to the east. Several small streams arise within the forest, including tributaries of the Castledowns Swamp, Taringatura Creek and the Dipton Stream. These streams provide habitat for an assemblage of native and exotic fish species.

Establishment by the New Zealand Forest Service began in 1984. These first rotation plantings consisted of approximately 80% *P. radiata*, with the remainder being Douglas fir. Harvesting of the *P. radiata* began in Jan 2009 (age 25) and is expected to conclude in 2020. Harvesting of the Douglas fir is expected to begin in 2033.

When harvesting is completed, land preparation (root raking) is undertaken between late spring and early autumn at selected sites where there is a build up of slash. In late summer, a pre-plant spray occurs. Planting generally occurs within one to two winters of harvesting. As a rule of thumb, *P. radiata* is planted at elevations below 450 metres, while Douglas fir and a hybrid species (*P. attenuata*) are planted above 450 metres. Prior to year's end, the new planted cut-over is aurally released (sprayed) to minimise competition from weed species.



Simon & Annabel Saunders



▲ Simon and Annabel Saunders' farm, with White Hill Wind Farm in the background.

Simon and Annabel Saunders, along with their three children, farm at Stag Valley. The original block of 550 ha was purchased by Simon's parents in 1965 and has been added to four times since then. The total farm area is now 1384 ha made up of approximately 50% cultivated paddocks and 50% hill country, (which includes 100 ha of production forestry and 12 ha of shelter and conservation areas). The original property was one block of native tussock and four trees!

About the farm

Rainfall averaging around 1138mm annually is typically well spread through all seasons, although spring is often the wettest period. Each year there are around 40 frosts and six snow falls recorded. Nor' west is the predominant wind and often very persistent!

The altitude ranges from 290m to 730m. All cultivated area is rolling to flat with steeper hill country. Six soil types are found on Stag Valley. The two main ones are Kaihiku soils, which are found on the upper area of the valley with Mossburn soils found closer to the valley floor. Small areas of Honeywood, Makarewa and Taringatura are also evident.

The farm has 100 ha of production forestry, which is made up of approximately 20 blocks, with a mix of *Pinus radiata* and Douglas fir. Depending on age and state of the market around four to seven ha will be harvested

