
# Canterbury Mayoral Forum

## BOARD PACK

for

## Canterbury Mayoral Forum

Friday, 19 November 2021

8:30 am

Held at:

Rydges Latimer

30 Latimer Square, Christchurch Central

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*—Continued—*

# AGENDA

## CANTERBURY MAYORAL FORUM

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|---|---|
| **Name:** | Canterbury Mayoral Forum |
| **Date:** | Friday, 19 November 2021 |
| **Time:** | 8:30 am to 11:30 am |
| **Location:** | Rydges Latimer, 30 Latimer Square, Christchurch Central |
| **Board Members:** | Sam Broughton (Chair), Craig Rowley, Craig Mackle, Dan Gordon, Gary Kircher, Graham Smith, Jenny Hughey, Lianne Dalziel, Marie Black, Neil Brown, Nigel Bowen |
| **Attendees:** | Alex Parmley, Angela Oosthuizen, Bede Carran, David Ward, Dawn Baxendale, Hamish Riach, Hamish Dobbie, Jim Harland, Stefanie Rixecker, Will Doughty, Amanda Wall, Maree McNeilly, Rosa Wakefield, Sean Tully |
| **Apologies:** | Stuart Duncan |
| **Guests/Notes:** | Dr Tim Davie, Jesse Burgess, Tumu Taiao Yvette Couch-Lewis (Environment Canterbury) - item 2.1; Fabia Fox and Lan Pham (Biodiversity Champions) - item 2.2; Paul Stocks (Regional Economic Development Senior Official) - item 2.5; Jim Palmer (Independent Chair, Greater Christchurch Partnership) - item 3.3; (Chair Future for Local Government Review) – item 3.4 |

## 1. Opening meeting

### 1.1 Mihi, welcome, introductions and apologies — 8:30 am (5 min)

Sam Broughton

**Canterbury Mayoral Forum mihi**

Ko Ngā Tiritiri o te Moana ngā maunga

Ko ngā wai huka ngā awa i rere tonu mai

Ko Ngā Pākihi Whakatekateka o Waitaha te whenua

Ko Marokura, ko Mahaanui, ko Araiteuru ngā tai

Tīhei mauri ora!

The Southern Alps stand above

The snow-fed rivers continually flow forth

The plains of Waitaha extend out

To the tides of Marokura, Mahaanui and Araiteuru

Behold, there is life!

### 1.2 Confirmation of agenda — 8:35 am (5 min)

Sam Broughton

### 1.3 Minutes from the previous meeting — 8:40 am (5 min)

Sam Broughton

Supporting Documents:



### 1.4 Action List

8:45 am (5 min)

Sam Broughton

Supporting Documents:



## 2. For discussion and decision

### 2.1 Climate Change Risk Assessment final report

8:50 am (20 min)

Dan Gordon

Supporting Documents:



### 2.2 Biodiversity Champions: shared regional approach

9:10 am (20 min)

Jenny Hughey

Supporting Documents:



### 2.3 Meeting structure 2022

9:30 am (10 min)

Sam Broughton

Supporting Documents:



### 2.4 Mayoral Forum Economic Development Group update

9:40 am (5 min)

Marie Black

Supporting Documents:



### 2.5 Regional Economic Development Senior Official update

9:45 am (20 min)

Paul Stocks

### 2.6 Morning Tea

10:05 am (15 min)

### 2.7 Three Waters 10:20 am (10 min)

Sam Broughton

Supporting Documents:

| | | |
|---|---|---|
| 2.7.a | CMF Three Waters reform Nov 2021.docx | 308 |
| 2.7.b | CMF Three Waters reform Nov 2021 Attachment 1.pdf | 310 |

## 3. For information

### 3.1 Ashburton Essential Freshwater paper 10:30 am (5 min)

Neil Brown

Supporting Documents:

| | | |
|---|---|---|
| 3.1.a | CMF Ashburton Essential Freshwater report Nov 2021.docx | 311 |
| 3.1.b | CMF Ashburton Essential Freshwater report Nov 2021 Attachment 1 Freshwater Nitrates Economic impact report.pdf | 314 |
| 3.1.c | CMF Ashburton Essential Freshwater report Nov 2021 Attachment 2 Social impact report.pdf | 454 |

### 3.2 Canterbury Water Management Strategy update 10:35 am (5 min)

Jenny Hughey

Supporting Documents:

| | | |
|---|---|---|
| 3.2.a | CMF CWMS Quarterly update Nov 2021.docx | 499 |

### 3.3 Greater Christchurch Partnership update 10:40 am (20 min)

Jim Palmer

Supporting Documents:

| | | |
|---|---|---|
| 3.3.a | CMF Greater Christchurch Partnership November 2021.docx | 507 |

### 3.4 Future for Local Government update 11:00 am (10 min)

Sam Broughton

### 3.5 Resource Management Reform update 11:10 am (5 min)

David Ward

Supporting Documents:

| | | |
|---|---|---|
| 3.5.a | CMF Resource Management reform update Nov 2021.docx | 516 |
| 3.5.b | CMF Resource Management reform update Nov 2021 Attachment 1a response from Taituarā to CMF letter.docx | 520 |
| 3.5.c | CMF Resource Management reform update Nov 2021 Attachment 1b response MfE to CMF letter re representation (1).pdf | 521 |

### 3.6 CREDS update 11:15 am (2 min)

Craig Rowley and Graham Smith

Supporting Documents:



### 3.7 Climate Change Steering Group update

11:17 am (2 min)

Dan Gordon

Supporting Documents:



### 3.8 Chief Executives Forum report

11:19 am (2 min)

Hamish Riach

Supporting Documents:



### 3.9 General Business

11:21 am (9 min)

## 4. Close Meeting

### 4.1 Close the meeting

**Next meeting:** Canterbury Mayoral Forum - 18 Feb 2022, 9:00 am
Meeting close followed by lunch with Canterbury MPs

**Next meetings:**

# MINUTES (in Review)

## CANTERBURY MAYORAL FORUM

| | |
|---|---|
| **Name:** | Canterbury Mayoral Forum |
| **Date:** | Friday, 20 August 2021 |
| **Time:** | 8:45 am to 12:05 pm |
| **Location:** | Peppers Clearwater Resort, Clearwater Avenue, Harewood, Christchurch |
| **Board Members:** | Sam Broughton (Chair), Craig Mackle, Craig Rowley, Dan Gordon, Gary Kircher, Graham Smith, Jenny Hughey, Lianne Dalziel, Marie Black, Neil Brown, Nigel Bowen |
| **Attendees:** | Angela Oosthuizen, Alex Parmley, Bede Carran, David Ward, Dawn Baxendale, Hamish Dobbie, Hamish Riach, Jim Harland, Stefanie Rixecker, Stuart Duncan, Will Doughty, Amanda Wall, Rosa Wakefield, Sean Tully |
| **Apologies:** | Suzette van Aswegen, Maree McNeilly |

# 1. Open meeting

## 1.1 Mihi, welcome, introductions and apologies

The Chair welcomed everyone to the meeting.

The Chair welcomed Alex Parmley to his first Mayoral Forum meeting.

Apologies were received from Suzette van Aswegen and Maree McNeilly. Angela Oosthuizen is attending for Suzette van Aswegen.

The meeting was opened with the Canterbury Mayoral Forum mihi.

## 1.2 Confirmation of agenda

The agenda was confirmed. The following item of general business was added:

- letter to the Minister of Transport regarding road funding.

## 1.3 Minutes from the previous meeting

**Decision**

The minutes of the meeting held 28 May 2021 were confirmed as an accurate record of the meeting.

| | |
|---|---|
| **Decision Date:** | 20 Aug 2021 |
| **Mover:** | Dan Gordon |
| **Seconder:** | Graham Smith |
| **Outcome:** | Approved |

### 1.4 Action List

| Due Date | Action Title | Owner |
|---|---|---|
| 22 Nov 2021 | Set up a visit to Kiwirail<br>**Status:** On Hold | Maree McNeilly |

Updates on actions from the May meeting were discussed:

- the secretariat is working with Kiwirail to get the second part of the freight tour set up; there is a meeting on 25 August to progress this
- the secretariat is also working with Lincoln University to plan a meeting around urban farming and energy farms.

## 2. For discussion and decision

### 2.1 Three Waters - verbal update

Sam Broughton gave a verbal update and members discussed the three waters reforms. Topics discussed included:

- the desire for the best possible outcome for Canterbury from the outset, including co-governance with Ngāi Tahu and the ability to provide for the different needs of different communities
- the need to start thinking about the next steps through transition
- the desire to develop a skills matrix for boards / shadow boards, and a workforce pipeline
- the desire for regular meetings with DIA, and a timeline for decision-making
- options and progress on the best three waters solution for the Chatham Islands. The chair is in discussion with the chairs of the Chatham Islands Moriori trust and iwi
- issues around the speed of reform, including understanding the data from DIA and the timing with relation to the standing up of Taumata Arowai
- the timing and methods of engagement councils are using with their communities on three waters
- that LGNZ is visiting councils as part of its roadshow in late August / early September
- the possibility of collaborating on a video with all mayors talking about their thoughts on the reforms
- whether gathering Canterbury MPs to express the collective concern might provide leverage
- the importance of keeping council and operations on the same page
- concern around ensuring councils don’t become the advocate for or defender of the reforms
- that some councils have discussed whether to retain LGNZ membership as they don’t feel LGNZ is representing them.

The Forum agreed to write to Minister Mahuta requesting the reform process is paused and release a public statement noting the formal request has been made.

There is a meeting on 23 August with Ngāi Tahu to discuss how to progress if everyone opts in or the reforms end up being mandatory.

**Action**

Send around a copy of the 28 questions used by Waimakariri to engage with its community on the reforms.

**Due Date:** 31 Oct 2021
**Owner:** Dan Gordon

## 2.2 Climate Change Risk Assessment Project Update

Dan Gordon spoke to the paper, noting that the project team will brief papatipu rūnanga on draft deliverables in September. Members agreed that a proactive release and engagement is more likely to promote an improved understanding, noting that there needs to a strong communications package with clear next steps.

Waitaki is keen to be involved in this and is happy to pay a higher proportion of funding accordingly.

How the $10k budgeted for this work will be spent was queried. This is intended to cover engagement activities, e.g. public events. The secretariat will provide more detail on this once available.

**Decision**

The Forum agreed to

1. endorse the process for approving the deliverables of the Canterbury Climate Change Risk Assessment
2. provide advice on the preferred future public communications and engagement approach for the Canterbury Climate Change Risk Assessment deliverables
3. delegate approval of the public communications and engagement approach to the Canterbury Climate Change Steering Group.

**Decision Date:** 20 Aug 2021
**Mover:** Dan Gordon
**Seconder:** Nigel Bowen
**Outcome:** Approved

**Action**

Provide spending breakdown for $10k once this is available.

**Due Date:** 31 Oct 2021
**Owner:** Amanda Wall

**Action**

Chief Executives to explore identification of climate opportunities for Canterbury, either as part of the CCRA or as a separate piece of work.

21/9 Some opportunities identified, report still to be finalised

**Due Date:** 11 Oct 2021
**Owner:** Hamish Riach

## 2.3 Mayoral Forum mid-term achievements 2019-2021

The Chair spoke to the paper and asked members to let the secretariat know if anything needs to be added. The Forum agreed that individual media releases should be developed for each mayor and TA including specific items of interest for each area.

**Decision**

The Forum agreed to:

1. review the draft mid-term report and advise of any amendments
2. approve the mid-term report for publication on the Canterbury Mayoral Forum website and sharing with member councils
3. promote the Mayoral Forum mid-term achievements with supporting media release(s) and encourage councils to share the achievements widely with their networks.

**Decision Date:** 20 Aug 2021
**Mover:** Sam Broughton
**Seconder:** Craig Rowley
**Outcome:** Approved

**Action**

Prepare media releases for each mayor and TA around the Mayoral Forum's mid-term achievements.

**Due Date:** 31 Oct 2021
**Owner:** Secretariat Secretariat

## 2.4 Regional Strategic Partnership Fund

The Chair spoke to the paper, noting that Paul Stocks, the new Regional Economic Development Senior Official (REDSO), is very engaged.

It would be good to develop a regional priority list, working with Ngāi Tahu, ChristchurchNZ and Venture Timaru. A decision and evaluation framework would need to be developed.

Marie, Nigel, Graham and Dan are keen to be part of a small group to develop a coordinated response across Canterbury. Nigel noted that Venture Timaru may also be able to add value to this.

CE support will be decided at the next CEs Forum meeting.

**Decision**

The Forum agreed to:

1. note the update on the Regional Strategic Partnership Fund and new Regional Economic Development Senior Official
2. provide feedback to Canterbury economic development agencies and council Economic Development staff on the Alternative Energy Region proposals
3. agree to facilitate a discussion, led by mayors Marie Black, Nigel Bowen, Graham Smith and Dan Gordon, with Ngāi Tahu and other stakeholders, based on the Mayoral Forum’s Plan for Canterbury, around specific regional priorities for Canterbury for potential central government funding and support.

**Decision Date:** 20 Aug 2021
**Mover:** Sam Broughton
**Seconder:** Neil Brown
**Outcome:** Approved

**Action**

Secretariat to organise meeting of sub-group of mayors plus Ngāi Tahu, ChristchurchNZ and Venture Timaru to discuss regional strategic priorities.

4/10 Draft papers have been sent to CMF Sub group and EDAs and Maree is confirming availability before scheduling the first meeting.

**Due Date:** 31 Oct 2021
**Owner:** Maree McNeilly

**Action**

Ask the Chief Executives for nominations to the group working on regional strategic priorities.

4/10 Will go to CEs Forum on 1 November.

**Due Date:** 1 Nov 2021
**Owner:** Hamish Riach

## 2.5 Resource Management Reform Update

David Ward spoke to the paper.

**Decision**

The Forum agreed to endorse letters to be sent to Local Government New Zealand, Ministry for the Environment, Department of Internal Affairs and Taituarā requesting inclusion of at least one representative from Canterbury on national working groups.

**Decision Date:** 20 Aug 2021
**Mover:** Marie Black
**Seconder:** Gary Kircher
**Outcome:** Approved

## 2.6 South Island Destination Management Plan - next steps

The Chair spoke to the paper, noting that the environment we are in now is quite different from when this plan was pulled together but the strategic aims still stand.

It was noted that ChristchurchNZ may have valuable insight on this, and that it's a good opportunity to think deeply about where we go in the future.

The proposal is to take this forward for the South Island via discussion with Zone 5 and 6. ChristchurchNZ could attend Zone 5 and 6 to talk to this. Earlier this week the Minister announced more funding for RTOs, with a focus on destination management.

Moved by Sam Broughton, seconded by Craig Rowley.

**Decision**

The Forum agreed to:

1. endorse the strategic aims of the South Island Destination Management Plan as the foundation for destination management collaboration and coordination going forward
2. seek endorsement of the strategic aims of the South Island Destination Management Plan by all South Island territorial authorities at the next LGNZ Zone 5 and 6 meeting in October 2021
3. focus future Mayoral Forum destination management and tourism advocacy on supporting ongoing collaboration by and between Canterbury regional tourism organisations and their South Island counterparts
4. close the South Island Destination Management Plan item on the Forum's three-year work programme in light of recommendations 1 to 3 above.

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|---|---|
| **Decision Date:** | 20 Aug 2021 |
| **Mover:** | Sam Broughton |
| **Seconder:** | Craig Rowley |
| **Outcome:** | Approved |

**Action**

Prepare a summary of new RTO funding for the Zone 5 and 6 meeting in October.

| | |
|---|---|
| **Due Date:** | 31 Oct 2021 |
| **Owner:** | Secretariat Secretariat |

## 2.7 CREDS update

Craig Rowley spoke to the FFIP and Digital Connectivity updates, noting that work is ongoing with the Rural Connectivity Group and telcos around planned work in the regions, both with regard to the top ten blackspots identified in phase one and the areas identified for phase two of the mobile blackspot mapping project. The secretariat will also engage more closely with CIP to confirm timing and requirements for their funding programme and to give the greatest effect to our advocacy. The provision of council staff to drive routes within a defined timeframe (September / October) is key to ensure project delivery.

Graham Smith spoke to the Canterbury Story update. The chief executives recommend closing the website due to the ongoing cost. A lot of work went into the website content, so it would be a shame to lose all the information. The chief executives will ask ChristchurchNZ to present an option to keep the story alive with a reduced financial cost. Hamish Riach noted that mayors should discuss the website with those within their councils as it is poorly used.

**Decision**

The Forum agreed to:

1. note the updates on CREDS projects
2. approve the proposal to engage Beca on a second phase of the Digital Connectivity – Mobile Blackspots project.

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|---|---|
| **Decision Date:** | 20 Aug 2021 |
| **Mover:** | Craig Rowley |
| **Seconder:** | Marie Black |
| **Outcome:** | Approved |

**Action**

Chief executives to explore options with ChristchurchNZ for hosting the collateral from the Canterbury Story website and provide an update to the next meeting.

21/10 Rosa is working with ChristchurchNZ on this

**Due Date:** 9 Nov 2021
**Owner:** Rosa Wakefield

# 3. For information

## 3.1 Canterbury Water Management Strategy update

Jenny Hughey spoke to the paper, noting that everyone in the community is encouraged to engage with freshwater farm plan consultation.

Stefanie Rixecker provided an update about the appointment of chairs to the regional committee. The co-chair position was advertised in June/July, interviews have been undertaken and the preferred candidate will be confirmed shortly. This will be shared with the Forum once appointed. Iaean Cranwell, Environment Canterbury Tumu Taiao, will serve as the co-chair from Ngāi Tahu until this role is formally appointed.

Neil Brown requested the purpose and ToR for the regional committee. The purpose is to provide further guidance around the CWMS, the secretariat will reshare the ToR.

Neil Brown requested information around Overseer and plan change 7 and plan change 2. Stefanie will circulate this.

**Decision**

The Forum agreed to:

1. receive the CWMS update report
2. note the progress made for the appointment of the independent Chair and co-Chair of the CWMS Regional Committee.

**Decision Date:** 20 Aug 2021
**Mover:** Jenny Hughey
**Seconder:** Marie Black
**Outcome:** Approved

**Action**

Reshare ToR for the CWMS regional committee.

**Due Date:** 31 Oct 2021
**Owner:** Secretariat Secretariat

**Action**

Circulate information around plan changes relating to Overseer.

**Due Date:** 31 Oct 2021
**Owner:** Stefanie Rixecker

**Action**

Correct the spelling mistake on page 61 which has an ‘o’ added to Waiau.

**Due Date:** 31 Oct 2021

**Owner:** Secretariat Secretariat

## 3.2 Essential Freshwater Steering Group update

Neil Brown spoke to the paper, noting that the planned meeting with Minister Parker last night didn't happen due to the elevated COVID-19 alert level, and that this will be rescheduled. Media are saying that Overseer is not fit for purpose. Farmers have been saying it's not correct for years but there was no alternative.

This Steering Group is now in a watching brief phase and will only meet as necessary going forward.

Ashburton's nitrate report on the 2.4 level will be out in September.

**Decision**

The Forum agreed to note the update from the Essential Freshwater Steering Group meeting held on Monday 9 August 2021.

**Decision Date:** 20 Aug 2021
**Mover:** Neil Brown
**Seconder:** Craig Rowley
**Outcome:** Approved

## 3.3 Morning Tea

## 3.4 Flooding update and funding of rating districts

Stefanie Rixecker and Jenny Hughey spoke to the paper. The estimated cost of repairs to infrastructure as a result of the recent flooding events is $15-20m. Environment Canterbury has been working to ensure councils, mana whenua and other stakeholders are kept across flood recovery plans. All members are invited to a workshop on 9 September to review potential changes to the river work programme for the 2021/22 year.

Jenny Hughey welcomed Basil Chamberlain to the meeting. Basil has been working in and with the regional sector for a long time. He will be doing supplementary work to his 2019 paper to seek permanent co-investment on river management from central government.

Basil spoke to the paper. In about 2016 he was tasked to sit with river management groups for regional authorities to review the approach to river management. The group engaged Tonkin & Taylor and economists to review flood protection assets, what value they have, and to assess future options. Floods are New Zealand's highest ranked natural hazard when assessed by potential impacts and frequency of occurrence. Around 100 towns are protected by flood protection measures, and these have excellent returns on investment.

Climate change is causing higher intensity, higher frequency storm events. The level of protection of existing measures may be cut in half. Increases to the value of property and assets and more people should also drive increased investment.

Councils across New Zealand typically spend around $200m per annum, about half on maintenance and the other half on investment. The investment in capital work probably needs to double. The government own a lot of assets but haven't been contributing to support and maintenance.

The report is seeking around $150m per annum and was put to the Provincial Development Unit but the Ministers didn't think it was a one-off but rather a permanent line in the budget. It was then referred to a community resilience steering group led by Minister Mahuta. At the same time about 50 shovel-ready resilience projects were successful and so because a significant amount of the budget was allocated to these they suggested this proposal be shelved for a year or two. There is a lot of awareness in Wellington around the role of this infrastructure and the importance of it.

We need to use the whole suite of methods for flood protection around New Zealand, working with iwi and with ecology. The option of retreat is being talked about a lot in Wellington currently but is very difficult and costly.

Analysis is underway to reinforce the value proposition of this investment.

Basil has been reluctant to introduce this into the future for local government reforms as this is separate and takes our need to get on with climate change adaptation forward.

Canterbury has two issues with braided rivers – gravel and vegetation. Removing these would keep the rivers in place but this is not working with the natural river and may become less possible once Te Mana o te Wai takes effect.

Building stopbanks upwards can add risk because when they get very big the risk of breach is more severe. One alternative is secondary stopbanks set back in a designated spillover area. This does require priority setting as the spillover areas then become very flood prone.

The National Policy Statement on water clearly states what can be done with the ecology of rivers. There are competing interests. We need to find different ways of doing the same things and take a broader approach than we used to. We also need to be aware that whatever flood protection is put in place that there might be a day when its capacity is reached.

Environment Canterbury are paying for the majority of the supplementary report, working with councils in Marlborough, Buller and the West Coast. John Hutchings, who is working with Basil on the report, could work with mayors to incorporate Canterbury voices into document.

Members agreed to endorse a letter of support to be sent to Basil for his use.

Members thanked Basil for his insight.

**Decision**

The Forum agreed to:

1. note the update provided on recent flooding events in Canterbury
2. note the verbal update from Basil Chamberlain
3. receive the report titled “2018 Central Government co-investment in River Management for Flood Protection”.

| | |
|---|---|
| **Decision Date:** | 20 Aug 2021 |
| **Mover:** | Jenny Hughey |
| **Seconder:** | Sam Broughton |
| **Outcome:** | Approved |

**Action**

Arrange for John Hutchings to contact mayors to gather their feedback.

5/10 John Hutchings contacted the mayors on 5 October seeking feedback.

| | |
|---|---|
| **Due Date:** | 31 Oct 2021 |
| **Owner:** | Stefanie Rixecker |

**Action**

Draft a letter of support to Basil and circulate to members for endorsement.

| | |
|---|---|
| **Due Date:** | 31 Oct 2021 |
| **Owner:** | Secretariat Secretariat |

## 3.5 Future for local government

The paper was taken as read. The chair and Gary Kircher have been working with LGNZ on advocacy within the sector ensuring that we continue to lift mana whenua involvement and that

funding is front and centre. The paper looks at incremental change but we also need to consider the transformational change that could eventuate and look at local government models in other parts of the world.

**Decision**

The Forum agreed to note the summary of recent Mayoral Forum activities regarding the future for local government.

| | |
|---|---|
| **Decision Date:** | 20 Aug 2021 |
| **Mover:** | Sam Broughton |
| **Seconder:** | Gary Kircher |
| **Outcome:** | Approved |

## 3.6 Climate Change Steering Group update

Dan Gordon spoke to the paper. The steering group's next meeting is on 17 September.

**Decision**

The Forum agreed to note the update provided in this paper.

| | |
|---|---|
| **Decision Date:** | 20 Aug 2021 |
| **Mover:** | Dan Gordon |
| **Seconder:** | Marie Black |
| **Outcome:** | Approved |

## 3.7 Chief Executives Forum report

The paper was taken as read, and Hamish Riach noted the strengthening links with the public sector lead. Following today's announcement on COVID-19 levels the regional COVID-19 oversight group from the last lockdown may be stood back up. Some members consider that this group may add duplication and it was noted that the social recovery advisory group, which existed before CERA, was a good mode which supported BAU processes and then increased support in times of need. It would be good to have this model across the Mayoral Forum, CDEM JC etc. Through lockdown last year there was a feeling that social issues focused on urban areas and the provinces were somewhat overlooked.

There is a note in the report that in relation to three waters there is no need for further collaborative work – this is specifically in relation to regional analysis needing to be funded by third parties. Individual councils may be pursuing their own analysis. Further funding for three waters analysis across the takiwā should come from DIA. There is an issue with the allocation of stimulus funds; these weren't to be for transition costs and now councils which spent their stimulus funds as intended are disadvantaged. Hamish Riach is working with Amelia East on this.

A question was asked about how Ben Clark and Paul Stocks' roles relate to each other. Hamish Riach is to investigate how the roles are related.

**Decision**

The Forum agreed to receive the quarterly report from the Chief Executives Forum and note updates to the three-year work programme.

| | |
|---|---|
| **Decision Date:** | 20 Aug 2021 |
| **Mover:** | Dan Gordon |
| **Seconder:** | Neil Brown |
| **Outcome:** | Approved |

**Action**

Investigate the relationship between the roles of Regional Public Sector Lead and Regional Economic Development Senior Official.

**Due Date:** 31 Oct 2021
**Owner:** Hamish Riach

## 3.8 General Business

The Regional Transport Committee discussed the Mayoral Forum putting a letter together for the Minister around the issues with the funding model for road transport. Members consider that the funding model is broken and are concerned about the decline on the smooth travel index and resilience of the roading network.

Planning for a meeting with the Minister is underway, the secretariat are awaiting a call from Minister of Transport's but this has been delayed by the COVID alert level change.

**Action**

Draft a letter to the Minister of Transport from the Mayoral Forum and RTC around issues with the funding model.

**Due Date:** 31 Oct 2021
**Owner:** Secretariat Secretariat

**Action**

Follow up with Minister of Transport's office around arrangements for meeting with the Forum.

4/10 Maree is still following up.

**Due Date:** 10 Nov 2021
**Owner:** Maree McNeilly

**Action**

Arrange for invitations to be sent to Canterbury MPs for lunch following the November Mayoral Forum

**Due Date:** 31 Oct 2021
**Owner:** Secretariat Secretariat

# 4. Documents of the original meeting

## 4.1 Original Board Pack

# 5. Close Meeting

## 5.1 Close the meeting

**Next meeting:** Canterbury Mayoral Forum - 19 Nov 2021, 8:30 am
Meeting close followed by lunch.

**Next meetings:**

The Climate Change Steering Group is meeting on 17 September.

Environment Canterbury are holding a flood recovery workshop on 9 September.

The Mayoral Forum meets on 19 November, and we will invite all Canterbury Members of Parliament to the next meeting.

Partners of mayors, chair and CEs will be invited to the dinner on 18 November.

**Signature:_____** **Date:_____**

# Action List

## Canterbury Mayoral Forum

*As of: 11 Nov 2021*

**Action** **In Progress**

Follow up with Minister of Transport's office around arrangements for meeting with the Forum.

4/10 Maree is still following up.

**Due Date:** 10 Nov 2021
**Owner:** Maree McNeilly
**Meeting:** 20 Aug 2021 Canterbury Mayoral Forum, 3.8 General Business

**Set up a visit to Kiwirail** **On Hold**

Set up part two of the freight tour, part of a day at KiwiRail.

2/11 On hold due to Covid restrictions, will look at this again in 2022.

**Due Date:** 22 Nov 2021
**Owner:** Maree McNeilly
**Meeting:** 28 May 2021 Mayoral Forum, 4.1 Action List

**Visits to tertiary campuses** **In Progress**

Explore options for visits to Canterbury tertiary campuses in September or October.

5/10 Plans have been developed to visit Lincoln and learn about their energy farm and peri-urban farm initiatives; this is likely to be early 2022.

**Due Date:** 31 Mar 2022
**Owner:** Maree McNeilly
**Meeting:** 28 May 2021 Mayoral Forum, 4.1 Action List

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Mayor Dan Gordon, Chair Climate Change Steering Group

## Canterbury Climate Change Risk Assessment

## Purpose

1. The purpose of this paper is to provide an update on the Canterbury Climate Change Risk Assessment (CCRA) project and seek endorsement for public release of the technical report and supporting snapshot report.

## Recommendations

**That the Canterbury Mayoral Forum:**

1. **endorse the Te Ao Māori integrated risk assessment framework and the gifted Ngāi Tahu name 'Te Tutei o Te Hau – Surveillance of the Wind'**
2. **endorse the Canterbury Climate Change Risk Assessment technical report for public release**
3. **delegate to the Canterbury Climate Change Steering Group the finalisation of the communications and engagement plan for the release of the technical report, including approval of the press release and public-facing snapshot report**
4. **note that the Canterbury Climate Change Working Group will develop further advice in early 2022 regarding the next steps for the Canterbury Climate Change Risk Assessment Project.**

## Key points

2. The Climate Change Risk Assessment technical report is now complete, showing climate change risk increasing in likelihood between now and 2100. This report seeks the CMF's endorsement of the technical report for public release, while delegating to the Climate Change Steering Group the finalisation of the communications and engagement approach and the supporting snapshot report.

3. The project reflects the CMF's pioneering approach to its climate change work programme and notably includes a new Ngāi Tahutanga-informed climate change integrated framework for assessing climate change risk, with the Ngāi Tahu gifted name *Te Tūtei o te Hau – Surveillance of the Wind*.

4. The disruptions of COVID-19 and the mid-year floods have put pressure on the project, however despite the timeline and scope shifts the CMF is now well set to integrate this technical report into Waitaha/Canterbury climate change planning and action.

## Background

5. The CMF has taken a pioneering approach to understanding the climate change risks to Waitaha/Canterbury. Since 2017/18 the CMF has invested in a dedicated regional climate change work programme and has moved in advance of national direction and guidance to develop Waitaha/Canterbury specific approaches. The CMF recognises that collaboration is key to building a shared understanding and awareness of climate change risks across the region and highlight the need for adaptation, an essential prerequisite for joint adaptation efforts.

6. Ngāi Tahu is an influential regional leader on climate change. They released the Ngāi Tahu Climate Change Strategy: He Rautaki mō te Huringa o te Āhuarangi: Te Tāhū o te Whāriki, Anchoring the Foundation in 2018, and held their first tribal wānanga on climate change in 2019. In addition, the Government appointed Ngāi Tahu Kaiwhakahaere Lisa Tumahai as Deputy Chair of the new Climate Change Commission.

7. In delivering the regional climate change work programme the CMF has noted that the national guidelines and work by other councils has insufficiently incorporated Mātauranga Māori and Te Ao Māori worldview into understanding and addressing climate change risk, so this has been a focus of the Waitaha/Canterbury approach.

8. In mid-2018, the Canterbury Chief Executives Forum requested a regional climate change risk assessment to understand the climate change risks and opportunities for Waitaha/Canterbury. This project is part of filling that directive.

### National context

9. The Ministry for the Environment released *He kupu ārahi mō te aromatawai tūraru huringa āhuarangi ā-rohi – A guide to local climate change risk assessments* in October 2021. The guide is not statutory national direction but provides a standard that we can use to assess the Canterbury Climate Change Risk Assessment, and to inform future work.

10. This builds on the previous work of the National Climate Change Risk Assessment and supports local authorities and communities implementing the National Adaptation Plan which is due for consultation next year. The Plan is required under the Climate Change Response Act 2002 to be in effect from August 2022 at the latest. The Plan will set out the governments objectives, strategies, policies and proposals for adapting to the effects of climate change.

### Canterbury Climate Change Risk Assessment Project Overview

11. In December 2020, Environment Canterbury engaged a consortium led by Tonkin + Taylor (T+T) to conduct a detailed climate change risk assessment to identify the priority

risks and opportunities from climate change to Waitaha/Canterbury's natural environment, built environment, social, cultural, economic and governance systems. This detailed assessment of climate change risks builds on the Canterbury Climate Change Risk Screening which was conducted in 2019/20 and identified a 'long-list' of risks and opportunities for Waitaha/Canterbury. This project was steered by the Canterbury Climate Change Working Group (staff from Waitaha/Canterbury councils and two Ngāi Tahu representatives).

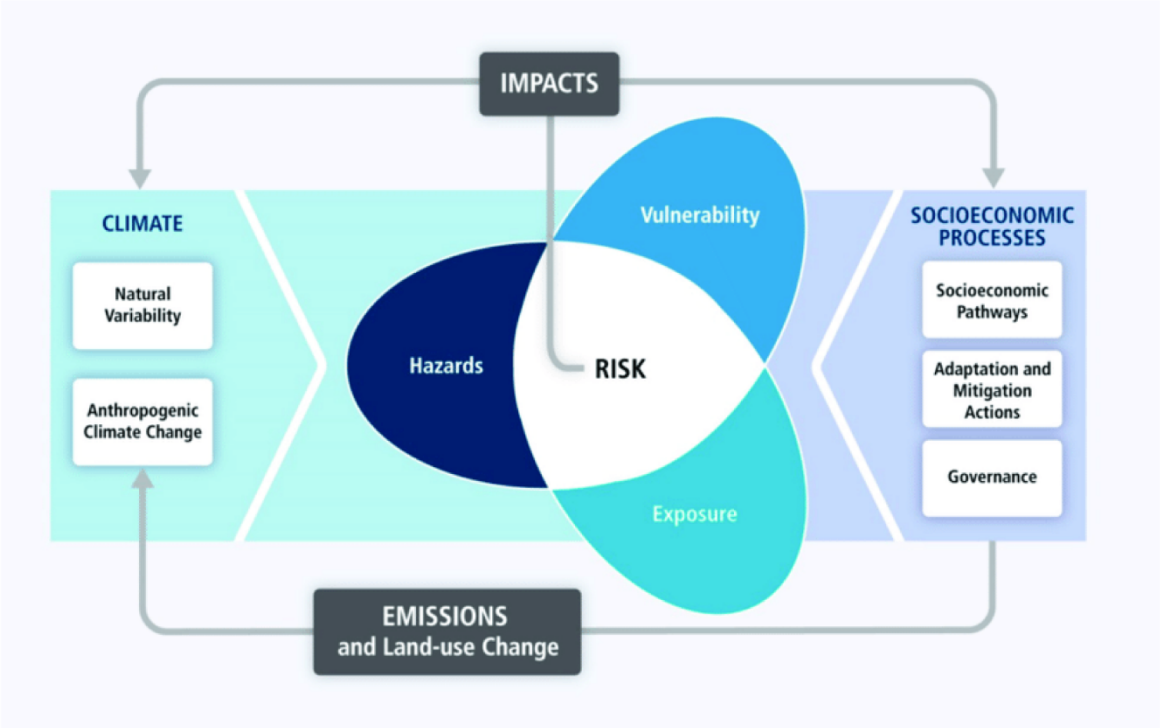
12. The contracted project deliverables are the risk assessment as a technical report (attachment 1), along with public-facing communications materials consisting of a snapshot report and infographics (attachment 2), and a risk workbook for staff use.

13. The snapshot report is currently in draft form to allow for further feedback from councils and the CMF regarding the communications and engagement plan, and the final snapshot report. This report therefore seeks the CMF affirm their previous delegation of the communications and engagement approach to the CCSG by way of email, to finalise the overall plan, the press release and the public-facing snapshot report, of which a draft is attached.

## Objectives of the risk assessment

14. Objectives of the risk assessment are to incorporate interconnected risks (the first in New Zealand), Ngāi Tahu values, and Mātauranga Māori to support adaptation planning by local authorities and Papatipu Rūnanga in Waitaha/Canterbury. The methodology for the report used the overlapping elements of hazard, exposure and vulnerability to develop qualitative assessment of risk through the criteria of exposure, sensitivity and adaptive capacity, as shown in Figure 1 below.

*Figure 1 - Intergovernmental Panel on Climate Change model of risk*




## Papatipu Rūnanga involvement in the Canterbury Climate Change Risk Assessment Project

15. At the end of 2020, a Papatipu Rūnanga Steering Group was established: Graeme Page (Koukourārata) and Rachel Robilliard (Taumutu) contributed significantly to the project. Benita Wakefield (Wairewa) was an initial member of the group but withdrew towards the end of the project due to reasons not related to the project.

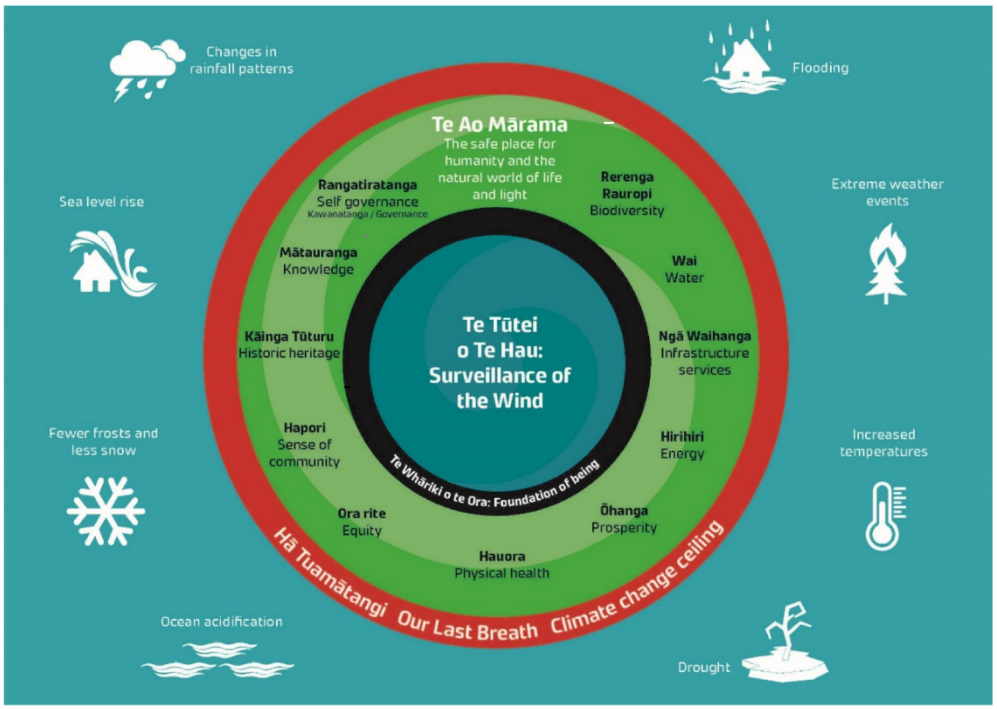
16. The Group has advised and supported the project team, particularly Professor Shaun Ogilvie[1], to develop an integrated Te Ao Māori integrated risk assessment framework which is more relevant to Waitaha/Canterbury and Ngāi Tahu than the current national framework.

## Integrated climate change risk assessment framework

17. The framework has been gifted a Ngāi Tahu name, *Te Tutei o Te Hau – Surveillance of the Wind*. The climate / wind / breath is described as a guardian, an alert system, for the environment, with climate change a warning from the environment to human beings. The framework is visualised in a diagram of a series of rings, shown below in Figure 2.

[1] Professor of Ecology and the Environment at the Ngāi Tahu Research Centre, University of Canterbury; Kaihautū Ngātahi, Co-Director-Māori, for the Biological Heritage National Science Challenge; Director of Eco Research Associates Ltd,

*Figure 2 - Te Tūtei o Te Hau: Surveillance of the Wind – Integrated climate change risk framework developed in collaboration with the Rūnanga Project Steering Group*




18. The rings in the diagram reflect the cycles and circles of the world, with an inner boundary – visualised as the black ring – of the spiritual and ancestral realm of whakapapa. The green ring depicts the natural world Te Ao Mārama within which human life exists. Lastly, the red ring is the upper limit of the climate system which, as now breached, is threatening the ecosystems, environment and humans through climatic changes – Hā Tuamātangi – our last breath.

19. Climate change in this framework is conceptualised as a revenge or utu due to the lack of balance and harmony within society, due to the destruction and desecration of Te Taiao, the environment. The hazards created or exacerbated by climate change, which are now occurring and will occur more into the end of the century, are visualised as white icons outside the limits of Ti Iho Nui (the safe place for humanity), reflecting that the natural world is becoming less safe for humans and the ngā pono – values of the green ring are under threat.

20. These ngā pono, values, that exist within Te Ao Mārama (the natural world) are identified in the risk assessment as: Rerenga Rauropi (biodiversity), Wai (water), Ngā Waihanga (infrastructure services), Hirihiri (energy), Ōhanga (prosperity), Hauora (physical health), Ora rite (equity), Hapori (sense of community), Kainga tūturu (historic heritage), Mātauranga (knowledge), Rangatiratanga and Kāwanatanga (governance). These concepts sit within the Te Ao Māori framework of Te Tūtei o Te Hau while also being relevant for all in Waitaha/Canterbury.

## Climate Change Risk Assessment Project progress, scope and timeline shifts

21. The Canterbury Climate Change Risk Assessment project team completed an extensive engagement programme including setting up and running a Project Steering Group, Rūnanga Steering Group, Rūnanga risk hui, expert and youth workshops.

22. This extensive engagement resulted in an extension of the project timeframe proposed earlier this year. This then put pressure on the latter stages of the report drafting process and allowed for fewer engagements and feedback windows than initially agreed to achieve the project deadline of approval by the CMF by the end of 2021.

### Project scope and timeline shift

23. Partner constraints leading to an inability to provide feedback within compressed timelines led to delays in the provision of information for analysis. The mid-year floods and COVID-19 Delta Alert Level disruptions further stretched capacity of partners, staff and T+T.

24. This created an issue for some aspects of the project's delivery, as information could not be easily and accurately collated, analysed, internally connected and socialised within required timelines to inform the analysis for the assessment. For example, a key workshop for collating and analysing adaptation actions was attended by only four of the eleven Waitaha/Canterbury councils and follow up requests for information went unanswered.

25. This lack of information therefore prevented T+T from assessing the urgency of climate change adaptation actions and this analysis was removed from the scope by mutual agreement. This urgency assessment would have been a significant part of supporting you, partners, stakeholders and our communities to prioritise action and guide adaptation decisions, highlighting where more action or research is needed as a lead in for adaptation planning. An approach for assessing urgency is detailed by T+T in the next steps section of the report; this could be followed in further work on the project.

26. These challenges are reflective of the current stage that climate change risk assessments and adaptation planning are at in terms of the maturity journey of the discipline. Approaches to these assessments and planning vary internationally, and are tailored in scope depending on the needs and resources of a region or area. With this being the first regional assessment that has been done for Waitaha/Canterbury we have many learnings to incorporate into current work and the future assessments we will do. Nonetheless the assessment gives a strong basis for climate action planning with the descoping of the urgency aspect of the report opens up the incorporation or delivery of this work as part of other ongoing planning processes, specifically regional planning, district planning, sub-regional spatial planning and climate change strategies and action planning. Examples of these are detailed in **Error! Reference source not found.** below.