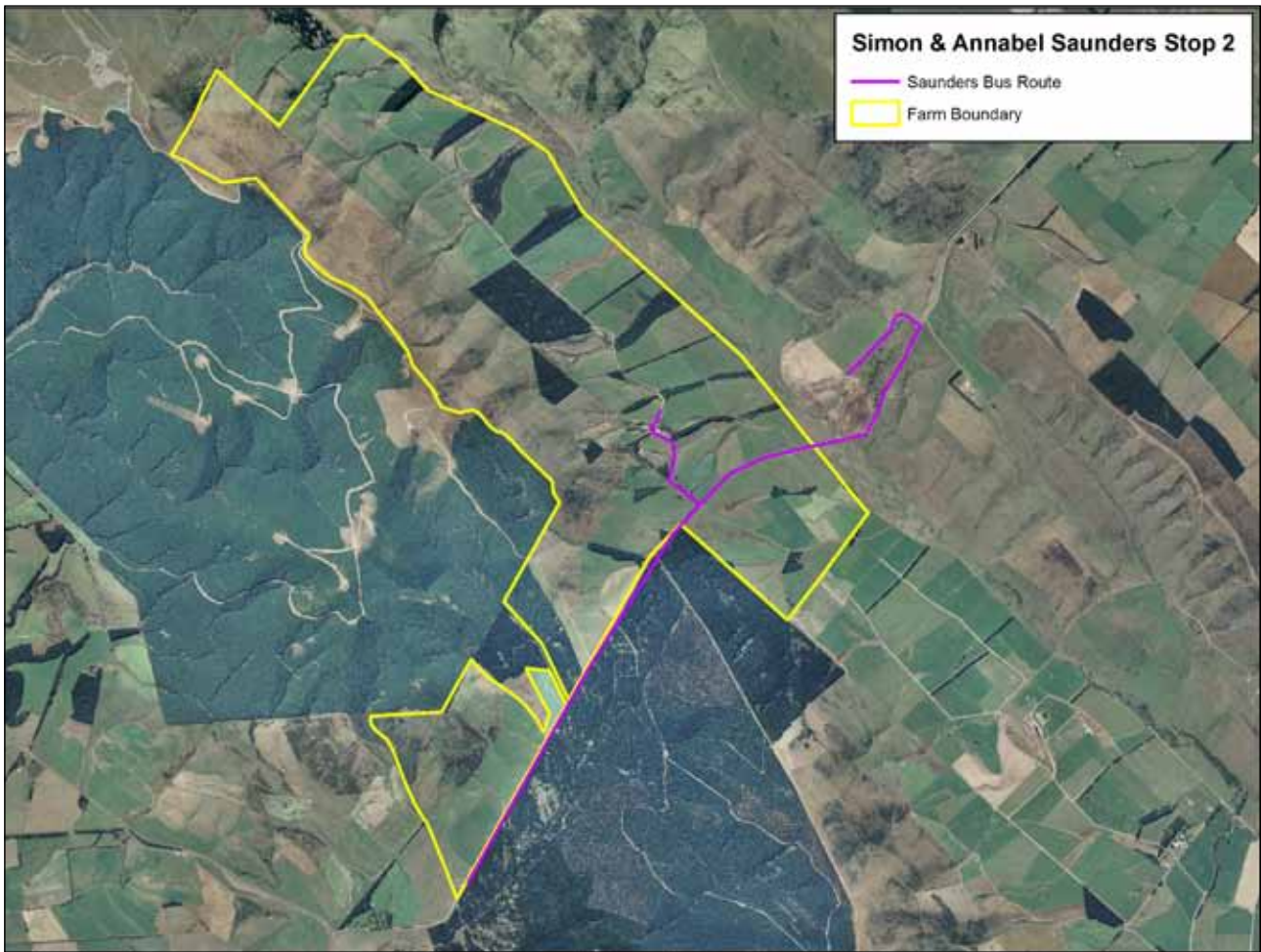
each year. On average approximately 500 tonnes of logs is harvested per stocked ha. The silviculture programme is aimed at producing a 6m pruned butt log at a stocking rate of 320 to 350 stems per hectare.

A large development programme was undertaken at each block with installation of four water supplies, large amount of subdivision of paddock and hill, with the aim of having all paddock under 10 ha, lower hill 15 to 20 ha. More recently the covered yards have been rebuilt and doubled in size. A stock manager's house was built 18 months ago.

Stock

Stock numbers budgeted for winter 2017:

Ewes	5100
Hoggets	1429
Rams	50
Cows	79
R2 Heifers	12
Bulls	3
R1 Dairy heifers	320
Approx total stock units	9500



- Ewe breed is Headwaters, approx. 70 to 80% sold prime. All lambs this year will be finished for Te Mana lamb. Average lambing around 150%.
- Manage the Elite breeding programme for Headwaters. Ram lambs are sold to Headwaters in March.
- Cattle breed is Angus, Terminal Charlies bull used and progeny sold as weaners. Buy in replacement R2.
- Dairy heifer grazing consists of only younger stock to minimise soil damage over the winter/spring period especially on the heavier Mossburn soils.

Simon and Annabel are very focused on a profitable, sustainable farming business. They are achieving this through managing their soils and climate to match the stock classes and management systems, planting shelter and fencing off waterways.

They have also gained consent through the Southland District Council to develop the lower parts of Wether Hill. As part of the consent process, they worked very closely with Environment Southland, DOC and the Southland District Council to develop a detailed plan of what was to be developed and what areas were to be left, including the heavier native scrub, gullies, rock outcrops and red tussock. The best of these areas was identified as a potential area to be placed into a QEII covenant to protect it for future generations.



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Broad Acres Farms Ltd

▲ Cows are wintered in two covered wintering sheds at Broad Acres Farms Ltd.

Broad Acres Farm Ltd is a family company comprising of Denise and Philip van der Bijl, their daughter and son-in-law – Yvonne and John Lang and son and daughter-in-law – Chris and Trish van der Bijl.

Philip, Denise, John and Yvonne are based at Broad Acres near Mossburn milking in an 80 bale rotary cow shed. Chris and Trish are on the Reperoa farm in the central North Island, farming on pumice soil, 15km north of Taupo. There they milk in a 60 bale, drop side, herringbone cow shed.

Their objectives are to earn enough or a bit more to have a comfortable lifestyle for all of us; to enjoy what they are doing (most of the time); and to try and do everything once only (they are perfectionists!)

The farm in Southland is 1340ha with about 1300ha effective. They winter about 1700 dairy cows, to milk a maximum of 1600 cows, which is about the maximum for the cowshed. These cows produce about 650,000kg milk solids. Broad Acres is totally self-contained with just over 400 heifer calves and 400 2-year old heifers. They also rear about 375 bull calves with 225 on contract, delivery in January at

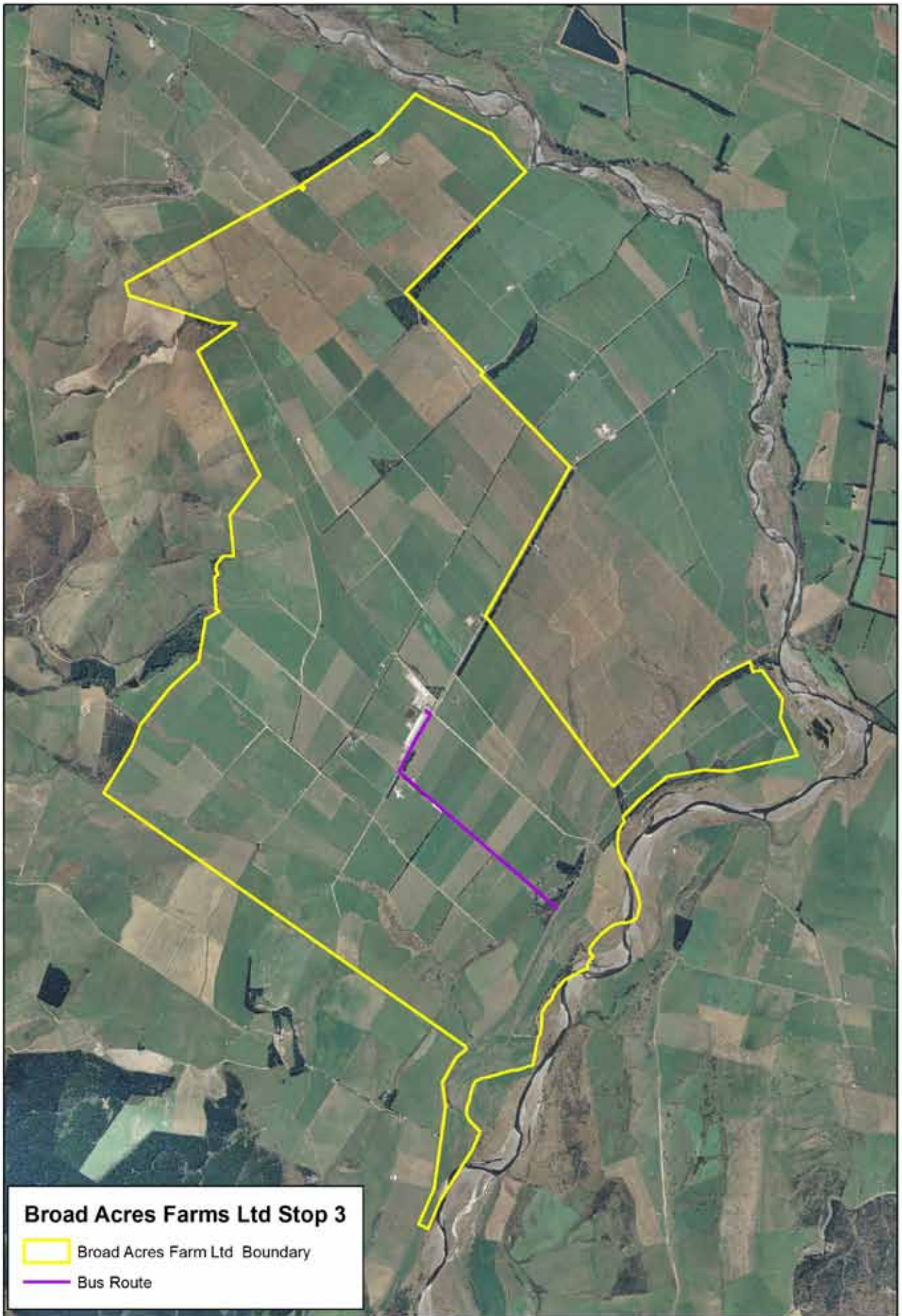
five months and keep about 120 bulls for breeding and meat up until they are two years old.