*Table 1 - examples of climate planning and action in Waitaha/Canterbury (not comprehensive)*

| **District /sub-region / region** | **Process ongoing or part of 2021-31 Long-Term Plans (LTP)** |
|---|---|
| Kaikōura | Kaikōura District Plan Review |
| Hurunui | Hurunui Coastal Conversations |
| Waimakariri | Waimakariri Climate Change Response Strategy |
| Christchurch | Coastal Hazards Adaptation Planning Programme |
| Selwyn | Selwyn District Plan Review |
| Ashburton | Ashburton River adaptation planning and management |
| Timaru | Timaru Climate Change Strategy within the first three years of the LTP |
| Mackenzie | Mackenzie District Plan Review |
| Waimate | Waimate Climate Change Strategy within the first three years of the LTP |
| Waitaki | Waitaki District Plan Review |
| Waitaha/Canterbury | Canterbury Climate Change Action Plan within the first three years of the LTP |
| Greater Christchurch | Greater Christchurch Spatial Plan |

27. These processes already include, or will be designed to include, collaborative processes with elected members, Papatipu Rūnanga and Waitaha/Canterbury communities to understand the climate adaptation work already underway, and understanding the consequences of risk. They also support the collaborative value-judgement required to support the prioritisation of adaptation actions to climate change risks, particularly through dynamic adaptive policy pathways/planning. These processes are therefore well placed to develop prioritised lists of climate change adaptation actions according to decision urgency and maladaptation risks.

28. The same challenges impacted the timely provision of feedback on the draft technical report to T+T. Feedback from the Project Steering Group on the draft technical report was provided to T+T on 25 August, with most Waitaha/Canterbury councils giving input. As the breadth of this feedback was considerable and addressed concerns with the methodology that had previously been agreed, it required additional time for T+T to address the feedback beyond the existing timelines of finalising the draft report.

29. We previously indicated to the CMF that the Canterbury Climate Change Risk Assessment Project Steering Group would present the final deliverables (technical report, risk workbook and public-facing communications materials) for approval by the

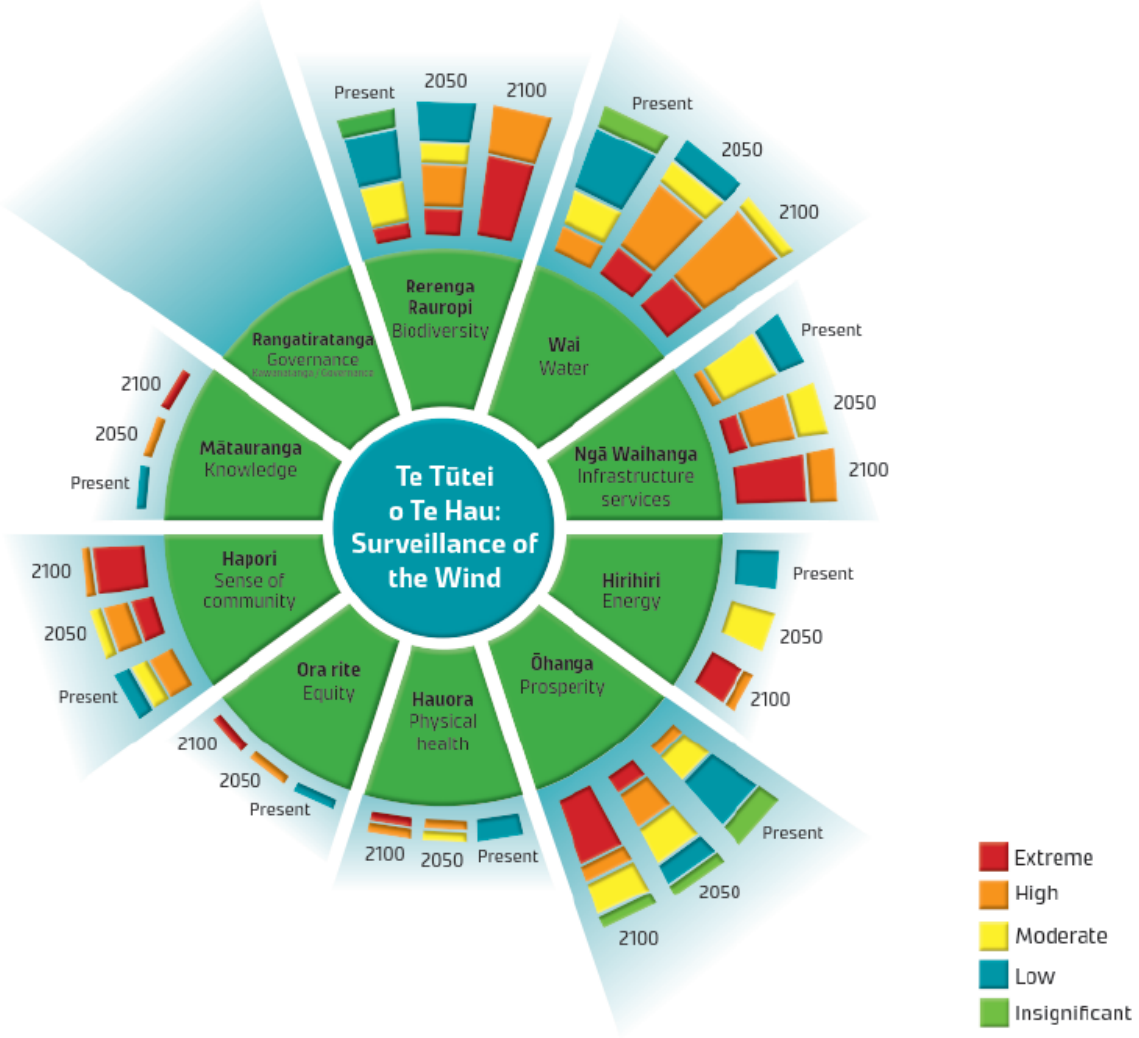
Chief Executives Forum and endorsement by the CMF in August, ahead of public release. The timeline shift means that we seek your endorsement today. The changes to scope and timeline were acknowledged by the Climate Change Steering Group, and it is comfortable with the shift given the disruptions that have occurred this year.

## Canterbury Climate Change Risk Assessment Project – draft technical report

30. The overall finding of the report is that climate change risks are threatening all the ngā pono, values. Figure 3 visualises an overall summary of the risks and shows that direct and indirect risks from climate change will increase over time. The assessment found that while at the present time risks are currently rated as insignificant or low (shown in green and blue), by 2100 there are high or extreme risks (shown in orange and red) predicted against all ngā pono, values.

31. The highly rated risks mainly include those to rerenga rauropi (biodiversity), wai (water), and ngā waihanga (infrastructure services). The present-day risks that are rated extreme include those relating to water supply and irrigation.

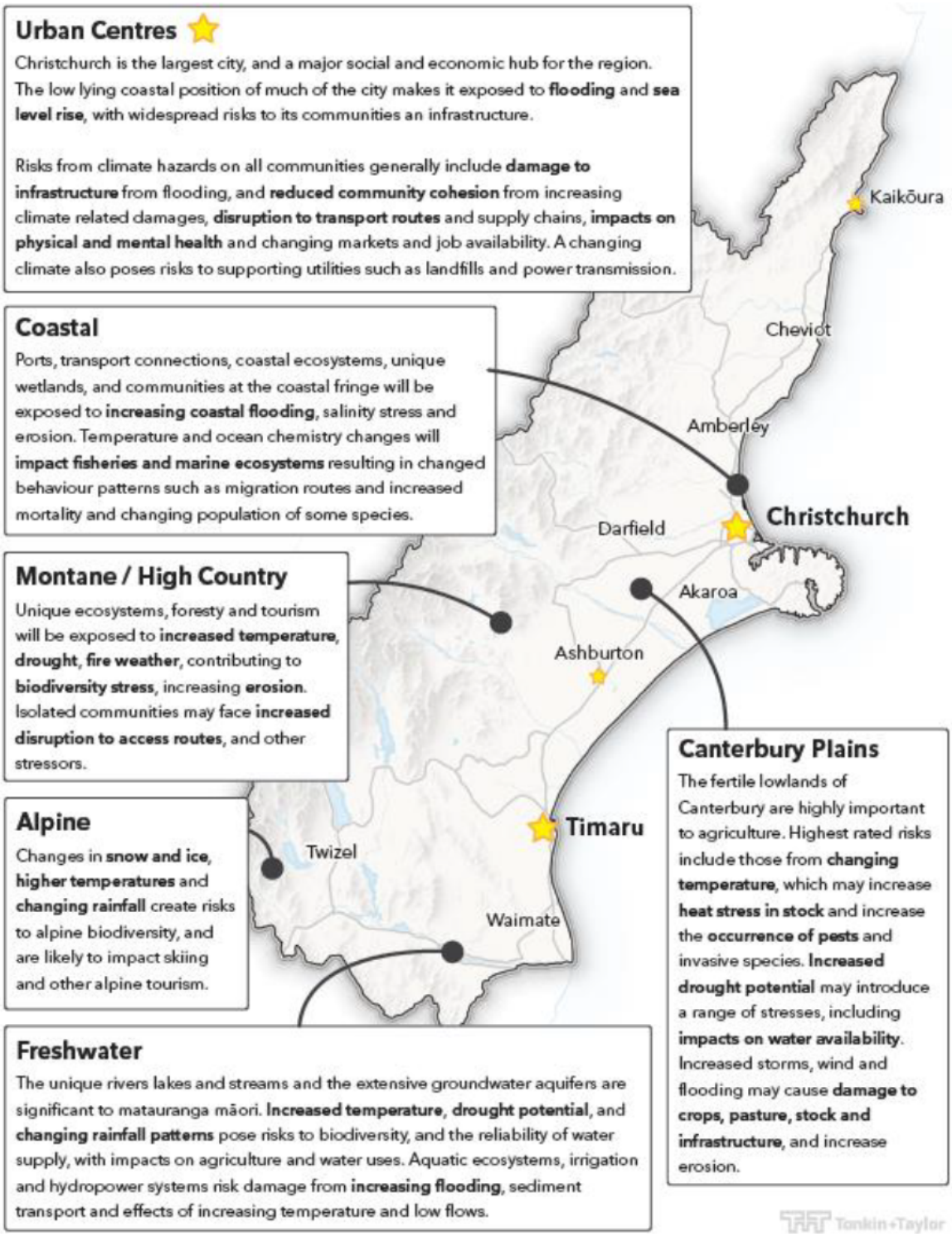
*Figure 3 - Summary of risk profiles for each of ngā pono (the values) across present, 2050 and 2100 timeframes*




## Impacts from climate change across Waitaha/Canterbury's different geographic areas

32. The challenges that climate change introduces will occur in different ways across the region. The large land area and geographic diversity of Waitaha/Canterbury means that some risks will be more relevant to certain areas. The differing impacts of these risks is described in the narrative of the report and visualised in this map-based risk summary in **Error! Not a valid bookmark self-reference.**4.

*Figure 4 - Canterbury Regional Climate Risk Summary*




## Opportunities due to climate change

33. The technical report also includes an opportunities section (page 175-185 in the attachment) that highlights the positive benefits from the physical effects of climate change. The identified opportunities are:

- warmer living conditions in winter
- increased tourism
- water storage
- new marine fish species
- increased migration from climate displacement
- viticulture
- reduced transport disruptions
- increased horticulture productivity.

34. It's important to note that these opportunities cannot be considered in isolation but must be considered as part of the broader report, as the risks may often outweigh the benefits. This section was specifically requested by this Forum.

35. Given the project shift that has been discussed above, the Canterbury Climate Change Working Group will consider the next steps of the Canterbury Climate Change Risk Assessment and bring this for consideration in the new year. This could include further work to understand decision urgency, or district detailed analysis of climate change risk.

36. With the growing capacity in councils to respond to climate change, through the creation by some councils of climate change teams or climate change and sustainability focused positions, Waitaha/Canterbury local authorities are a strong position to develop a new work programme focusing on climate change risk management and action planning.

37. Advice on scoping for the next phase of the work, which may include engaging with local authorities and rūnanga on identifying the urgency of the risks and localised effects of climate change across the region, will be provided in early 2022. As part of this advice, we will consider the approaches of both the Christchurch City Council and the Hurunui District Council respectively, as both have commenced engaging with their communities on coastal hazards. This was recommended by the Canterbury Climate Change Steering Group. The Group noted that both approaches were proving valuable and successful, and members considered they would be useful approaches to consider when developing the next steps for the Risk Assessment Project.

## Cost, compliance and communication

### Financial implications

38. Environment Canterbury invoiced councils for the Canterbury Climate Change Risk Assessment, as agreed by the Chief Executives Forum on 27 July 2020. The cost is as follows, noting that this excludes labour costs[2]:

[2] Environment Canterbury labour costs were approximately $60k

| Item | Spend |
|---|---|
| Tonkin + Taylor | $221,202.5 |
| Engagement expenses | $5,188 |
| Total | $226,390.50 |

39. While an additional $10,000 has been set aside by the CMF for communications and engagement on the completed report at the outset of the project, this budget is no longer required for this project given the recommended change in communications approach (see paragraphs 47-49 below).

### Risk assessment and legal compliance

40. The legal risk for releasing the results of the Canterbury Climate Change Risk Assessment is low as the findings cannot be used as an evidentiary base for regional, district or spatial planning as they are not sufficiently detailed.

41. There is however potentially high public interest in the results. Environment Canterbury staff will provide communications support to the Canterbury Mayoral Forum.

42. Staff will prepare a holding statement in the event the results are prematurely released. Dr Tim Davie, as convenor of the Canterbury Climate Change Working Group, will act as spokesperson if this occurs. This allows the CMF to make its own statement, at the appropriate time.

### Significance and engagement

43. The project team engaged with Ngāi Tahu via a Rūnanga Steering Group and Environment Canterbury staff will brief Te Rōpū Tuia (Environment Canterbury-papatipu rūnanga governance group) and Te Paiherenga (Environment Canterbury-papatipu rūnanga operational group) in November.

44. There is a high risk of Papatipu Rūnanga disappointment and frustration if the release of the technical report is handled poorly as the climate change effects directly impact their takiwā and their mana as mana whenua and mana moana. Additionally, the technical report itself and the overall project is greatly enhanced by the Matauranga Māori and Ngāi Tahutanga informed content and integrated framework which creates a further obligation on the CMF to honour the relationship.

45. The Project Steering Group received requests from Papatipu Rūnanga Steering Group members for direct engagement with ngā Rūnanga about the report and the impacts of climate change on their takiwā/territory. The Rūnanga Project Steering Group specifically requested that the technical report be taken to all Waitaha/Canterbury Papatipu Rūnanga Marae Hui in advance of public release, with support from Environment Canterbury and territorial authority councillors and staff. This will not be possible however without significantly delaying the public release of the report. We will work carefully to draft the media release to honour the relationship with Papatipu Rūnanga

while acknowledging the challenges with the project timeline that made comprehensive engagement prior to release not compatible with the timeline for release this year.

46. The Climate Change Working Group will develop advice on further engagement with Papatipu Rūnanga on climate change action following release of the report. We encourage all councils to use their existing engagement forums to connect with their local Rūnanga directly in advance of the report's release and ask each Papatipu how they wish to be engaged with regarding the report and climate change action planning more broadly. The Environment Canterbury Tuia team has offered to support these conversations.

### Communication

47. It is proposed that the CMF will lead the public release of the assessment in late November or early December. The reduction of scope as described in paragraphs 23-29 means our advice is substantially different from advice to the Mayoral Forum in August which encouraged a significant proactive campaign. This change is because the de-scoped technical report has been assessed by our communications and engagement advisors as having considerably less saliency for public communications and engagement than was expected.

48. We therefore recommend that the final technical report and accompanying public facing material would be published on the CMF website along with a media release. The material would also be made available to councils to use for their own engagement, and form part of the *It's Time, Canterbury* engagement campaign.

49. As noted above, the draft media release will be carefully worded to honour the relationship with Papatipu Rūnanga. Following advice from the Chief Executives Forum on 8 November, the media release will also be drafted to focus on not just the risks from climate change but also the opportunities, as well as reinforcing the next steps of the project to engage with local authorities and rūnanga on urgency, localised impacts of climate change and climate action planning.

50. At the request of the Climate Change Steering Group, to ensure a collaborative approach at a governance level the CMF secretariat worked with the project team to arrange a briefing for the regional climate change councillor group on the project and technical report in advance of today's CMF meeting.

## Next steps

51. The technical report and snapshot report will be released in late November, early December with support from the Environment Canterbury Communications and Engagement Group.

52. Further advice, led by the Climate Change Working Group, on the next steps for the project will be developed in the new year with the work being based on addressing the knowledge gaps, future research and next steps sections of the report.

## Attachments

- Attachment 1: Canterbury Climate Change Risk Assessment – Technical Report - redacted as not yet finalised
- Attachment 2: Draft Canterbury Climate Change Risk Assessment Snapshot Report - redacted as not yet finalised

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Jenny Hughey (Chair Environment Canterbury)

## Canterbury Biodiversity Champions: shared regional approach

## Purpose

1. To brief the Mayoral Forum on the Canterbury Biodiversity Champions recent stocktake work on biodiversity activities across Canterbury, and outline key elements of the anticipated National Policy Statement for Indigenous Biodiversity relevant for council implementation.

## Recommendations

**That the Canterbury Mayoral Forum:**

1. **notes that the next briefing from the Canterbury Biodiversity Champions will provide options for progressing shared regional approaches to address biodiversity roles, responsibilities and action in Canterbury**

2. **acknowledges an increase in focus and resources is required by councils to address ongoing biodiversity decline and implement national direction and shared regional approaches.**

## Background

2. The Canterbury Biodiversity Champions is a group of councillors (one from each Canterbury council) with a stated purpose: “To get our colleagues amped about biodiversity and to advocate for our councils’ and communities’ roles in weaving biodiversity through our living and working landscapes.”

3. The group is currently focussed on advocacy and finding opportunities for a shared regional approach to biodiversity across Canterbury local government.

4. The Biodiversity Champions were recently presented with a biodiversity stocktake - information gathered from biodiversity staff across all Canterbury councils about councils’ biodiversity priorities and work programmes. The work compared current biodiversity action with councils’ existing roles and responsibilities and upcoming national direction, to identify gaps in biodiversity management.

5. This has resulted in the Biodiversity Champions identifying a need for greater clarity amongst councils on roles and responsibilities for biodiversity and where there are opportunities to address the current gaps in biodiversity management through shared regional approaches.

## Roles and responsibilities for biodiversity management

### Current regulatory and regional context

6. Local government agencies have a general function to maintain biodiversity under the Resource Management Act (RMA). Importantly, as a matter of national significance (s6(c)), the RMA has always required councils to address the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna. It is these requirements that have driven the identification and management of significant natural areas (SNAs) for the last 30 years.

7. The Canterbury Regional Policy Statement (RPS) provides regional context and direction for resource management matters relating to indigenous biodiversity. The RPS includes a specific description of the roles of both the regional council and territorial authorities. In simple terms, territorial authorities are responsible for the control of the use of land for the maintenance of indigenous biological diversity on all land outside of wetlands, the coastal marine area, and beds of rivers and lakes. The other ecosystems are the responsibility of the regional council.

8. Canterbury councils have a strong history of working together to address local priorities including through the Canterbury Biodiversity Strategy (CBS) and the Ecosystem Health and Biodiversity target areas in the Canterbury Water Management Strategy (CWMS). Under the CWMS, the Mayoral Forum supported the Fit for Future work programmes including biodiversity actions for councils.

9. The Biodiversity Champions view the upcoming CBS revitalisation as key to addressing the region's biodiversity challenges collaboratively.

## Stocktake of current biodiversity action undertaken by Canterbury councils

### Stocktake scope and aims

10. The Biodiversity Champions sought information from biodiversity staff across the region to:

    - identify the current priorities and actions undertaken by local government to improve biodiversity
    - highlight the gaps between current activity and regional and national requirements and
    - identify opportunities to address these matters through a shared regional approach to biodiversity as part of the Biodiversity Champions advocacy and leadership role.

### Current activity

11. In summary, the stocktake identified that all councils are undertaking some biodiversity actions, often in collaboration with their communities. However, all councils also

perceived shortcomings in aligned strategic direction, landowner engagement, supporting community groups, engaging with Papatipu Rūnanga, implementing comprehensive monitoring programmes (where is it, how is it and if we've taken any action, is it working?) and regulatory actions.

12. It was found that non-regulatory initiatives deployed by councils vary according to the size and budget of the council. The larger councils are better placed to provide support to others to undertake biodiversity work. Some of the activities include contestable funds, rates remissions for covenanted areas, provision of technical advice and education in schools. Some smaller councils do not undertake non-regulatory measures as part of their biodiversity work. This is due to budget and resourcing constraints and other council priorities.

13. All councils have rules in their District Plan to protect biodiversity, however, these do not always offer a high level of protection and there is limited monitoring of these rules.

14. The region as a whole is still a long way from understanding where all high value biodiversity is located and the actions necessary to maintain it.

15. On a regional-scale, biodiversity management undertaken by local government is poorly aligned and not undertaken at a large enough scale to protect, maintain and restore Canterbury's indigenous biodiversity as directed by current regulations and strategies.

16. This raises the question of how councils will address and implement new national direction designed to address these shortcomings, including the National Policy Statement on Indigenous Biodiversity (NPSIB).

## The Proposed National Policy Statement on Indigenous Biodiversity

17. The proposed National Policy Statement for Indigenous Biodiversity (NPSIB) has been prepared under the RMA to provide direction and consistency to councils' interpretations and application of the RMA. An exposure draft of the NPSIB is expected to be released for targeted consultation by the end of the year, and the final NPSIB released in 2022.

18. The lack of consistent application of biodiversity provisions in the RMA has led to litigation, uncertainty, and an undervaluing of biodiversity in decision-making. Overall, indigenous biodiversity and taonga continue to be lost - regardless of current efforts to protect and restore them.

19. The proposed NPSIB:
    a. prescribes a consistent approach to the existing requirement to identify and protect SNAs
    b. requires the development of a regional biodiversity strategy and a regional monitoring framework
    c. promotes protection, restoration and enhancement

d. requires councils to work with tangata whenua to identify taonga and management actions

e. will require a shared approach, agreed roles and responsibilities and a strategy for working together on implementation.

20. Notwithstanding any new national direction, a commitment to work together on biodiversity protection is critical in addressing the trend of ongoing decline. The Biodiversity Champions are identifying opportunities to address the current gaps in biodiversity management through shared regional approaches.

21. Attachment 1 contains a recent update provided to the Biodiversity Champions on the NPSIB and the Significant Natural Area (SNA) requirements. It should be noted that regardless of whether the SNAs are mapped, they are protected by law and there are restrictions on what development can take place. Mapping of SNAs provides certainty about their location and any relevant requirements.

22. Canterbury councils are in varying stages of identifying SNAs and listing SNAs in district plans. Most are part way through the process, and one has done the work.

## Cost, compliance and communication

### Financial implications

23. While much of the work and recommendations of the Biodiversity Champions are structured to be cost neutral, or part of existing work programmes, it is acknowledged that implementation of biodiversity responsibilities that are already in place or agreed to will require finances to be allocated.

24. The Biodiversity Champions are recommending that councils consider allocating funding to work that will be required as a result of the NPSIB through the Annual Plan processes. The government has also recognised that some councils will need support to implement the NPSIB.

## Next steps

25. The Canterbury Biodiversity Champions will continue to work with staff to develop specific options to present to the Mayoral Forum in early 2022.

## Attachments

- **Attachment 1**: Summary of NPSIB information

## *ATTACHMENT 1* National Policy Statement for Indigenous Biodiversity

Timing

- The exposure draft of the National Policy Statement for Indigenous Biodiversity (NPSIB) is expected to be released for targeted consultation by the end of the year. The consultation is intended to test the workability of the policies before the National Policy Statement is finalised next year.

Implementation

- An implementation plan is also in early development and will be released alongside the gazetted NPSIB. The implementation plan will be aligned with the Aotearoa New Zealand Biodiversity Strategy action plan.
- The Government has recognised that some councils will need support to implement the NPSIB.

Aim, purpose, and rationale for the NPSIB

- The main objective of the proposed National Policy Statement for Indigenous Biodiversity (NPSIB) is to maintain indigenous biodiversity under the Resource Management Act 1991 (RMA).
- While the RMA provides the main framework for protecting and maintaining indigenous biodiversity on private land, there is insufficient direction and RMA provisions are subject to different interpretation, application and monitoring by councils.
- The lack of consistent application of biodiversity provisions in the RMA has led to litigation, uncertainty, and an undervaluing of biodiversity in decision-making. Overall, we continue to lose our indigenous biodiversity and taonga - regardless of current efforts to protect and restore them.
- The NPSIB seeks to ensure biodiversity is maintained overall, including no reductions in the following:
    - the size of populations of indigenous species
    - indigenous species occupancy across their natural range
    - the function of ecosystems and habitats
    - the full range and extent of ecosystems and habitats
    - connectivity between them, and buffering around ecosystems
    - the resilience and adaptability of ecosystems.

Application in Canterbury

- Canterbury councils are in varying stages of identifying SNAs and listing SNAs in district plans.
- SNA identification may not affect individuals unless there are RMA plans that include provisions specific to SNAs. A resource consent may be needed for any activities

that would affect or modify the SNA, such as clearing indigenous vegetation, earthworks, irrigation or other activities that can cause biodiversity loss.

- While there are some ongoing implementation issues, many councils already have rules preventing or controlling the modification of indigenous vegetation, as well as limits around earthworks, gravel and rock extraction and other activities that can reduce biodiversity. The identification and protection of SNAs is likely to refine these rules, to protect high-value biodiversity areas.
- The proposed NPSIB is not yet finalised (and therefore is not yet in effect). A further exposure draft is expected late 2021.

Significant Natural Areas (SNAs)

- Regardless of whether the Significant Natural Areas (SNAs) are mapped, they are protected by law and there are restrictions on what development can take place. Mapping of SNAs provides certainty about their location and any relevant requirements.
- The NPSIB requires councils to identify, using a consistent process, areas with significant indigenous vegetation and habitats of indigenous fauna, and manage their protection through regional and district plans and consent processes under the RMA.
- SNAs would be identified by councils and ecologists working with landowners, using significance criteria developed by ecologists.
- SNA criteria are not intended to capture all indigenous flora and fauna in an area, but to identify the significant vegetation and habitats that need protection and management, to maintain indigenous biodiversity across New Zealand.
- The provisions seek to manage adverse effects from new activities that have an adverse effect on SNAs.
- The NPSIB allows for existing pastoral farming to continue if adverse effects on indigenous biodiversity do not increase.

Biodiversity strategies and biodiversity monitoring

- Regional councils must prepare a regional biodiversity strategy in collaboration with territorial authorities, tangata whenua, communities, and other identified stakeholders.
- Regional councils are also required to develop a biodiversity monitoring plan for their region by working with territorial authorities, relevant agencies and tangata whenua.

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Sam Broughton, Chair

## Meeting structure 2022

## Purpose

1. The purpose of this paper is to instigate a discussion to ensure Mayoral Forum meetings meet members' expectations, and confirm the preferred meeting structure for 2022.

## Recommendation

**That the Canterbury Mayoral Forum:**

**1. confirm the structure of Canterbury Mayoral Forum meetings in 2022.**

## Background

2. The quarterly Regional Transport Committee (RTC), Canterbury Mayoral Forum (CMF) and Civil Defence Emergency Management Group Joint Committee (CDEM JC) meetings are scheduled to occur over two consecutive days each quarter. The CMF working dinner is held on the evening of the first day.

3. Most of the Canterbury mayors and the Chair of Environment Canterbury are members of all three groups. The RTC and CDEM JC have members that attend only those specific meetings.

4. Scheduling the meetings over two consecutive days and holding all meetings at the same venue minimises travel, therefore increasing efficiency and reducing cost. Meetings are scheduled for Thursdays and Fridays to avoid clashes with most council meetings.

5. The current schedule has two days of meetings. On the first day the RTC is scheduled from 4.00pm to 6.00pm, followed by the CMF working dinner from 6.00pm to 9.00pm. On the second day the CMF is scheduled from 9.00am to 12.00pm, followed by the CDEM JC meeting from 1.00pm to 3.00pm.

6. As the meetings run back-to-back, if an agenda item requires longer discussion it can impact the start of the following meeting. It is therefore important for meetings to be disciplined and to run to time, accepting that sometimes there is a need for more fulsome discussion.

## Scheduling meetings

7. Both the RTC and CDEM JC meetings are committees of Environment Canterbury and must be held in a venue that provides for members of the public to attend. The regional forums secretariat works with the Environment Canterbury governance team, who is responsible for the RTC and CDEM JC in scheduling meetings and venues.

8. Meeting dates are finalised following receipt of the confirmed Local Government New Zealand (LGNZ) 2022 calendar. The secretariat also works with the Greater Christchurch Partnership secretariat to avoid clashes with their governance meetings. The draft calendar for 2022 is provided at Attachment 1. We are still waiting for confirmation of the LGNZ 2022 calendar.

9. As most of the CMF members and council chief executives are in Christchurch for the RTC, CMF and CDEM JC meetings, other meetings are regularly scheduled around these meetings, for example, workshops and meetings with Ministers.

## Meeting agenda

10. Other parts of councils and/or other agencies often seek time on the agenda, particularly for the CMF. For example, at this meeting we have representations from the Greater Christchurch Partnership, the Regional Economic Development Senior Official and members of the Canterbury Biodiversity Champions group, as well as meeting the Canterbury MPs for lunch. This can make it challenging to adequately cover all the material presented.

## Discussion questions

11. Taking into consideration that members' diaries are very full and that minimising the amount of travel for members is a priority, options to increase the effectiveness of our meetings may include:

    a. extending the meeting time, by starting earlier or shifting the CDEM JC later

    b. reviewing the structure of meetings and agendas, e.g. by covering noting papers first to clear the way for full discussion around key issues

    c. creating a process to approve minutes and noting papers prior to the meeting, reserving face-to-face time for matters requiring discussion.

## Next steps

12. Should the Canterbury Mayoral Forum elect to make changes to the meeting scheduling for 2022 the secretariat will work with Environment Canterbury Governance team to finalise the schedule.

## Attachments

- Attachment 1 – Draft CMF 2022 Calendar

# Canterbury Mayoral Forum and Greater Christchurch Partnership meeting dates 2022

*Draft - as at 10 November 2021*

| | January | February | March | April | May | June | July | August | September | October | November | December | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| s | 1 New Year's Day | | | | | | | | | 1 | | | s |
| s | 2 Holiday | | | | 1 | | | | | 2 | | | s |
| m | 3 New Year's Day | | | | 2 **CEs Forum** | | | 1 **CEs Forum** | | 3 | | | m |
| t | 4 | 1 | 1 PMG & TMG | | 3 | | | 2 | | 4 | 1 PMG & TMG | | t |
| w | 5 | 2 | 2 | | 4 | 1 | | 3 | | 5 | 2 | | w |
| t | 6 | 3 | 3 | | 5 | 2 | | 4 | 1 | 6 | 3 | 1 | t |
| f | 7 | 4 | 4 | 1 **Policy Forum** | 6 | 3 **CCSG** | 1 **Policy Forum** | 5 **Papatipu rūnanga** | 2 | 7 | 4 | 2 | f |
| s | 8 | 5 | 5 | 2 | 7 | 4 | 2 | 6 | 3 | 8 LOCAL ELECTIONS | 5 | 3 | s |
| s | 9 | 6 | 6 | 3 | 8 | 5 | 3 | 7 | 4 | 9 | 6 | 4 | s |
| m | 10 | 7 Waitangi Day | 7 **CCSG** | 4 | 9 | 6 Queen's Birthday | 4 PMG & TMG | 8 | 5 | 10 | 7 | 5 **CCSG** | m |
| t | 11 | 8 | 8 | 5 | 10 | 7 | 5 | 9 | 6 | 11 | 8 | 6 | t |
| w | 12 | 9 | 9 | 6 | 11 | 8 | 6 | 10 | 7 | 12 | 9 | 7 | w |
| t | 13 | 10 | 10 | 7 | 12 | 9 | 7 | 11 | 8 | 13 | 10 | 8 | t |
| f | 14 | 11 GCP Committee | 11 GCPC & UGP | 8 GCP Committee | 13 GCPC | 10 GCPC & UGP | 8 GCP Committee | 12 GCP Committee | 9 GCPC & UGP | 14 | 11 Show Day | 9 GCPC & UGP | f |
| s | 15 | 12 | 12 | 9 | 14 | 11 | 9 | 13 | 10 | 15 | 12 | 10 | s |
| s | 16 | 13 | 13 | 10 | 15 | 12 | 10 | 14 | 11 | 16 | 13 | 11 | s |
| m | 17 | 14 | 14 | 11 | 16 | 13 | 11 | 15 | 12 | 17 | 14 | 12 **CCF and COF** | m |
| t | 18 | 15 SMG | 15 SMG | 12 SMG | 17 SMG | 14 SMG | 12 SMG | 16 SMG | 13 SMG | 18 SMG | 15 SMG | 13 SMG | t |
| w | 19 | 16 | 16 | 13 | 18 | 15 | 13 | 17 | 14 | 19 | 16 | 14 | w |
| t | 20 | 17 **CMF dinner** | 17 | 14 | 19 | 16 | 14 | 18 | 15 | 20 | 17 | 15 | t |
| f | 21 | 18 **Mayoral Forum** | 18 Partner Gov. | 15 Good Friday | 20 | 17 Partner Gov. | 15 | 19 | 16 **CCSG** | 21 | 18 GCP Committee | 16 **Policy Forum** | f |
| s | 22 | 19 | 19 | 16 | 21 | 18 | 16 | 20 | 17 | 22 | 19 | 17 | s |
| s | 23 | 20 | 20 | 17 | 22 | 19 | 17 | 21 | 18 | 23 | 20 | 18 | s |
| m | 24 | 21 | 21 **CCF and COF** | 18 Easter Monday | 23 | 20 **CCF and COF** | 18 | 22 | 19 **CCF and COF** | 24 Labour Day | 21 | 19 | m |
| t | 25 CEAG | 22 CEAG | 22 CEAG | 19 | 24 CEAG | 21 CEAG | 19 | 23 CEAG | 20 CEAG | 25 CEAG | 22 CEAG | 20 | t |
| w | 26 | 23 | 23 | 20 | 25 | 22 | 20 | 24 | 21 | 26 | 23 | 21 | w |
| t | 27 | 24 | 24 | 21 | 26 **CMF dinner** | 23 | 21 | 25 **CMF dinner** | 22 | 27 | 24 **CMF dinner** | 22 | t |
| f | 28 | 25 | 25 **Papatipu rūnanga** | 22 | 27 **Mayoral Forum** | 24 Matariki | 22 | 26 **Mayoral Forum** | 23 | 28 | 25 **Mayoral Forum** | 23 | f |
| s | 29 | 26 | 26 | 23 | 28 | 25 | 23 | 27 | 24 | 29 | 26 | 24 | s |
| s | 30 | 27 | 27 | 24 | 29 | 26 | 24 | 28 | 25 | 30 | 27 | 25 Christmas Day | s |
| m | 31 **CEs Forum** | 28 | 28 PMG & TMG | 25 ANZAC Day | 30 PMG & TMG | 27 | 25 | 29 PMG & TMG | 26 PMG & TMG | 31 **CEs Forum** | 28 PMG & TMG | 26 Boxing Day | m |
| t | | | 29 | 26 CEAG | 31 | 28 | 26 CEAG | 30 | 27 | | 29 | 27 | t |
| w | | | 30 | 27 | | 29 | 27 | 31 | 28 | | 30 | 28 | w |
| t | | | 31 | 28 | | 30 | 28 | | 29 | | | 29 | t |
| f | | | | 29 | | | 29 | | 30 **Policy Forum** | | | 30 | f |
| s | | | | 30 | | | 30 | | | | | 31 New Year's Eve | s |
| s | | | | | | | 31 | | | | | | s |

| **Canterbury Mayoral Forum** | |
|---|---|
| **Group** | **Membership** |
| Mayoral Forum | Canterbury mayors, Canterbury regional council chair, Canterbury council chief execs |
| CEs Forum | Canterbury council chief executives |
| CCSG (Climate Change Steering Group) | Subset of Canterbury mayors and chair |
| Policy Forum | One Canterbury council chief executive and policy managers from Canterbury councils |
| COF (Operations Forum) | One Canterbury council chief exec and operations managers from Canterbury councils |
| CCF (Corporate Forum) | One Canterbury council chief executive and corporate managers from Canterbury |
| Papatipu rūnanga | Canterbury mayors and Canterbury papatipu rūnanga chairs |

| **Greater Christchurch Partnership** | |
|---|---|
| | |
| Partner Governance | Greater Christchurch mayors and chief executives |
| GCPC (GCP Committee) | Greater Christchurch mayors and chief executives |
| UGP (Urban Growth Partnership) | Greater Christchurch mayors and chief executives, ministers |
| CEAG (Chief Executives Advisory | Greater Christchurch chief executives |
| SMG (Senior Managers Group) | Greater Christchurch council senior managers |
| PMG (Planning Managers Group) | Greater Christchurch planning managers |
| TMG (Transport Managers Group) | Greater Christchurch transport managers |

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Marie Black, Chair Economic Development Group

## Mayoral Forum Economic Development Group

## Purpose

1. To update the Mayoral Forum on the inaugural meeting of the Economic Development Group and seek approval of its terms of reference.

## Recommendations

**That the Canterbury Mayoral Forum:**

1. **endorse the attached terms of reference for the Canterbury Mayoral Forum's Economic Development Group**

2. **agree that all Canterbury councils be asked to assist the Economic Development Group in compiling a list of current and potential projects from across the region for the Group's consideration at its next meeting.**

## Background

2. The Regional Strategic Partnership Fund was discussed at both the May and August Canterbury Mayoral Forum (CMF) meetings. Concerns were raised by members around the amount of work that would be required to apply for a relatively small amount of seed funding that would then require more work to co-fund and deliver.

3. Kānoa (MBIE's Regional Economic Development and Investment Unit) indicated that the CMF is the right forum for projects to be promoted to the fund. However there would likely need to be engagement with Ngāi Tahu, other stakeholders and the business community on any projects that are to be promoted.

4. The CMF agreed to convene a discussion with Ngāi Tahu and other stakeholders around specific regional priorities for Canterbury.

5. Paul Stocks, Deputy Secretary Labour, Science and Enterprise, and Regional Economic Development Senior Official for Canterbury is attending this Mayoral Forum meeting.

## CMF Economic Development Group

6. The August CMF meeting proposed Mayors Marie Black, Dan Gordon, Nigel Bowen and Graham Smith convene the CMF Economic Development Group, with support from Venture Timaru and ChristchurchNZ.

7. Along with Venture Timaru and ChristchurchNZ it was suggested that the Economic Development Manager from Ashburton District Council and Enterprise North Canterbury were also included. In addition, a representative from Kānoa, Warren Gilbertson, was invited to attend the Group's meetings.

8. An invitation was sent to the Chairs of the Papatipu Rūnanga seeking their involvement. At this stage we have not received any response from Ngāi Tahu but acknowledge the resource and capacity pressures rūnanga are under at this time.

9. The Chief Executives Forum discussed officer membership of the Group at its meeting on 8 November and agreed the Economic Development Agency members would represent chief executives.

### Terms of reference

10. The Group discussed its terms of reference and agreed to seek the Mayoral Forum's approval of the draft as attached (attachment 1).

11. The purpose of the Group is "to support the promotion of regional priorities for central government funding, either through the Regional Strategic Partnership Fund or other funding avenues".

12. The Group considers the terms of reference are broad enough to be a useful framework for the group to achieve its goals without being overly prescriptive.

### Assessment framework

13. The Group also considered a draft proposal to agree how it will operate and the framework to be used when considering support for proposals for central government funding. A key part of the framework is ensuring any project that is considered aligns with the Mayoral Forum's Plan for Canterbury. A copy of the agreed framework is appended as attachment 2.

14. The Group agreed that the assessment framework highlights the key aspects of the Kānoa requirements for Regional Strategic Partnership Fund (RSPF), and how this intersects with meeting the objectives of the Mayoral Forum's Plan for Canterbury. It also acknowledges that this group is not limited to only supporting applications to the RSPF. The Group considers the framework is broad enough to be flexible to move with its work as this evolves.

### Meeting actions

15. Rather than consider projects at the initial meeting, the Group agreed to compile a list of projects (including projects from the Provincial Growth Fund period, if still relevant) that would include projects from across the region that:
    - were previously declined central government funding (or funding from other avenues)
    - are currently in a business case or detailed scoping process
    - are either planned or on a council's horizon.

16. The list would include projects wider than those that may only be fit for the RSPF process. To assist with considering the list once compiled, Kānoa has undertaken to provide advice on the reasons for Canterbury projects not receiving Provincial Growth Fund funding.

17. It was agreed that compiling this list would be a good first action to ensure the Group had a full view of projects across Canterbury. To support the Group to compile the list, it is recommended all Canterbury councils be asked to identify relevant projects.

### Other matters

18. The Group also received an update from Warren Gilbertson at Kānoa on progress with the RSPF. Members were interested to hear that while the RSPF has not progressed as swiftly as initially anticipated, Kānoa has been able to develop a better picture of what ministers are looking for in the regional development sphere – which is a better understanding of regional priorities rather than advocacy for specific projects. No projects have been approved for RSPF funding yet, and it is looking likely that this will not occur until February/March next year.

19. Warren noted that the first step in the RSPF process would likely be a 2-3 page application, rather than full business case. If the project passed this first step, then a business case would be sought.

20. Warren also acknowledged the resourcing and capacity pressures on Ngāi Tahu and other iwi that may affect their ability to engage with the work of this and similar groups and advised Kānoa can assist by ensuring that it keeps rūnanga informed on regional development matters.

## Next steps

21. The Group decided it would next meet in early 2022. At the next meeting, it will begin to consider the range of projects that will be identified during the compilation process outlined in paragraph 15-17.

## Attachments

- Attachment 1: Canterbury Mayoral Forum Economic Development Group – draft terms of reference
- Attachment 2: Canterbury Mayoral Forum Economic Development Group assessment framework

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# CMF Economic Development: Terms of reference (November 2021)

## Background

1. These terms of reference replace any previous terms of reference.

## Purpose

2. The purpose of the CMF Economic Development Group is to support the promotion of regional priorities for central government funding, either through the Regional Strategic Partnership Fund or other funding avenues.

3. The Steering Group reports to the Mayoral Forum and is mandated by the Canterbury Local Authorities' Triennial Agreement 2020–22.

## Scope

4. Matters subject to the CMF Economic Development Group are:
   - 4.1. supporting the development of clear, consistent framework for the promotion of regional priorities for central government funding
   - 4.2. advocating for, and acting as, a united voice for economic development opportunities for the region
   - 4.3. maintaining a watching brief for the Mayoral Forum.