The contour of this land is about 90% flat and the rest moderate to steep hill country. They believe it is the hills and mountains in the background that give this farms real beauty.

The soil types are mainly Glenelg stoney soils which are prone to drying up badly in the summer months. There is also Braxton and Drummond Clay type soils. These do get wet and pug easily and need to be handled with real care during the wetter months of the year, however they will grow extremely well if looked after.

They have some Nova Flow running through some paddocks draining the worst of the springs. Ploughing is difficult as there are many large stones everywhere.

Rainfall is about 1000mm per year, often with the winter months below 50mm per month. However in the last few years they've gotten one to two months with as high as 150mm thrown in, which makes wintering without barns a real challenge. This is why most dairy farmers in Southland need to graze off farm.



They try to maintain a ryegrass/clover pasture which, with very low natural fertility and sometimes dry summers, is hard as 'brown top' still loves to take over. Every year they work up 10-15% of the farm to bring in different ryegrass again. They sow 50ha of barley with the grass in it for 'whole-crop' barley, to be made into silage in February. This produces on average 10,000 kg/DM ha in three months growing. They feed a grain/PKE pellet in the cow shed, using some 350 tonnes each year, and feed the calves 25 tonnes of grain pellets.

Their fertiliser programme is basic but seems to work - 600kg/ha of Serp. Super 15k. They use about 125kg of N/ha each year.

The cowshed is a 80 bale rotary which was built in 1999 but, with a lot of thanks to their excellent staff of seven, is still almost as good as new. They have renewed the track under the platform three years ago and replaced the Waikato electric pulsator at the same time. There are automatic cup removers but always have someone on the take-off side.

As their soils became wetter and wintering became difficult, they decided five years ago to build a 950 bail wintering barn and due to its success we have since built another 750 bail barn. Now they can house most of the herd over winter.

▼ The surrounding hills and mountains provide a stunning backdrop to this dairy farm.



Tim Shadbolt

(Conference dinner guest speaker)

Mayor, JP, author, actor, Marriage Celebrant, Professional Dancer, Scooter Extraordinaire and all-round Kiwi Bloke

Having won in total 12 Local Government elections in two cities, Tim Shadbolt is New Zealand's longest serving Mayor. First serving as Mayor of Waitemata City from 1983 to 1989, and then Mayor of Invercargill from 1993 to 1995 and 1998 to the current day.

Tim first came to prominence as a radical student leader in the 1960s as a member of Auckland University Society for the Active Prevention of Cruelty to Politically Apathetic Humans and an executive life member of the Auckland University Student Association. He took a year off from his studies to work on the Manapouri Power Project in 1966 which led him to form close connections to Invercargill.

A concrete contractor, by trade, he won grassroots support by famously towing his concrete mixer behind the Mayoral Daimler while Mayor of Waitemata City.

Tim was a leading figure in the key protests of the 60s and 70s – a Pirate Radio, Vietnam, French Nuclear Tests, the Maori Land March and Springbok Tours. He has served two prison sentences, been arrested 33 times and spent five years in periodic detention centres, all being convictions for political activism.

Tim's first television appearance was as a very young radical against formidable debater and Minister of Finance, Robert Muldoon, with a young Brian Edwards as moderator.

Tim was one of the first kiwi celebrities to share his dancing prowess on the very first series of *Dancing with the Stars*, a television competition which he almost won by public vote. In 2012 he broke the record for the World's longest television interview, talking non-stop for 26 hours and four seconds.

Tim tours the country with humourist and social commentator Gary McCormick and is a passionate supporter of the New Zealand film industry. He has acted in many New Zealand films: *Utū*; *The World's Fastest Indian* with Award winner Anthony Hopkins; *Two Little Boys* with Oscar winner Brett McKenzie and celebrity radio host Hamish Blake; and *Pork Pie*.



▲ Tim Shadbolt

Tim has also written two best-selling autobiographies, many books of poetry, writes regular newspaper columns and has contributed to countless magazines and online articles over the decades. He has appeared in numerous television programs over the last 45 years. Tim is a favourite special guest on TV Three's *7 Days* and *Jono and Ben*.

Most recently he has come to international attention on YouTube by using his scooter to propel himself to the dairy for milk, dressed in corporate attire, with almost a million people liking his mode of transport.

Tim was also a key propagator of the Zero Fees Scheme which established free education at S.I.T in Invercargill.

Tim's strength lies in his sense of humour, his massive political experience and his solid grounding in all things Kiwi. He has the most recognisable smile and voice in the land and is currently serving his eighth term as Mayor of Invercargill City Council.

DAY 3






















Thursday 12 October

ACTION ON THE GROUND

FIELD DAY

Eastern and Southern Southland

Physiographic Zones

-  Stops
-  Field Trip Route
-  Roads
-  Highways
-  Alpine - No Variant
-  Bedrock/Hill Country - Artificial Drainage
-  Bedrock/Hill Country - No Variant
-  Bedrock/Hill Country - Overland Flow
-  Central Plains - No Variant
-  Gleyed - No Variant
-  Gleyed - Overland Flow
-  Lignite - Marine Terraces - Artificial Drainage
-  Lignite - Marine Terraces - No Variant
-  Lignite - Marine Terraces - Overland Flow
-  Old Mataura - No Variant
-  Oxidising - Artificial Drainage
-  Oxidising - No Variant
-  Oxidising - Overland Flow
-  Peat Wetlands - No Variant
-  Riverine - No Variant
-  Riverine - Overland Flow



Tulips, Sheep, Beef & Waituna

▶ **8.15am – Meet at Transport World**

▶ **8.30am – Depart**

Travel through the Waihopai Catchment to Edendale

▶ **9.05am – Triflor, large scale tulip growing operation**

The history of the operation and challenges ahead

Rudi Verplanke and Marco Appel

▶ **9.45am – Depart**

▶ **10.05am – David and Alanna Clarke**

Sheep and beef property and their involvement with catchments groups. The Clarkes were 2017 Southland BFEA winners.

David Clarke, Turi McFarlane (Beef + Lamb), Nathan Cruickshank (Environment Southland)

▶ **11.05am – Depart**

▶ **11.30am – Fortrose café, Lower Mataura River**

Early lunch, then discuss Environment Southland lease land, how and why it was acquired, as well as hearing about water quality in the Mataura River.

Karen Wilson – (Environment Southland)
David Burger (DairyNZ)

▶ **12.50pm – Depart**

▶ **1.30pm – Waituna Lagoon (RAMSAR site)**

Stevie-Rae Blair (Te Ao Marama), Katrina Robertson (Environment Southland), Nikki Atkinson (Living Water)

▶ **2.15pm – Conference closure**

Kerry Hudson

▶ **2.30pm – Depart**

▶ **3.15pm – New River Estuary lookout**

▶ **3.20 pm – Invercargill Airport**

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Manatū Mō Te Taiao



▲ One of Triflors' current lease blocks.

Triflor NZ Ltd

Rudi Verplancke is the operational manager of Triflor NZ Ltd. He's been involved in the flower bulb industry in New Zealand for the last twenty years, in both tulips and lilies.