## Membership and operation

5. The members of the CMF economic development group are:

- Marie Black (Mayor Hurunui District Council
- Dan Gordon (Mayor, Waimakariri)
- Nigel Bowen (Mayor, Timaru District)
- Graham Smith (Mayor, Mackenzie District)

supported by

- Simon Worthington (Economic Development Manager, Ashburton DC)
- Heather Warwick (CE, Enterprise North Canterbury)
- Boyd Warren (GM Innovation and Business Growth, ChristchurchNZ)

- Nick Bryan (GM Strategy and Insights, Christchurch NZ)
- Nigel Davenport (CE, Venture Timaru)

6. An invitation has been extended to the Papatipu Rūnanaga Chairs for their participation in the CMF Economic Development Group.

7. The CMF Economic Development Group may invite other agencies, in particular to present and participate in its discussions as it considers appropriate.

8. The CMF Economic Development Group may task other Regional Working Groups and/or council staff to provide advice as necessary.

9. The CMF Economic Development Group will meet as frequently as necessary to perform their purpose.

## Assessment Framework

10. The CMF Economic Development Group will develop an assessment framework to support the promotion of economic development opportunities. The Framework will be based on the following:
    - consistent with the Mayoral Forum's Plan for Canterbury priorities
    - consistent with Kānoa objectives to build more Productive, Resilient, Inclusive, Sustainable and Māori-enabling regional economies
    - identified within a local/regional economic development strategy
    - priority is developed to a level that supports funding requirements
    - clearly demonstrates benefit to the Canterbury region

## Review and amendment of these terms of reference

11. The CMF Economic Development Group may recommend changes to its terms of reference to the Chief Executives Forum and Mayoral Forum.

12. The Mayoral Forum will review the terms of reference three-yearly in the year following local authority elections.

Approved by the Mayoral Forum on 19 November 2021

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## Economic Development Assessment Framework

1. Projects for consideration for support from the Canterbury Mayoral Forum must be:
    - consistent with the Mayoral Forums's Plan for Canterbury[1] priorities:
        - sustainable environmental management
        - shared economic prosperity
        - better freight transport options
        - climate change mitigation and adaptation
        - three water services
    - identified within a local/regional economic development strategy
    - the proposal must be developed to a level that supports funding requirements
    - the proposal must clearly demonstrates benefit to the Canterbury region.

## Process for reviewing proposals

2. Proposals may come to this group's consideration via regional economic development agencies, Ngāi Tahu, councils, Kānoa and other avenues.

3. Submitted proposals should clearly show how they meet the CMF ED assessment framework.

4. Proposals that are seeking support from the Regional Strategic Partnership Fund (RSPF) must clearly articulate how the proposal meets the RSPF requirements.

5. The proposal proponent may be asked to present their proposal to the CMF ED group prior to support being provided.

6. The CMF ED group may consider proposals either in person, online or via email before a decision is made to support the proposal or not.

[1] Mayoral-Forums-Plan-for-Canterbury_SEPT-2020.pdf (canterburymayors.org.nz)

## Regional Strategic Partnership Fund Eligibility Criteria

7. The Regional Strategic Partnership Fund[2] eligibility criteria states that proposals must:
    - be in regional New Zealand outside the three main centres of Auckland, Wellington and Christchurch
    - align with Government and regional economic development priorities and PRISM objectives
    - creates additional value and avoids duplicating existing efforts
    - meets co-contribution requirements as outlined under “commercial projects”
    - have the capability to deliver and implement the project.

8. Commercial projects:
    - will be supported through equity or loans
    - Kānoa – REDIU will structure each project’s contract terms to increase the likelihood of success
    - as a guideline, commercial and quasi-commercial projects will require 50 percent co-funding
    - non-commercial projects will generally require 20 per cent co-funding.

9. Kānoa – REDIU PRISM framework is to support regional economies to be more:
    - productive
    - resilient
    - inclusive
    - sustainable
    - Māori-enabling

10. Kānoa has stated that regions can target improvements to achieve PRISM economies through:
    - allocating resources for best impact
    - improving connectivity
    - supporting social infrastructure
    - encouraging a healthy labour market
    - working with regional economic development bodies
    - improving outcomes for Māori
    - improving outcomes for Pasifika people

[2] The Regional Strategic Partnership Fund | Grow Regions

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Sam Broughton, Chair

## Three Waters reform

## Purpose

1. The purpose of this paper is to seek the Canterbury Mayoral Forum's response to a letter from Ashburton District Council on whether the Mayoral Forum has any plans or intentions to examine legal remedies in relation to the mandating of the Three Waters reform.

## Recommendation

**That the Canterbury Mayoral Forum:**

**1. request the secretariat to draft a response to Ashburton District Council based on the outcome of the discussion at the Mayoral Forum meeting.**

## Background

2. The Government has been consulting with local councils on the Three Waters Reform proposal. The submission period closed on 1 October 2021.

3. A summary of the submissions can be found at Summary of local government feedback on the Three Waters Reform proposals (dia.govt.nz).

4. While councils were not asked to make a decision on whether they would opt-in or opt-out of the reform proposal a number of councils indicated that on current information that they would likely opt-out.

5. The Canterbury Mayoral Forum has written to Minister Mahuta requesting that the reform process be paused to allow councils sufficient time to better understand the significant amount of complex information on which the Government has based its case for change and engage with our communities about it.

6. On 27 October Minister Nanaia Mahuta announced that the Government will be mandating the establishment of four publicly owned water service entities, which removes the ability for councils to make their own decision on whether they would opt-in or opt-out of the reform process.

## Ashburton District Council's letter

7. On 5 November the Ashburton District Council has written to the Mayoral Forum to enquire whether the Mayoral Forum has any plans or intentions to examine legal remedies in relation to the mandating of the reform. The letter is provided at Attachment 1.

8. The Forum has not yet had an opportunity to discuss the Minister's announcement to mandate the reform process.

## Next steps

9. The Secretariat will draft a response to Ashburton District Council's letter based on the outcome of the discussion at the Mayoral Forum meeting.

## Attachments

- Attachment 1 – Letter from Ashburton District Council

5 November 2021

Chair
Mayor Sam Broughton
Canterbury Mayoral Forum
secretariat@canterburymayors.org.nz

Dear Sam

The Ashburton District Council met on Wednesday 3 November and at the meeting discussions were held on the recent decision by the Government to mandate the 3 Waters reform. Members expressed their deep concerns at the change in stance to remove the option to opt out from the Council and the community, and are extremely disappointed in this decision.

Council resolved to enquire whether your organization has any plans or intentions to examine legal remedies in relation to the mandating of the reform. While Council is not currently planning to seek its own legal advice, there is a strong will to join or contribute to a collective process.

Yours sincerely

Neil Brown.

Neil Brown
**Mayor**

**MAYOR NEIL BROWN** **P** (03) 307 7765 **E** Mayor@adc.govt.nz

**SISTER CITIES** Pulaski - Virginia, USA I Ashburton - Devon, United Kingdom I Shiozawa-Niigata, Japan
**FRIENDSHIP CITIES** Puyang - Henan, People's Republic of China I Xianyang, Shaanxi, People's Republic of China

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Neil Brown

## Essential Freshwater Ashburton reports

## Purpose

1. The purpose of this paper is to provide copies of the *Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District* research undertaken on behalf of Ashburton District Council on the likely economic impact of land and water legislation across the Ashburton District, and the *Essential Freshwater Social Impact Report: Ashburton District* prepared for the Mid-Canterbury Rural Support Trust.

## Recommendation

**That the Canterbury Mayoral Forum:**

1. **receive the reports *Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District* and *Essential Freshwater Social Impact Report: Ashburton District.***

## Background

2. The National Policy Statement for Fresh Water Management (NPS-FWM), the National environmental standards for Fresh Water Regulations, and Stock Exclusion Regulations were passed into law in 2020.

3. This policy statement sets out a target of achieving a freshwater soluble nitrate level of 2.4mg N/L. 3.

4. This economic impact report builds on a previous report that was commissioned by Ashburton District Council (ADC) titled '*Land and Water Reforms and Economic Impact for the Ashburton District*, which was shared with the Mayoral Forum in February 2021.

5. The social impact report was commissioned by the Mid-Canterbury Rural Support Trust to explore the social impact of the new freshwater rules and regulations on the Ashburton District.

## *Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District*

6. The *Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District* report (the report) was commissioned by the ADC as the implications of achieving a freshwater

soluble nitrate level of 2.4mg N/L are not well understood at a farm level nor are the effects on the district's economy.

7. The report outlines the changes that would need to occur within the Ashburton District to achieve a nitrate level of 2.4 mg N/L and the impacts on the economy of achieving this level.

8. Macfarlane Rural Business (MRB) undertook the analysis of farm system improvements, land use change and the use of managed aquifer recharge systems as part of the reporting system.

9. Infometrics was engaged to calculate on-farm impact, farm expenditure changes and the effect on employment across the Ashburton District, specifically quantifying direct, indirect and induced effects of the changes needed to achieve the mandated freshwater standards.

## Report Summary

10. The summary of the report notes that while it is technically possible to change the faming landscape in Ashburton (291,000ha farmed) to give effect to 2.4ppm N in surface water, the actions we take to achieve the target will have a material effect on the style of farming and the physical landscape.

11. Ashburton District's farming community could expect to see:
    - significant and widespread changes to farming practices, particularly housed cattle
    - an increase in the forestry area by 102,691 ha (35% of the catchment)
    - using 17.1 m3 /sec alpine river water for additional Managed Aquifer Recharge.

12. The scenario modelled hinges on the above three items all being achieved. Without one of them, the chances of achieving the desired 2.4ppm N in surface water is unlikely as farm management cannot achieve N losses low enough.

13. Nett farm revenue will decline significantly under the modelled scenario and farm working expenses will also decline, but at a lower rate leading to a reduction in regional farm profit of at least $173m p/a ($592/ha).

14. Reduced business profitability ultimately ends up resulting in de-valuation of the business assets. In this instance the main asset is land. We could expect to see the erosion of $25,309/ha in land value ($7.4 bn for whole catchment).

15. The reduced business profitability on farm and land use change will have significant downstream consequences for the surrounding industry. The biggest changes likely are:
    - 3,522ha less arable land available for seed multiplication and vegetable production
    - 85,000,000kg less milk solids produced
    - 185,000 head less cattle killed annually.

16. Attempting to meet a water quality target of 2.4ppm N would be extremely financially, physically and psychologically challenging for most Ashburton farmers and could have material sociological impacts on the wider community.

## *Essential Freshwater Social Impact Report: Ashburton District*

17. This research was commissioned to provide insight into the impacts of the freshwater rules and regulations on the people of the Ashburton District. The report adds to the economic impact report produced by the Council in 2020 (referenced in paragraph 4).

### Report summary

18. The report found that the new freshwater rules and regulations have wide social implications for people in the Ashburton District.

19. Key points include:

- there has been an increasingly adverse impact on farmers and their families in recent times; the new rules have compounded existing stressors, including droughts, banking reforms, Mycoplasma bovis, and COVID-19 impacts
- the way the new rules and regulations were introduced failed to take into consideration the on-flow socio-economic impacts of such an intervention on some rural communities
- the initial engagement process for the freshwater rules, specifically the consultation seminar held in Ashburton, created anxiety, stress, and uncertainty for the agri-sector; this uncertainty has only increased over time, hindering farmers and those working in the agricultural sector's ability to plan, provide practical advice, and progress forward with projects
- decreased confidence in farming was a theme particularly for young farmers; one of the main concerns for young farmers was the negative way they felt the public viewed farmers
- in terms of the broader community, there was a view that the possible flow-on impact from a loss of farms and reduced spending in the district could affect the viability of some rural supply businesses, increasing unemployment and resulting in families relocating away from the district
- a shared commitment to tackle the complex environmental issues, including a willingness from government to work with farmers to create a time appropriate pathway for water quality improvements would result in a more effective and sustainable change in the way that land and water is managed and could achieve more positive social outcomes.

## Attachments

- Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District
- Essential Freshwater Social Impact Report: Ashburton District

2021

# Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District

Ashburton District Council

10/20/2021

# Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District

By
Richard Fitzgerald
Agricultural Portfolio Advisor
Ashburton District Council

## Executive Summary

The implications of achieving a freshwater soluble Nitrate level of 2.4mg N/L, are not well understood at a farm level nor are the effects on a district's economy. The Ashburton District Council commissioned the **'Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District'** report to understand the effects of achieving this aspect of the freshwater regulations more fully.

An understanding of the impact on the Ashburton District has been established by analysing the effects of three mitigation interventions, on-farm nutrient loss mitigations, coupled with ground water supplementation, and land use change to forestry. Forestry was used as an intervention because it is a low nitrate crop known to Canterbury plains.

The report makes no claim that these interventions are the most suitable land use change nor are they proposed as the most likely response by farmers to achieve the freshwater regulations. These interventions have been used to represent change that can be quantified and are used in this report to demonstrate the potential economic impact of achieving the freshwater regulations.

This report shows that at a farm level, the interventions will result in a reduction of dairy farming and dairy support land use by over fifty percent from current levels. This is replaced with forestry land use. The remaining dairying, dairy support, arable and red meat farming land uses will change their operations significantly by implementing all nutrient loss mitigation measures available. This will involve widespread changes to farm systems and increased investment in farm infrastructure and technology. This will result in a decline in farm profitability across the Ashburton District by -62% even though farm expenditure declines by 11.7%. The decline in farm profitability and changes to land use lead to a decline in land values of $25,306 per hectare or $7.4B districtwide.

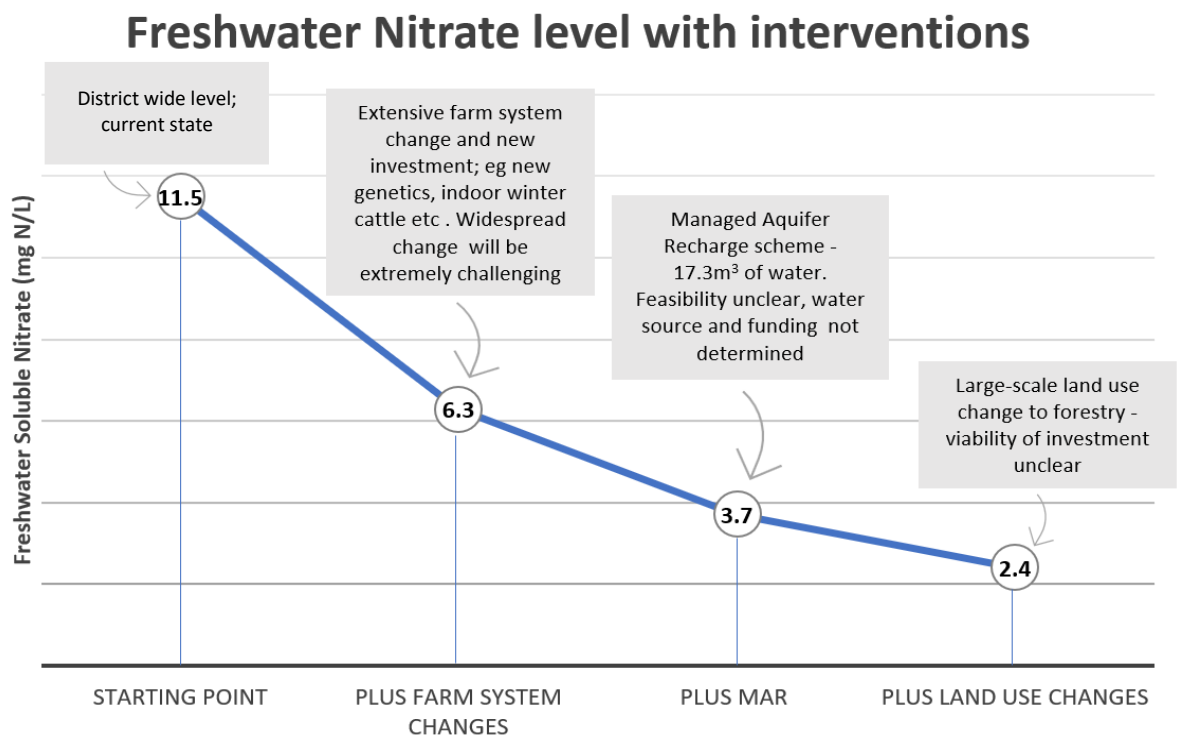
Agriculture is a significant contributor to the district's GDP and the decline in farm productivity and financial performance flows through to agricultural support businesses and the wider economy. The reduction in livestock numbers and lower volumes of produce result in a decline in the transport industry by -25.9%, reductions in irrigation because of land use change shows that water services will decline by -20.7%, and businesses which provide vehicle and equipment maintenance will experience reduced demand for their services leading to a 37.0% decline.

As a result, the Ashburton District's GDP is calculated to decline by $409M or 23%, with the loss of 1735 jobs and the tax take from the district will decline by $72M.

The regulations do not define the timeframe by when they must be met. A short timeframe will exacerbate the negative effects while a longer timeframe will enable businesses to adjust and adopt new science and technology to meet the regulations.

By applying the interventions, the freshwater Nitrate levels will shift from the weighted average starting point of 11.5mg N/L to 6.3mg N/L when all the on-farm nutrient loss mitigations are applied. Additionally, when the Managed Aquifer Recharge scheme and land use changes are also included, the freshwater Nitrate levels shift from 6.3mg N/L to 2.4mg N/L.

Summary of the effect of the interventions on freshwater Nitrate levels.




Importantly, meeting the freshwater regulations requires all the interventions to be implemented fully across the district. An underperformance of any of the interventions means that the freshwater targets will not be achieved.

This will be challenging.

Challenging because farmers are businessmen and women and as such, are unlikely to invest where there is a negative return and unclear benefits. They will act when they understand the connections between the problem and the solution. They will act when they are engaged in the change process and are able to provide their expertise to help shape the future for their farms and their community.

They will also act when they are confident about the risks and benefits of change, and to achieve this further research is crucial to fill gaps in current knowledge.

All the Ashburton District community want good environmental outcomes and a strong and healthy economy for them and their children, so do all farmers. The real challenge is not about trading off one against the other, but rather it is about achieving good outcomes for the environment, businesses, and the community.

To achieve that future, government, industry, and the farming community need to work collectively and solve the problems together.

## Introduction

Land and Water management is a hot topic of discussion throughout New Zealand. After a period of community consultation, the National Policy Statement for Fresh Water Management (NPS-FWM), the National environmental standards for Fresh Water Regulations, and Stock Exclusion Regulations were passed into law in 2020. The regulations are intended to address a range of issues associated with freshwater quality and environmental management. The regulations will influence the impact primary production has on the environment. Since the implementation, several aspects of these regulations have attracted debate about workability and economic impact.

A desktop review of relevant research papers was undertaken by the Ashburton District Council to better understand the impacts of the NPS-FWM. The report 'Land and Water Management in the Ashburton District – Economic Impact[1]' was completed by the Economic Development unit of the Ashburton District Council in late 2020. This report studied the economic impact of achieving a freshwater soluble Nitrate level of 6.9mg Nitrate per litre (mg N). The results showed there is a risk of significant decline in farm profitability causing a decline in employment in the district.

The report did not capture the full impact of NPS-FWM because the NPS-FWM requires a freshwater level of 2.4mg N, which is significantly more stringent than the 6.9mg N levels examined in the Ashburton District Economic Impact report. A follow up report was commissioned by the Ashburton District Council to gain a clearer understanding of what achieving a level of 2.4mg N means to the Ashburton District's economy.

## Overview

This report, **'Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District'** explores the impacts of achieving a freshwater soluble Nitrate level of 2.4mg/L at a farm level and the associated effects on the Ashburton District's economy. It was commissioned by the Ashburton District Council to better understand the potential implications of achieving the freshwater regulations.

This report firstly analyses two research papers. The first research paper, 'Land and Water Management in the Ashburton District – Economic Impact' (referred to as the '*Freshwater Nitrate: 2.4mg/L - appendix 1*' paper) was prepared by MacFarlane Rural Business. It models farm system change (in Farmax) with resulting nutrient loss analysis. Importantly, this research paper includes farm systems budgets and cashflow assessments to determine the financial implications of the changes. The second research paper, 'Economic Impact of freshwater environmental standards in Ashburton District', (referred to as the *'Economic Impact of 2.4mg/L – appendix 2'* paper) was prepared by Infometrics. It uses the output data from the farm systems and budget cashflow modelling (presented in appendix 1) to calculate the economic impact for the Ashburton District. This report then analyses the findings and presents them in the context of the Ashburton District. It will identify the farm and district economic cost of achieving a freshwater soluble Nitrate level of 2.4mg/L.

## The Scope

The purpose of this report is to present a high-level analysis of interventions that decrease the impact of agriculture on freshwater nitrate levels. This is to understand what achieving a freshwater Nitrate level of 2.4mg/L looks like on-farm and at a community level. It examines how to achieve the freshwater regulations and considers changing on-farm practices, supplementing ground water, and substituting land use to forestry as a low nutrient-loss land use.

[1] Land and Water Manager in the Ashburton District – Economic Impact (2020). Ashburton District Council.

The report encompasses the plains area of the Ashburton District only and is only focussed on achieving the Nitrate aspect of the freshwater regulations and identifying the costs associated with the achievement. It does not consider the economic impact of other aspects of the regulations such as wetland protection, and achieving other freshwater attributes etc. The high-country areas are not accounted for in the study as they represent a relatively small contribution to the freshwater quality issue compared to farm systems on the plains. Additionally, determining the practicality and achievability of the interventions are outside the scope of this report.

The report does not attempt to quantify the benefits or value of improved ecosystem health, which should be a focus of future research.

### Assumptions

This report recognises the complexity of the interrelationship between farm systems, human behaviour, and the environment, and as such, there are limitations as to how this mix of factors can be accurately analysed and quantified. Several assumptions have been utilised to develop interventions that are plausible, however, the report acknowledges that the likelihood of all interventions being enacted, is open to be challenged.

Expert judgement has been utilised to ensure validity of the assumptions used in the analysis of the interventions. The analysis is undertaken in several steps, each step is an intervention that theoretically decreases soluble Nitrogen in freshwater. The interventions include changing on-farm systems to minimise nutrient losses, a district-scale Managed Aquifer Recharge scheme, and land use change to largescale forestry. The steps of analysis are carried out in a linear manner, adding the reduction of soluble nitrogen to the outcome of the previous intervention. The purpose of this is to demonstrate the scale of interventions needed to reach the freshwater targets outlined in the NPS-FWM. It can be assumed in practice the interventions will not occur one after another but instead develop omnidirectionally, therefore the rolling tallies are arbitrary but still highlight feasible outcomes.

It should be noted that significant value would be gained from undertaking hydro-geological research to better understand the relationship between soils, climate, land uses and water movement in Ashburton District's natural environment.

## The Analysis

This section summarises and analyses '*Freshwater Nitrate: 2.4mg/L - appendix 1*' and *'Economic Impact of 2.4mg/L – appendix 2'*. The '*Freshwater Nitrate: 2.4mg/L - appendix 1*' identifies three interventions that can be utilised for agriculture to achieve the NPS-FWM regulations. These are; (1) the implementation of practice change on-farm and capital investment (including technology) that would mitigate nutrient losses, (2) the implementation of a district-scale Managed Aquifer Recharge scheme, and (3) changing land use to a lower nitrogen loss farming system. The analysis will consider the impact each intervention has on decreasing the soluble Nitrate levels as well as the economic impact.

For each intervention, the change in individual farm financial performance and the impact on the Freshwater soluble nitrate level is calculated. The results of the first intervention are carried through onto the next to give a rolling tally of the financial and environmental impact of undergoing each intervention. Extrapolated to the district level, this helps determine the economic impact these interventions could have on the Ashburton District's economy.

## Changing On-Farm Practices

'*Freshwater Nitrate: 2.4mg/L - appendix 1*' identified that changing and adopting different on-farm practices and further investment resulted in a reduction of freshwater soluble nitrate levels. However, these changes come at a cost. The research paper considered most mitigation practices currently available to agriculture, for example, housing cattle (including dairy) during winter, the utilisation of different farm practices, and the use of the latest technology such as precision irrigation technology. To assess the impact of changing on-farm systems, the research paper '*Freshwater Nitrate: 2.4mg/L - appendix 1*' calculated the baseline financial and environmental 'Starting Point' for each type of farming. From there, the theorised changes which reduce nutrient losses that can be implemented on-farm were modelled and the cost of implementing these changes, calculated. The recalculated financial and environmental status of each farm system was shown in the 'Forecast' farm system.

Table 1 summarises the impacts at a district level and highlights the change in farm performance resulting from changes to the farm practices. Refer to appendix 1 paper - '*Freshwater Nitrate: 2.4mg/L' (p20).*

*Table 1 District wide financial impact of changing on-farm systems*

| **Farm Performance area – Ashburton District** | **Pre changes ($1M)** | **Post practice changes* ($1M)** | **Change impacts** ($1M)** | **Change Impact*** (% change)** |
|---|---|---|---|---|
| Nett farm income | 1,779 | 1,984 | 205 | +11.5% |
| Farm working expense | 1,221 | 1,545 | 324 | +26.5% |
| Earnings before interest and tax (EBIT) | 558 | 439 | -119 | -21.3 |
| Interest | 26 | 33 | 7 | +26.9% |
| Tax | 107 | 45 | -62 | -57.9% |
| Plant replacement | 148 | 204 | 64 | +37.8% |
| Nett profit | 277 | 144 | -133 | -48.0% |

*Figures are derived from '*Freshwater Nitrate: 2.4mg/L - appendix 1*' paper. They are calculated by multiplying 'starting point' land uses on page 14, figure 8, with the 'forecast' figures on page 20, table 5.6.5. These figures only consider the on-farm system changes, and do not account for MAR or land use change.

** Figures are calculated as the difference between 'pre changes' and 'post practice change'.

*** Figures are calculated as the percentage change from 'pre changes' from 'post practice change'.

Table 1 demonstrates an increase in farm income with associated increases in farm expenditure. The expenditure increases greater than income, leading to a decline in EBIT of -21.3% (-$119M). The decline in EBIT leads to lower tax payments.

The on-farm changes result in increased operating expenditure of 26.5% ($324M) on different management practices such as pasture renewal, nutrient inhibitors, and plant genetics. These changes deliver a negative cost benefit while reducing the amount of nutrient loss; for every $1 dollar of increased operating expenditure, farm income increases only $0.63. Additionally, farms show an increase in capital expenditure with investment in farm infrastructure such as winter barns and precision technology, resulting in a decline in farm profitability of -48.0% (-$133M).

Table 2 summarises the impacts at a district level and highlights the effects on freshwater Nitrate levels because of on-farm practice and system changes. Refer to appendix 1 paper - '*Freshwater Nitrate: 2.4mg/L' (p10. Figure 2).*

*Table 2 District wide effect on freshwater nitrate levels from changing on-farm systems*

| District wide effects | Pre system changes level (District weighted average) | Post system changes level* | Change impacts** |
|---|---|---|---|
| **Freshwater Soluble Nitrate Level** | 11.5 ppm N/L | 6.3 ppm N/L | A decline of 5.3ppm N/L |

*The figures show the change from the current state of farm system nutrient loss, and the loss after the nutrient loss reduction farm system changes.

The widespread change to farm systems and investment in new technology is calculated to achieve a reduction in freshwater soluble Nitrate levels from a starting point of 11.5ppm N/L to 6.3ppm N/L, after all possible on-farm system mitigations are implemented.

It should be noted that the breadth and scale of change identified in the report will be very disruptive to all farm businesses and achieving unilateral commitment amongst all farmers to this magnitude of change will be extremely challenging.

## Managed Aquifer Recharge

The Hekeao/Hinds area currently has a Managed Aquifer Recharge (MAR) scheme in operation which recharges the ground aquifers in the area. It is speculated that this may be scaled up and extended across the district to provide the same benefits. The '*Freshwater Nitrate: 2.4mg/L - appendix 1*' paper does not assert whether this is feasible or not, nor does the report assess the effectiveness of this intervention on freshwater Nitrate levels. The rationale of using a MAR intervention is based on a modelled catchment N load which will receive the same flow rate of 0.055lps/ha as per the current MAR scheme. The volume of water required to supplement a district scale MAR scheme is calculated at 17.1$m^3$.

The expenditure associated with a district scale MAR (capital and operating costs) is accounted for in the '*Freshwater Nitrate: 2.4mg/L - appendix 1*' paper. The costings are derived from the Hekeao/Hinds MAR scheme and scaled up to meet the theoretical needs of an Ashburton District scale scheme. Importantly, the analysis does not determine how or by whom such a large-scale MAR scheme will be funded. For this reason, the capital and operating costs are not incorporated within the farm budget calculations.

Table 3 shows the cost of establishing a MAR scheme that supplements ground water by 17.1$m^3$as per the paper '*Freshwater Nitrate: 2.4mg/L - appendix 1*'(p14).

*Table 3 The estimated cost of establishing and operating a MAR scheme that supplements ground water by 17.1$m^3$.*

| Effect of a District Scale MAR | Impact |
|---|---|
| Capital cost | $23,528,906 |
| Operating cost (annual) | $1,368,000 |

The table shows the initial one-off cost of building the MAR scheme and the annual operating costs. These operating costs include overheads such as personnel and scheme maintenance.

Table 4 shows the effect on freshwater soluble Nitrate levels after the introduction of 17.1$m^3$ of water through a Managed Aquifer Recharge scheme as well as the on-farm system changes. Refer '*Freshwater Nitrate: 2.4mg/L - appendix 1*' (p 12. Figure 5).

*Table 4 District wide effect on freshwater nitrate levels from introducing MAR and changing on-farm systems*

| District wide effects | Pre MAR level * | Post MAR level* | MAR impacts |
|---|---|---|---|
| **Freshwater Soluble Nitrate level** | 6.3ppm N/L | 3.7ppm N/L. | A decline of 2.6ppm N/L |

*The figures include the effects of on-farm system changes.

The implementation of intervention one, widespread change to farm systems and investment in new technology, and intervention two, a district scale MAR scheme is calculated to achieve a reduction in freshwater to a soluble Nitrate level of 3.7ppm N/L.

It should be noted that it is unclear whether a district scale MAR is feasible. It is undetermined where 17.1m$^3$ of water will be sourced, nor how the scheme will be funded. It is recognised that the lack of clarity of key pieces of information is problematic for assessing the merits of this intervention.

## Land Use change

The '*Freshwater Nitrate: 2.4mg/L - appendix 1*' report evaluated the impact of widespread land use change to forestry. It is recognised that land use change is not simple and will take many forms involving different land use options. However, forestry was chosen for modelling because it has historically been a land use on the Canterbury Plains and is one of the lowest nutrient loss land use options.

Several land use options were considered for analysis, but none were as suitable for modelling as forestry for agronomic reasons This report does not propose that forestry is a recommended land use change for the Ashburton District.

Table 5 identifies the area of land that would need to be converted to meet the freshwater soluble nitrate levels. The economic impact of the conversions was calculated by determining the value of the forestry land use plus the value of the remaining land uses in the district (arable, dairy, dairy support, and red meat).

Table 5 summarises the impacts at a district level and highlights the total impact of all mitigation measures, farm system changes and land use change, required to meet the freshwater regulations. Refer to '*Freshwater Nitrate: 2.4mg/L - appendix 1*' (p14 and p20).

*Table 5 The financial and environmental impact of land use change to forestry – refer to 'Freshwater Nitrate: 2.4mg/L - appendix 1'*

| Land use change | Change to area – hectares (ha) |
|---|---|
| Arable area - change | -3,522 ha |
| Dairy area - change | -57,659 ha |
| Dairy Support area – change | -31,967 ha |
| Red Meat area - change | -9,877 ha |
| Forestry area - change | +105,079 ha |
| | ppm |
| **Farm Performance area – Ashburton District** | **Farm systems change impacts ($1M)** |
| Nett farm income | -409 |
| Farm working expense | -143 |
| Earnings before interest and tax (EBIT) | -267 |
| Interest | -3 |
| Tax | -72 |
| Plant replacement | -19 |
| Nett profit | -172 |

The paper '*Freshwater Nitrate: 2.4mg/L - appendix 1*' identifies that land use change to forestry would occur across 35% (105,079 ha) of the district to achieve the freshwater regulations. This change would impact all types of land use with dairy farming, (a reduction of -57,659 ha), and Dairy Support (-31,967 ha) the most affected.

Collectively, the interventions will result in a decline in all the farm financial performance areas. Nett Farm Income will decline -23% (-$409M), Farm Working Expenses will decline -11.7% (-$143M), and EBIT will decline -52.1% (-$267M). The Tax take from farming will decline -68% (-$72M) and farm profitability across the whole district will decline -62.2% (-$172M).

Table 6 shows the effect on freshwater soluble Nitrate levels after land use change to forestry after the implementation of a Managed Aquifer Recharge scheme as well as the on-farm system changes. Refer '*Freshwater Nitrate: 2.4mg/L - appendix 1*' (p 13. Figure 6).

*Table 6 District wide effect on freshwater nitrate levels from land use change along with MAR and changing on-farm systems*

| District wide effects | Pre land use change * | Post land use change* | Land Use Change impacts |
|---|---|---|---|
| **Freshwater Soluble Nitrate level** | 3.7ppm N/L | 2.4ppm N/L. | A decline of 1.3ppm N/L |

*The figures include the accumulated effects of farm systems change and the use of MAR

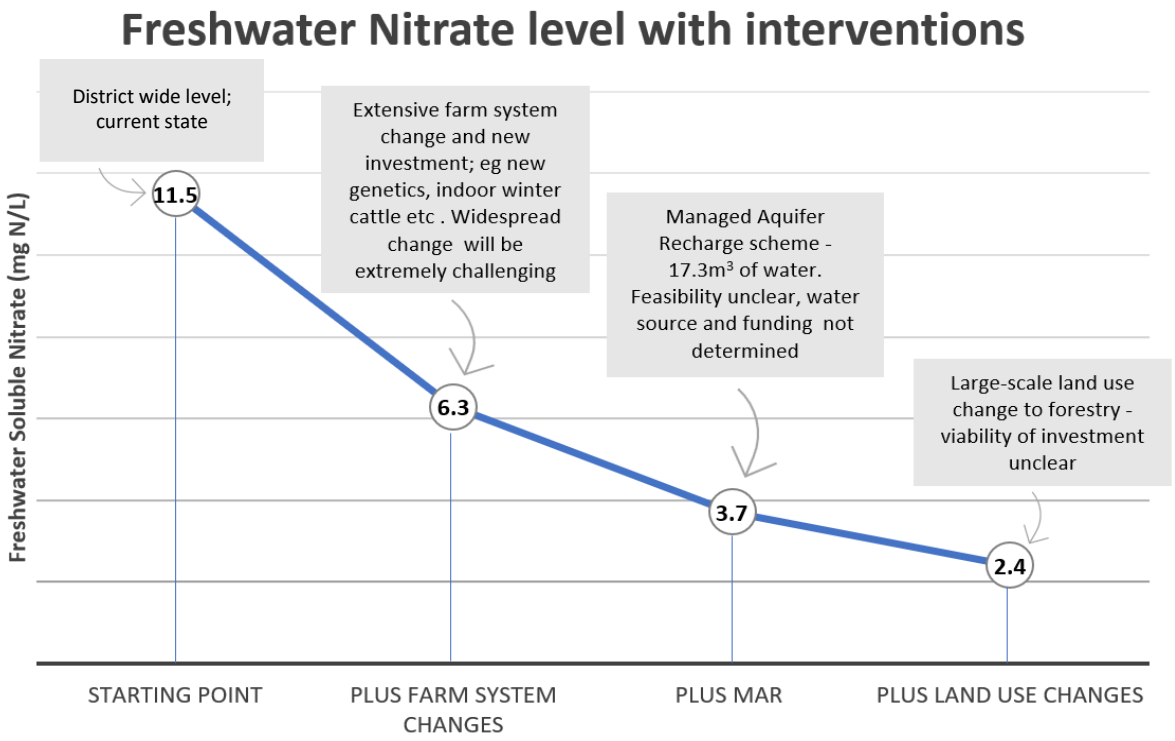
The implementation of intervention one, widespread change to farm systems and investment in new technology, and intervention two, a district scale MAR scheme plus intervention three, land use change to forestry is projected to achieve a reduction in freshwater to a soluble Nitrate level of 2.4ppm N/L.

It should be noted that currently for several reasons, forestry land use occupies a small area on the plains of the Ashburton District eg fire risk, windfall, timber quality. Under climate change, which is forecast to become drier and hotter, forestry land use will be less attractive as an investment option. Going forward, this is likely to limit the merits of forestry land use as a nutrient loss intervention unless additional value emerges for forestry as a carbon sink.

## Summary of the effects of interventions on freshwater Nitrate levels

Table 7 summarises the changes to freshwater nitrate levels resulting from each of the three nutrient loss mitigation interventions.

*Table 7 Summary chart of the district wide effect on freshwater nitrate levels from all mitigations – changing on-farm systems along with MAR and land use change.*




## The Economic Impact

The *'Economic Impact of 2.4mg/L – appendix 2'* paper details the economic impact of the NPS-FWM regulations on the Ashburton District. Calculated from the farm level modelling, district scale MAR, and a land use change to forestry, the district's GDP will reduce by 16.3% ($409M) and employment will decline by 9.1% (loss of 1735 jobs). Furthermore, the district will contribute -$72M less in taxes to the national economy.

The decline in farm profitability and changed land use will flow through to land values and a projected decline in value of $7.4B district wide (or $25,309 per ha). A decline of this scale will have significant implications for the equity position of many farms as well as bank security. Minimal or negative equity will be problematic for farm succession.

Including the direct, indirect, and induced effects, the analysis shows a decline in all areas of the economy except mining (due to the positive effect of gravel extraction to build the MAR scheme). The Agricultural GDP will decline -44.1% with 1475 fewer employees as farms change their systems to forestry, which has a low labour requirement. Changes to forestry will lead to reduced irrigation use affecting the Electricity and Water Services which will decline by -20.7% (-$27.8M) resulting in -7.8% (18 personnel) fewer employees. Other Services, which includes vehicle and equipment maintenance, is affected through reduced demand for maintenance from the agriculture industry, leading to a 37.0% reduction in GDP and Transport Services will decline by -25.9% (-$13.2M) as fewer livestock are farmed and volumes of farm output decline.

## Discussion

The analysis shows that the district's GDP, employment, and farm productivity and profitability will decline significantly. Given the significance of agriculture to the Ashburton District's economy and the targeted approach of the regulations, it is unsurprising that the impact is large. Reducing farm productivity (intensity) without a corresponding reduction in farm profitability can be challenging unless there are viable high value land use alternatives. There currently exists very few high value alternative options for land use in the Ashburton District. This may change under climate change and new options for land use should be explored. Further research in this area is recommended.

To achieve the nutrient reductions as per the regulations, all farms will need to undergo a comprehensive change to their farm systems. This will involve a significant change to how these farms operate, significant changes to the operating cost structures, and significant changes to their capital investment programmes. Some of this expenditure, such as wintering all cattle indoors, will move New Zealand agriculture away from all-natural farm systems for which New Zealand is well recognised which may have market implications. An aging agricultural workforce will be further challenged by the need to adopt a wide range of mitigation technologies.

Supplementing ground water through a district-scale MAR is untested and may not be feasible. It is unclear where the water will come from for such an exercise, and it is unclear who will fund it.

Large-scale plantation forestry will employ fewer staff which will impact rural communities and affect student numbers in rural schools. Climate change will bring increased droughts and fire risk making forestry an increasingly riskier option.

Achieving the freshwater regulations will be extremely challenging and as highlighted by the papers '*Freshwater Nitrate: 2.4mg/L - appendix 1*' and *'Economic Impact of 2.4mg/L – appendix 2'*, all three areas of intervention must succeed to achieve the requirements of NPS-FWM. The underperformance of just one of the interventions will put the freshwater Nitrate level of 2.4mg N/L out of reach.

The on-farm mitigations will be very difficult to implement, and they will reduce the viability of the remaining businesses unless there is new technology or viable alternative land uses. MAR may not be feasible and forestry, while it is possible, may be unlikely and will have a significant negative impact on the social cohesion of the Ashburton District community.

The timeframe for achieving the freshwater regulations is critical. A shorter timeframe is likely to exacerbate the downside of changes, whereas a longer timeframe will enable business practices, science, and communities to adjust to the regulations. A longer timeframe will enable a more cohesive transition to alternative land uses for all.

The purpose of the freshwater regulations is to establish good environmental outcomes, of which all in the Ashburton District would agree is the right thing to do. The risk is that, in the pursuit of this outcome the financial, social, and cultural domains are lost sight of.

## Summary

The implications of achieving a freshwater soluble Nitrate level of 2.4mg N/L, are not well understood at a farm level nor are the effects on a district's economy. The Ashburton District Council commissioned the **'Freshwater Nitrate – 2.4mg and Economic Impact for Ashburton District'** report to understand the effects of achieving this aspect of the freshwater regulations more fully.

The research approach in this report utilises several assumptions that help quantify impact figures and identify the scale of the challenge, and the issues that exist for achieving a freshwater Nitrate level of 2.4mg/L.

By analysing the effects of on-farm nutrient loss mitigations, coupled with ground water supplementation, and land use change to forestry, a picture of the potential impact on the Ashburton District has emerged.

The mitigation interventions will lead to a significant decline in farm performance which flows through to a greatly reduced district GDP and over 1700 job losses. At a farm level, all the key performance metrics show a negative shift, and the viability of many businesses will come under scrutiny.

The purpose of the freshwater regulations is to establish good environmental outcomes and all people in the district want a healthy and prosperous future. The challenge is how the community gets there and what does a good future look like. It will take a unified approach with all community, iwi, business, and government, working together with good practices, science, and innovation to realise that future.

A future that is informed by research and supported by central government working together with the community to achieve positive environmental, financial, social, and cultural outcomes for all the community.

## Where to next?

Tensions are emerging between achieving the freshwater regulations and maintaining the standard of living enjoyed throughout the district. Achieving good environmental outcomes are important, so are strong businesses and thriving communities. The real challenge is achieving good outcomes for the environment, businesses, and the community.

To move forward, empowering agriculture to deliver on the four domains is vital (environment, financial, social, and cultural) but it will not happen by chance. Collaboration across the district is key. By harnessing leading science and smart innovative solutions that are implemented by knowledgeable and skilled farmers, the Ashburton District will be able to seize opportunities and make them happen. A structured and joined-up approach will enable this by engaging farmers, scientists, experts, regulators, the government, and community stakeholders who will learn from each other and develop down-to-earth solutions.

Through a structured community collaboration, smart people will wrestle with and resolve the challenges facing the district through innovative agriculture. Like a district wide living laboratory, farmers, scientists, and industry will identify and act on opportunities and front foot issues such as land use change, climate change, greenhouse gasses, new crops, and value chains.

This will create place where practical solutions are developed based on sound knowledge, tested, and implemented on-farm, and where innovation and technology enable agriculture to support a healthy environment and where its people, its businesses, and its economy are resilient.

## Recommendations

There are two recommendations from this report:

1. This report was commissioned by the Ashburton District Council to understand the potential impact of the NPS - FWM at a farm level and the flow on effects to the Ashburton District's economy. This report will help the Council understand the effects of achieving the freshwater nitrate requirements of the NPS - FWM.

   **Recommendation: That the Ashburton District Council receive the report.**

2. The report highlights the economic impact of achieving a freshwater nitrate level of 2.4mg per litre. The findings of this report, in principle, can be applied to other territorial Authorities to help them understand the emerging challenges and potential opportunities of the NPS - FWM.

   Co - ordinating with other territorial authorities will enable more effective engagement with central government to achieve better outcomes both environmentally and economically. This will be achieved through an aligned voice, a deeper and more consistent understanding of the issues and opportunities, alignment of resources, and greater reach and influence for positive change.

   **Recommendation: That the report be referred to the Canterbury Mayoral Forum and other relevant stakeholders (both political and industry organisations) for consideration and comment.**

# Appendix 1

# Economic Impacts of Achieving 2.4ppm N in Ashburton District Surface Water

## Final (version 2.3)

## 8 August 2021

**Prepared by Macfarlane Rural Business Ltd**

# Table of Contents

# 1. Glossary

| | |
|---|---|
| ADC | Ashburton District Council |
| MAR | Managed Aquifer Recharge |
| PC2 | Plan Change 2 to the LWRP |
| LWRP | Land and Water Regional Plan |
| Start Point | Proxy water quality and farm system position that could have been implemented by the community under ECan's LWRP to achieve a catchment water quality target of 6.9ppm. |
| Forecast | The proposed catchment model to achieve the 2.4ppm N in ground and surface water under the National Environmental Standards 2020. |
| GMP | Good Management Practice |
| Horticulture | Representative term for high value perennial horticultural and viticulture crops |
| AM1 | Advanced Mitigation Level 1 (practices from PC2 catchment modelling) |
| AM2 | Advanced Mitigation Level 2 (practices from PC2 catchment modelling) |
| AM3 | Advanced Mitigation Level 3 (practices from PC2 catchment modelling) |
| DCD | Nitrification Inhibitor |
| Farmax | Bio-physical farm modelling software |
| VL | Very Light Soil (PAW= 60mm water per 600mm soil depth) |
| L | Light Soil (PAW = 81mm water per 600mm soil depth |
| MH | Medium Heavy Soil (PAW = 110mm water per 600mm soil depth) |
| DPD | Deep Poorly Drained Soil (PAW = 105mm water per 600mm soil depth) |
| PDL | Poorly Drained Light Soil (PAW = 92mm water per 600mm soil depth) |
| IC | In Calf |
| LUC | Land Use Change |
| N | Nitrogen |

# 2. Introduction

This report has been prepared for ADC to examine the economic impact of achieving a freshwater Nitrogen level of 2.4ppm to the Ashburton District.

This report "version 2.3" considers the community impacts for land use change required to meet the 2.4ppm Nitrogen standards. The primary land use change considered is forestry in this report.

The primary intention of this analysis is to think laterally and try and implement farm system and management changes required while preserving some profit on farm with the current farm systems.

When identifying land use change as a mitigation tool, forestry was chosen to quantify environmental, economic and community impacts. It is recognised that there are alternative land use options other than just forestry, however, preliminary investigations into regional viability indicated implementation of these options would likely be nominal due to poor previous performance, lack of processing and handling infrastructure and/or constrained industry/market growth at a time that other areas of New Zealand will also be considering them as viable options. Therefore, in this report forestry was considered a credible land use change scenario to consider.

This report has been a collaborative effort by the following contributing authors:

- Jamie Gordon (livestock systems)
- Trevor Gee (dairy systems)
- Anton Nicholls (arable systems and agronomy)
- Reuben Edkins (nutrient management)
- Nicole Mesman (nutrient management)
- Mark Everest (livestock systems, project supervisor)

This report and prefacing analysis have been undertaken without a hydrology model. Hydrological modelling was outside of the report scope. The limitation of this approach is that without a robust hydrology model overlaid by land use data, we are unable to ascertain which parts of the catchment could be focused on (with respect to water quality) to get the best water quality results while preserving community prosperity.

Without this hydrology, we have assumed that all farms in the catchments would need to observe the same production and financial reductions. It is therefore possible that we are at risk of overstating or understating the regional economic impacts of achieving the 2.4ppm water quality policy objectives.

If you have any questions, please contact the writer.

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# 3. Summary

While it is technically possible to change the faming landscape in Ashburton (291,000ha farmed) to give effect to 2.4ppm N in surface water, the actions we take to achieve the target will have a material effect on the style of farming and the physical landscape.

Ashburton Districts farming community could expect to see:

- Significant and widespread changes to farming practices, particularly housed cattle.
- An increase in the forestry area by 102,691 ha (35% of the catchment)
- Using 17.1 $m^3$/sec alpine river water for additional Managed Aquifer Recharge.

The scenario modelled hinges on the above three items all being achieved. Without one of them, the chances of achieving the desired 2.4ppm N in surface water is unlikely as farm management cannot achieve N losses low enough.

Nett farm revenue will decline significantly under the modelled scenario and farm working expenses will also decline, but at a lower rate leading to a reduction in regional farm profit of at least $173m p/a ($592/ha).

Reduced business profitability ultimately ends up resulting in de-valuation of the business assets. In this instance the main asset is land. We could expect to see the erosion of $25,309/ha in land value ($7.4 bn for whole catchment).

The reduced business profitability on farm and land use change will have significant downstream consequences for the surrounding industry. The biggest changes likely are:

- 3,522ha less arable land available for seed multiplication and vegetable production.
- 85,000,000kg less milk solids produced.
- 185,000 head less cattle killed annually.

Attempting to meet a water quality target of 2.4ppm N would be extremely financially, physically and psychologically challenging for most Ashburton farmers and could have material sociological impacts on the wider community.

# 4. Methodology

## 4.1. Farm System and Nutrient Loss Modelling

### 4.1.1. Start Point

The initial start point for farm systems and catchment water quality was based on the Hinds/PC2 catchment feasibility undertaken by MRB for ECan in 2013. The farm models prepared for the 2013 project were intended to reflect the catchment as a whole rather than individual farms at the time. The same methodology has been applied to this project for ADC in the interest of being consistent.

From GMP based files, the mitigation levels were applied until one of the following was achieved:

1. 20kgN/ha/year loss was achieved
2. 36% reduction in N loss relative to GMP N loss was achieved
3. Farm business was unprofitable (no profit)

The resulting farms and management regimes that were used to represent the Start Point were:

- Arable 1: AM1
- Arable 2: AM3
- Arable 3: AM2
- Arable 4: GMP
- Dairy 1: AM2
- Dairy 2: AM2
- Dairy Support 1: AM1
- Dairy Support 2: AM2
- Red Meat 1: GMP
- Red Meat 2: AM2

Once the farm system was established, the nutrient budget models were updated to include:

- nitrification inhibitors where applicable
- pasture blocks containing 20% plantain
- centre pivot (high efficient) irrigation on all blocks
- deficit irrigation management to take advantage of spring and autumn rains

The cash budgets were then updated to reflect 2021 market conditions and pricing. The product and input pricing we have used is a professional opinion based on historical pricing balanced for forecast pricing given current long term market indicators.

### 4.1.2. Forecast

To reflect the likely change in farm systems required to achieve the national water quality target of 2.4ppm N in surface water, we developed four representative farms for Dairy, Dairy Support, Arable and Red Meat (sheep, beef and deer).

Due to the limited scope, a list of known tools to improve nitrogen efficiency was collated to implement in the systems and the suite of tools was implemented to make a best one-attempt at minimising N losses from farm systems. See Appendix 17.

The feasibility of the farm systems was ascertained by modelling the proposed farms in Farmax, followed by Overseer and finally a cash budget prepared.

The results of the N loss reductions were collated.

Where the improved Forecast farm systems did not enable the catchment to achieve the 2.4ppm N, MAR was added or increased in the catchment to a maximum of 0.055lps/ha (approximately 40% of annual recharge for the catchment)

Once MAR was fully utilised, forestry was added on the lightest soils until the target catchment concentration of 2.4ppm N were achieved. To make space for forestry the enterprises on the lightest soils were displaced at proportional rates.

We did not include a reversion of land use to dryland sheep, cattle and cropping as preliminary assessments indicated this would result in a higher concentration of N in drainage than irrigated land use.

#### 4.1.3. Debt on Land

For this analysis we have not assumed any debt on any business. Currently, in Canterbury we are observing debt:asset ratios of approximately 60% in dairy, 30% in arable and 25% in red meat or dairy support.

Typically bank debt must be repaid in 25 years, with the low forecast profitability of the forecast farm systems, debt levels will need to reduce to almost zero in order for owners to get a return on capital that would make farming worth while.

### 4.2. Catchment Modelling

The “Start Point” was assumed to be the current groundwater quality targets as set under the LWRP.

While the Forks and Rakaia catchments do not currently have reduction targets as Hinds does in PC2, it was assumed that the Hinds target of 6.9ppm nitrogen would apply to the Forks and Rakaia catchments.

#### 4.2.1. Land Use

Looking at only the land between the lower foothills (flat intensive) and the east coast of the Canterbury Plains between the Rakaia and Rangitata Rivers, the land use data for three catchments was attained from Asure Quality:

1. Hinds (Rangitata River to Ashburton South Branch)
2. Forks (between the Ashburton River North and South Branches)
3. Rakaia (Ashburton River North Branch to Rakaia River)

The land use data was then corrected to balance dairy and dairy support grazing numbers to represent 22.5% replacement grazing.

Corrected land use data was then overlaid with Irrigation information from ECan’s GIS portal, and soil texture information from the Landcare database and ECan GIS databases to calculate land use across the catchments.

### 4.2.2. Soil Type and Climate Scaling

Climate: One representative location was defined as the central location for all climate modelling purposes, located at Latitude: -43.799291; Longitude: 171.641346.

Soils: All farms were only modelled using one soil type in Overseer. The relativity coefficients from catchment modelling by Scott (2013) prepared in the PC2 modelling were then used to adjust N loss and drainage for soil type. This then gave a matrix of drainage and N losses for farm systems by soil type.

### 4.2.3. Catchment Water Quality

Nitrogen losses and drainage volumes from the overseer files were then applied to the relevant land use data (and MAR added if necessary) to calculate the catchment drainage concentration, to use as a proxy for N concentration in rivers.

# 5. Results

## 5.1. N Loss and Drainage by Farm System

Note below a summary of the N loss and drainage per hectare of the modelled representative farm systems used in the comparison report.

| Farm | ha | N loss/ha | Drainage | N ppm |
|---|---|---|---|---|
| Arable 1 | 320 | 23 | 258 | 8.8 |
| Arable 2 | 320 | 28 | 246 | 11.3 |
| Arable 3 | 320 | 24 | 246 | 9.8 |
| Arable 4 | 320 | 19 | 176 | 10.3 |
| Dairy 2 | 220 | 36 | 248 | 14.6 |
| Dairy 2 | 220 | 36 | 248 | 14.7 |
| Dairy Support 1 | 270 | 44 | 293 | 15.0 |
| Dairy Support 2 | 270 | 27 | 214 | 12.5 |
| Red Meat 1 | 350 | 13 | 168 | 7.6 |
| Red Meat 2 | 375 | 18 | 189 | 9.3 |
| | | | | |
| Viticulture | 22 | 5 | 258 | 2.1 |
| Forestry | 270 | 2 | 175 | 0.0 |
| | | | | |
| Arable 5 | 320 | 16 | 248 | 6.5 |
| Dairy 4 | 220 | 12 | 226 | 5.2 |
| Dairy Support 4 | 270 | 27 | 249 | 9.9 |
| Red Meat 3 | 360 | 18 | 197 | 8.3 |

Figure 1: comparison of farm system on environment impacts

## 5.2. Likely Water Quality under LWRP (“Start Point”)

Feasibility work for PC2 MAR (Scott, 2013) modelled scenarios of using up to 5m3/sec alpine water to dilute the nutrient concentrations in the lowland drains and streams in the Hinds catchment.

The crude hydrology modelling suggests that for the existing balance of farm systems to remain in all three main catchments assessed in this report, MAR would be required to achieve shallow groundwater and surface water nitrogen concentrations of 6.9ppm.

To achieve the 6.9ppm, the following MAR flow rates would be required by catchment:

| | Hinds | Forks | Rakaia |
|---|---|---|---|
| Catchment Total Area | 137,446 | 29,349 | 145,213 |
| MAR lps/catchment | 7,500 | 1,450 | 7,100 |
| MAR lps/hectare | 0.055 | 0.049 | 0.049 |

| | | | |
|---|---|---|---|
| Catchment N Load | 3961 | 773 | 3968 |
| Catchment ppm N without MAF | 11.8 | 11.5 | 11.4 |
| Catchment ppm with MAR | 6.9 | 6.9 | 6.9 |

Figure 2: Possible water quality outcomes under "Start Point" scenario

At the quoted MAR rates above, approximately 40% of the ground and surface water recharge would come from MAR. A hydrologist should be engaged to assess whether this is possible, let alone any further increases beyond the nominated rates in this report.

For the purposes of this modelling, we have assumed that no further MAR is possible or available and any further improvements must come from farm system change and/or land use change.

## 5.3. Farm Model Profit Summary

### 5.3.1. Start Point Models

| | "Start Point" Farm Models | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Arable 1 | Arable 2 | Arable 3 | Arable 4 | Dairy 1 | Dairy 2 | D Support 1 | D Support 2 | Red Meat 1 | Red Meat 2 | Forestry | Viticulture |
| Nett Farm Income | 6,642 | 5,255 | 3,824 | 2,213 | 11,591 | 10,372 | 3,860 | 4,073 | 1,780 | 2,317 | 2,126 | 16,716 |
| Farm Working Expenses | 5,070 | 3,518 | 2,399 | 1,676 | 8,253 | 7,217 | 2,565 | 2,349 | 1,232 | 1,757 | 1,751 | 12,738 |
| Earnings Before Interest and Tax | 1,572 | 1,738 | 1,425 | 537 | 3,338 | 3,155 | 1,296 | 1,724 | 548 | 560 | 376 | 3,978 |
| | | | | | | | | | | | | |
| Interest (on Overdraft) | 106 | 74 | 50 | 35 | 173 | 152 | 54 | 49 | 26 | 37 | 37 | 267 |
| Tax | 238 | 266 | 241 | 103 | 691 | 641 | 189 | 340 | 114 | 94 | 93 | 409 |
| Plant Replacement/Depreciation | 613 | 677 | 490 | 113 | 715 | 708 | 557 | 461 | 115 | 180 | 0 | 2,136 |
| | | | | | | | | | | | | |
| Net Profit | 615 | 721 | 645 | 286 | 1,759 | 1,655 | 496 | 874 | 292 | 249 | 246 | 1,165 |

Figure 3: Farm Profit Summary "Start Point"

### 5.3.2. Forecast Models

| | "Forecast" Farm Models | | | | | |
|---|---|---|---|---|---|---|
| | Forestry | Viticulture | Arable 5 | Dairy 4 | D Support 4 | Red Meat 3 |
| Nett Farm Income | 2,126 | 16,716 | 5,085 | 11,451 | 3,762 | 3,466 |
| Farm Working Expenses | 1,751 | 12,738 | 3,998 | 8,851 | 3,003 | 2,748 |
| Earnings Before Interest and Tax | 376 | 3,978 | 1,086 | 2,600 | 759 | 717 |
| | | | | | | |
| Interest (on Overdraft) | 37 | 267 | 84 | 186 | 63 | 58 |
| Tax | 93 | 409 | 0 | 382 | 59 | 61 |
| Plant Replacement/Depreciation | 0 | 2,136 | 750 | 1,043 | 478 | 439 |
| | | | | | | |
| Net Profit | 246 | 1,165 | 253 | 989 | 159 | 159 |

Figure 4: Farm Profit Summary "Forecast"

Note that both the viticulture (horticulture) and forestry models are common between the two scenarios. Viticulture in the "Forecast" balance of farms is used to represent only the viticulture area that is present in the "Start Point" balance of farms.

## 5.4. Water Quality Improvement Without Land Use Change

By modifying the farm systems to house cattle indoors and use every technology available on every farm in the catchment, the balance of farms would have to change, particularly dairy and dairy support.

In the Start Point modelling, for every 1 ha in dairy farms, the catchment requires 0.41 ha of dairy support land to graze replacements and winter dry cows.

If all cattle are housed inside, the relative area of dairy support land to dairy farm land is reduced to 0.27 ha dairy support per 1 ha dairy land.

We have assumed that the farm area reduction in dairy support between Start Point and the Forecast models would revert to the Red Meat 3 farm model (50% irrigated).

Even given the major change in farm system and maintaining the MAR contribution, the N in groundwater would reduce so far as 3.6-3.8 ppm. No catchment would meet the target without land use change, see the summary table below.

| | Hinds | Forks | Rakaia |
|---|---|---|---|
| Catchment Total Area | 137,446 | 29,349 | 145,213 |
| MAR lps/catchment | 7,500 | 1,450 | 7,100 |
| MAR lps/hectare | 0.055 | 0.049 | 0.049 |
| | | | |
| Catchment N Load | 1962 | 403 | 2139 |
| Catchment ppm N without MAF | 6.3 | 6.3 | 6.4 |
| Catchment ppm with MAR | 3.6 | 3.7 | 3.8 |

Figure 5: Possible water quality outcomes under "Forecast" farm systems without LUC

## 5.5. 2.4ppm N with “Forecast” farm system and LUC

### 5.5.1. Process

To achieve 2.4ppm N in ground and surface water, land use change will be required, even after significantly modifying farm systems.

When considering the land use change to reduce environmental impact we have followed the following steps in sequential order:

**1. Increase MAR water to 0.055lps/ha**

The MAR flow rate was initially set to attain an average catchment concentration of 6.9ppm under the “Start Point” catchment modelling.

In order to optimise chances of meeting 2.4ppm N in surface water under the NES 2020, initially the MAR flow rates were brought up to the arbitrary 0.055lps/ha cap rate. The 0.055lps/ha represents approximately 40% of catchment water recharge.

It is expected that with improvements in water use efficiency and further redundancy of irrigation plant due to the planting of forestry that there would be some additional surplus water available.

Increasing the MAR flow rates requires a total of 17.1 $m^3$.sec supplied to:

- Hinds: 7.5 $m^3$.sec
- Forks: 1.6 $m^3$.sec
- Rakaia: 8.0 $m^3$.sec

This part of the proposal is highly reliant on water being made available and not being surrendered back to the source.

**2. Increase forestry area.**

As forestry has the lowest emitting land use (2kgN/ha/year compared to circa 10kgN/ha/year for the weighted average for farm systems), it therefore was used as the solution to make significant reductions in contributions to N losses beyond farm programme change.

While considering forestry, I expect that it would be possible to cover up to 10% of the catchment with relative ease provided farmers plant some difficult-to-irrigate areas and some wider (3 row) shelter belts.

Increases beyond 10% area will likely require some targeted investment in large scale forests, planted for the purposes of logs.

We have not considered the value of Carbon or Carbon Credits in this assessment as the carbon can only be sold once and does not have a perpetuating cashflow.

While forestry might be planted on a range of soils I have assumed that it would firstly be planted on the lightest soils to preserve the productive areas for future food production.

The resulting forestry area totals is 105,079ha (35% of the total catchment) spread as:

- Hinds 32% (43,983ha)
- Forks 35% (10,272ha)
- Rakaia 35% (50,825ha)

This final step achieved ground and surface water concentrations of 2.4ppm across all three catchments.

### 5.5.2. Results

With the total Ashburton catchment investing in:

- 17.1m3.sec MAR
- 102,691 forestry

The community would be able to achieve a ground and surface water nitrogen concentration of 2.4ppm.

| | Hinds | Forks | Rakaia |
|---|---|---|---|
| Catchment Total Area | 137,446 | 29,349 | 145,213 |
| MAR lps/catchment | 7,500 | 1,600 | 8,000 |
| MAR lps/hectare | 0.055 | 0.055 | 0.055 |
| | | | |
| Catchment N Load | 1236 | 258 | 1341 |
| Catchment ppm N without MAR | 4.4 | 4.5 | 4.5 |
| Catchment ppm with MAR | 2.4 | 2.4 | 2.4 |

Figure 6: water quality outcomes for NES 2020

## 5.6. Economic Impacts of Achieving 2.4ppm

### 5.6.1. Cost of MAR

Based on the Hekeao Hinds Water Enhancement Trust business case (Kerr+Partners, 2020), projected capital expenditure and operating expenditure were estimated to be:

MAR Volume 5 $m^3$/sec

Capital expenditure $6,879,797

Operating expenditure $400,000 p/a (excluding cost of water consent leases)

It is still undecided in the Hinds catchment how the MAR capital costs will be met and how the operating costs will be met. Given that both the farming and non-farming communities both benefit from MAR, it is likely that the cost will be divided between both the farming and non-faming communities.

Because of the uncertainty of obligation, I have not included the costs of MAR in the farm budgets, rather listed as a separate cost to the community.

Table 7 below provides a breakdown of the estimated cost for utilising 17,1m3 of water for a district wide MAR project.

| MAR Cost | Hinds | Forks | Rakaia | Total |
|---|---|---|---|---|
| Capital Expenditure ($) | 10,319,696 | 2,201,535 | 11,007,675 | 23,528,906 |
| Operational Expenditure ($p/a) | 600,000 | 128,000 | 640,000 | 1,368,000 |

Figure 7: Estimated costs of MAR

### 5.6.2. Land Use Summary (hectares)

The table below represents the expected land use between the Starting Point land use (where the water quality outcome achieved should be 6.9ppm N) and the Forecast land use (where the water quality outcome achieved should be 2.4ppm N).

| | Starting Point | Forecast | Change |
|---|---|---|---|
| Arable | 65,059 | 61,538 | -3,522 |
| Dairy | 112,427 | 54,768 | -57,659 |
| Dairy Support | 46,704 | 14,737 | -31,967 |
| Red Meat | 53,029 | 43,152 | -9,877 |
| Viticulture | 9 | 9 | 0 |
| Forestry | 2,388 | 105,079 | 102,691 |
| Other | 11,940 | 12,273 | 333 |

Figure 8: land use area (hectares) required to achieve 6.9 or 2.4ppm N

Under the Forecast land use, the total irrigated area is reduced by 61,169ha from approximately 213,000ha to 153,000ha.

Assuming an average application rate of 0.45lps per hectare, this would release 27.5$m^3$/sec of flow rate from agricultural consents. Some of this water will come from bores and some will come from surface water schemes. Due to the unknown origin, it is difficult to assess whether this water might be made available for MAR. However, given that river based irrigation schemes account for approximately 50% of the irrigated area in Ashburton, it could be conservatively assumed that a portion of this water could be available for MAR.

## 5.6.3. Farm Budget Breakdowns

| | Arable 1 | | Arable 2 | | Arable 3 | | Arable 4 | |
|---|---|---|---|---|---|---|---|---|
| **Land Area** | | | | | | | | |
| Area - Total | | 320 | | 320 | | 320 | | 320 |
| Area - Effective | | 300 | | 300 | | 300 | | 300 |
| **Budget Summary** | $ total | $/ha | $ total | $/ha | $ total | $/ha | $ total | $/ha |
| Income | | | | | | | | |
| Nett Sheep and Wool | 170,140 | 532 | 74,117 | 232 | 147,386 | 461 | 274,177 | 857 |
| Nett Cattle | 0 | 0 | 0 | 0 | 276,791 | 865 | 0 | 0 |
| Nett Deer and Velvet | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Milk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grain, Seed and Horticulture | 1,882,400 | 5,883 | 1,496,499 | 4,677 | 773,700 | 2,418 | 408,600 | 1,277 |
| Other Income | 72,974 | 228 | 111,143 | 347 | 25,960 | 81 | 25,522 | 80 |
| Total Nett Farm Income | 2,125,514 | 6,642 | 1,681,758 | 5,255 | 1,223,836 | 3,824 | 708,299 | 2,213 |
| | | 0 | | 0 | | 0 | | 0 |
| Expenses | | 0 | | 0 | | 0 | | 0 |
| Wages | 242,484 | 758 | 154,440 | 483 | 106,421 | 333 | 119,218 | 373 |
| Veterinary and Animal Health | 10,965 | 34 | 4,210 | 13 | 19,522 | 61 | 11,370 | 36 |
| Stockfeed - Grazing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stockfeed - Domestic | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stockfeed - Imported | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stockfeed - Conservation | 17,855 | 56 | 35,632 | 111 | 31,256 | 98 | 26,663 | 83 |
| Other Stock Expenses | 1,500 | 5 | 1,000 | 3 | 1,000 | 3 | 3,750 | 12 |
| Contracting | 239,243 | 748 | 35,188 | 110 | 10,454 | 33 | 15,297 | 48 |
| Freight | 132,224 | 413 | 41,250 | 129 | 16,391 | 51 | 20,309 | 63 |
| Fertiliser - Product | 208,989 | 653 | 96,681 | 302 | 107,545 | 336 | 50,929 | 159 |
| Fertiliser - Cart and Spread | 11,280 | 35 | 6,215 | 19 | 21,195 | 66 | 10,049 | 31 |
| Seed | 220,875 | 690 | 47,345 | 148 | 53,963 | 169 | 27,720 | 87 |
| Certification and Dressing | 36,785 | 115 | 117,228 | 366 | 26,275 | 82 | 34,726 | 109 |
| Agrichemical - Product | 147,965 | 462 | 205,729 | 643 | 81,443 | 255 | 54,942 | 172 |
| Agrichemical - Application | 0 | 0 | 780 | 2 | 0 | 0 | 13,860 | 43 |
| Repairs and Maintenance | 54,300 | 170 | 49,300 | 154 | 39,588 | 124 | 25,300 | 79 |
| Vehicles - Fuel | 69,500 | 217 | 56,500 | 177 | 43,300 | 135 | 40,500 | 127 |
| Vehicles - Repairs and Maintenance | 23,500 | 73 | 21,500 | 67 | 19,200 | 60 | 12,000 | 38 |
| Electricity | 63,400 | 198 | 63,400 | 198 | 63,400 | 198 | 4,000 | 13 |
| Other Farm Working Expenses | 28,635 | 89 | 73,405 | 229 | 25,696 | 80 | 5,055 | 16 |
| Administration | 28,500 | 89 | 27,500 | 86 | 27,500 | 86 | 27,500 | 86 |
| Standing Charges - Rates | 25,920 | 81 | 25,920 | 81 | 14,000 | 44 | 18,432 | 58 |
| Standing Charges - Insurances | 17,970 | 56 | 21,788 | 68 | 26,985 | 84 | 14,413 | 45 |
| Standing Charges - Other | 40,600 | 127 | 40,600 | 127 | 32,560 | 102 | 400 | 1 |
| Total Farm Working Expenses | 1,622,489 | 5,070 | 1,125,609 | 3,518 | 767,692 | 2,399 | 536,432 | 1,676 |
| | | 0 | | 0 | | 0 | | 0 |
| EBIT | 503,025 | 1,572 | 556,149 | 1,738 | 456,144 | 1,425 | 171,867 | 537 |
| | | 0 | | 0 | | 0 | | 0 |
| Non-Operting Expenses | | 0 | | 0 | | 0 | | 0 |
| Interest | 34,072 | 106 | 23,638 | 74 | 16,122 | 50 | 11,265 | 35 |
| Tax | 76,000 | 238 | 85,000 | 266 | 77,000 | 241 | 33,000 | 103 |
| Plant Replacement/Depreciation | 196,124 | 613 | 216,700 | 677 | 156,760 | 490 | 36,000 | 113 |
| Total Non-Operating Expenses | 306,196 | 957 | 325,338 | 1,017 | 249,882 | 781 | 80,265 | 251 |
| | | 0 | | 0 | | 0 | | 0 |
| Net Profit | 196,829 | 615 | 230,811 | 721 | 206,262 | 645 | 91,602 | 286 |
| | | | | | | | | |
| **Capital** | | | | | | | | |
| Plant and Machinery | 1,800,000 | 5,625 | 1,537,000 | 4,803 | 970,000 | 3,031 | 360,000 | 1,125 |
| Land, Irrigation Hardware and Water | 14,400,000 | 45,000 | 14,400,000 | 45,000 | 13,440,000 | 42,000 | 9,280,000 | 29,000 |
| Capital Stock | $0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Capital (excl Overdraft) | 16,200,000 | 50,625 | 15,937,000 | 49,803 | 14,410,000 | 45,031 | 9,640,000 | 30,125 |
| | | | | | | | | |
| **Tax-Paid Return on Capital** | 1.21% | | 1.45% | | 1.43% | | 0.95% | |

| | Dairy 1 | | Dairy 2 | | Dairy Support 1 | | Dairy Support 2 | |
|---|---|---|---|---|---|---|---|---|
| **Land Area** | | | | | | | | |
| Area - Total | | 220 | | 220 | | 270 | | 270 |
| Area - Effective | | 210 | | 210 | | 260 | | 260 |
| **Budget Summary** | $ total | $/ha | $ total | $/ha | $ total | $/ha | $ total | $/ha |
| Income | | | | | | | | |
| Nett Sheep and Wool | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nett Cattle | 114,560 | 521 | 108,109 | 491 | 765,891 | 2,837 | 952,203 | 3,527 |
| Nett Deer and Velvet | 0 | 0 | | 0 | 0 | 0 | 0 | 0 |
| Milk | 2,435,496 | 11,070 | 2,167,867 | 9,854 | 0 | 0 | 0 | 0 |
| Grain, Seed and Horticulture | 0 | 0 | 0 | 0 | 257,470 | 954 | 102,600 | 380 |
| Other Income | 0 | 0 | 5,800 | 26 | 18,955 | 70 | 44,900 | 166 |
| Total Nett Farm Income | 2,550,056 | 11,591 | 2,281,776 | 10,372 | 1,042,316 | 3,860 | 1,099,703 | 4,073 |
| | | 0 | | 0 | | 0 | | 0 |
| Expenses | | 0 | | 0 | | 0 | | 0 |
| Wages | 309,250 | 1,406 | 248,700 | 1,130 | 132,700 | 491 | 132,700 | 491 |
| Veterinary and Animal Health | 105,801 | 481 | 99,153 | 451 | 2,000 | 7 | 2,000 | 7 |
| Stockfeed - Grazing | 390,186 | 1,774 | 359,408 | 1,634 | 0 | 0 | 0 | 0 |
| Stockfeed - Domestic | 377,890 | 1,718 | 230,830 | 1,049 | 2,000 | 7 | 2,000 | 7 |
| Stockfeed - Imported | 0 | 0 | 9,324 | 42 | 0 | 0 | 0 | 0 |
| Stockfeed - Conservation | 0 | 0 | 0 | 0 | 2,000 | 7 | 40,828 | 151 |
| Other Stock Expenses | 18,840 | 86 | 17,640 | 80 | 68,150 | 252 | 0 | 0 |
| Contracting | 12,600 | 57 | 12,600 | 57 | 19,700 | 73 | 26,340 | 98 |
| Freight | 29,340 | 133 | 25,470 | 116 | 0 | 0 | 13,535 | 50 |
| Fertiliser - Product | 148,071 | 673 | 151,191 | 687 | 120,960 | 448 | 113,283 | 420 |
| Fertiliser - Cart and Spread | 25,891 | 118 | 25,941 | 118 | 12,301 | 46 | 9,955 | 37 |
| Seed | 10,784 | 49 | 10,784 | 49 | 41,378 | 153 | 35,220 | 130 |
| Certification and Dressing | 500 | 2 | 500 | 2 | 500 | 2 | 500 | 2 |
| Agrichemical - Product | 6,725 | 31 | 6,725 | 31 | 53,328 | 198 | 69,174 | 256 |
| Agrichemical - Application | 3,234 | 15 | 3,234 | 15 | 8,008 | 30 | 4,360 | 16 |
| Repairs and Maintenance | 106,345 | 483 | 103,258 | 469 | 22,000 | 81 | 22,891 | 85 |
| Vehicles - Fuel | 23,916 | 109 | 24,049 | 109 | 18,800 | 70 | 18,800 | 70 |
| Vehicles - Repairs and Maintenance | 22,400 | 102 | 22,400 | 102 | 31,000 | 115 | 31,000 | 115 |
| Electricity | 73,180 | 333 | 70,780 | 322 | 56,740 | 210 | 31,819 | 118 |
| Other Farm Working Expenses | 10,540 | 48 | 10,360 | 47 | 3,500 | 13 | 5,975 | 22 |
| Administration | 25,935 | 118 | 25,935 | 118 | 24,700 | 91 | 24,700 | 91 |
| Standing Charges - Rates | 21,780 | 99 | 17,160 | 78 | 20,412 | 76 | 16,281 | 60 |
| Standing Charges - Insurances | 42,564 | 193 | 50,660 | 230 | 15,424 | 57 | 13,424 | 50 |
| Standing Charges - Other | 49,889 | 227 | 61,554 | 280 | 36,840 | 136 | 19,420 | 72 |
| Total Farm Working Expenses | 1,815,660 | 8,253 | 1,587,655 | 7,217 | 692,441 | 2,565 | 634,204 | 2,349 |
| | | 0 | | 0 | | 0 | | 0 |
| EBIT | 734,396 | 3,338 | 694,122 | 3,155 | 349,875 | 1,296 | 465,499 | 1,724 |
| | | 0 | | 0 | | 0 | | 0 |
| Non-Operting Expenses | | 0 | | 0 | | 0 | | 0 |
| Interest | 38,129 | 173 | 33,341 | 152 | 14,541 | 54 | 13,318 | 49 |
| Tax | 152,000 | 691 | 141,000 | 641 | 51,000 | 189 | 91,778 | 340 |
| Plant Replacement/Depreciation | 157,240 | 715 | 155,790 | 708 | 150,400 | 557 | 124,400 | 461 |
| Total Non-Operating Expenses | 347,369 | 1,579 | 330,131 | 1,501 | 215,941 | 800 | 229,496 | 850 |
| | | 0 | | 0 | | 0 | | 0 |
| Net Profit | 387,027 | 1,759 | 363,991 | 1,655 | 133,934 | 496 | 236,002 | 874 |
| **Capital** | | | | | | | | |
| Plant and Machinery | 721,000 | 3,277 | 701,000 | 3,186 | 725,000 | 2,685 | 725,000 | 2,685 |
| Land, Irrigation Hardware and Water | 12,100,000 | 55,000 | 12,100,000 | 55,000 | 11,340,000 | 42,000 | 9,045,000 | 33,500 |
| Capital Stock | 1,605,250 | 7,297 | 1,500,000 | 6,818 | 0 | 0 | 0 | 0 |
| Total Capital (excl Overdraft) | 14,426,250 | 65,574 | 14,301,000 | 65,005 | 12,065,000 | 44,685 | 9,770,000 | 36,185 |
| **Tax-Paid Return on Capital** | 2.68% | | 2.55% | | 1.11% | | 2.42% | |

| | Red Meat 1 | | Red Meat 2 | | Forestry | | Viticulture | |
|---|---|---|---|---|---|---|---|---|
| **Land Area** | | | | | | | | |
| Area - Total | | 350 | | 350 | | 270 | | 22 |
| Area - Effective | | 340 | | 340 | | 260 | | 20 |
| **Budget Summary** | $ total | $/ha | $ total | $/ha | $ total | $/ha | $ total | $/ha |
| Income | | | | | | | | |
| Nett Sheep and Wool | 156,337 | 447 | 107,689 | 308 | 0 | 0 | 0 | 0 |
| Nett Cattle | 394,420 | 1,127 | 518,120 | 1,480 | 0 | 0 | 0 | 0 |
| Nett Deer and Velvet | 46,960 | 134 | 61,478 | 176 | 0 | 0 | 0 | 0 |
| Milk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grain, Seed and Horticulture | 17,100 | 49 | 60,040 | 172 | 0 | 0 | 367,750 | 16,716 |
| Other Income | 8,026 | 23 | 63,676 | 182 | 574,089 | 2,126 | 0 | 0 |
| Total Nett Farm Income | 622,844 | 1,780 | 811,003 | 2,317 | 574,089 | 2,126 | 367,750 | 16,716 |
| | | 0 | | 0 | | 0 | | 0 |
| Expenses | | 0 | | 0 | | 0 | | 0 |
| Wages | 140,660 | 402 | 138,307 | 395 | 0 | 0 | 162,680 | 7,395 |
| Veterinary and Animal Health | 19,970 | 57 | 38,276 | 109 | 0 | 0 | 0 | 0 |
| Stockfeed - Grazing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stockfeed - Domestic | 28,100 | 80 | 17,750 | 51 | 0 | 0 | 0 | 0 |
| Stockfeed - Imported | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stockfeed - Conservation | 46,800 | 134 | 36,816 | 105 | 0 | 0 | 0 | 0 |
| Other Stock Expenses | 3,951 | 11 | 3,000 | 9 | 1,500 | 6 | 0 | 0 |
| Contracting | 3,100 | 9 | 8,151 | 23 | 291,974 | 1,081 | 14,600 | 664 |
| Freight | 8,022 | 23 | 17,640 | 50 | 102,143 | 378 | 3,350 | 152 |
| Fertiliser - Product | 44,027 | 126 | 123,845 | 354 | 0 | 0 | 8,370 | 380 |
| Fertiliser - Cart and Spread | 9,702 | 28 | 13,587 | 39 | 0 | 0 | 0 | 0 |
| Seed | 5,370 | 15 | 22,097 | 63 | 2,835 | 11 | 0 | 0 |
| Certification and Dressing | 500 | 1 | 500 | 1 | 0 | 0 | 0 | 0 |
| Agrichemical - Product | 11,600 | 33 | 33,293 | 95 | 2,682 | 10 | 9,300 | 423 |
| Agrichemical - Application | 3,080 | 9 | 8,360 | 24 | 2,088 | 8 | 12,000 | 545 |
| Repairs and Maintenance | 20,000 | 57 | 25,000 | 71 | 0 | 0 | 18,000 | 818 |
| Vehicles - Fuel | 12,200 | 35 | 12,200 | 35 | 0 | 0 | 5,540 | 252 |
| Vehicles - Repairs and Maintenance | 12,000 | 34 | 12,000 | 34 | 0 | 0 | 2,140 | 97 |
| Electricity | 5,260 | 15 | 27,009 | 77 | 0 | 0 | 4,600 | 209 |
| Other Farm Working Expenses | 3,500 | 10 | 3,500 | 10 | 0 | 0 | 5,000 | 227 |
| Administration | 24,700 | 71 | 24,700 | 71 | 52,100 | 193 | 19,000 | 864 |
| Standing Charges - Rates | 15,750 | 45 | 18,963 | 54 | 4,860 | 18 | 3,240 | 147 |
| Standing Charges - Insurances | 10,924 | 31 | 15,424 | 44 | 12,000 | 44 | 9,230 | 420 |
| Standing Charges - Other | 2,000 | 6 | 14,570 | 42 | 500 | 2 | 3,180 | 145 |
| Total Farm Working Expenses | 431,215 | 1,232 | 614,987 | 1,757 | 472,681 | 1,751 | 280,230 | 12,738 |
| | | 0 | | 0 | | 0 | | 0 |
| EBIT | 191,629 | 548 | 196,016 | 560 | 101,408 | 376 | 87,520 | 3,978 |
| | | 0 | | 0 | | 0 | | 0 |
| Non-Operting Expenses | | 0 | | 0 | | 0 | | 0 |
| Interest | 9,056 | 26 | 12,915 | 37 | 9,926 | 37 | 5,885 | 267 |
| Tax | 40,000 | 114 | 33,000 | 94 | 25,000 | 93 | 9,000 | 409 |
| Plant Replacement/Depreciation | 40,400 | 115 | 63,000 | 180 | 0 | 0 | 47,000 | 2,136 |
| Total Non-Operating Expenses | 89,456 | 256 | 108,915 | 311 | 34,926 | 129 | 61,885 | 2,813 |
| | | 0 | | 0 | | 0 | | 0 |
| Net Profit | 102,174 | 292 | 87,101 | 249 | 66,482 | 246 | 25,635 | 1,165 |
| **Capital** | | | | | | | | |
| Plant and Machinery | 355,000 | 1,014 | 355,000 | 1,014 | 0 | 0 | 165,000 | 7,500 |
| Land, Irrigation Hardware and Water | 8,750,000 | 25,000 | 10,535,000 | 30,100 | 6,750,000 | 25,000 | 1,940,000 | 88,182 |
| Capital Stock | 195,500 | 559 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Capital (excl Overdraft) | 9,300,500 | 26,573 | 10,890,000 | 31,114 | 6,750,000 | 25,000 | 2,105,000 | 95,682 |
| **Tax-Paid Return on Capital** | 1.10% | | 0.80% | | 0.98% | | 1.22% | |

| | Arable 5 | | Dairy 4 | | Dairy Support 4 | | Red Meat 3 | |
|---|---|---|---|---|---|---|---|---|
| **Land Area** | | | | | | | | |
| Area - Total | | 320 | | 220 | | 270 | | 360 |
| Area - Effective | | 300 | | 210 | | 260 | | 350 |
| **Budget Summary** | $ total | $/ha | $ total | $/ha | $ total | $/ha | $ total | $/ha |
| Income | | | | | | | | |
| Nett Sheep and Wool | 212,540 | 664 | 0 | 0 | 0 | 0 | 179,671 | 499 |
| Nett Cattle | 0 | 0 | 92,595 | 421 | 452,215 | 1,675 | 884,849 | 2,458 |
| Nett Deer and Velvet | 0 | 0 | 0 | 0 | 0 | 0 | 179,577 | 499 |
| Milk | 0 | 0 | 2,420,902 | 11,004 | 0 | 0 | 0 | 0 |
| Grain, Seed and Horticulture | 1,369,500 | 4,280 | 0 | 0 | 536,580 | 1,987 | 0 | 0 |
| Other Income | 45,000 | 141 | 5,800 | 26 | 26,880 | 100 | 3,500 | 10 |
| Total Nett Farm Income | 1,627,040 | 5,085 | 2,519,297 | 11,451 | 1,015,675 | 3,762 | 1,247,598 | 3,466 |
| | | 0 | | 0 | | 0 | | 0 |
| Expenses | | 0 | | 0 | | 0 | | 0 |
| Wages | 251,938 | 787 | 248,700 | 1,130 | 127,000 | 470 | 167,089 | 464 |
| Veterinary and Animal Health | 10,500 | 33 | 146,896 | 668 | 9,105 | 34 | 59,143 | 164 |
| Stockfeed - Grazing | 0 | 0 | 102,938 | 468 | 0 | 0 | 0 | 0 |
| Stockfeed - Domestic | 0 | 0 | 605,778 | 2,754 | 0 | 0 | 26,644 | 74 |
| Stockfeed - Imported | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stockfeed - Conservation | 15,000 | 47 | 190,000 | 864 | 102,760 | 381 | 151,020 | 420 |
| Other Stock Expenses | 1,500 | 5 | 14,400 | 65 | 0 | 0 | 4,959 | 14 |
| Contracting | 51,078 | 160 | 4,760 | 22 | 43,700 | 162 | 52,125 | 145 |
| Freight | 46,652 | 146 | 3,308 | 15 | 19,620 | 73 | 38,128 | 106 |
| Fertiliser - Product | 120,899 | 378 | 141,275 | 642 | 80,845 | 299 | 128,191 | 356 |
| Fertiliser - Cart and Spread | 42,057 | 131 | 23,524 | 107 | 18,176 | 67 | 21,128 | 59 |
| Seed | 117,975 | 369 | 8,568 | 39 | 83,764 | 310 | 48,100 | 134 |
| Certification and Dressing | 50,699 | 158 | 500 | 2 | 500 | 2 | 500 | 1 |
| Agrichemical - Product | 220,474 | 689 | 6,862 | 31 | 56,354 | 209 | 28,625 | 80 |
| Agrichemical - Application | 0 | 0 | 2,992 | 14 | 30,822 | 114 | 14,300 | 40 |
| Repairs and Maintenance | 54,300 | 170 | 126,200 | 574 | 44,500 | 165 | 46,750 | 130 |
| Vehicles - Fuel | 81,500 | 255 | 42,000 | 191 | 33,973 | 126 | 40,487 | 112 |
| Vehicles - Repairs and Maintenance | 26,000 | 81 | 46,400 | 211 | 20,500 | 76 | 28,000 | 78 |
| Electricity | 63,400 | 198 | 67,260 | 306 | 58,480 | 217 | 41,650 | 116 |
| Other Farm Working Expenses | 25,410 | 79 | 10,360 | 47 | 3,500 | 13 | 3,500 | 10 |
| Administration | 32,740 | 102 | 25,935 | 118 | 24,900 | 92 | 27,500 | 76 |
| Standing Charges - Rates | 6,912 | 22 | 17,160 | 78 | 7,020 | 26 | 9,450 | 26 |
| Standing Charges - Insurances | 19,730 | 62 | 62,680 | 285 | 21,346 | 79 | 28,068 | 78 |
| Standing Charges - Other | 40,600 | 127 | 48,756 | 222 | 23,950 | 89 | 23,950 | 67 |
| Total Farm Working Expenses | 1,279,363 | 3,998 | 1,947,251 | 8,851 | 810,815 | 3,003 | 989,306 | 2,748 |
| | | 0 | | 0 | | 0 | | 0 |
| EBIT | 347,677 | 1,086 | 572,046 | 2,600 | 204,860 | 759 | 258,292 | 717 |
| | | 0 | | 0 | | 0 | | 0 |
| Non-Operting Expenses | | 0 | | 0 | | 0 | | 0 |
| Interest | 26,867 | 84 | 40,892 | 186 | 17,027 | 63 | 20,775 | 58 |
| Tax | 0 | 0 | 84,000 | 382 | 16,000 | 59 | 22,000 | 61 |
| Plant Replacement/Depreciation | 240,000 | 750 | 229,500 | 1,043 | 129,000 | 478 | 158,137 | 439 |
| Total Non-Operating Expenses | 266,867 | 834 | 354,392 | 1,611 | 162,027 | 600 | 200,913 | 558 |
| | | 0 | | 0 | | 0 | | 0 |
| Net Profit | 80,810 | 253 | 217,653 | 989 | 42,833 | 159 | 57,379 | 159 |
| **Capital** | | | | | | | | |
| Plant and Machinery | 1,830,000 | 5,719 | 3,057,000 | 13,895 | 2,122,000 | 7,859 | 3,270,000 | 9,083 |
| Land, Irrigation Hardware and Water | 4,577,323 | 14,304 | 4,074,674 | 18,521 | 1,151,169 | 4,264 | 2,774,957 | 7,708 |
| Capital Stock | 0 | 0 | 1,194,750 | 5,431 | | 0 | 0 | 0 |
| Total Capital (excl Overdraft) | 6,407,323 | 20,023 | 8,326,424 | 37,847 | 3,273,169 | 12,123 | 6,044,957 | 16,792 |
| **Tax-Paid Return on Capital** | 1.26% | | 2.61% | | 1.31% | | 0.95% | |

### 5.6.4. Assessing Return on Capital and Land Value

The "Starting Point" return on capital has been ascertained using arbitrary land values, considered by MRB to represent medium-term value with no irrigation scheme debt (MRB are not registered valuers and value noted should be considered an opinion, not a valuation).