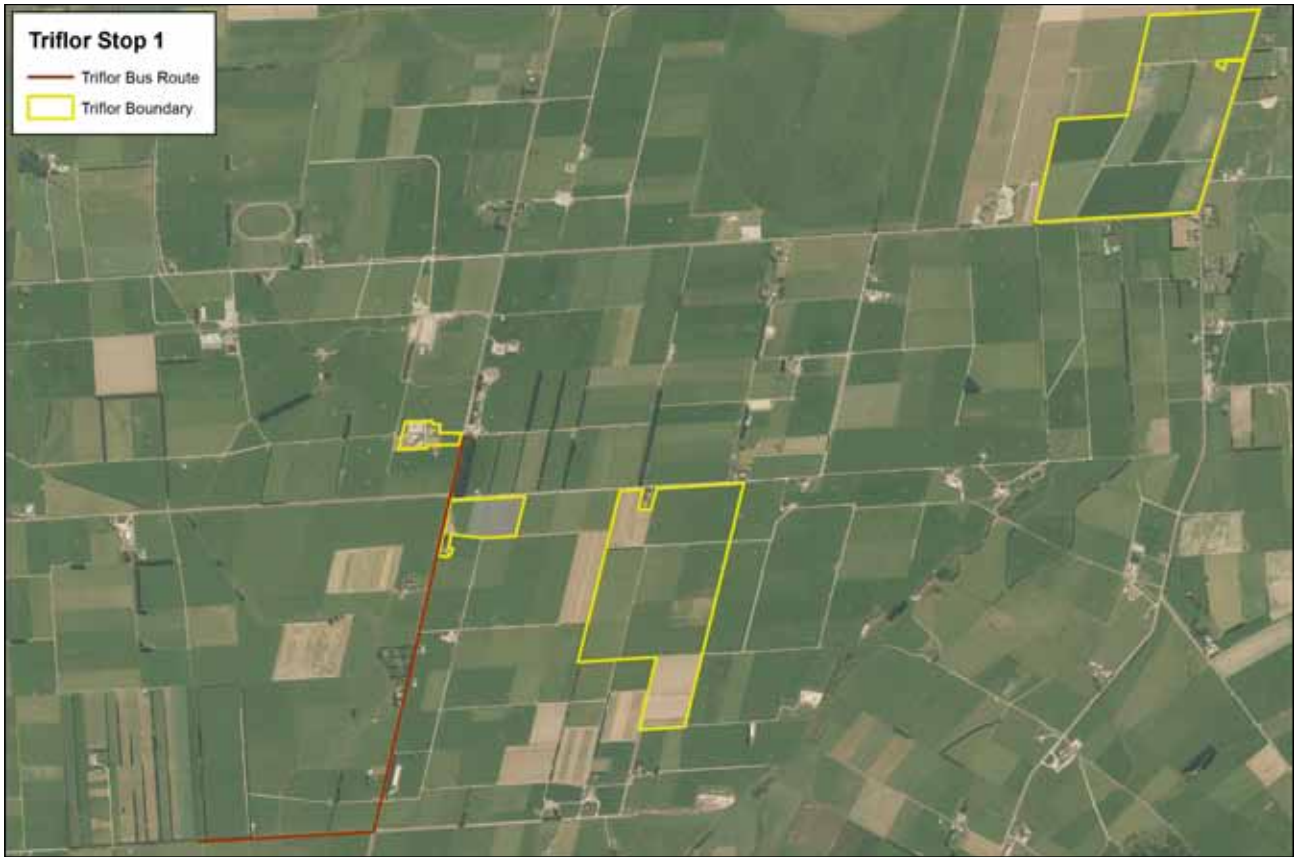
Triflor NZ Ltd. is a company specialising in the cultivation of tulip bulbs and focuses on 'out of season provision' of fresh flower bulbs to the Northern Hemisphere where they supply commercial flower growers.

Although their main focus is on the west coast of USA, they also supply growers in Canada, Sweden, Finland,

Russia, The Netherlands and Thailand; with a combined total exported bulbs of approximately 60 million bulbs per annum.

Triflor NZ Ltd. has been grown in the Edendale area since 2002; over the last 15 years the production has grown from 20 hectares in 2002 to 100 hectares in 2017.

The decision to move to Edendale wasn't a hard one to make. The soil and climate conditions make eastern Southland one of the best, if not the best, area in the world for tulip production, which explains the cluster of tulip bulb companies within the lower Mataura Valley.



DYNEX

Dynex is proud to sponsor the 2017 NZARM Conference. Dynex has been providing innovative plastic extrusion solutions in New Zealand since 1977, manufacturing all products from its production facility in Auckland. Dynex has a history of supporting local body initiatives with products that are environmentally friendly, using materials that are both recyclable and responsibly sourced.



▲ David and Alanna Clarke's recently constructed wetland.