The Starting Point land values were set as land and buildings (including dairy sheds, excluding barns).

| | |
|---|---|
| Dairy 1 | $55,000 |
| Dairy 2 | $55,000 |
| Dairy Support 1 | $42,000 |
| Dairy Support 2 | $33,500 |
| Arable 1 | $45,000 |
| Arable 2 | $45,000 |
| Arable 3 | $42,000 |
| Arable 4 | $29,000 |
| Red Meat 1 | $25,000 |
| Red Meat 2 | $30,100 |
| Viticulture (land + establishment) | $97,000 |
| Forestry | $25,000 |
| Other | $43,196 |

Figure 9: Starting Point nominal land values

To calculate the underlying land values in the Forecast models, the return on capital that was enjoyed by the farm system in the Starting Point models was applied to the tax paid EBIT to ascertain total asset value. The improvements (for example barns) that were added to run the Forecast farm system were deducted from the total capital, as were stock and plant, to define the residual land asset value.

Formula:

(Tax Paid Profit / Starting Point ROC ) – new improvements, stock and plant = land asset value

### 5.6.5. Consolidated Catchment Budget Comparison

| CATCHMENT BUDGET | Starting Point ($M) | Forecast ($M) | Variance ($M) |
|---|---|---|---|
| Income | | | |
| Nett Sheep and Wool | 44.3 | 62.4 | **18.1** |
| Nett Cattle | 302.1 | 153.8 | **-148.3** |
| Nett Deer and Velvet | 8.2 | 21.5 | **13.3** |
| Milk | 1,129.8 | 602.7 | **-527.2** |
| Grain, Seed and Horticulture | 263.8 | 292.8 | **29.0** |
| Other Income | 31.2 | 235.4 | **204.2** |
| Total Nett Farm Income | 1,779.4 | 1,368.6 | **-410.8** |
| | | | |
| Expenses | | | |
| Wages | 203.0 | 137.4 | **-65.6** |
| Veterinary and Animal Health | 58.6 | 46.2 | **-12.4** |
| Stockfeed - Grazing | 186.2 | 25.6 | **-160.6** |
| Stockfeed - Domestic | 133.8 | 154.0 | **20.2** |
| Stockfeed - Imported | 4.0 | 0.0 | **-4.0** |
| Stockfeed - Conservation | 16.3 | 73.9 | **57.6** |
| Other Stock Expenses | 16.4 | 5.1 | **-11.3** |
| Contracting | 19.8 | 133.3 | **113.5** |
| Freight | 23.6 | 55.2 | **31.6** |
| Fertiliser - Product | 131.8 | 78.2 | **-53.6** |
| Fertiliser - Cart and Spread | 19.9 | 17.5 | **-2.4** |
| Seed | 25.9 | 36.3 | **10.3** |
| Certification and Dressing | 13.5 | 10.0 | **-3.6** |
| Agrichemical - Product | 44.8 | 51.7 | **6.9** |
| Agrichemical - Application | 3.8 | 5.0 | **1.2** |
| Repairs and Maintenance | 69.2 | 49.9 | **-19.3** |
| Vehicles - Fuel | 27.5 | 32.8 | **5.4** |
| Vehicles - Repairs and Maintenance | 22.7 | 21.0 | **-1.7** |
| Electricity | 59.4 | 37.1 | **-22.3** |
| Other Farm Working Expenses | 15.8 | 8.1 | **-7.7** |
| Administration | 27.3 | 37.7 | **10.4** |
| Standing Charges - Rates | 19.0 | 9.0 | **-10.0** |
| Standing Charges - Insurances | 34.8 | 28.6 | **-6.2** |
| Standing Charges - Other | 44.0 | 24.3 | **-19.7** |
| Total Farm Working Expenses | 1,221.1 | 1,077.7 | **-143.4** |
| | | | |
| EBIT | 558.3 | 290.9 | **-267.4** |
| | | | |
| Non-Operting Expenses | | | |
| Interest | 25.6 | 22.6 | **-3.0** |
| Tax | 106.9 | 34.2 | **-72.7** |
| Plant Replacement/Depreciation | 148.4 | 129.3 | **-19.1** |
| Total Non-Operating Expenses | 280.9 | 186.1 | **-94.8** |
| | | | |
| Net Profit | 277.4 | 104.8 | **-172.6** |
| | | | |
| **Capital** | | | |
| Plant and Machinery | 788.1 | 1,620.8 | **832.7** |
| Land, Irrigation Hardware and Water | 12,297.1 | 4,917.8 | **-7,379.2** |
| Capital Stock | 789.6 | 297.4 | **-492.1** |
| Total Capital (excl Overdraft) | 13,874.8 | 6,836.1 | **-7,038.7** |

## 5.6.6. Consolidated Catchment Budget Comparison by Enterprise

| Catchment Based Enterprise Budget Variance Summary | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Arable ($M) | | | Dairy ($M) | | | Dairy Support ($M) | | |
| **Budget Summary** | **Start Point** | **Forecast** | **Variance** | **Start Point** | **Forecast** | **Variance** | **Start Point** | **Forecast** | **Variance** |
| Income | | | | | | | | | |
| Nett Sheep and Wool | 24.4 | 40.9 | **16.4** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Nett Cattle | 29.9 | 0.0 | **-29.9** | 55.8 | 23.1 | **-32.7** | 147.0 | 24.7 | **-122.3** |
| Nett Deer and Velvet | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Milk | 0.0 | 0.0 | **0.0** | 1,129.8 | 602.7 | **-527.2** | 0.0 | 0.0 | **0.0** |
| Grain, Seed and Horticulture | 225.2 | 263.4 | **38.2** | 0.0 | 0.0 | **0.0** | 32.5 | 29.3 | **-3.2** |
| Other Income | 12.8 | 8.7 | **-4.1** | 2.5 | 1.4 | **-1.0** | 5.3 | 1.5 | **-3.8** |
| Total Nett Farm Income | 292.3 | 312.9 | **20.6** | 1,188.1 | 627.2 | **-560.9** | 184.8 | 55.4 | **-129.3** |
| Expenses | | | | | | | | | |
| Wages | 26.8 | 48.4 | **21.7** | 132.1 | 61.9 | **-70.2** | 23.0 | 6.9 | **-16.0** |
| Veterinary and Animal Health | 2.6 | 2.0 | **-0.6** | 51.2 | 36.6 | **-14.6** | 0.3 | 0.5 | **0.2** |
| Stockfeed - Grazing | 0.0 | 0.0 | **0.0** | 186.2 | 25.6 | **-160.6** | 0.0 | 0.0 | **0.0** |
| Stockfeed - Domestic | 0.0 | 0.0 | **0.0** | 130.0 | 150.8 | **20.8** | 0.3 | 0.0 | **-0.3** |
| Stockfeed - Imported | 0.0 | 0.0 | **0.0** | 4.0 | 0.0 | **-4.0** | 0.0 | 0.0 | **0.0** |
| Stockfeed - Conservation | 6.6 | 2.9 | **-3.7** | 0.0 | 47.3 | **47.3** | 3.4 | 5.6 | **2.2** |
| Other Stock Expenses | 0.2 | 0.3 | **0.1** | 9.1 | 3.6 | **-5.5** | 6.5 | 0.0 | **-6.5** |
| Contracting | 6.0 | 9.8 | **3.8** | 6.4 | 1.2 | **-5.3** | 3.9 | 2.4 | **-1.5** |
| Freight | 6.3 | 9.0 | **2.6** | 13.3 | 0.8 | **-12.5** | 1.1 | 1.1 | **0.0** |
| Fertiliser - Product | 21.5 | 23.2 | **1.7** | 77.0 | 35.2 | **-41.8** | 20.3 | 4.4 | **-15.9** |
| Fertiliser - Cart and Spread | 2.9 | 8.1 | **5.2** | 13.3 | 5.9 | **-7.4** | 1.9 | 1.0 | **-1.0** |
| Seed | 11.6 | 22.7 | **11.1** | 5.5 | 2.1 | **-3.4** | 6.7 | 4.6 | **-2.1** |
| Certification and Dressing | 13.1 | 9.7 | **-3.3** | 0.3 | 0.1 | **-0.1** | 0.1 | 0.0 | **-0.1** |
| Agrichemical - Product | 27.4 | 42.4 | **15.0** | 3.4 | 1.7 | **-1.7** | 10.5 | 3.1 | **-7.4** |
| Agrichemical - Application | 0.1 | 0.0 | **-0.1** | 1.7 | 0.7 | **-0.9** | 1.1 | 1.7 | **0.6** |
| Repairs and Maintenance | 8.9 | 10.4 | **1.5** | 53.0 | 31.4 | **-21.6** | 3.9 | 2.4 | **-1.4** |
| Vehicles - Fuel | 10.1 | 15.7 | **5.6** | 12.3 | 10.5 | **-1.8** | 3.3 | 1.9 | **-1.4** |
| Vehicles - Repairs and Maintenance | 4.1 | 5.0 | **0.9** | 11.4 | 11.6 | **0.1** | 5.4 | 1.1 | **-4.2** |
| Electricity | 12.7 | 12.2 | **-0.5** | 36.4 | 16.7 | **-19.6** | 7.9 | 3.2 | **-4.7** |
| Other Farm Working Expenses | 9.2 | 4.9 | **-4.3** | 5.3 | 2.6 | **-2.7** | 0.8 | 0.2 | **-0.6** |
| Administration | 5.6 | 6.3 | **0.7** | 13.3 | 6.5 | **-6.8** | 4.3 | 1.4 | **-2.9** |
| Standing Charges - Rates | 4.0 | 1.3 | **-2.6** | 9.1 | 4.3 | **-4.9** | 3.2 | 0.4 | **-2.8** |
| Standing Charges - Insurances | 4.9 | 3.8 | **-1.1** | 25.2 | 15.6 | **-9.6** | 2.5 | 1.2 | **-1.3** |
| Standing Charges - Other | 7.2 | 7.8 | **0.6** | 30.5 | 12.1 | **-18.4** | 5.0 | 1.3 | **-3.7** |
| Total Farm Working Expenses | 191.9 | 246.0 | **54.2** | 830.1 | 484.8 | **-345.3** | 115.2 | 44.3 | **-71.0** |
| EBIT | 100.5 | 66.9 | **-33.6** | 358.0 | 142.4 | **-215.6** | 69.5 | 11.2 | **-58.3** |
| Non-Operting Expenses | | | | | | | | | |
| Interest | 4.0 | 5.2 | **1.1** | 17.4 | 10.2 | **-7.3** | 2.4 | 0.9 | **-1.5** |
| Tax | 16.2 | 0.0 | **-16.2** | 73.0 | 20.9 | **-52.0** | 12.0 | 0.9 | **-11.1** |
| Plant Replacement/Depreciation | 36.8 | 46.2 | **9.4** | 79.7 | 57.1 | **-22.6** | 24.0 | 7.0 | **-17.0** |
| Total Non-Operating Expenses | 57.0 | 51.3 | **-5.6** | 170.1 | 88.2 | **-81.9** | 38.4 | 8.8 | **-29.6** |
| Net Profit | 43.5 | 15.5 | **-28.0** | 187.9 | 54.2 | **-133.7** | 31.1 | 2.3 | **-28.8** |
| **Capital** | | | | | | | | | |
| Plant and Machinery | 249.0 | 351.9 | **103.0** | 359.9 | 761.0 | **401.2** | 125.4 | 115.8 | **-9.6** |
| Land, Irrigation Hardware and Water | 2,805.2 | 880.2 | **-1,925.0** | 6,183.5 | 1,014.4 | **-5,169.1** | 1,782.9 | 62.8 | **-1,720.1** |
| Capital Stock | 0.0 | 0.0 | **0.0** | 775.2 | 297.4 | **-477.8** | 0.0 | 0.0 | **0.0** |
| Total Capital (excl Overdraft) | 3,054.2 | 1,232.2 | **-1,822.0** | 7,318.6 | 2,072.8 | **-5,245.7** | 1,908.3 | 178.7 | **-1,729.7** |

| Catchment Based Enterprise Budget Variance Summary | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Red Meat ($M) | | | Viticulture ($M) | | | Forestry ($M) | | |
| **Budget Summary** | **Start Point** | **Forecast** | **Variance** | **Start Point** | **Forecast** | **Variance** | **Start Point** | **Forecast** | **Variance** |
| Income | | | | | | | | | |
| Nett Sheep and Wool | 19.9 | 21.5 | **1.6** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Nett Cattle | 69.4 | 106.1 | **36.7** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Nett Deer and Velvet | 8.2 | 21.5 | **13.3** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Milk | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Grain, Seed and Horticulture | 5.9 | 0.0 | **-5.9** | 0.2 | 0.2 | **0.0** | 0.0 | 0.0 | **0.0** |
| Other Income | 5.6 | 0.4 | **-5.1** | 0.0 | 0.0 | **0.0** | 5.1 | 223.4 | **218.3** |
| Total Nett Farm Income | 109.0 | 149.5 | **40.5** | 0.2 | 0.2 | **0.0** | 5.1 | 223.4 | **218.3** |
| | | | | | | | | | |
| Expenses | | | | | | | | | |
| Wages | 21.1 | 20.0 | **-1.1** | 0.1 | 0.1 | **0.0** | 0.0 | 0.0 | **0.0** |
| Veterinary and Animal Health | 4.5 | 7.1 | **2.6** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Stockfeed - Grazing | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Stockfeed - Domestic | 3.5 | 3.2 | **-0.3** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Stockfeed - Imported | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Stockfeed - Conservation | 6.3 | 18.1 | **11.8** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Other Stock Expenses | 0.5 | 0.6 | **0.1** | 0.0 | 0.0 | **0.0** | 0.0 | 0.6 | **0.6** |
| Contracting | 0.9 | 6.2 | **5.4** | 0.0 | 0.0 | **0.0** | 2.6 | 113.6 | **111.0** |
| Freight | 2.0 | 4.6 | **2.6** | 0.0 | 0.0 | **0.0** | 0.9 | 39.8 | **38.8** |
| Fertiliser - Product | 12.9 | 15.4 | **2.5** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Fertiliser - Cart and Spread | 1.8 | 2.5 | **0.8** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Seed | 2.1 | 5.8 | **3.6** | 0.0 | 0.0 | **0.0** | 0.0 | 1.1 | **1.1** |
| Certification and Dressing | 0.1 | 0.1 | **-0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Agrichemical - Product | 3.4 | 3.4 | **-0.0** | 0.0 | 0.0 | **0.0** | 0.0 | 1.0 | **1.0** |
| Agrichemical - Application | 0.9 | 1.7 | **0.8** | 0.0 | 0.0 | **0.0** | 0.0 | 0.8 | **0.8** |
| Repairs and Maintenance | 3.4 | 5.6 | **2.2** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Vehicles - Fuel | 1.8 | 4.9 | **3.0** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Vehicles - Repairs and Maintenance | 1.8 | 3.4 | **1.5** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Electricity | 2.5 | 5.0 | **2.5** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Other Farm Working Expenses | 0.5 | 0.4 | **-0.1** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Administration | 3.7 | 3.3 | **-0.4** | 0.0 | 0.0 | **0.0** | 0.5 | 20.3 | **19.8** |
| Standing Charges - Rates | 2.6 | 1.1 | **-1.5** | 0.0 | 0.0 | **0.0** | 0.0 | 1.9 | **1.8** |
| Standing Charges - Insurances | 2.0 | 3.4 | **1.4** | 0.0 | 0.0 | **0.0** | 0.1 | 4.7 | **4.6** |
| Standing Charges - Other | 1.3 | 2.9 | **1.6** | 0.0 | 0.0 | **0.0** | 0.0 | 0.2 | **0.2** |
| Total Farm Working Expenses | 79.7 | 118.6 | **38.9** | 0.1 | 0.1 | **0.0** | 4.2 | 184.0 | **179.8** |
| | | | | | | | | | |
| EBIT | 29.4 | 31.0 | **1.6** | 0.0 | 0.0 | **0.0** | 0.9 | 39.5 | **38.6** |
| | | | | | | | | | |
| Non-Operting Expenses | | | | | | | | | |
| Interest | 1.7 | 2.5 | **0.8** | 0.0 | 0.0 | **0.0** | 0.1 | 3.9 | **3.8** |
| Tax | 5.5 | 2.6 | **-2.9** | 0.0 | 0.0 | **0.0** | 0.2 | 9.7 | **9.5** |
| Plant Replacement/Depreciation | 7.9 | 19.0 | **11.1** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Total Non-Operating Expenses | 15.1 | 24.1 | **9.0** | 0.0 | 0.0 | **0.0** | 0.3 | 13.6 | **13.3** |
| | | | | | | | | | |
| Net Profit | 14.3 | 6.9 | **-7.4** | 0.0 | 0.0 | **0.0** | 0.6 | 25.9 | **25.3** |
| | | | | | | | | | |
| **Capital** | | | | | | | | | |
| Plant and Machinery | 53.8 | 392.0 | **338.2** | 0.1 | 0.1 | **0.0** | 0.0 | 0.0 | **0.0** |
| Land, Irrigation Hardware and Water | 1,465.0 | 332.6 | **-1,132.3** | 0.8 | 0.8 | **0.0** | 59.7 | 2,627.0 | **2,567.3** |
| Capital Stock | 14.4 | 0.0 | **-14.4** | 0.0 | 0.0 | **0.0** | 0.0 | 0.0 | **0.0** |
| Total Capital (excl Overdraft) | 1,533.1 | 724.6 | **-808.5** | 0.9 | 0.9 | **0.0** | 59.7 | 2,627.0 | **2,567.3** |

# 6. Discussion

1. **At a catchment level, the nett farm income may reduce as a result of trying to achieve 2.4ppm N in surface water**

   A mitigation to additional fixed costs in a farming business is to try and increase the level of output from the fixed resources. In this particular analysis the livestock operations (dairy, beef, deer sheep) performance was increased markedly, which in turn increases nett sales for more product is sold. Despite the projected increase in nett farm revenue from agriculture, the significant land use change to forestry which has a much lower nett revenue results in a catchment reduction in nett farm income.

2. **Reduced Farm Working Expenses**

   $143,000,000 reduction in expenditure.

   In partnership with the drive to increase income when under pressure, this comes with additional costs. In all agriculture budgets there is a material change in infrastructure to putting cattle in barns over winter which not only comes at a capital cost, but all the feed must be harvested, stored, and fed out again which adds further cost.

   The increase in farm working expenses for is offset by the increase in forestry area with much lower farm working expenses, resulting in a nett reduction in regional spend.

3. **Reduced rates**

   To reflect reduced asset values, the rates have been reduced proportionally to suit. This will impact Councils ability to spend in the community, including maintaining roads.

   An alternative approach might be that total rates are maintained, resulting in an increase in rates to some, to compensate for the reduced rating revenue from rural land.

4. **Lower Profit**

   As a result of both a reduction in farm expenses and a much greater reduction in farm income a nett reduction in regional EBIT ($267 million p/a less) is projected. Consequently we could expect to see at least a $72.7m less tax paid to the government.

   Residual profit after tax reduced by $592 per effective hectare, total $173m less profit in the community.

5. **Land Capital**

   Profit and asset value are intrinsically linked. In the modelled farm and forestry scenarios considered, cash profit is reduced and significant capital investment has been required. Collectively these two actions result in a devaluation of the underlying asset value (land in this case) when investors seek to maintain a return on total capital.

   The modelling forecasts a loss of land equity of $7.4bn for the Mid Canterbury Plains. This equates to an average reduction in land value of $25,309/ha.

6. **Forestry and the potential impact on infrastructure**

   The forestry is not new to Canterbury, although it has become less popular and therefore less common mid-plains in the recent decades.

With the advent of 105,079 ha forestry, approximately 3800 ha will be harvested in the Ashburton district annually. This will put significant pressure on roading networks and regional infrastructure.

The Ashburton District would need to consider what further investment in the infrastructure will be required in the future to provide for this land use change.

**7. Displacing established businesses.**

Local specialist businesses (meat processors, grain and seed merchants or vegetable producers) will have their businesses models threatened if Ashburton is to achieve 2.4ppm N in surface water in the way modelled.

Changes in land use detailed in the scenario considered in this report indicate the local business impact could be:

- 85,000,000kgMS less production
- 3,522 ha less available to the seed multiplication and process vegetable market.
- Approximately 185,000 less head of cattle (dairy and beef) to process for meat.

**8. Culture, personnel, and market access**

Moving to a housed livestock system is at odds with the free-range system on which much of NZ's market access and trade reputation is based. Widespread change in the way we farm, away from a more “free range” system to indoor farming may undermine our reputation and challenge NZ's premium position in the market place.

Housed livestock systems can be very mechanical in terms of day to day management. Being inside for 5 months of the year would be a large psychological challenge for many New Zealand farmers as they (mostly) prefer to work outdoors. We would expect to see a large change in management personnel, similar to that with the introduction of irrigation schemes to an area (90% turnover in 10 years).

**9. Managed Aquifer Recharge.**

This scenario is highly dependant on finding 17.1$m^3$.sec from alpine rivers to seep into the aquifers or directly into rivers/drains/streams. The political and social resistance to this is increasing constantly and there are no guarantees that unused water on existing consents will not be mandated to return to the river of origin.

# 7. Conclusions

1. While it is technically plausible to achieve the national environmental standards of nitrogen in water of 2.4ppm, there will be material economic, social and physical changes to the (traditionally) agricultural land in the Ashburton District. The focal consequences in terms of productivity and land use are:
   a. 3,522ha less arable land.
   b. 85,000,000kg less milk solids produced.
   c. 185,000 head less cattle to process.
   d. 102,691 ha increase in forestry, lost from food production unless carbon credits are repaid.
2. To achieve the 2.4ppm Nitrate Nitrogen in rivers, Ashburton District will also rely on obtaining 17.1 $m^3$/sec alpine water for Managed Aquifer Recharge. The availability of this water would need to be ascertained and hydrological assessments would need to be made to ensure this is feasible. If 17.1 $m^3$/sec MAR is hydrologically, socially or culturally impractical, the further land use change to forestry would need to be considered.
3. While we are able to model financial viability of farm systems with a much reduced environmental footprint, the significantly reduced profit and significantly increased cash loss exposure due to commodity price swings may have more adverse impacts than the modelling indicates. The modelling indicates the Ashburton District would see:
   a. Average $592/ha less profit across the catchment.
   b. Increased cost structures will result in reduced business resilience and greater profit/loss volatility.
   c. $7.4 bn loss in land asset values.
4. Significant investment in market development and alternative business opportunities will be required by the district (and country) to ensure it survives, because the changes to farming methods proposed in this assessment would undermine a large portion of NZ's current market positioning.
5. Attempting to meet a water quality target of 2.4ppm N would be extremely financially, physically and psychologically challenging for most Ashburton farmers and could have material sociological impacts on the wider community.

# 8. Appendices

## 8.1. Appendix 1: Arable 1 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 320ha |
| Effective | 300ha |

Irrigated balance:

100% Pivot Irrigated

Stock policy:

3800 trading Lambs.

Labour Policy:

Waged:

Two permanent staff responsible particularly for machinery operations.

Two casual labour units through summer months e.g. agricultural students helping with irrigation and harvest.

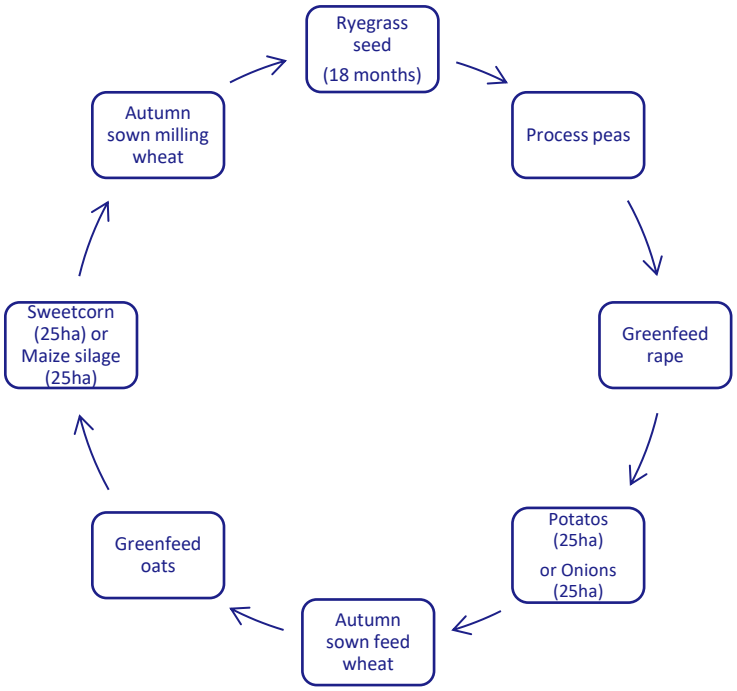
Own labour used for cultivation, drilling, boom-spraying, fertiliser spreading, grain & seed harvest, grain/seed cartage to sale.

Contractors:

Specialist contractors employed for:

all fertiliser spreading, boom-spraying, direct-drilling of kale, windrowing & heading & drying of ryegrass seed crop, straw baling, shearing and crutching, grain/seed/livestock cartage to sale.

Crop Rotation:

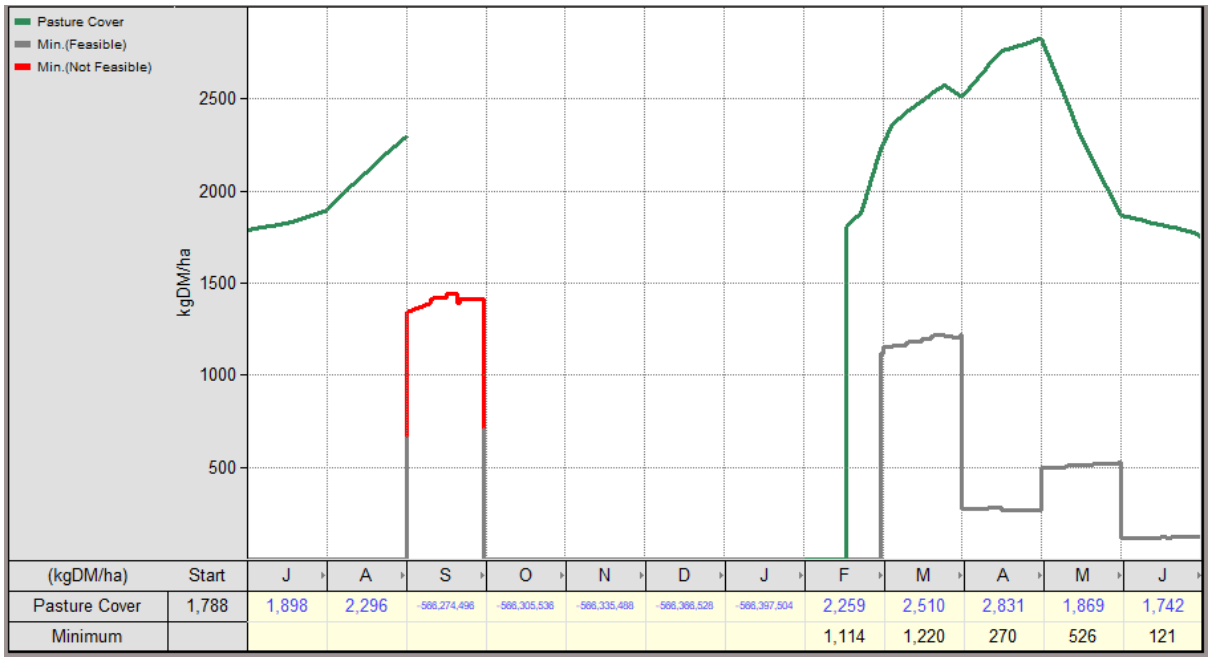


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY 320 Su or Ha | | | | |
|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 242,484 | 758 | SHEEP | | 435,781 | |
| VETERINARY AND ANIMAL HEALTH | 10,965 | 34 | WOOL | | 24,671 | |
| STOCKFEED - Grazing | | | CATTLE | | | |
| STOCKFEED - Domestic | | | MILK | | | |
| STOCKFEED - Imported | | | DEER | | | |
| OTHER STOCK EXPENSES | 1,500 | 5 | VELVET | | | |
| STOCKFEED - Conservation | 17,855 | 56 | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 239,243 | 748 | Previous Yr Sales | | | |
| FREIGHT | 132,224 | 413 | Current Yr Sales | | 1,658,150 | |
| FERTILISER - Product | 208,989 | 653 | Unsold At Year End | | | |
| FERTILISER - Cart and Spread | 11,280 | | SMALL SEED PRODUCE | | | |
| SEED | 220,875 | 690 | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | 36,785 | 115 | Current Yr Sales | | 224,250 | |
| AGRICHEMICAL - Product | 147,965 | 462 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | | | MISCELLANEOUS INCOME | | 72,974 | |
| REPAIRS & MAINTENANCE | 54,300 | 170 | | | | |
| VEHICLES - Fuels | 69,500 | 217 | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | 23,500 | | | Sheep | -290,312 | |
| ELECTRICITY | 63,400 | 198 | | Cattle | | |
| OTHER WORKING EXPS | 28,635 | 89 | | Deer | | |
| ADMINISTRATION | 28,500 | 89 | | Other | | |
| STANDING CHARGES - Rates | 25,920 | 81 | | | | |
| STANDING CHARGES - Insurance & ACC | 17,970 | | | | | |
| STANDING CHARGES - Other | 40,600 | | | | | |
| **CASH FARM WORKING EXPENSES** | **1,622,489** | 5,070 | **CASH FARM INCOME** | | **2,125,514** | 6,642 |
| **EBIT (Earnings Before Interest and Tax)** | **503,025** | 1,572 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 34,072 | 106 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **1,656,561** | 5,177 | **CASH OPERATING INCOME** | | **2,125,514** | 6,642 |
| **CASH OPERATING SURPLUS/DEFICIT** | **468,953** | 1,465 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 76,000 | 238 | | | | |
| PLANT REPLACEMENT | 196,124 | 613 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **1,928,685** | 6,027 | **TOTAL CASH INCOME** | | **2,125,514** | 6,642 |
| **TOTAL CASH SURPLUS/DEFICIT** | **196,829** | 615 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **196,829** | 615 | | | | |

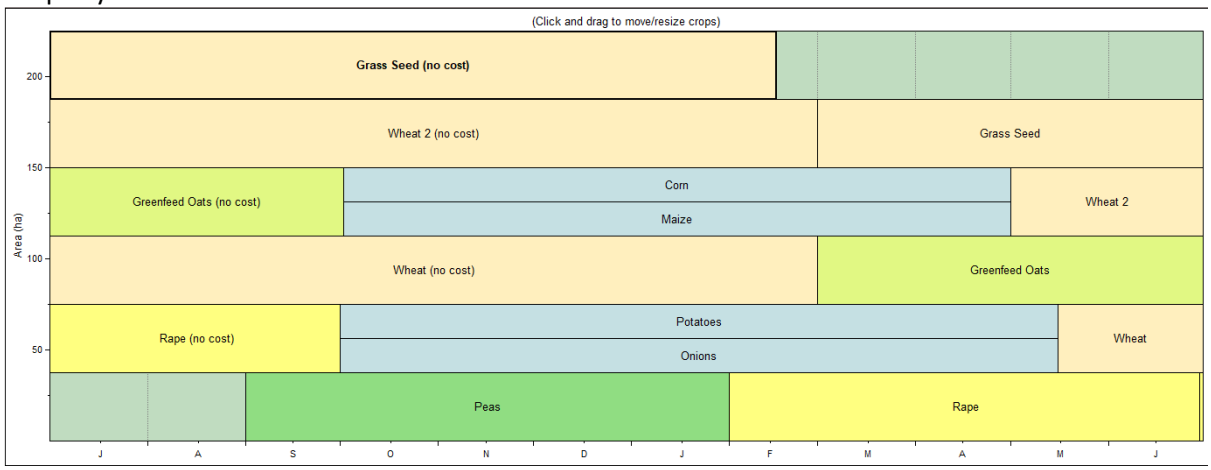
## Farmax Summary

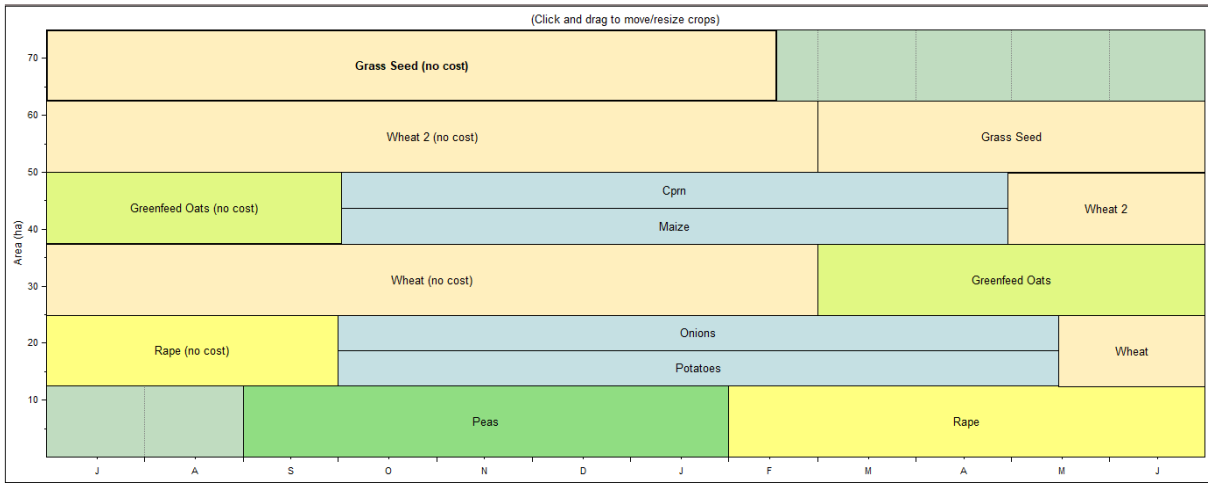
### Pasture Covers




| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 1,788 | 1,898 | 2,296 | -566,274,496 | -566,305,536 | -566,335,488 | -566,366,528 | -566,397,504 | 2,259 | 2,510 | 2,831 | 1,869 | 1,742 |
| Minimum | | | | | | | | | 1,114 | 1,220 | 270 | 526 | 121 |

### Crops by Block`



Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Lambs | | | | | | | | 500 | 1,490 | 2,615 | 3,010 | 2,499 |
| Mixed Hoggets | 2,489 | 1,899 | | | | | | | | | | |
| **Total** | **2,489** | **1,899** | | | | | | **500** | **1,490** | **2,615** | **3,010** | **2,499** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr-Arable 1 - AM1_2035.21

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 11:30AM |
| Model version | 6.3.5 |

### Farm details

N: 7,207 N/ha: 23 P: 143 P/ha: 0.4 GHG/ha: 3,655 NCE: 97%

| | |
|---|---|
| Total area | 320 ha |
| Productive block area | 300.00 ha |
| Nitrogen conversion efficiency (NCE) | 97% |
| N Surplus | 5 kg/ha |
| Region | Canterbury |
| Sheep stock rate (RSU) | 945 |

## 8.2. Appendix 2: Arable 2 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 320ha |
| Effective | 300ha |

Irrigated balance:

100% Pivot Irrigated

Stock policy:

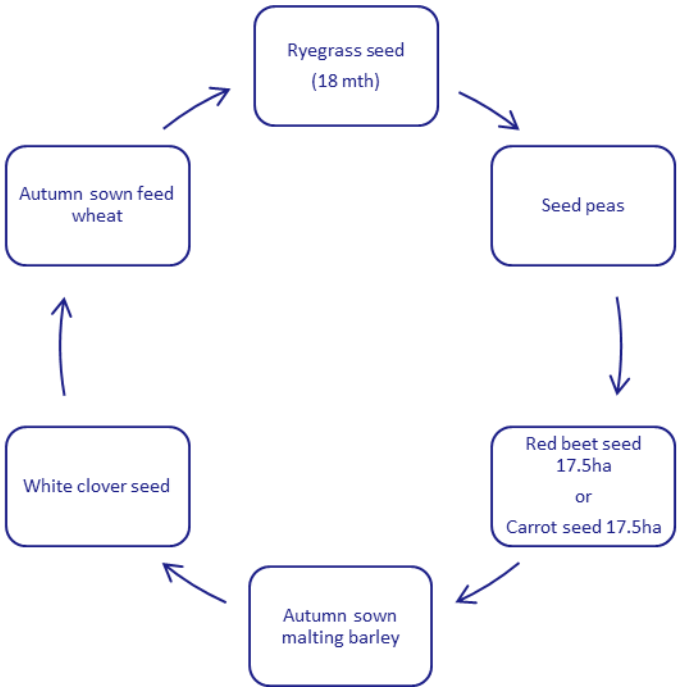
1400 summer trading Lambs
700 winter trading lambs

Labour Policy:

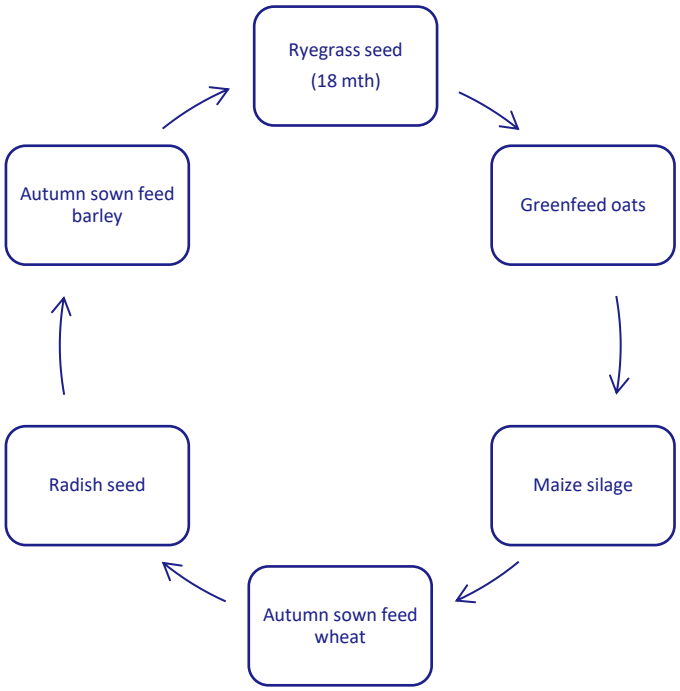
Waged:
Two permanent staff, plus one casual labour unit helping with irrigation and harvest.
Own labour used for cultivation, drilling, boom-spraying, harvest, grain/seed cartage to sale.
Crutching carried out by own farm labour.

Contractors:
Specialist contractors employed for all fertiliser spreading, all hybrid seed crop related operations, maize planting, windrowing & heading & drying of ryegrass seed crop, windrowing & drying of carrot seed crop, straw baling, shearing. Contract cartage for delivery-to-sale of various grain & seed produce.