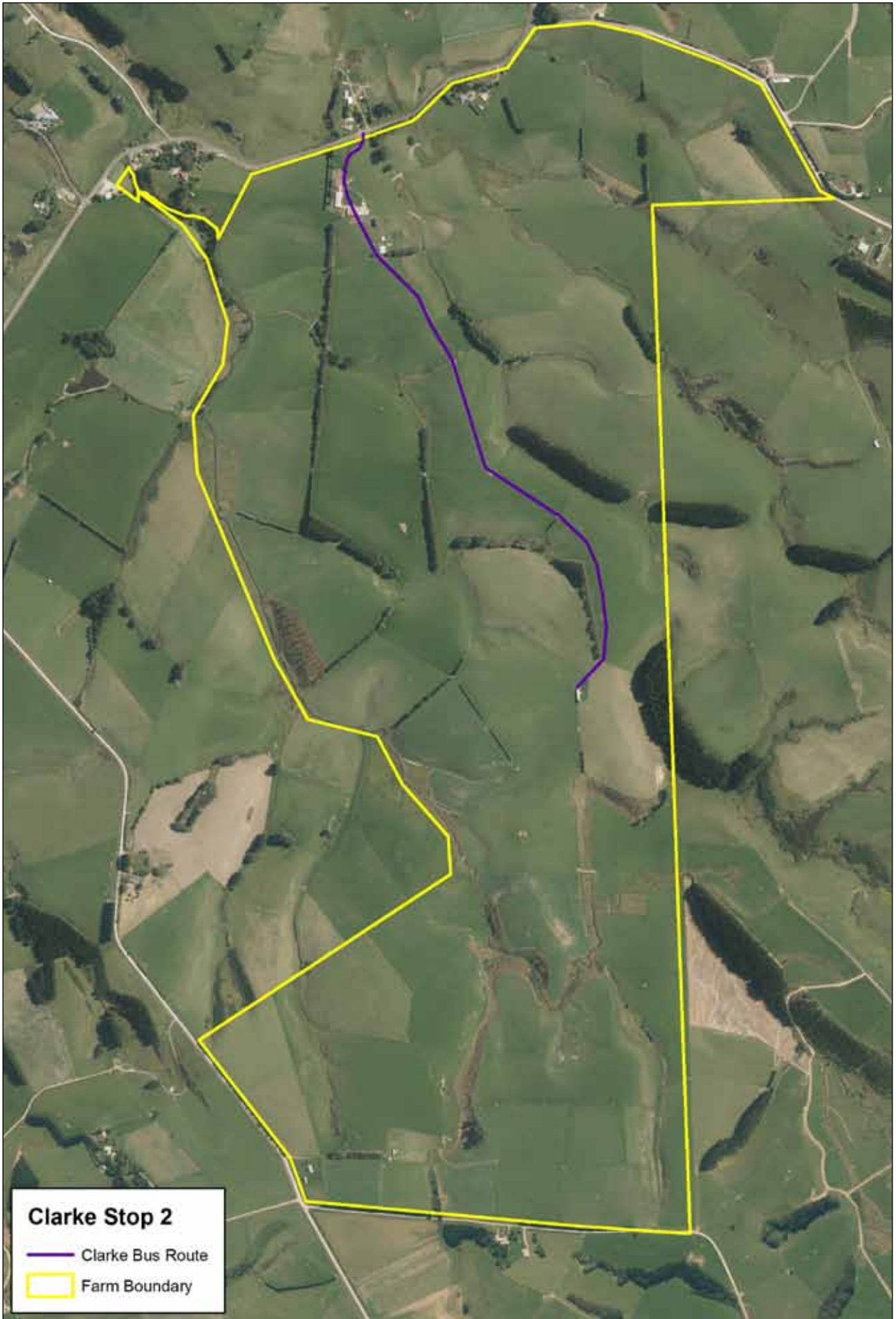
David and Alanna Clarke

David and Alanna Clarke, along with their daughters Isla and June, run the property owned by David's mother Julie. It is 315ha, 278 ha effective at Glenham south of Wyndham, running 70% sheep and 30% beef and dairy support.

The original block was purchased in 1983 with an additional purchase of 240 acres in 1997 and the lease block purchased not long after they came home to manage the farm in 2008. They have been fortunate enough to have been able to put in a stock water scheme and fence off 95% of their waterways

Since returning home to manage the farm, they have been involved in the Beef and Lamb monitor farm programme as the monitor farm for the eastern Southland region and taken part in the Ballance Farm Environment awards twice. The second time they won the supreme award for the Southland region.

The main reason for entering these programmes and awards was to be able to access advice and feedback from other parties. David and Alanna enjoy hosting groups and find that they have gained immeasurable insight about their business through this.



Waituna Lagoon



▲ Waituna Lagoon, part of the Awarua Wetland, a Ramsar Wetland of International Importance

Waituna Lagoon sits at the bottom of a small (approximately 20,000 ha), intensively farmed catchment. The lagoon is fed by three main waterways – Waituna, Moffat, and Carran Creeks.

The lagoon is one of the best remaining examples of a natural coastal lagoon in New Zealand and is unique in our region and to New Zealand. From time to time, the lagoon has been mechanically opened to the sea, initially for fish passage and latterly to help manage drainage for surrounding farms.

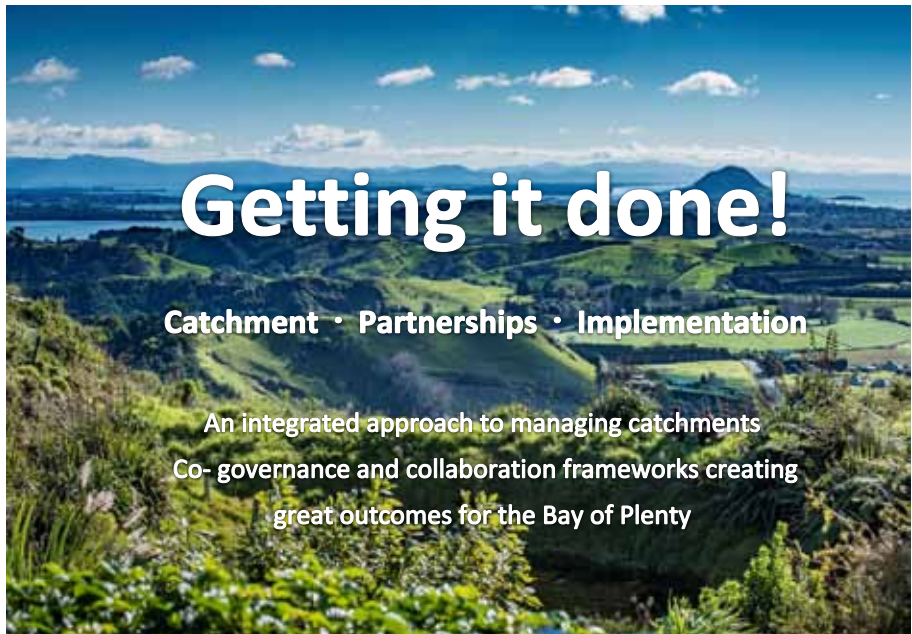
Waituna Wetland is a taonga (treasure of high significance) to Ngāi Tahu and was formally recognised by a Statutory Acknowledgement under the Ngāi Tahu Claims Settlement Act 1998.

The significance of the indigenous flora and fauna of Waituna Lagoon and the surrounding wetland (an area of 3,500 ha) was given special recognition in 1976 as a Ramsar Wetland of International Importance. The extent of the Ramsar site was increased in 2008 to include

nearby wetland areas and renamed Awarua Wetland, with the total complex now at 20,000 ha.

Historically the lagoon was surrounded by peat bog wetland, the drainage from which gave the lagoon its characteristic clear brown stain. It has high ecological habitat diversity, a unique macrophyte community (ruppia dominated), internationally important birdlife, and large areas of relatively unmodified wetland and terrestrial vegetation, meaning it has a number of nationally significant ecosystems. In addition, it is highly valued for its aesthetic appeal, its rich biodiversity, duck shooting, fishing (for brown trout primarily), boating, walking, and scientific values.

The catchment and lagoon contribute to the wider economy of the region and the livelihoods for many hundreds of people, through agriculture, tourism, recreational experiences and food harvesting. It has been, and continues to be, a special place for the local, national and international community over many generations.





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Bonisch can assist with a range of resource consent applications for:

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- Farming operations
- Land development
- Industrial operations
- Infrastructure projects, including roading, wastewater and wind power projects
- Concessions

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