Crop Rotation 1 (70% Area):



Crop Rotation 2 (30% Area):

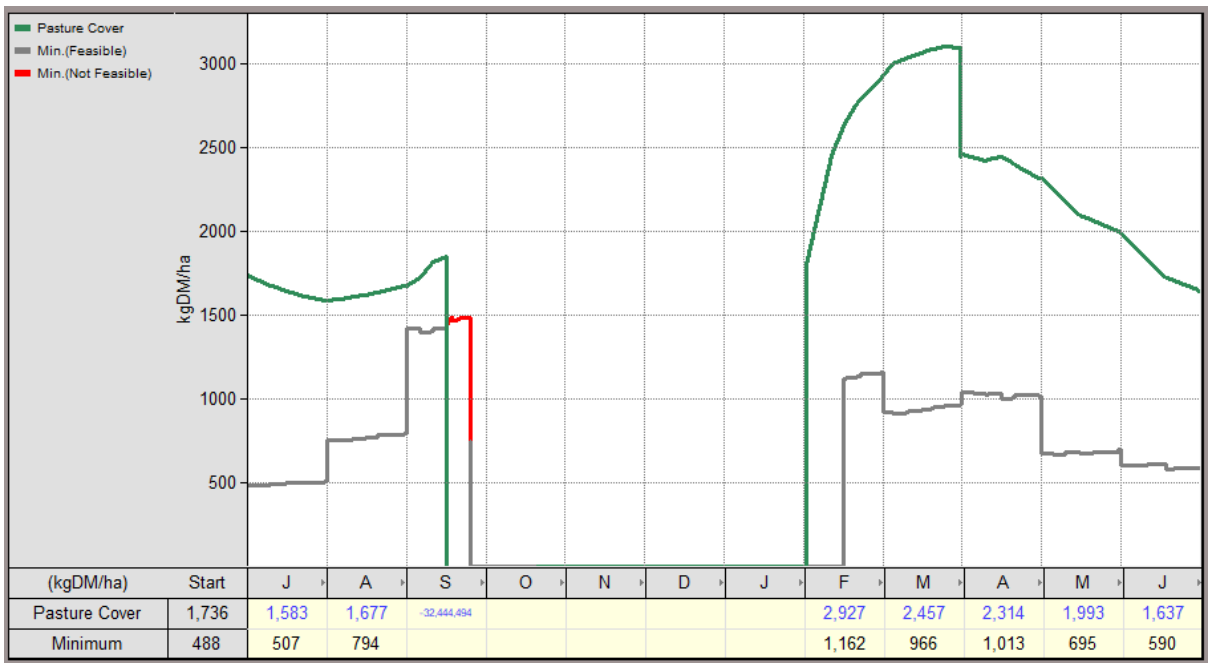


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY | | | | |
|---|---|---|---|---|---|---|
| | | 300 | Su or Ha | | | |
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 154,440 | 515 | SHEEP | | 221,256 | |
| VETERINARY AND ANIMAL HEALTH | 4,210 | 14 | WOOL | | 11,999 | |
| STOCKFEED - Grazing | | | CATTLE | | | |
| STOCKFEED - Domestic | | | MILK | | | |
| STOCKFEED - Imported | | | DEER | | | |
| OTHER STOCK EXPENSES | 1,000 | 3 | VELVET | | | |
| STOCKFEED - Conservation | 35,632 | 119 | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 35,188 | 117 | Previous Yr Sales | | | |
| FREIGHT | 41,250 | 137 | Current Yr Sales | | 660,824 | |
| FERTILISER - Product | 96,681 | 322 | Unsold At Year End | | | |
| FERTILISER - Cart and Spread | 6,215 | 21 | SMALL SEED PRODUCE | | | |
| SEED | 47,345 | 158 | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | 117,228 | 391 | Current Yr Sales | | 835,675 | |
| AGRICHEMICAL - Product | 205,729 | 686 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | 780 | 3 | MISCELLANEOUS INCOME | | 111,143 | |
| REPAIRS & MAINTENANCE | 49,300 | 164 | | | | |
| VEHICLES - Fuels | 56,500 | 188 | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | 21,500 | 72 | | Sheep | -159,138 | |
| ELECTRICITY | 63,400 | 211 | | Cattle | | |
| OTHER WORKING EXPS | 73,405 | 245 | | Deer | | |
| ADMINISTRATION | 27,500 | 92 | | Other | | |
| STANDING CHARGES - Rates | 25,920 | 86 | | | | |
| STANDING CHARGES - Insurance & ACC | 21,788 | 73 | | | | |
| STANDING CHARGES - Other | 40,600 | 135 | | | | |
| **CASH FARM WORKING EXPENSES** | **1,125,609** | 3,752 | **CASH FARM INCOME** | | **1,681,758** | 5,606 |
| **EBIT (Earnings Before Interest and Tax)** | **556,149** | 1,854 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 23,638 | 79 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **1,149,247** | 3,831 | **CASH OPERATING INCOME** | | **1,681,758** | 5,606 |
| **CASH OPERATING SURPLUS/DEFICIT** | **532,511** | 1,775 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 85,000 | 283 | | | | |
| PLANT REPLACEMENT | 216,700 | 722 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **1,450,947** | 4,836 | **TOTAL CASH INCOME** | | **1,681,758** | 5,606 |
| **TOTAL CASH SURPLUS/DEFICIT** | **230,811** | 769 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **230,811** | 769 | | | | |

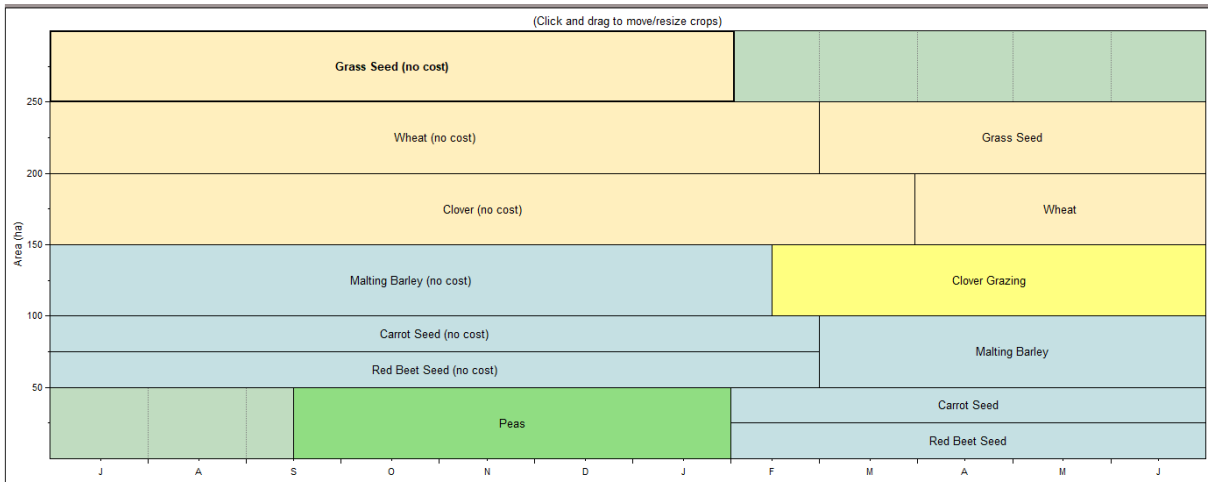
## Farmax Summary

### Pasture Covers




| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 1,736 | 1,583 | 1,677 | -32,444,494 | | | | | 2,927 | 2,457 | 2,314 | 1,993 | 1,637 |
| Minimum | 488 | 507 | 794 | | | | | | 1,162 | 966 | 1,013 | 695 | 590 |

### Crops by Block




### Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Lambs | | | | | | | | 595 | 1,237 | 1,200 | 1,232 | 698 |
| Mixed Hoggets | 688 | 586 | | | | | | | | | | |
| **Total** | **688** | **586** | | | | | | **595** | **1,237** | **1,200** | **1,232** | **698** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr-Arable2 - AM3_2035.21

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 11:17AM |
| Model version | 6.3.5 |

## Farm details

N: 9,047 N/ha: 25 P: 36 P/ha: 0.1 GHG/ha: 2,448 NCE: 43%

| | |
|---|---|
| Total area | 360 ha |
| Productive block area | 300.00 ha |
| Nitrogen conversion efficiency (NCE) | 43% |
| N Surplus | 85 kg/ha |
| Region | Canterbury |
| Sheep stock rate (RSU) | 369 |

## 8.3. Appendix 3: Arable 3 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 320ha |
| Effective | 300ha |

Irrigated balance:

80% Pivot Irrigated

20% Dry land

Stock policy:

3000 summer trading Lambs

1000 winter trading lambs

300 beef cross calves bought as 100kg weaners and sold prime.

Labour Policy:

Waged:

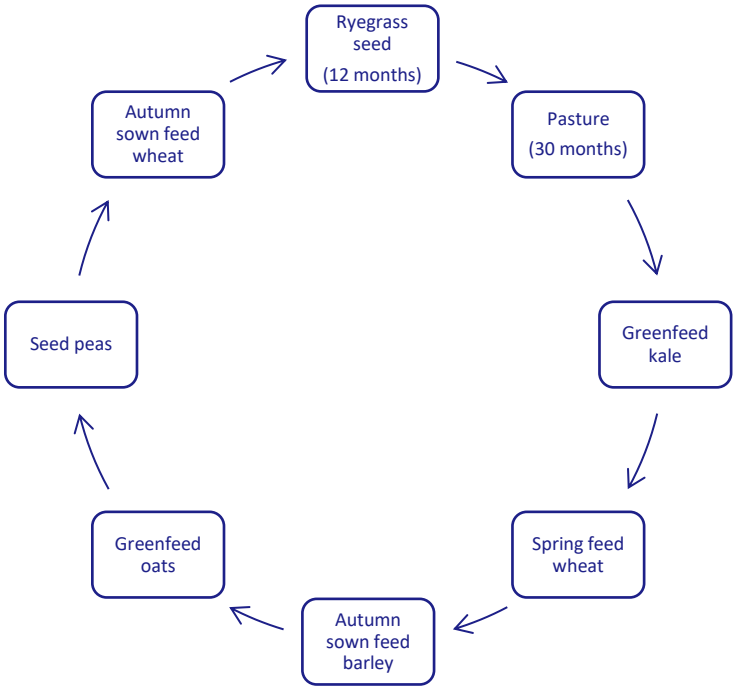
One full time labour unit plus one casual labour unit helping with irrigation and harvest.

Own labour used for cultivation, drilling, boom-spraying, harvest, grain/seed cartage to sale.

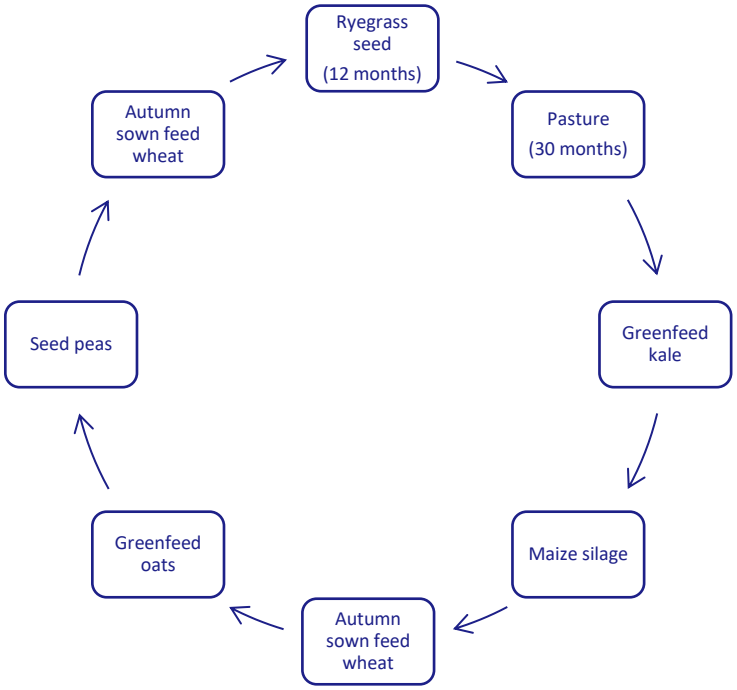
Contractors:

Specialist contractors employed for: all fertiliser spreading, direct-drilling of kale, maize planting, windrowing & heading & drying of ryegrass seed crop, straw baling, maize harvest and silage stack preparation, shearing and some crutching.

Crop Rotation 1 (Dryland):



Crop Rotation 2 (Irrigated):

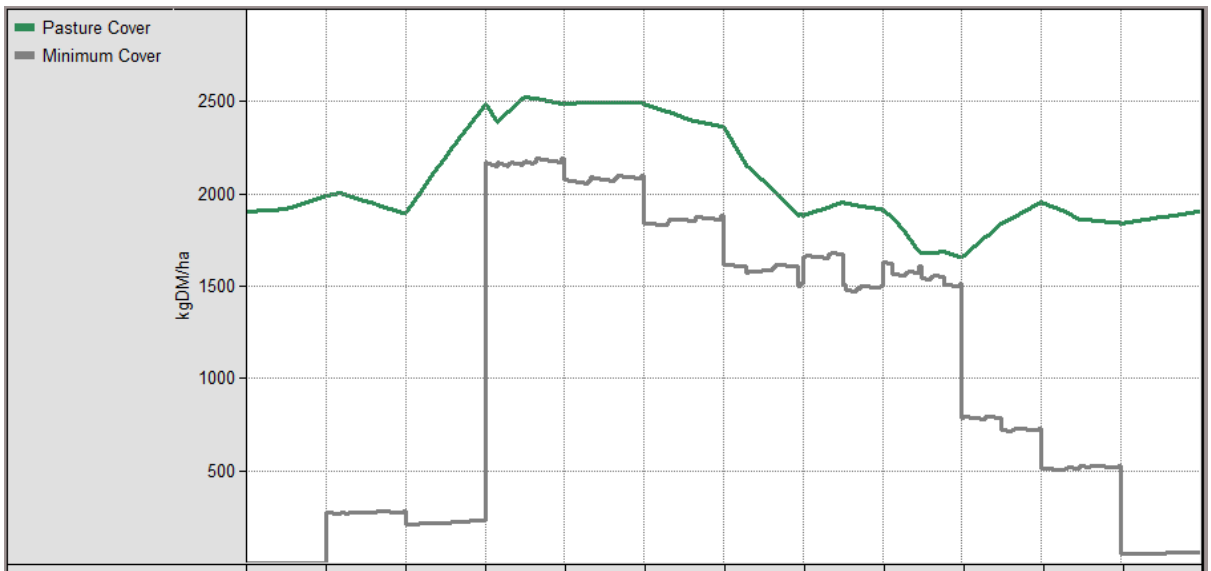


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY 320 Su or Ha | | | | |
|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 106,421 | 333 | SHEEP | | 431,687 | |
| VETERINARY AND ANIMAL HEALTH | 19,522 | 61 | WOOL | | 27,317 | |
| STOCKFEED - Grazing | | | CATTLE | | 411,791 | |
| STOCKFEED - Domestic | | | MILK | | | |
| STOCKFEED - Imported | | | DEER | | | |
| OTHER STOCK EXPENSES | 1,000 | 3 | VELVET | | | |
| STOCKFEED - Conservation | 31,256 | 98 | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 10,454 | 33 | Previous Yr Sales | | | |
| FREIGHT | 16,391 | 51 | Current Yr Sales | | 616,200 | |
| FERTILISER - Product | 107,545 | 336 | Unsold At Year End | | | |
| FERTILISER - Cart and Spread | 21,195 | 66 | SMALL SEED PRODUCE | | | |
| SEED | 53,963 | 169 | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | 26,275 | 82 | Current Yr Sales | | 157,500 | |
| AGRICHEMICAL - Product | 81,443 | 255 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | | | MISCELLANEOUS INCOME | | 25,960 | |
| REPAIRS & MAINTENANCE | 39,588 | 124 | | | | |
| VEHICLES - Fuels | 43,300 | 135 | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | 19,200 | 60 | | Sheep | -311,619 | |
| ELECTRICITY | 63,400 | 198 | | Cattle | -135,000 | |
| OTHER WORKING EXPS | 25,696 | 80 | | Deer | | |
| ADMINISTRATION | 27,500 | 86 | | Other | | |
| STANDING CHARGES - Rates | 14,000 | 44 | | | | |
| STANDING CHARGES - Insurance & ACC | 26,985 | 84 | | | | |
| STANDING CHARGES - Other | 32,560 | 102 | | | | |
| **CASH FARM WORKING EXPENSES** | **767,692** | 2,399 | **CASH FARM INCOME** | | **1,223,836** | 3,824 |
| **EBIT (Earnings Before Interest and Tax)** | **456,144** | 1,425 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 16,122 | 50 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **783,814** | 2,449 | **CASH OPERATING INCOME** | | **1,223,836** | 3,824 |
| **CASH OPERATING SURPLUS/DEFICIT** | **440,022** | 1,375 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 77,000 | 241 | | | | |
| PLANT REPLACEMENT | 156,760 | 490 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **1,017,574** | 3,180 | **TOTAL CASH INCOME** | | **1,223,836** | 3,824 |
| **TOTAL CASH SURPLUS/DEFICIT** | **206,262** | 645 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **206,262** | 644.6 | | | | |

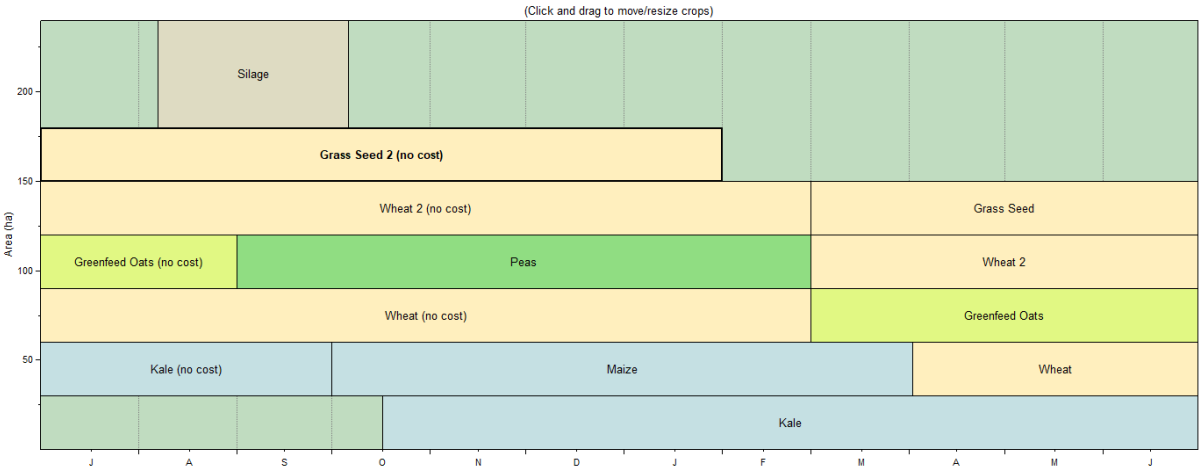
## Farmax Summary

### Pasture Cover

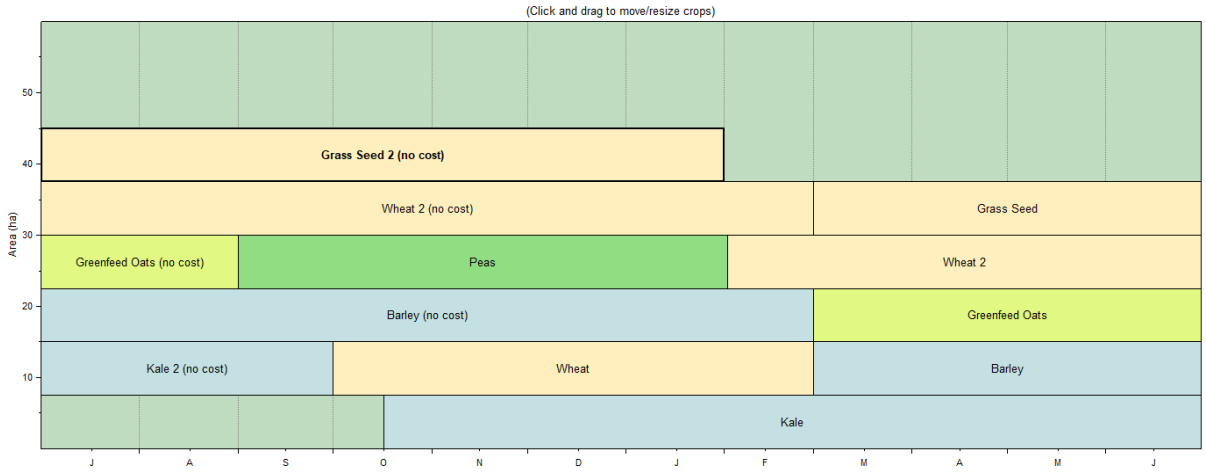



| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 1,901 | 1,989 | 1,893 | 2,487 | 2,485 | 2,491 | 2,364 | 1,884 | 1,914 | 1,657 | 1,956 | 1,842 | 1,907 |
| Minimum | | | 281 | 232 | 2,191 | 2,100 | 1,880 | 1,514 | 1,502 | 1,515 | 729 | 529 | 55 |

### Crops by Block (Irrigated)



## Crops by Block (Dryland)




## Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Lambs | | | | | | | 895 | 1,837 | 2,118 | 2,507 | 1,929 | 1,161 |
| Mixed Hoggets | 1,151 | 955 | | | | | | | | | | |
| **Total** | **1,151** | **955** | | | | | **895** | **1,837** | **2,118** | **2,507** | **1,929** | **1,161** |

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bull Calves | | | | | | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| 1-Year Bulls | 298 | 297 | 296 | 295 | 295 | 278 | 123 | 93 | 28 | 2 | | |
| **Total** | **298** | **297** | **296** | **295** | **295** | **578** | **423** | **393** | **328** | **302** | **300** | **300** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr-Arable 3_AM2_2035.12

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 11:57AM |
| Model version | 6.3.5 |

## Farm details

N: 7,662 N/ha: 24 P: 129 P/ha: 0.4 GHG/ha: 5,176 NCE: 57%

| | |
|---|---|
| Total area | 320 ha |
| Productive block area | 300.00 ha |
| Nitrogen conversion efficiency (NCE) | 57% |
| N Surplus | 63 kg/ha |
| Region | Canterbury |

| | | | |
|---|---|---|---|
| Total liveweight brought (kg/ha grazed) | 1612 | Percent male beef animals | 100 |
| Total liveweight reared (kg/ha grazed) | 1981 | Beef / dairy grazing stock rate (RSU) | 1839 |
| Total liveweight sold (kg/ha grazed) | 4893 | Sheep stock rate (RSU) | 960 |

## 8.4. Appendix 4: Arable 4 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 320ha |
| Effective | 300ha |

Irrigated balance:

100% dryland

Stock policy:

1500 lambing ewes (one year culls)

1200 trading lambs finished to meet winter schedule

Labour Policy:

Waged:

One full time and one casual labour unit through summer months helping with irrigation and harvest.

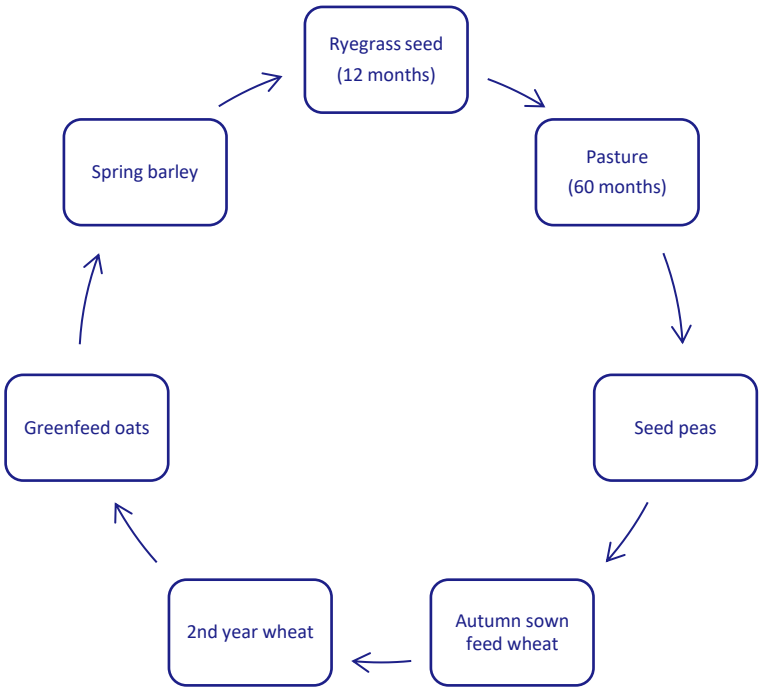
Own labour used for cultivation, drilling, harvest of grain crops.

Contractors:

Specialist contractors employed for:

all fertiliser spreading, boom-spraying, direct-drilling of kale, windrowing & heading & drying of ryegrass seed crop, straw baling, shearing and crutching, grain/seed/livestock cartage to sale.

Crop Rotation:

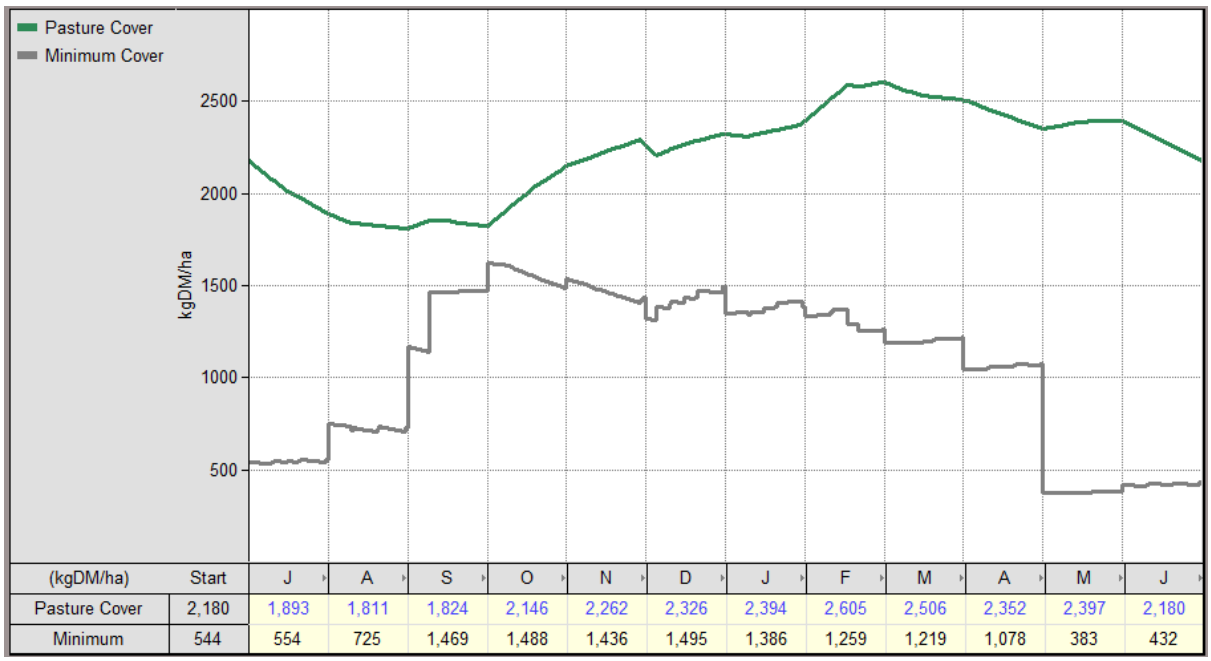


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY | | | | |
|---|---|---|---|---|---|---|
| | | 320 Su or Ha | | | | |
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 119,218 | 373 | SHEEP | | 508,912 | |
| VETERINARY AND ANIMAL HEALTH | 11,370 | 36 | WOOL | | 43,845 | |
| STOCKFEED - Grazing | | | CATTLE | | | |
| STOCKFEED - Domestic | | | MILK | | | |
| STOCKFEED - Imported | | | DEER | | | |
| OTHER STOCK EXPENSES | 3,750 | 12 | VELVET | | | |
| STOCKFEED - Conservation | 26,663 | 83 | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 15,297 | 48 | Previous Yr Sales | | | |
| FREIGHT | 20,309 | 63 | Current Yr Sales | | 330,600 | |
| FERTILISER - Product | 50,929 | 159 | Unsold At Year End | | | |
| FERTILISER - Cart and Spread | 10,049 | 31 | SMALL SEED PRODUCE | | | |
| SEED | 27,720 | 87 | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | 34,726 | 109 | Current Yr Sales | | 78,000 | |
| AGRICHEMICAL - Product | 54,942 | 172 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | 13,860 | 43 | MISCELLANEOUS INCOME | | 25,522 | |
| REPAIRS & MAINTENANCE | 25,300 | 79 | | | | |
| VEHICLES - Fuels | 40,500 | 127 | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | 12,000 | 38 | | Sheep | -278,580 | |
| ELECTRICITY | 4,000 | 13 | | Cattle | | |
| OTHER WORKING EXPS | 5,055 | 16 | | Deer | | |
| ADMINISTRATION | 27,500 | 86 | | Other | | |
| STANDING CHARGES - Rates | 18,432 | 58 | | | | |
| STANDING CHARGES - Insurance & ACC | 14,413 | 45 | | | | |
| STANDING CHARGES - Other | 400 | 1 | | | | |
| **CASH FARM WORKING EXPENSES** | **536,432** | 1,676 | **CASH FARM INCOME** | | **708,299** | 2,213 |
| **EBIT (Earnings Before Interest and Tax)** | **171,867** | 537 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 11,265 | 35 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **547,697** | 1,712 | **CASH OPERATING INCOME** | | **708,299** | 2,213 |
| **CASH OPERATING SURPLUS/DEFICIT** | **160,602** | 502 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 33,000 | 103 | | | | |
| PLANT REPLACEMENT | 36,000 | 113 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **616,697** | 1,927 | **TOTAL CASH INCOME** | | **708,299** | 2,213 |
| **TOTAL CASH SURPLUS/DEFICIT** | **91,602** | 286 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **91,602** | 286.3 | | | | |

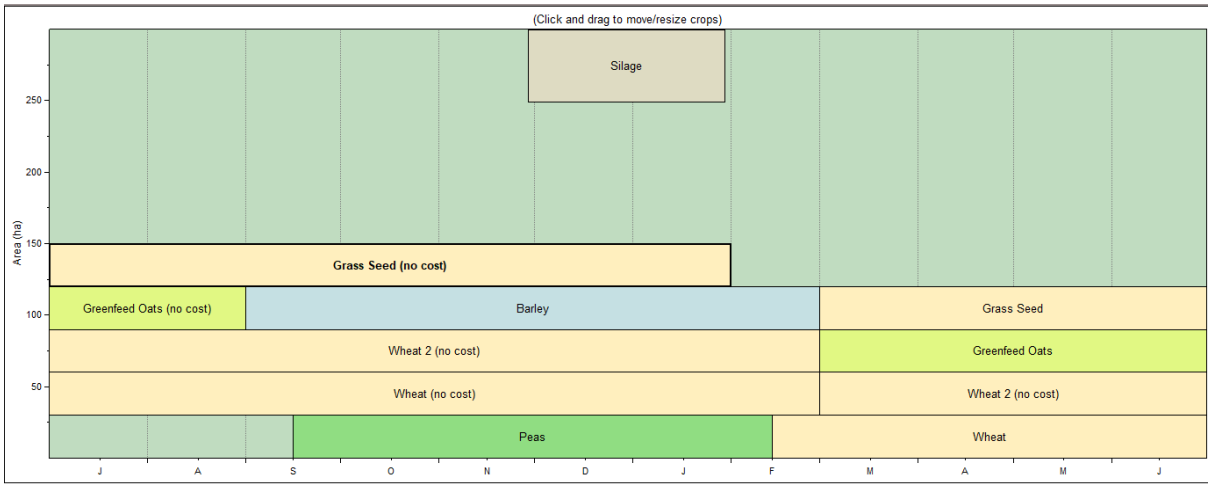
## Farmax Summary

### Pasture Cover




| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,180 | 1,893 | 1,811 | 1,824 | 2,146 | 2,262 | 2,326 | 2,394 | 2,605 | 2,506 | 2,352 | 2,397 | 2,180 |
| Minimum | 544 | 554 | 725 | 1,469 | 1,488 | 1,436 | 1,495 | 1,386 | 1,259 | 1,219 | 1,078 | 383 | 432 |

### Crops by Block




### Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ewes | 1,500 | 1,500 | 1,500 | 1,475 | 1,450 | | | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Mixed Lambs | | | | | 1,800 | 1,695 | 764 | 276 | 1,276 | 1,266 | 1,256 | |
| Mixed Hoggets | 1,242 | 206 | | | | | | | | | | |
| Rams | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 15 | 15 | 15 | 15 |
| **Total** | **2,752** | **1,716** | **1,510** | **1,485** | **3,260** | **1,705** | **774** | **1,786** | **2,791** | **2,781** | **2,771** | **1,515** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr-Arable 4 - GMP

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 12:30PM |
| Model version | 6.3.5 |

## Farm details

N: 6,187 N/ha: 19 P: 30 P/ha: 0.1 GHG/ha: 3,563 NCE: 41%

| | |
|---|---|
| Total area | 320 ha |
| Productive block area | 300.00 ha |
| Nitrogen conversion efficiency (NCE) | 41% |
| N Surplus | 57 kg/ha |
| Region | Canterbury |

| | | | |
|---|---|---|---|
| Total liveweight brought (kg/ha grazed) | 644 | Total liveweight sold (kg/ha grazed) | 1039 |
| Total liveweight reared (kg/ha grazed) | 98 | Sheep stock rate (RSU) | 2153 |

## Blocks

| NAME | TYPE | AREA (HA) | N LOSS | N LOSS/HA | N SURPLUS/HA | P LOSS | P LOSS/HA |
|---|---|---|---|---|---|---|---|
| Dryland Pasture | Pasture | 150 | 1,173 | 8 | 92 | 10 | 0.1 |
| DL (Pasture > Peas) | Crop | 30 | 2,273 | 76 | -61 | 1 | 0 |
| DL (S Peas > Wheat) | Crop | 30 | 1,057 | 35 | 8 | 1 | 0 |
| DL (Sp Barley > RGS) | Crop | 30 | 803 | 27 | 239 | 1 | 0 |
| DL (Wheat > GF Oats > SP Barley) | Crop | 30 | 156 | 5 | -15 | 2 | 0.1 |
| DL (Wheat > Wheat) | Crop | 30 | 714 | 24 | 22 | 1 | 0 |
| Other sources | Other | - | 11 | - | - | 13 | - |

## 8.5. Appendix 5: Dairy 1 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 220ha |
| Effective | 210ha |

Irrigated balance:

100% Irrigated with centre pivots

Stock policy:

785 peak cows
3.74 cows/ha
500kgMS/cow
Covered feed pad not used for wintering

Labour Policy:

Waged:
Five full time plus casual labour over calf rearing.

Contractors:
Specialist contractors employed for all cultivation, drilling and forage making or freight.

Crop Rotation:

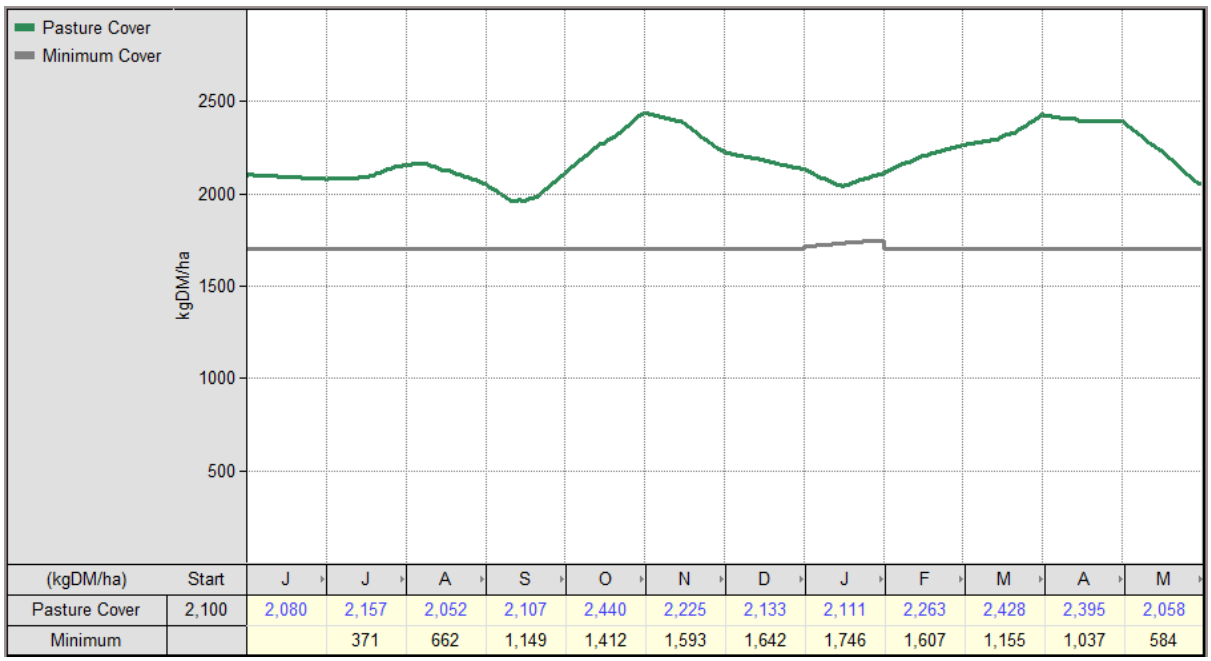
Regrassing only (no forage or feed crops grown)

## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY | | | | |
|---|---|---|---|---|---|---|
| | | 220 | Su or Ha | | | |
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 309,250 | 1,406 | SHEEP | | | |
| VETERINARY AND ANIMAL HEALTH | 105,801 | 481 | WOOL | | | |
| STOCKFEED - Grazing | 390,186 | 1,774 | CATTLE | | 139,760 | |
| STOCKFEED - Domestic | 377,890 | 1,718 | GRAZING | | | |
| STOCKFEED - Imported | | | MILK | | 2,435,496 | |
| OTHER STOCK EXPENSES | 18,840 | 86 | DEER | | | |
| STOCKFEED - Conservation | | | VELVET | | | |
| CONTRACTING | 12,600 | 57 | GRAIN AND PULSE PRODUCE | | | |
| FREIGHT | 29,340 | 133 | Previous Yr Sales | | | |
| FERTILISER - Product | 148,071 | 673 | Current Yr Sales | | | |
| FERTILISER - Cart and Spread | 25,891 | 118 | Unsold At Year End | | | |
| SEED | 10,784 | 49 | SMALL SEED PRODUCE | | | |
| CERTIFICATION AND DRESSING | 500 | 2 | Previous Yr Sales | | | |
| AGRICHEMICAL - Product | 6,725 | 31 | Current Yr Sales | | | |
| AGRICHEMICAL - Application | 3,234 | 15 | Unsold At Year End | | | |
| REPAIRS & MAINTENANCE | 106,345 | 483 | MISCELLANEOUS INCOME | | 5,800 | |
| VEHICLES - Fuels | 23,916 | 109 | | | | |
| VEHICLES - Repairs and Maintenance | 22,400 | 102 | STOCK PURCHASES | | | |
| ELECTRICITY | 73,180 | 333 | | Sheep | | |
| OTHER WORKING EXPS | 10,540 | 48 | | Cattle | -25,200 | |
| ADMINISTRATION | 25,935 | 118 | | Deer | | |
| STANDING CHARGES - Rates | 21,780 | 99 | | Other | | |
| STANDING CHARGES - Insurance & ACC | 42,564 | 193 | | | | |
| STANDING CHARGES - Other | 49,889 | 227 | | | | |
| **CASH FARM WORKING EXPENSES** | **1,815,660** | 8,253.0 | **CASH FARM INCOME** | | **2,555,856** | 11,617.5 |
| **CASH FARM WORKING PROFIT** | **740,196** | 3,364.5 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 38,129 | 173.3 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **1,853,789** | 8,426.3 | **CASH OPERATING INCOME** | | **2,555,856** | 11,617.5 |
| **CASH OPERATING SURPLUS/DEFICIT** | **702,067** | 3,191.2 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 152,000 | 690.9 | | | | |
| CAPITAL PURCHASES & PAYMENTS | 157,240 | 714.7 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **2,163,029** | 9,831.9 | **TOTAL CASH INCOME** | | **2,555,856** | 11,617.5 |
| **TOTAL CASH SURPLUS/DEFICIT** | **392,827** | 1,785.6 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **392,827** | 1,785.6 | | | | |

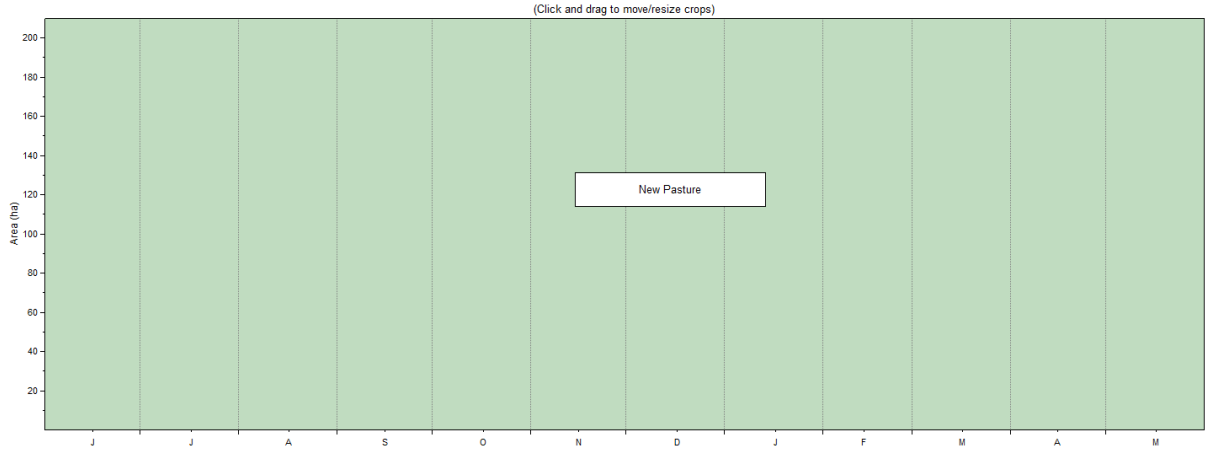
**Farmax Summary**

Pasture Cover




| (kgDM/ha) | Start | J | J | A | S | O | N | D | J | F | M | A | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,100 | 2,080 | 2,157 | 2,052 | 2,107 | 2,440 | 2,225 | 2,133 | 2,111 | 2,263 | 2,428 | 2,395 | 2,058 |
| Minimum | | | 371 | 662 | 1,149 | 1,412 | 1,593 | 1,642 | 1,746 | 1,607 | 1,155 | 1,037 | 584 |

Crops by Block




Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| F4 Hay/Straw bought | | 21.7 | | | 21.7 | |
| F1 Meal and Grains bought | | 624 | | | 624 | |
| F2 Pasture Silage | | | | | | |
| New Pasture | | | | | | |
| F2 Pasture Silage bought | | 227 | | | 227 | |
| **Total** | **0.00** | **872** | **0.00** | **0.00** | **872** | **0.00** |

Stock Numbers by Month

| Mob | 30 Jun | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cows at home | | 178 | 795 | 790 | 785 | 785 | 785 | 780 | 780 | 780 | 740 | 555 |
| Cows Grazing | 800 | 622 | | | | | | | | | | |
| 2011 Born Heifers Grazing | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 |
| 2012 Born Heifers Grazing | | | | | | | 180 | 180 | 180 | 180 | 180 | 180 |
| 2012 Born Heifers at Home | | 43 | 180 | 180 | 180 | 180 | | | | | | |
| Bobby Calves | | 24 | 72 | 32 | | | | | | | | |
| **Total** | **980** | **1,047** | **1,227** | **1,182** | **1,145** | **1,145** | **1,145** | **1,140** | **1,140** | **1,140** | **1,100** | **915** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr - Dairy1_AM2_2035.21

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 1:28PM |
| Model version | 6.3.5 |

## Farm details

N: 7,886 N/ha: 36 P: 176 P/ha: 0.8 GHG/ha: 17,035 NCE: 30%

| | |
|---|---|
| Total area | 220 ha |
| Productive block area | 210.00 ha |
| Nitrogen conversion efficiency (NCE) | 30% |
| N Surplus | 276 kg/ha |
| Region | Canterbury |

| | | | |
|---|---|---|---|
| Total liveweight brought (kg/ha grazed) | 493 | Milk solids (kg/ha grazed) | 1867 |
| Total liveweight reared (kg/ha grazed) | 100 | Milking herd size (peak cows/ha grazed) | 3.7 |
| Total liveweight sold (kg/ha grazed) | 559 | Dairy stock rate (RSU) | 8685 |
| Default calving date | 06 August | Dairy replacements stock rate (RSU) | 0 |
| Milk production per cow (kg milk solids / cow) | 499.5 | | |

## 8.6. Appendix 6: Dairy 2 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 220ha |
| Effective | 210ha |

Irrigated balance:

100% Irrigated with centre pivots

Stock policy:

735 peak cows
3.5 cows/ha
476kgMS/cow
Covered feed pad not used for wintering

Labour Policy:

Waged:
Four full time plus casual labour over calf rearing.

Contractors:
Specialist contractors employed for all cultivation, drilling and forage making or freight.

Crop Rotation:

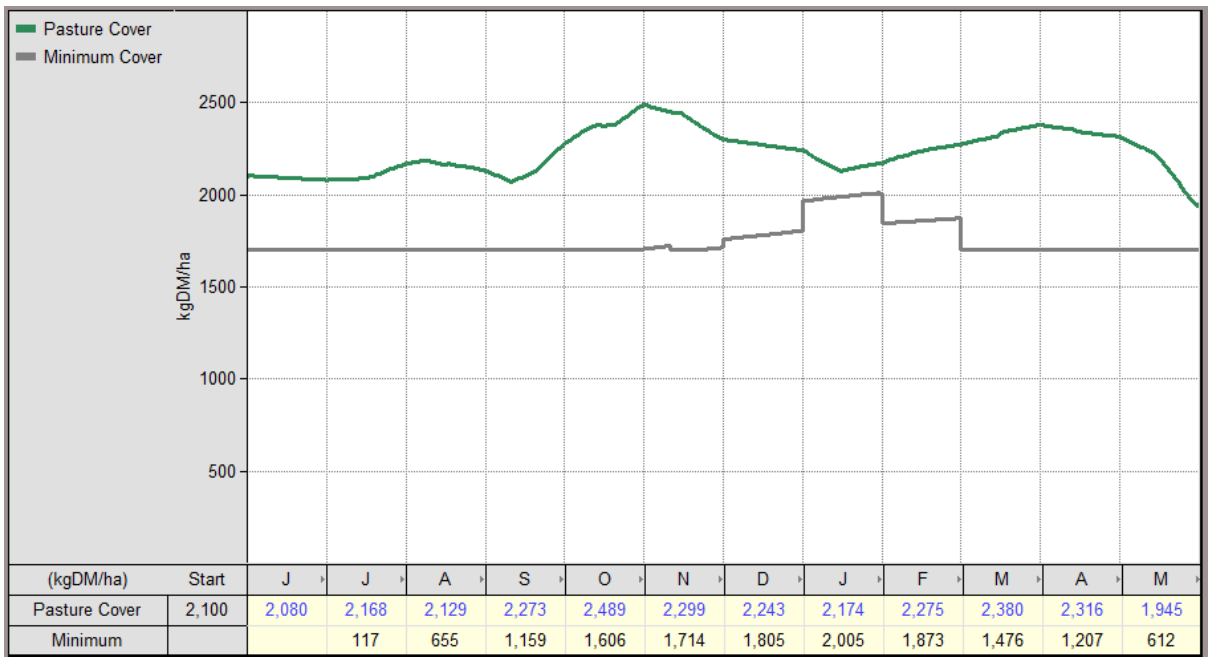
Regrassing only (no forage or feed crops grown)

## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY 220 Su or Ha | | | | |
|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 248,700 | 1,130 | SHEEP | | | |
| VETERINARY AND ANIMAL HEALTH | 99,153 | 451 | WOOL | | | |
| STOCKFEED - Grazing | 359,408 | 1,634 | CATTLE | | 126,109 | |
| STOCKFEED - Domestic | 230,830 | 1,049 | GRAZING | | | |
| STOCKFEED - Imported | 9,324 | 42 | MILK | | 2,167,867 | |
| OTHER STOCK EXPENSES | 17,640 | 80 | DEER | | | |
| STOCKFEED - Conservation | | | VELVET | | | |
| CONTRACTING | 12,600 | 57 | GRAIN AND PULSE PRODUCE | | | |
| FREIGHT | 25,470 | 116 | Previous Yr Sales | | | |
| FERTILISER - Product | 151,191 | 687 | Current Yr Sales | | | |
| FERTILISER - Cart and Spread | 25,941 | 118 | Unsold At Year End | | | |
| SEED | 10,784 | 49 | SMALL SEED PRODUCE | | | |
| CERTIFICATION AND DRESSING | 500 | 2 | Previous Yr Sales | | | |
| AGRICHEMICAL - Product | 6,725 | 31 | Current Yr Sales | | | |
| AGRICHEMICAL - Application | 3,234 | 15 | Unsold At Year End | | | |
| REPAIRS & MAINTENANCE | 103,258 | 469 | MISCELLANEOUS INCOME | | 5,800 | |
| VEHICLES - Fuels | 24,049 | 109 | | | | |
| VEHICLES - Repairs and Maintenance | 22,400 | 102 | STOCK PURCHASES | | | |
| ELECTRICITY | 70,780 | 322 | | Sheep | | |
| OTHER WORKING EXPS | 10,360 | 47 | | Cattle | -18,000 | |
| ADMINISTRATION | 25,935 | 118 | | Deer | | |
| STANDING CHARGES - Rates | 17,160 | 78 | | Other | | |
| STANDING CHARGES - Insurance & ACC | 50,660 | 230 | | | | |
| STANDING CHARGES - Other | 61,554 | 280 | | | | |
| **CASH FARM WORKING EXPENSES** | **1,587,655** | 7,216.6 | **CASH FARM INCOME** | | **2,281,776** | 10,371.7 |
| **EBIT (Earnings Before Interest and Tax)** | **694,122** | 3,155.1 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 33,341 | 151.5 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **1,620,995** | 7,368.2 | **CASH OPERATING INCOME** | | **2,281,776** | 10,371.7 |
| **CASH OPERATING SURPLUS/DEFICIT** | **660,781** | 3,003.5 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 141,000 | 640.9 | | | | |
| PLANT REPLACEMENT | 155,790 | 708.1 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **1,917,785** | 8,717.2 | **TOTAL CASH INCOME** | | **2,281,776** | 10,371.7 |
| **TOTAL CASH SURPLUS/DEFICIT** | **363,991** | 1,654.5 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **363,991** | 1,654.5 | | | | |

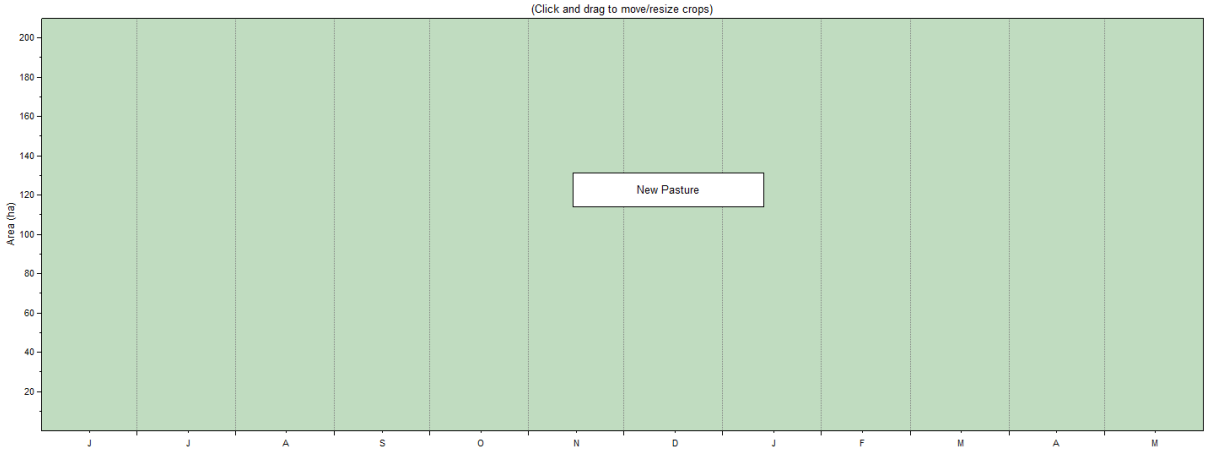
**Farmax Summary**

Pasture Cover




| (kgDM/ha) | Start | J | J | A | S | O | N | D | J | F | M | A | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,100 | 2,080 | 2,168 | 2,129 | 2,273 | 2,489 | 2,299 | 2,243 | 2,174 | 2,275 | 2,380 | 2,316 | 1,945 |
| Minimum | | | 117 | 655 | 1,159 | 1,606 | 1,714 | 1,805 | 2,005 | 1,873 | 1,476 | 1,207 | 612 |

Crops by Block




Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| F4 Hay/Straw bought | | 26.9 | | | 26.9 | |
| F1 Meal and Grains bought | | 288 | | | 288 | |
| F2 Pasture Silage | | | | | | |
| New Pasture | | | | | | |
| F2 Pasture Silage bought | | 172 | | | 172 | |
| **Total** | **0.00** | **487** | **0.00** | **0.00** | **487** | **0.00** |

Stock Numbers by Month

| Mob | 30 Jun | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cows at home | | 178 | 745 | 740 | 735 | 735 | 735 | 730 | 730 | 730 | 690 | 582 |
| Cows Grazing | 747 | 569 | | | | | | | | | | |
| 2011 Born Heifers Grazing | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 |
| 2012 Born Heifers Grazing | | | | | | | 135 | 135 | 135 | 135 | 135 | 135 |
| 2012 Born Heifers at Home | | 11 | 135 | 135 | 135 | 135 | | | | | | |
| Bobby Calves | | 7 | 64 | 8 | | | | | | | | |
| **Total** | **912** | **930** | **1,109** | **1,048** | **1,035** | **1,035** | **1,035** | **1,030** | **1,030** | **1,030** | **990** | **882** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr - Dairy2_AM2_2035.21

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 1:39PM |
| Model version | 6.3.5 |

## Farm details

N: 7,922 N/ha: 36 P: 168 P/ha: 0.8 GHG/ha: 15,721 NCE: 29%

| | |
|---|---|
| Total area | 220 ha |
| Productive block area | 210.00 ha |
| Nitrogen conversion efficiency (NCE) | 29% |
| N Surplus | 265 kg/ha |
| Region | Canterbury |

| | |
|---|---|
| Total liveweight brought (kg/ha grazed) | 507 |
| Total liveweight reared (kg/ha grazed) | 103 |
| Total liveweight sold (kg/ha grazed) | 576 |
| Default calving date | 06 August |
| Milk production per cow (kg milk solids / cow) | 469.3 |

| | |
|---|---|
| Milk solids (kg/ha grazed) | 1665 |
| Milking herd size (peak cows/ha grazed) | 3.5 |
| Dairy stock rate (RSU) | 7981 |
| Dairy replacements stock rate (RSU) | 0 |

## 8.7. Appendix 7: Dairy Support 1 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 270ha |
| Effective | 260ha |

Irrigated balance:

100% Irrigated with centre pivots

Stock policy:

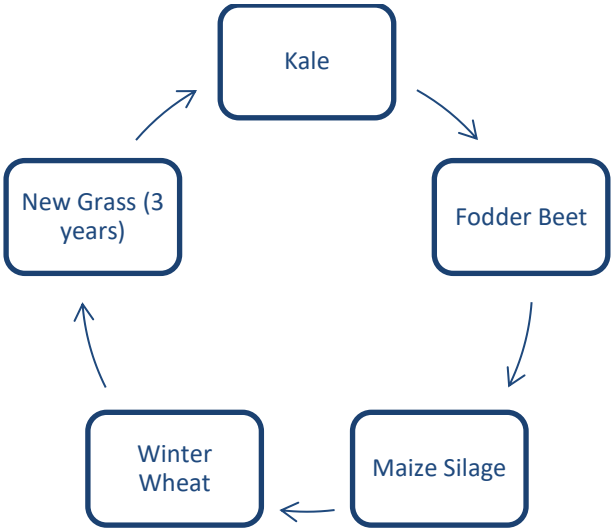
520 R1 Heifers
520 R2 Heifers
520 R2 IC Heifers wintered
550 Mixed Age cows wintered

Labour Policy:

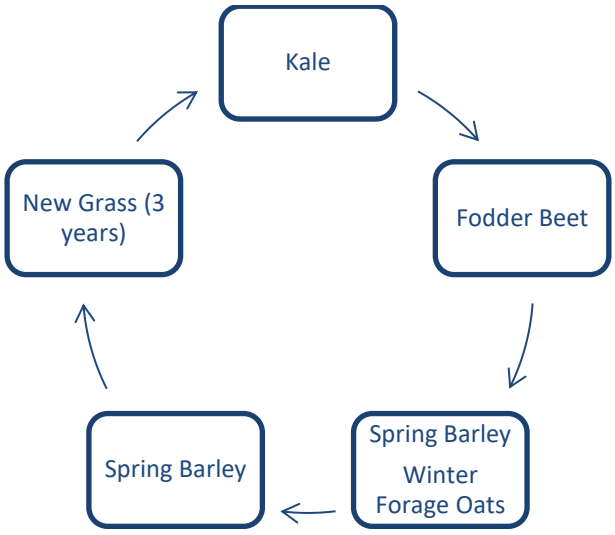
Waged:
Two full time plus casual labour.

Contractors:
Specialist contractors employed for some cultivation, drilling and forage making or freight. Harvest completed by farm staff with own machinery.

Crop Rotation 1 (Blocks 1 & 2):



Crop Rotation 2 (Block 3):

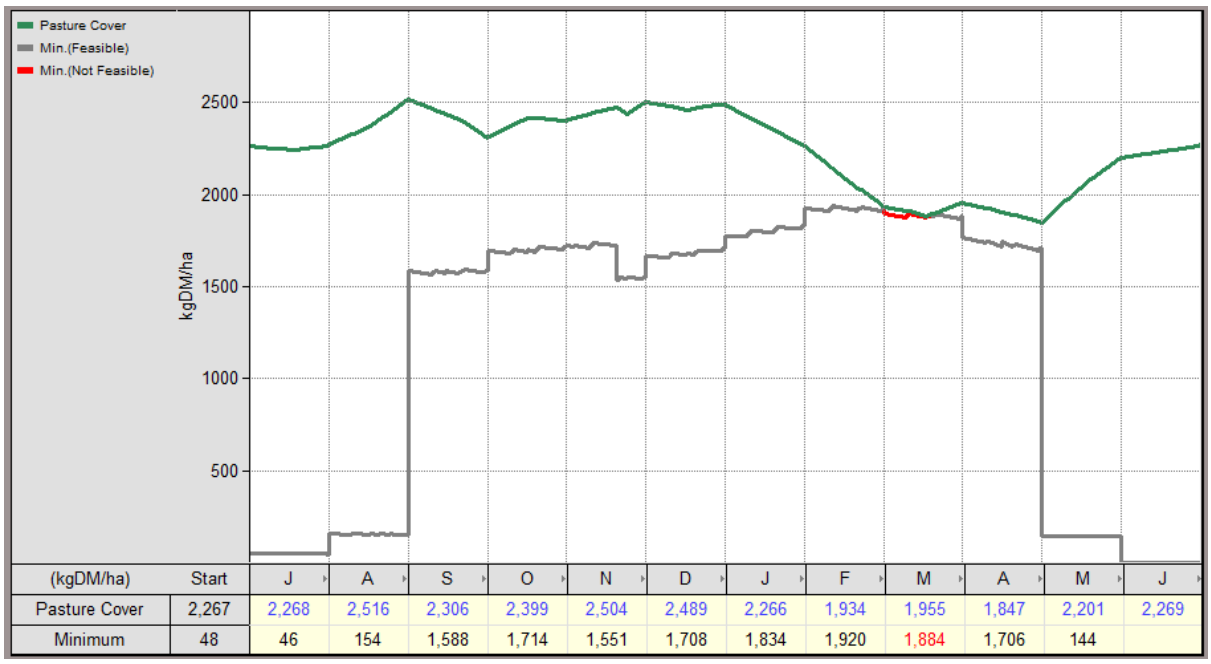


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY 270 Su or Ha | | | | | |
|---|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | | TOTAL $ | Income |
| WAGES | 132,700 | 491 | SHEEP | | | | |
| VETERINARY AND ANIMAL HEALTH | 2,000 | 7 | WOOL | | | | |
| STOCKFEED - Grazing | | | CATTLE | | | | |
| STOCKFEED - Domestic | 2,000 | 7 | GRAZING | | | 765,891 | |
| STOCKFEED - Imported | | | MILK | | | | |
| OTHER STOCK EXPENSES | 2,000 | 7 | DEER | | | | |
| STOCKFEED - Conservation | 68,150 | 252 | VELVET | | | | |
| CONTRACTING | 19,700 | 73 | GRAIN AND PULSE PRODUCE | | | | |
| FREIGHT | | | Previous Yr Sales | | | 95,615 | |
| FERTILISER - Product | 120,960 | 448 | Current Yr Sales | | | 161,855 | |
| FERTILISER - Cart and Spread | 12,301 | 46 | Unsold At Year End | | 95,615 | | |
| SEED | 41,378 | 153 | SMALL SEED PRODUCE | | | | |
| CERTIFICATION AND DRESSING | 500 | 2 | Previous Yr Sales | | | | |
| AGRICHEMICAL - Product | 53,328 | 198 | Current Yr Sales | | | | |
| AGRICHEMICAL - Application | 8,008 | 30 | Unsold At Year End | | | | |
| REPAIRS & MAINTENANCE | 22,000 | 81 | MISCELLANEOUS INCOME | | | 18,955 | |
| VEHICLES - Fuels | 18,800 | 70 | | | | | |
| VEHICLES - Repairs and Maintenance | 31,000 | 115 | STOCK PURCHASES | | | | |
| ELECTRICITY | 56,740 | 210 | | Sheep | | | |
| OTHER WORKING EXPS | 3,500 | 13 | | Cattle | | | |
| ADMINISTRATION | 24,700 | 91 | | Deer | | | |
| STANDING CHARGES - Rates | 20,412 | 76 | | Other | | | |
| STANDING CHARGES - Insurance & ACC | 15,424 | 57 | | | | | |
| STANDING CHARGES - Other | 36,840 | 136 | | | | | |
| **CASH FARM WORKING EXPENSES** | **692,441** | 2,564.6 | **CASH FARM INCOME** | | | **1,042,316** | 3,860.4 |
| **EBIT (Earnings Before Interest and Tax)** | **349,875** | 1,295.8 | | | | | |
| DEBT SERVICING | | | | | | | |
| Mortgage | | | | | | | |
| Term Interest | | | | | | | |
| Current Account | 14,541 | 53.9 | | | | | |
| Rent | | | | | | | |
| Other | | | | | | | |
| **CASH OPERATING EXPENSES** | **706,982** | 2,618.5 | **CASH OPERATING INCOME** | | | **1,042,316** | 3,860.4 |
| **CASH OPERATING SURPLUS/DEFICIT** | **335,334** | 1,242.0 | | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | | |
| OTHER PERSONAL | | | | | | | |
| TAXATION | 51,000 | 188.9 | | | | | |
| PLANT REPLACEMENT | 150,400 | 557.0 | INVESTMENT INCOME | | | | |
| INVESTMENTS | | | | | | | |
| UNPAID ACCOUNTS | | | | | | | |
| **TOTAL CASH EXPENDITURE** | **908,382** | 3,364.4 | **TOTAL CASH INCOME** | | | **1,042,316** | 3,860.4 |
| **TOTAL CASH SURPLUS/DEFICIT** | **133,934** | 496.1 | | | | | |
| Change in value of stock on hand | | | | | | | |
| Change in value of produce on hand | | | | | | | |
| Depreciation | | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **133,934** | 496.1 | | | | | |

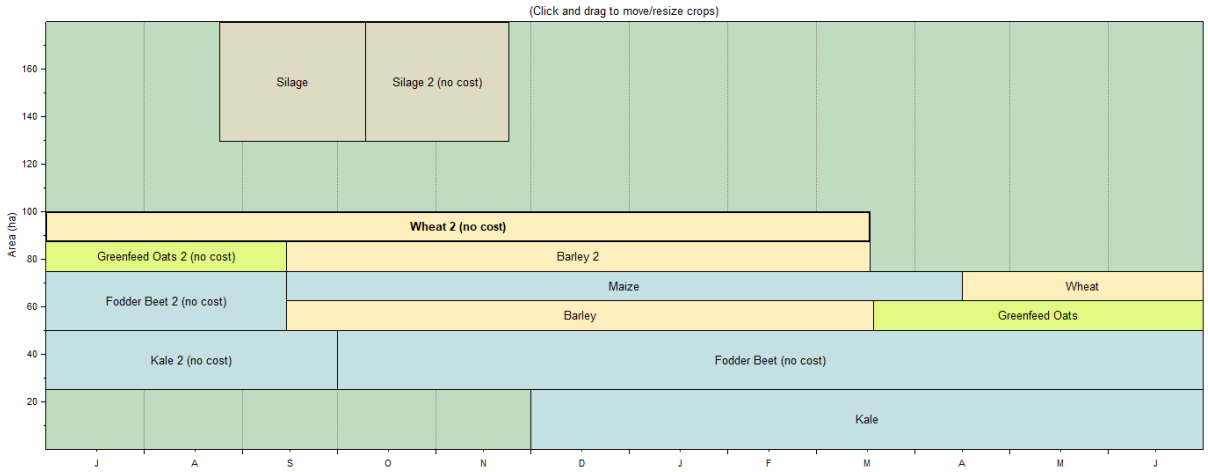
**Farmax Summary**

Pasture Cover

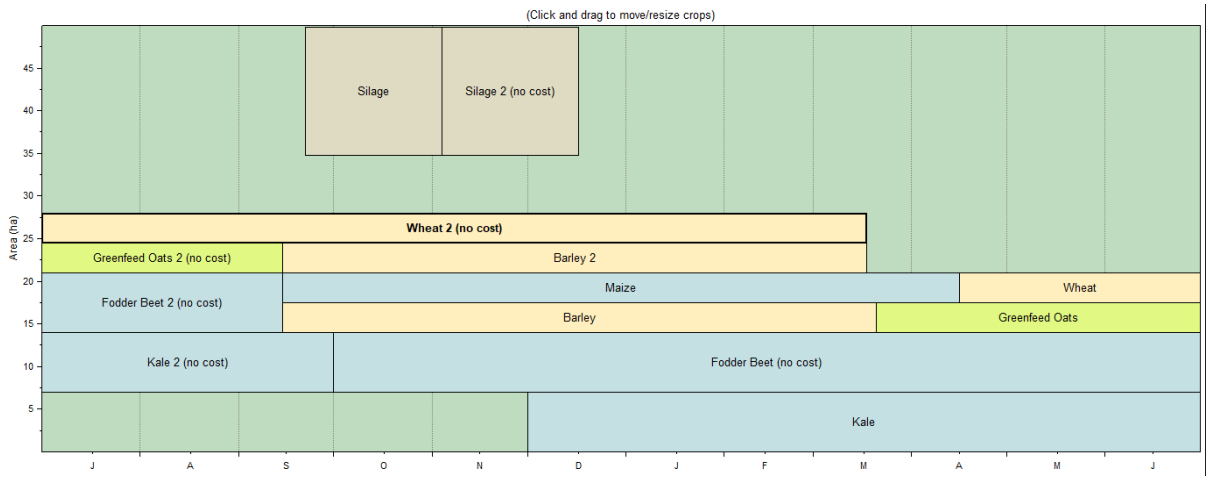



| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,267 | 2,268 | 2,516 | 2,306 | 2,399 | 2,504 | 2,489 | 2,266 | 1,934 | 1,955 | 1,847 | 2,201 | 2,269 |
| Minimum | 48 | 46 | 154 | 1,588 | 1,714 | 1,551 | 1,708 | 1,834 | 1,920 | 1,884 | 1,706 | 144 | |

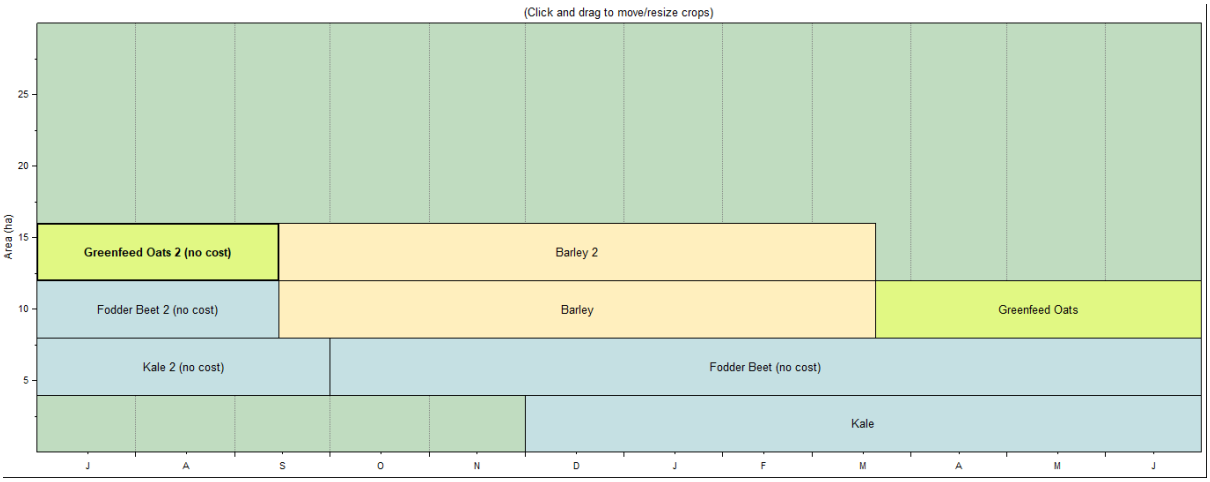
Crops by Block (Main Block)




Crops by Block (Second Block)




Crops by Block (Third Block)




Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| Kale | | | 1,190 | | 1,190 | |
| Straw | 69.6 | | | | 69.5 | 0.12 |
| Wheat | | | 479 | 479 | | |
| Greenfeed Oats | | | 60.0 | | 54.0 | 5.98 |
| Maize | | | 272 | | | 272 |
| Silage | 38.3 | | 94.4 | 6.60 | 87.8 | 38.3 |
| **Total** | **108** | **0.00** | **2,096** | **486** | **1,401** | **316** |

Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heifer Calves | | | | | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 |
| 1-Year Heifers | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 |
| 2-Year Heifers | 520 | | | | | | | | | | | |
| Cows | | | | | | | | | | | | 550 |
| **Total** | **1,040** | **520** | **520** | **520** | **1,040** | **1,040** | **1,040** | **1,040** | **1,040** | **1,040** | **1,040** | **1,590** |

## Overseer Summaries

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

### Ovr - Dairy Support 1_AM1_2035.21

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 1:00PM |
| Model version | 6.3.5 |

### Farm details

N: 11,996 N/ha: 44 P: 46 P/ha: 0.2 GHG/ha: 7,027 NCE: 30%

| | |
|---|---|
| Total area | 270 ha |
| Productive block area | 260.00 ha |
| Nitrogen conversion efficiency (NCE) | 30% |
| N Surplus | 108 kg/ha |
| Region | Canterbury |

| | |
|---|---|
| Total liveweight brought (kg/ha grazed) 7037 | Total liveweight sold (kg/ha grazed) 7676 |
| Total liveweight reared (kg/ha grazed) 1582 | Beef / dairy grazing stock rate (RSU) 4153 |

## 8.8. Appendix 8: Dairy Support 2 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 270ha |
| Effective | 260ha |

Irrigated balance:

50% Irrigated with centre pivots

50% dryland

Stock policy:

260 R1 Heifers

260 R2 Heifers

260 R2 IC Heifers wintered

2400 Mixed Age cows wintered

Labour Policy:

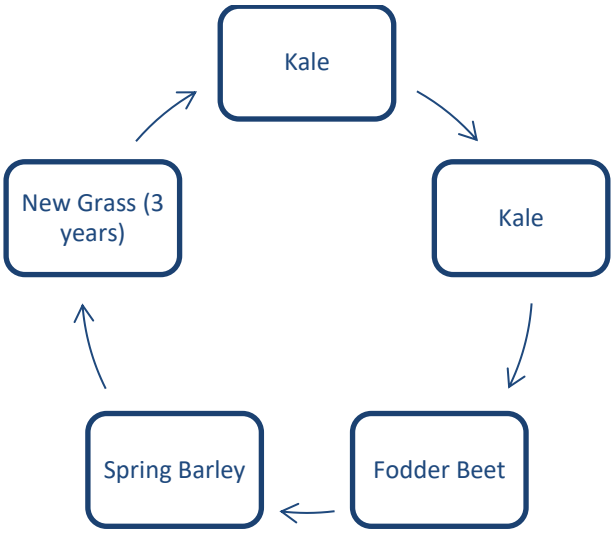
Waged:

Two full time plus casual labour.

Contractors:

Specialist contractors employed for some cultivation, drilling and forage making or freight. Harvest completed by farm staff with own machinery.

Crop Rotation (Blocks 1 & 2):

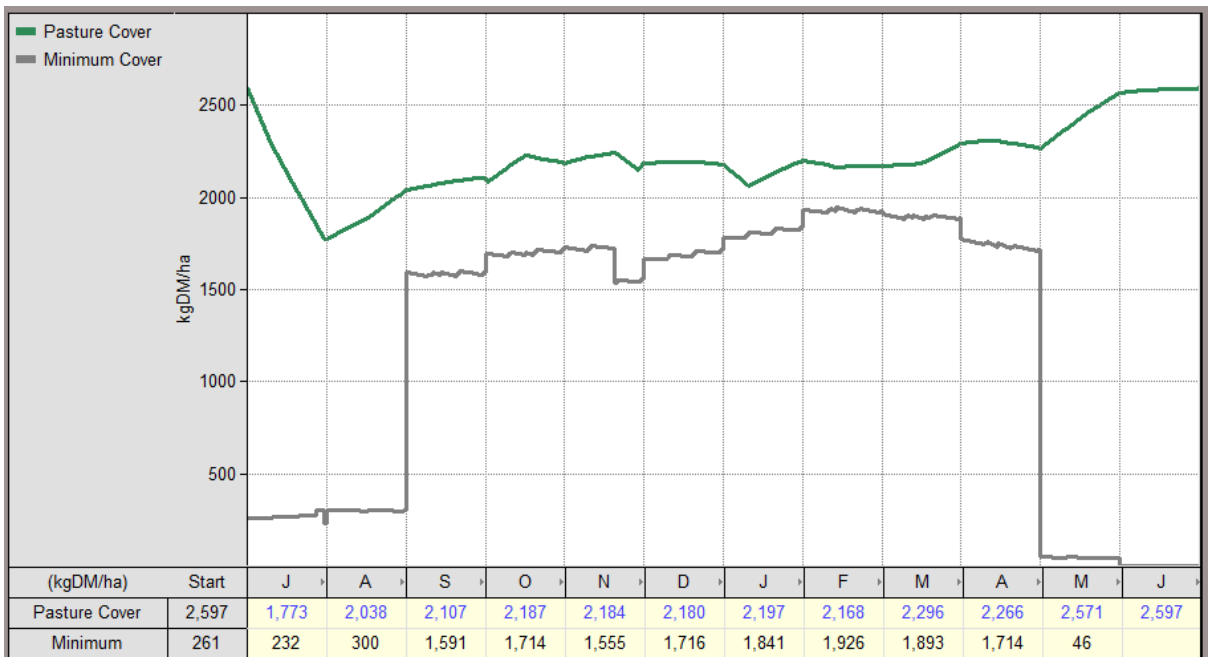


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY | | | | | |
|---|---|---|---|---|---|---|---|
| | | 270 Su or Ha | | | | | |
| | TOTAL $ | Income | | | | TOTAL $ | Income |
| WAGES | 132,700 | 491 | SHEEP | | | | |
| VETERINARY AND ANIMAL HEALTH | 2,000 | 7 | WOOL | | | | |
| STOCKFEED - Grazing | | | CATTLE | | | | |
| STOCKFEED - Domestic | 2,000 | 7 | GRAZING | | | 952,203 | |
| STOCKFEED - Imported | | | MILK | | | | |
| OTHER STOCK EXPENSES | | | DEER | | | | |
| STOCKFEED - Conservation | 40,828 | 151 | VELVET | | | | |
| CONTRACTING | 26,340 | 98 | GRAIN AND PULSE PRODUCE | | | | |
| FREIGHT | 13,535 | 50 | Previous Yr Sales | | | 51,300 | |
| FERTILISER - Product | 113,283 | 420 | Current Yr Sales | | | 51,300 | |
| FERTILISER - Cart and Spread | 9,955 | 37 | Unsold At Year End | | 51,300 | | |
| SEED | 35,220 | 130 | SMALL SEED PRODUCE | | | | |
| CERTIFICATION AND DRESSING | 500 | 2 | Previous Yr Sales | | | | |
| AGRICHEMICAL - Product | 69,174 | 256 | Current Yr Sales | | | | |
| AGRICHEMICAL - Application | 4,360 | 16 | Unsold At Year End | | | | |
| REPAIRS & MAINTENANCE | 22,891 | 85 | MISCELLANEOUS INCOME | | | 44,900 | |
| VEHICLES - Fuels | 18,800 | 70 | | | | | |
| VEHICLES - Repairs and Maintenance | 31,000 | 115 | STOCK PURCHASES | | | | |
| ELECTRICITY | 31,819 | 118 | | Sheep | | | |
| OTHER WORKING EXPS | 5,975 | 22 | | Cattle | | | |
| ADMINISTRATION | 24,700 | 91 | | Deer | | | |
| STANDING CHARGES - Rates | 16,281 | 60 | | Other | | | |
| STANDING CHARGES - Insurance & ACC | 13,424 | 50 | | | | | |
| STANDING CHARGES - Other | 19,420 | 72 | | | | | |
| **CASH FARM WORKING EXPENSES** | **634,204** | 2,348.9 | **CASH FARM INCOME** | | | **1,099,703** | 4,073.0 |
| **EBIT (Earnings Before Interest and Tax)** | **465,499** | 1,724.1 | | | | | |
| DEBT SERVICING | | | | | | | |
| Mortgage | | | | | | | |
| Term Interest | | | | | | | |
| Current Account | 13,318 | 49.3 | | | | | |
| Rent | | | | | | | |
| Other | | | | | | | |
| **CASH OPERATING EXPENSES** | **647,523** | 2,398.2 | **CASH OPERATING INCOME** | | | **1,099,703** | 4,073.0 |
| **CASH OPERATING SURPLUS/DEFICIT** | **452,180** | 1,674.7 | | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | | |
| OTHER PERSONAL | | | | | | | |
| TAXATION | 91,778 | 339.9 | | | | | |
| PLANT REPLACEMENT | 124,400 | 460.7 | INVESTMENT INCOME | | | | |
| INVESTMENTS | | | | | | | |
| UNPAID ACCOUNTS | | | | | | | |
| **TOTAL CASH EXPENDITURE** | **863,701** | 3,198.9 | **TOTAL CASH INCOME** | | | **1,099,703** | 4,073.0 |
| **TOTAL CASH SURPLUS/DEFICIT** | **236,002** | 874.1 | | | | | |
| Change in value of stock on hand | | | | | | | |
| Change in value of produce on hand | | | | | | | |
| Depreciation | | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **236,002** | 874.1 | | | | | |

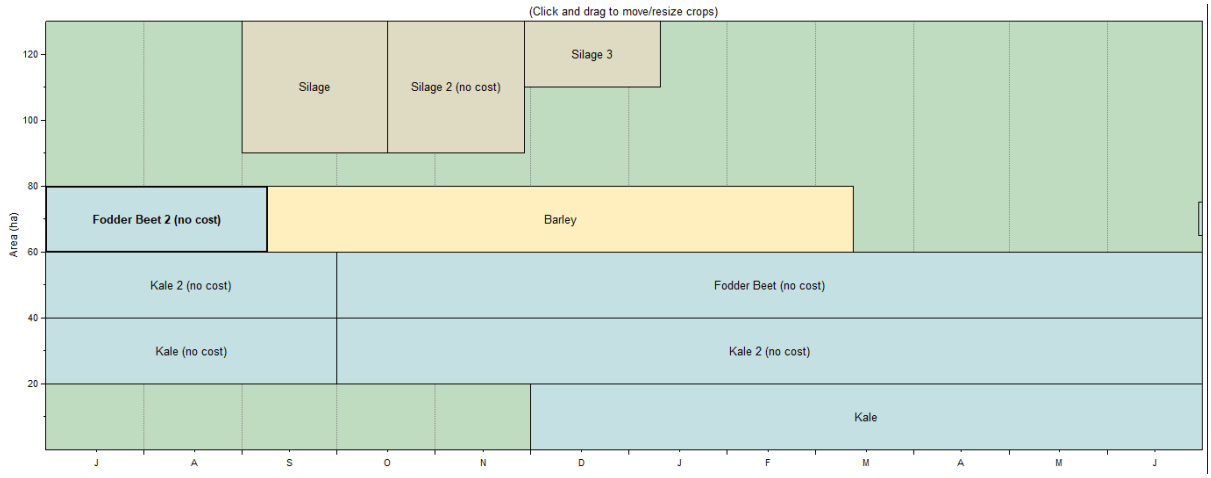
**Farmax Summary**

Pasture Cover

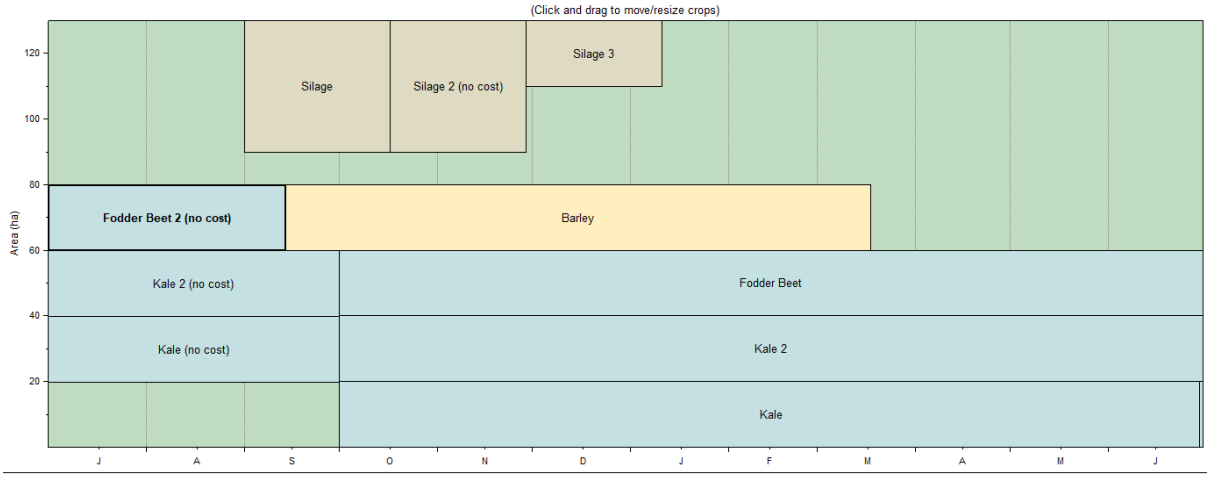



| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,597 | 1,773 | 2,038 | 2,107 | 2,187 | 2,184 | 2,180 | 2,197 | 2,168 | 2,296 | 2,266 | 2,571 | 2,597 |
| Minimum | 261 | 232 | 300 | 1,591 | 1,714 | 1,555 | 1,716 | 1,841 | 1,926 | 1,893 | 1,714 | 46 | |

Crops by Block (Irrigated Block)



## Crops by Block (Dryland Block)




## Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| Kale | 228 | | 2,040 | | 2,040 | 228 |
| Straw | 83.9 | 171 | | | 171 | 83.9 |
| Wheat | | | 260 | 185 | | 75.0 |
| Silage | 42.2 | | 145 | 68.3 | 76.9 | 42.2 |
| **Total** | **354** | **171** | **2,445** | **253** | **2,288** | **429** |

## Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heifer Calves | | | | | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| 1-Year Heifers | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| 2-Year Heifers | 260 | | | | | | | | | | | |
| Cows | | | | | | | | | | | | 2,400 |
| **Total** | **520** | **260** | **260** | **260** | **520** | **520** | **520** | **520** | **520** | **520** | **520** | **2,920** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr - Dairy Support 2_AM2_2035.21

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 1:04PM |
| Model version | 6.3.5 |

## Farm details

N: 7,262 N/ha: 27 P: 42 P/ha: 0.2 GHG/ha: 5,815 NCE: 16%

| | |
|---|---|
| Total area | 270 ha |
| Productive block area | 260.00 ha |
| Nitrogen conversion efficiency (NCE) | 16% |
| N Surplus | 78 kg/ha |
| Region | Canterbury |

| | | | |
|---|---|---|---|
| Total liveweight brought (kg/ha grazed) | 29581 | Total liveweight sold (kg/ha grazed) | 29952 |
| Total liveweight reared (kg/ha grazed) | 918 | Beef / dairy grazing stock rate (RSU) | 3883 |

## 8.9. Appendix 9: Red Meat 1 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 350ha |
| Effective | 340ha |

Irrigated balance:

100% dryland

Stock policy:

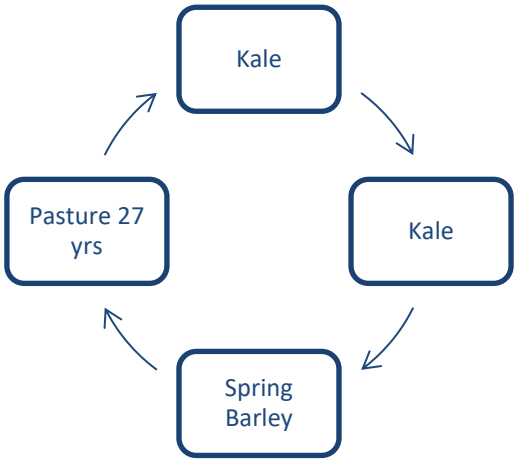
959 breeding ewes lambing 136%, lambing hoggets
574 weaner beef cattle in February/March to finish at 260kg CW before second winter
192 weaner trading deer

Labour Policy:

Waged:
Two full time plus seasonal casual.

Contractors:
Specialist contractors employed for all agricultural tasks including ground work and drilling.

Crop Rotation:

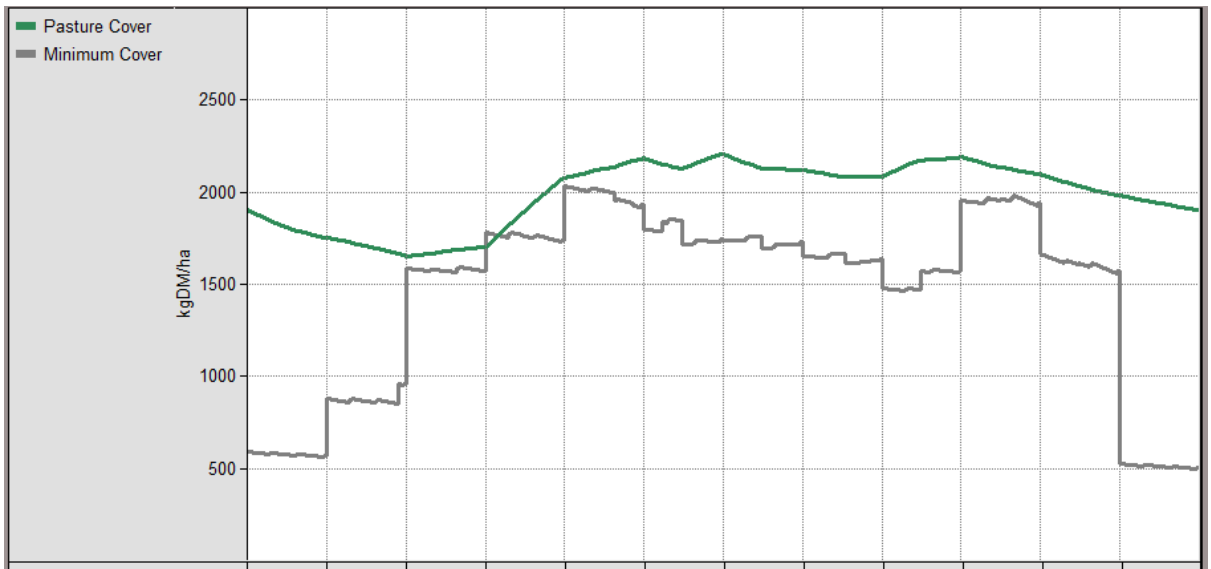


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY 350 Su or Ha | | | | | |
|---|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | | TOTAL $ | Income |
| WAGES | 140,660 | 401.9 | SHEEP | | | 145,494 | |
| VETERINARY AND ANIMAL HEALTH | 19,970 | 57.1 | WOOL | | | 14,443 | |
| STOCKFEED - Grazing | | | CATTLE | | | 764,478 | |
| STOCKFEED - Domestic | 28,100 | 80.3 | MILK | | | | |
| STOCKFEED - Imported | | | DEER | | | 88,825 | |
| OTHER STOCK EXPENSES | 3,951 | 11.3 | VELVET | | | 3,563 | |
| STOCKFEED - Conservation | 46,800 | 133.7 | GRAIN AND PULSE PRODUCE | | | | |
| CONTRACTING | 3,100 | 8.9 | Previous Yr Sales | | | 17,100 | |
| FREIGHT | 8,022 | 22.9 | Current Yr Sales | | | | |
| FERTILISER - Product | 44,027 | 125.8 | Unsold At Year End | | 17,100 | | |
| FERTILISER - Cart and Spread | 9,702 | 27.7 | SMALL SEED PRODUCE | | | | |
| SEED | 5,370 | 15.3 | Previous Yr Sales | | | | |
| CERTIFICATION AND DRESSING | 500 | 1.4 | Current Yr Sales | | | | |
| AGRICHEMICAL - Product | 11,600 | 33.1 | Unsold At Year End | | | | |
| AGRICHEMICAL - Application | 3,080 | 8.8 | MISCELLANEOUS INCOME | | | 8,026 | |
| REPAIRS & MAINTENANCE | 20,000 | 57.1 | | | | | |
| VEHICLES - Fuels | 12,200 | 34.9 | STOCK PURCHASES | | | | |
| VEHICLES - Repairs and Maintenance | 12,000 | 34.3 | | Sheep | | -3,600 | |
| ELECTRICITY | 5,260 | 15.0 | | Cattle | | -370,058 | |
| OTHER WORKING EXPS | 3,500 | 10.0 | | Deer | | -45,427 | |
| ADMINISTRATION | 24,700 | 70.6 | | Other | | | |
| STANDING CHARGES - Rates | 15,750 | 45.0 | | | | | |
| STANDING CHARGES - Insurance & ACC | 10,924 | 31.2 | | | | | |
| STANDING CHARGES - Other | 2,000 | 5.7 | | | | | |
| **CASH FARM WORKING EXPENSES** | **431,215** | 1,232.0 | **CASH FARM INCOME** | | | **622,844** | 1,779.6 |
| **EBIT (Earnings Before Interest and Tax)** | **191,629** | 547.5 | | | | | |
| DEBT SERVICING | | | | | | | |
| Mortgage | | | | | | | |
| Term Interest | | | | | | | |
| Current Account | 9,056 | 25.9 | | | | | |
| Rent | | | | | | | |
| Other | | | | | | | |
| **CASH OPERATING EXPENSES** | **440,271** | 1,257.9 | **CASH OPERATING INCOME** | | | **622,844** | 1,779.6 |
| **CASH OPERATING SURPLUS/DEFICIT** | **182,574** | 521.6 | | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | | |
| OTHER PERSONAL | | | | | | | |
| TAXATION | 40,000 | 114.3 | | | | | |
| PLANT REPLACEMENT | 40,400 | 115.4 | INVESTMENT INCOME | | | | |
| INVESTMENTS | | | | | | | |
| UNPAID ACCOUNTS | | | | | | | |
| **TOTAL CASH EXPENDITURE** | **520,671** | 1,487.6 | **TOTAL CASH INCOME** | | | **622,844** | 1,779.6 |
| **TOTAL CASH SURPLUS/DEFICIT** | **102,174** | 291.9 | | | | | |
| Change in value of stock on hand | | | | | | | |
| Change in value of produce on hand | | | | | | | |
| Depreciation | | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **102,174** | 291.9 | | | | | |

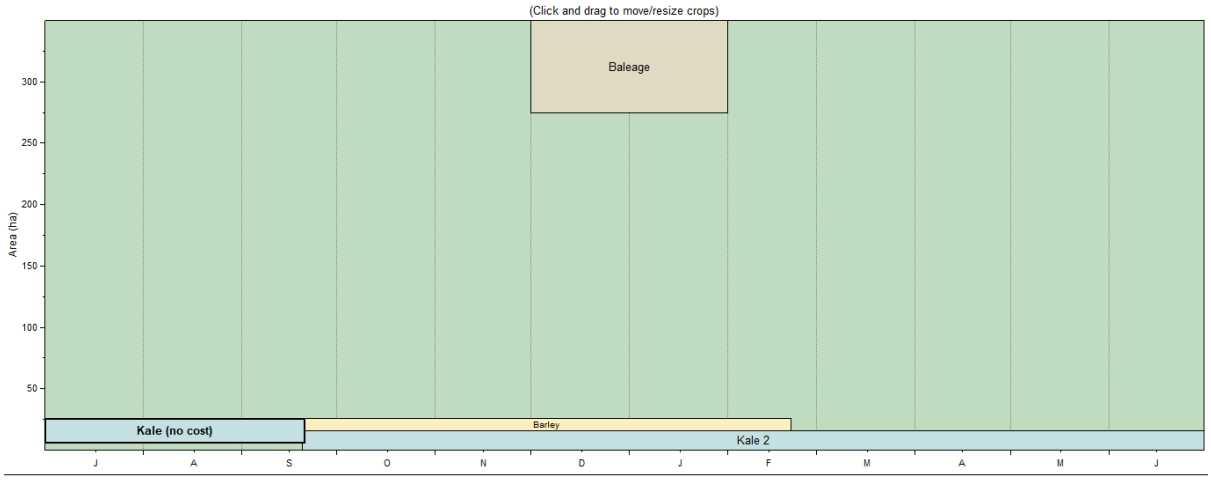
**Farmax Summary**

Pasture Covers




| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 1,902 | 1,752 | 1,650 | 1,704 | 2,077 | 2,184 | 2,208 | 2,120 | 2,085 | 2,189 | 2,099 | 1,981 | 1,901 |
| Minimum | 593 | 570 | 958 | 1,574 | 1,741 | 1,933 | 1,747 | 1,728 | 1,634 | 1,569 | 1,939 | 1,574 | 504 |

Crops by Block




Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| Kale | 90.0 | | 216 | | 120 | 186 |
| Straw | 17.9 | 86.3 | | | 104 | |
| Baleage | 135 | | 225 | | 225 | 135 |
| Barley | 8.50 | | | | 8.50 | |
| Wheat | 55.0 | | 55.0 | 45.0 | | 65.0 |
| **Total** | **306** | **86.3** | **496** | **45.0** | **457** | **386** |

## Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beef Weaners | | | | | | | | | 574 | 574 | 574 | 574 |
| R1 Beef | 574 | 574 | 574 | 574 | 488 | 341 | 256 | 171 | 56 | 15 | | |
| **Total** | **574** | **574** | **574** | **574** | **488** | **341** | **256** | **171** | **630** | **589** | **574** | **574** |

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ewes | 959 | 959 | 949 | 939 | 929 | 827 | 827 | 827 | 827 | 827 | 754 | 958 |
| Ewe Hoggets | 230 | 226 | 216 | 216 | 212 | 212 | 212 | 212 | 208 | 208 | 208 | |
| Ewe Lambs | | | | | 652 | 230 | 230 | 230 | 230 | 230 | 230 | 230 |
| Mixed Lambs | | | | | 847 | 885 | 718 | 320 | | | | |
| Rams | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 13 | 13 | 10 | 10 |
| **Total** | **1,199** | **1,195** | **1,175** | **1,165** | **2,650** | **2,164** | **1,997** | **1,599** | **1,278** | **1,278** | **1,202** | **1,198** |

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Fawns | | | | | | | | 192 | 191 | 191 | 190 | 190 |
| R1 Mixed Deer | 190 | 190 | 63 | | | | | | | | | |
| **Total** | **190** | **190** | **63** | | | | | **192** | **191** | **191** | **190** | **190** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr - Sheep & Beef 1_GMP_2035.21

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 1:38PM |
| Model version | 6.3.5 |

## Farm details

N: 4,704 N/ha: 13 P: 46 P/ha: 0.1 GHG/ha: 4,931 NCE: 16%

| | |
|---|---|
| Total area | 350 ha |
| Productive block area | 340.00 ha |
| Nitrogen conversion efficiency (NCE) | 16% |
| N Surplus | 89 kg/ha |
| Region | Canterbury |

| | |
|---|---|
| Total liveweight brought (kg/ha grazed) | 678 |
| Total liveweight reared (kg/ha grazed) | 529 |
| Total liveweight sold (kg/ha grazed) | 1171 |
| Percent male beef animals | 50 |

| | |
|---|---|
| Beef / dairy grazing stock rate (RSU) | 2496 |
| Deer stock rate (RSU) | 207 |
| Sheep stock rate (RSU) | 1571 |

## 8.10. Appendix 10: Red Meat 2 - Start Point

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 350ha |
| Effective | 340ha |

Irrigated balance:

30% Irrigated with centre pivots
70% dryland

Stock policy:

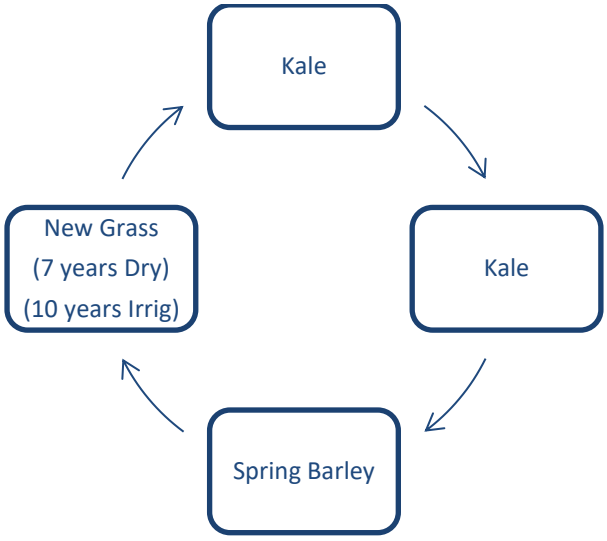
1200 winter trade lambs
3150 summer trade lambs
620 dairy beef cross calves bought at 100kg and finished
250 weaner deer finished

Labour Policy:

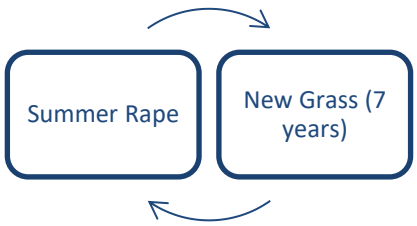
Waged:
Two full time plus casual labour.

Contractors:
Specialist contractors employed for all crop establishment and harvest tasks.

Crop Rotation (Irrigated and Dryland):




Crop Rotation (Dryland):

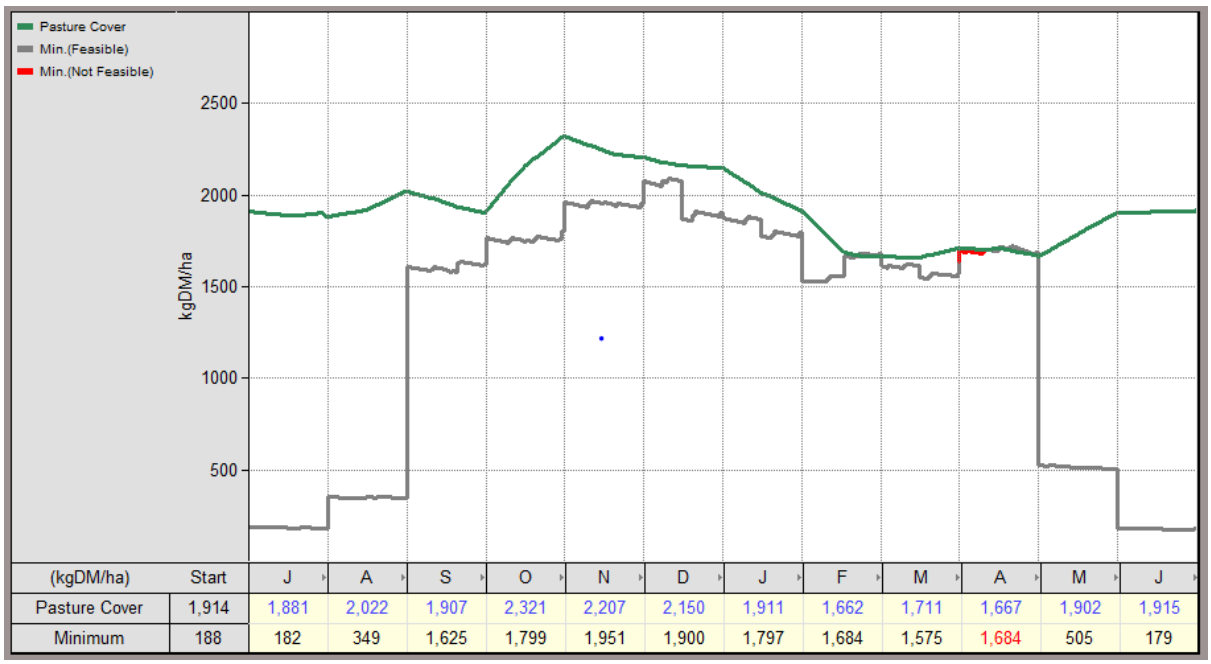


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | BUDGET SUMMARY 350 Su or Ha | | | | | |
|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 138,307 | 395.2 | SHEEP | | 465,370 | |
| VETERINARY AND ANIMAL HEALTH | 38,276 | 109.4 | WOOL | | 6,469 | |
| STOCKFEED - Grazing | | | CATTLE | | 774,180 | |
| STOCKFEED - Domestic | 17,750 | 50.7 | MILK | | | |
| STOCKFEED - Imported | | | DEER | | 115,940 | |
| OTHER STOCK EXPENSES | 3,000 | 8.6 | VELVET | | 4,688 | |
| STOCKFEED - Conservation | 36,816 | 105.2 | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 8,151 | 23.3 | Previous Yr Sales | | 30,020 | |
| FREIGHT | 17,640 | 50.4 | Current Yr Sales | | 30,020 | |
| FERTILISER - Product | 123,845 | 353.8 | Unsold At Year End | 30,020 | | |
| FERTILISER - Cart and Spread | 13,587 | 38.8 | SMALL SEED PRODUCE | | | |
| SEED | 22,097 | 63.1 | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | 500 | 1.4 | Current Yr Sales | | | |
| AGRICHEMICAL - Product | 33,293 | 95.1 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | 8,360 | 23.9 | MISCELLANEOUS INCOME | | 63,676 | |
| REPAIRS & MAINTENANCE | 25,000 | 71.4 | | | | |
| VEHICLES - Fuels | 12,200 | 34.9 | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | 12,000 | 34.3 | | Sheep | -364,150 | |
| ELECTRICITY | 27,009 | 77.2 | | Cattle | -256,060 | |
| OTHER WORKING EXPS | 3,500 | 10.0 | | Deer | -59,150 | |
| ADMINISTRATION | 24,700 | 70.6 | | Other | | |
| STANDING CHARGES - Rates | 18,963 | 54.2 | | | | |
| STANDING CHARGES - Insurance & ACC | 15,424 | 44.1 | | | | |
| STANDING CHARGES - Other | 14,570 | 41.6 | | | | |
| **CASH FARM WORKING EXPENSES** | **614,987** | 1,757.1 | **CASH FARM INCOME** | | **811,003** | 2,317.2 |
| **EBIT (Earnings Before Interest and Tax)** | **196,016** | 560.0 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 12,915 | 36.9 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **627,902** | 1,794.0 | **CASH OPERATING INCOME** | | **811,003** | 2,317.2 |
| **CASH OPERATING SURPLUS/DEFICIT** | **183,101** | 523.1 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 33,000 | 94.3 | | | | |
| PLANT REPLACEMENT | 63,000 | 180.0 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **723,902** | 2,068.3 | **TOTAL CASH INCOME** | | **811,003** | 2,317.2 |
| **TOTAL CASH SURPLUS/DEFICIT** | **87,101** | 248.9 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **87,101** | 248.9 | | | | |

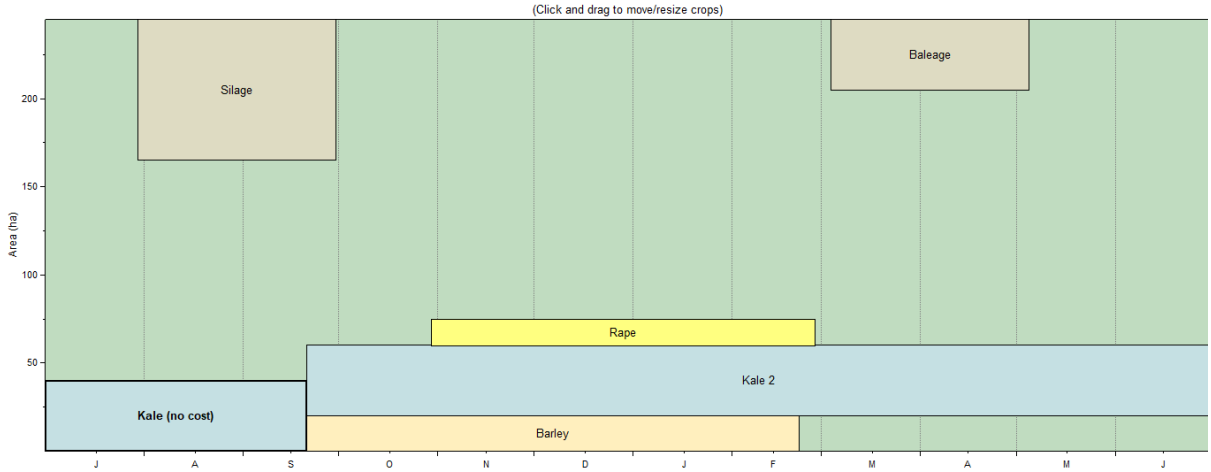
**Farmax Summary**

Pasture Covers

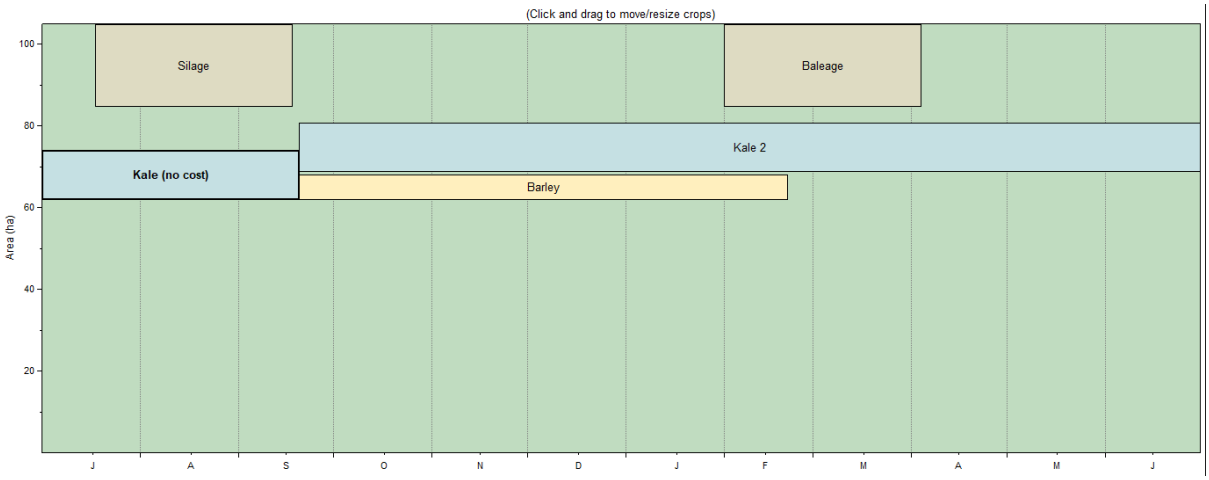



| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 1,914 | 1,881 | 2,022 | 1,907 | 2,321 | 2,207 | 2,150 | 1,911 | 1,662 | 1,711 | 1,667 | 1,902 | 1,915 |
| Minimum | 188 | 182 | 349 | 1,625 | 1,799 | 1,951 | 1,900 | 1,797 | 1,684 | 1,575 | 1,684 | 505 | 179 |

Crops by Block (Dryland)




Crops by Block (Irrigated)




## Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| Kale | | | 568 | | 560 | 8.00 |
| Straw | 29.8 | 52.1 | | | 52.1 | 29.8 |
| Baleage | 135 | | 180 | | 180 | 135 |
| Wheat | | | 158 | 126 | | 32.0 |
| Rape | | | 67.5 | | 67.6 | -0.050 |
| Silage | | | 72.6 | | | 72.6 |
| **Total** | **165** | **52.1** | **1,046** | **126** | **859** | **277** |

## Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beef Weaners | | | | | 620 | 618 | 618 | 616 | 616 | 614 | 614 | 614 |
| R1 Beef | 614 | 614 | 614 | 614 | 522 | 365 | 274 | 183 | 42 | 15 | | |
| **Total** | **614** | **614** | **614** | **614** | **1,142** | **983** | **892** | **799** | **658** | **629** | **614** | **614** |

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Lambs | | | | | 945 | 1,643 | 2,017 | 1,033 | 1,575 | 1,570 | 1,565 | 1,213 |
| Mixed Hoggets | 1,208 | 55 | | | | | | | | | | |
| **Total** | **1,208** | **55** | | | **945** | **1,643** | **2,017** | **1,033** | **1,575** | **1,570** | **1,565** | **1,213** |

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Fawns | | | | | | | | 250 | 249 | 249 | 248 | 248 |
| R1 Mixed Deer | 248 | 248 | 83 | | | | | | | | | |
| **Total** | **248** | **248** | **83** | | | | | **250** | **249** | **249** | **248** | **248** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## Ovr - Sheep & Beef 2_AM2_2035.21

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 27 May 2021, 2:00PM |
| Model version | 6.3.5 |

## Farm details

N: 6,931 N/ha: 19 P: 28 P/ha: 0.1 GHG/ha: 5,001 NCE: 35%

| | |
|---|---|
| Total area | 360 ha |
| Productive block area | 350.00 ha |
| Nitrogen conversion efficiency (NCE) | 35% |
| N Surplus | 82 kg/ha |
| Region | Canterbury |

| | | | |
|---|---|---|---|
| Total liveweight brought (kg/ha grazed) | 633 | Beef / dairy grazing stock rate (RSU) | 3352 |
| Total liveweight reared (kg/ha grazed) | 818 | Deer stock rate (RSU) | 235 |
| Total liveweight sold (kg/ha grazed) | 1626 | Sheep stock rate (RSU) | 755 |
| Percent male beef animals | 50 | | |

## 8.11. Appendix 11: Viticulture

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 22ha |
| Effective | 200ha |

Irrigated balance:

100% irrigated with drip

Labour Policy:

Contractors for all tasks and part managed under contract.

Crop:

15 ha white varieties

5ha red varieties

## Budget Summary

Note this budget is contingent on a local processor establishing in the region to enable savings on freight. If product has to be shipped to Marlborough then freight would become $350/t**.**

| **MACFARLANE RURAL BUSINESS LTD** | | **BUDGET SUMMARY** | | | | |
|---|---|---|---|---|---|---|
| | | **22 Su or Ha** | | | | |
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 162,680 | 7,395 | SHEEP | | | |
| VETERINARY AND ANIMAL HEALTH | | | WOOL | | | |
| STOCKFEED - Grazing | | | CATTLE | | | |
| STOCKFEED - Domestic | | | MILK | | | |
| STOCKFEED - Imported | | | DEER | | | |
| OTHER STOCK EXPENSES | | | VELVET | | | |
| STOCKFEED - Conservation | | | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 14,600 | 664 | Previous Yr Sales | | | |
| FREIGHT | 3,350 | 152 | Current Yr Sales | | 367,750 | |
| FERTILISER - Product | 8,370 | 380 | Unsold At Year End | | | |
| FERTILISER - Cart and Spread | | | SMALL SEED PRODUCE | | | |
| SEED | | | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | | | Current Yr Sales | | | |
| AGRICHEMICAL - Product | 9,300 | 423 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | 12,000 | 545 | MISCELLANEOUS INCOME | | | |
| REPAIRS & MAINTENANCE | 18,000 | 818 | | | | |
| VEHICLES - Fuels | 5,540 | 252 | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | 2,140 | 97 | | Sheep | | |
| ELECTRICITY | 4,600 | 209 | | Cattle | | |
| OTHER WORKING EXPS | 5,000 | 227 | | Deer | | |
| ADMINISTRATION | 19,000 | 864 | | Other | | |
| STANDING CHARGES - Rates | 3,240 | 147 | | | | |
| STANDING CHARGES - Insurance & ACC | 9,230 | 420 | | | | |
| STANDING CHARGES - Other | 3,180 | 145 | | | | |
| **CASH FARM WORKING EXPENSES** | **280,230** | 12,738 | **CASH FARM INCOME** | | **367,750** | 16,716 |
| **EBIT (Earnings Before Interest and Tax)** | **87,520** | 3,978 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 5,885 | 267 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **286,115** | 13,005 | **CASH OPERATING INCOME** | | **367,750** | 16,716 |
| **CASH OPERATING SURPLUS/DEFICIT** | **81,635** | 3,711 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 9,000 | 409 | | | | |
| PLANT REPLACEMENT | 47,000 | 2,136 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **342,115** | 15,551 | **TOTAL CASH INCOME** | | **367,750** | 16,716 |
| **TOTAL CASH SURPLUS/DEFICIT** | **25,635** | 1,165 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **25,635** | 1,165 | | | | |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## ADC - Viticulture, 2021

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 21 Jun 2021, 4:24AM |
| Model version | 6.3.5 |

## Farm details

N: 117 N/ha: 5 P: 1 P/ha: 0.1 GHG/ha: 1,592 NCE: 14%

| | |
|---|---|
| Total area | 22 ha |
| Productive block area | 20.00 ha |
| Nitrogen conversion efficiency (NCE) | 14% |
| N Surplus | 46 kg/ha |
| Region | Canterbury |

## 8.12. Appendix 12: Forestry

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 270ha |
| Effective | 260ha |

Irrigated balance:

100% dryland

Labour Policy:

Contractors for all tasks.

Crop Rotation:

Forestry radiata 28 years repeating.

## Budget Summary

Note there is no provision for income from carbon as it can only be sold once. This forestry is assumed to operate in perpetuity for logging purposes.

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY 260 Su or Ha | | | | |
|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | | | SHEEP | | | |
| VETERINARY AND ANIMAL HEALTH | | | WOOL | | | |
| STOCKFEED - Grazing | | | CATTLE | | | |
| STOCKFEED - Domestic | | | MILK | | | |
| STOCKFEED - Imported | | | DEER | | | |
| OTHER STOCK EXPENSES | 1,500 | 6 | VELVET | | | |
| STOCKFEED - Conservation | | | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 291,974 | 1,123 | Previous Yr Sales | | | |
| FREIGHT | 102,143 | 393 | Current Yr Sales | | | |
| FERTILISER - Product | | | Unsold At Year End | | | |
| FERTILISER - Cart and Spread | | | SMALL SEED PRODUCE | | | |
| SEED | 2,835 | 11 | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | | | Current Yr Sales | | | |
| AGRICHEMICAL - Product | 2,682 | 10 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | 2,088 | 8 | MISCELLANEOUS INCOME | | 574,089 | |
| REPAIRS & MAINTENANCE | | | | | | |
| VEHICLES - Fuels | | | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | | | | Sheep | | |
| ELECTRICITY | | | | Cattle | | |
| OTHER WORKING EXPS | | | | Deer | | |
| ADMINISTRATION | 52,100 | 200 | | Other | | |
| STANDING CHARGES - Rates | 4,860 | 19 | | | | |
| STANDING CHARGES - Insurance & ACC | 12,000 | 46 | | | | |
| STANDING CHARGES - Other | 500 | 2 | | | | |
| **CASH FARM WORKING EXPENSES** | **472,681** | 1,818 | **CASH FARM INCOME** | | **574,089** | 2,208 |
| **EBIT (Earnings Before Interest and Tax)** | **101,408** | 390 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 9,926 | 38 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **482,608** | 1,856 | **CASH OPERATING INCOME** | | **574,089** | 2,208 |
| **CASH OPERATING SURPLUS/DEFICIT** | **91,482** | 352 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 25,000 | 96 | | | | |
| PLANT REPLACEMENT | | | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **507,608** | 1,952 | **TOTAL CASH INCOME** | | **574,089** | 2,208 |
| **TOTAL CASH SURPLUS/DEFICIT** | **66,482** | 256 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **66,482** | 256 | | | | |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## ADC - Forestry

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 21 Jun 2021, 2:20AM |
| Model version | 6.3.5 |

## Farm details

N: 751 N/ha: 2 P: 42 P/ha: 0.1 GHG/ha: X NCE: -

| | |
|---|---|
| Total area | 310 ha |
| Productive block area | 0 ha |
| Nitrogen conversion efficiency (NCE) | - |
| N Surplus | 2 kg/ha |
| Region | Canterbury |

## 8.13. Appendix 13: Arable 5 - Forecast

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 320ha |
| Effective | 300ha |

Irrigated balance:

100% Irrigated with centre pivots

Stock policy:

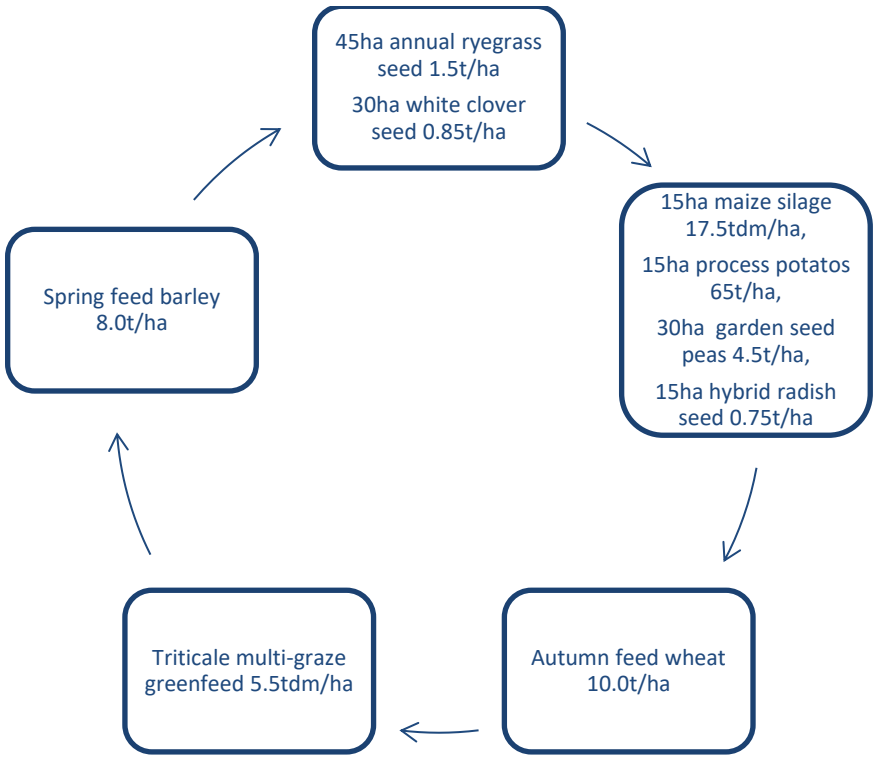
350 winter trade lambs

Labour Policy:

Waged:

Three full time plus casual labour, most of required machinery is owned to undertake farm activities.

Crop Rotation:

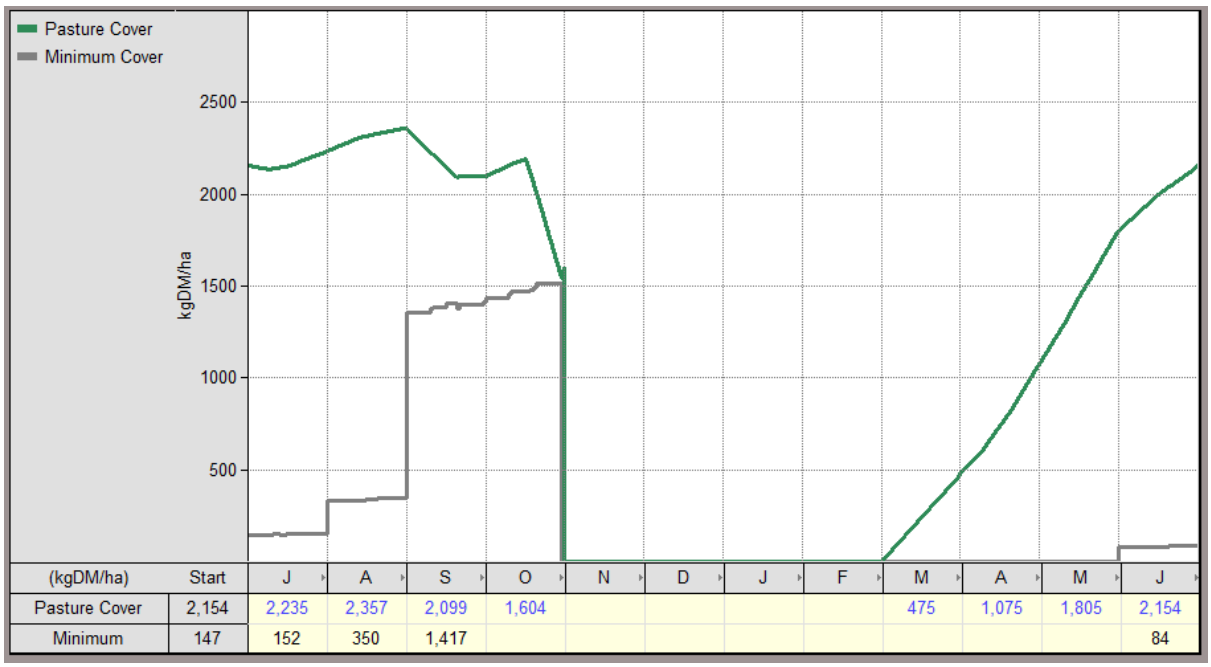


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY 320 Su or Ha | | | | |
|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 251,938 | 787 | SHEEP | | 508,640 | |
| VETERINARY AND ANIMAL HEALTH | 10,500 | 33 | WOOL | | 23,625 | |
| STOCKFEED - Grazing | | | CATTLE | | | |
| STOCKFEED - Domestic | | | MILK | | | |
| STOCKFEED - Imported | | | DEER | | | |
| OTHER STOCK EXPENSES | 1,500 | 5 | VELVET | | | |
| STOCKFEED - Conservation | 15,000 | 47 | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 51,078 | 160 | Previous Yr Sales | | | |
| FREIGHT | 46,652 | 146 | Current Yr Sales | | 957,375 | |
| FERTILISER - Product | 120,899 | 378 | Unsold At Year End | | | |
| FERTILISER - Cart and Spread | 42,057 | 131 | SMALL SEED PRODUCE | | | |
| SEED | 117,975 | 369 | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | 50,699 | 158 | Current Yr Sales | | 412,125 | |
| AGRICHEMICAL - Product | 220,474 | 689 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | | | MISCELLANEOUS INCOME | | 45,000 | |
| REPAIRS & MAINTENANCE | 54,300 | 170 | | | | |
| VEHICLES - Fuels | 81,500 | 255 | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | 26,000 | 81 | | Sheep | -319,725 | |
| ELECTRICITY | 63,400 | 198 | | Cattle | | |
| OTHER WORKING EXPS | 25,410 | 79 | | Deer | | |
| ADMINISTRATION | 32,740 | 102 | | Other | | |
| STANDING CHARGES - Rates | 6,912 | 22 | | | | |
| STANDING CHARGES - Insurance & ACC | 19,730 | 62 | | | | |
| STANDING CHARGES - Other | 40,600 | 127 | | | | |
| **CASH FARM WORKING EXPENSES** | **1,279,363** | 3,998 | **CASH FARM INCOME** | | **1,627,040** | 5,085 |
| **EBIT (Earnings Before Interest and Tax)** | **347,677** | 1,086 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 26,867 | 84 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **1,306,230** | 4,082 | **CASH OPERATING INCOME** | | **1,627,040** | 5,085 |
| **CASH OPERATING SURPLUS/DEFICIT** | **320,810** | 1,003 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | | | | | | |
| PLANT REPLACEMENT | 240,000 | 750 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **1,546,230** | 4,832 | **TOTAL CASH INCOME** | | **1,627,040** | 5,085 |
| **TOTAL CASH SURPLUS/DEFICIT** | **80,810** | 253 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **80,810** | 253 | | | | |

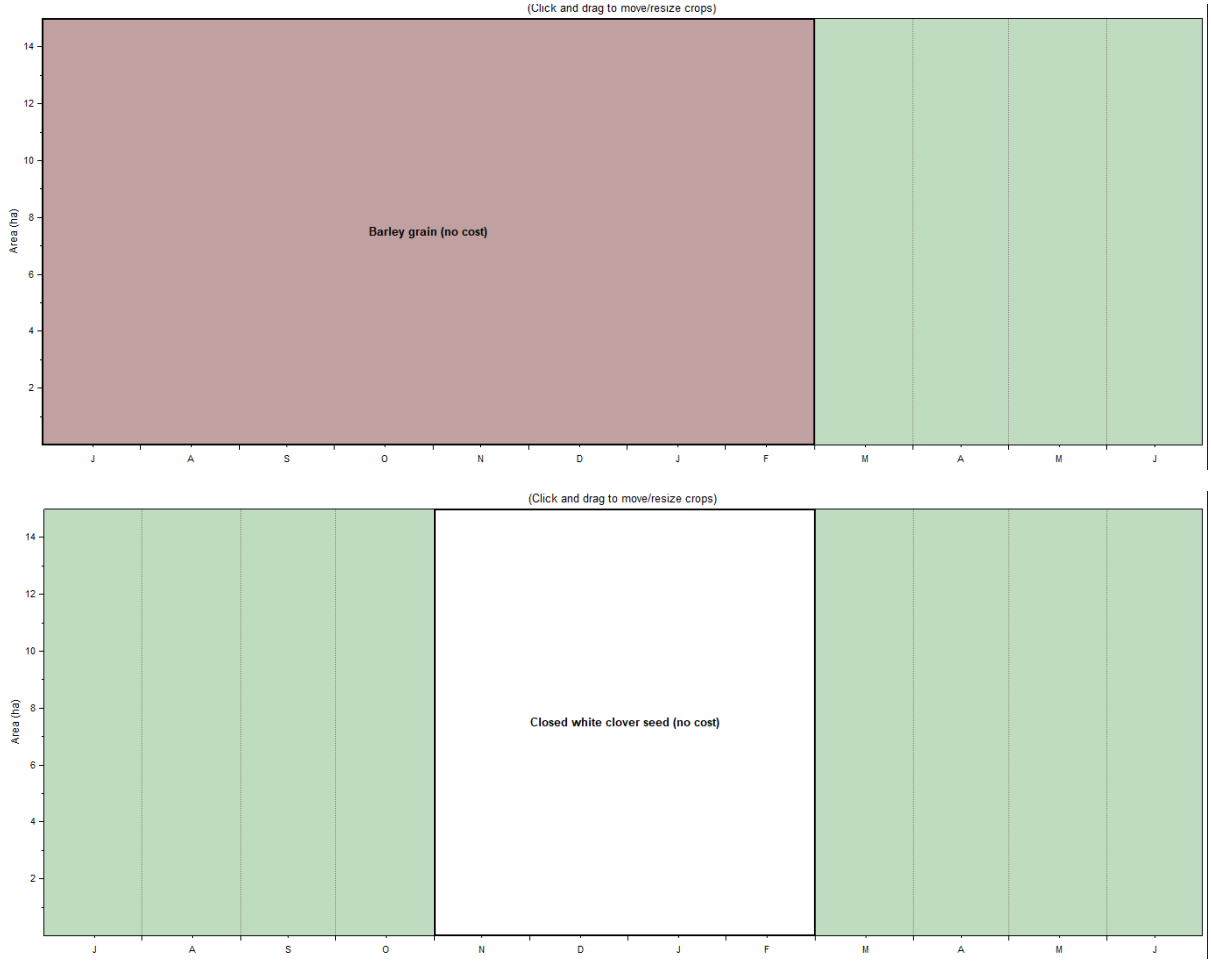
**Farmax Summary**

Pasture Covers

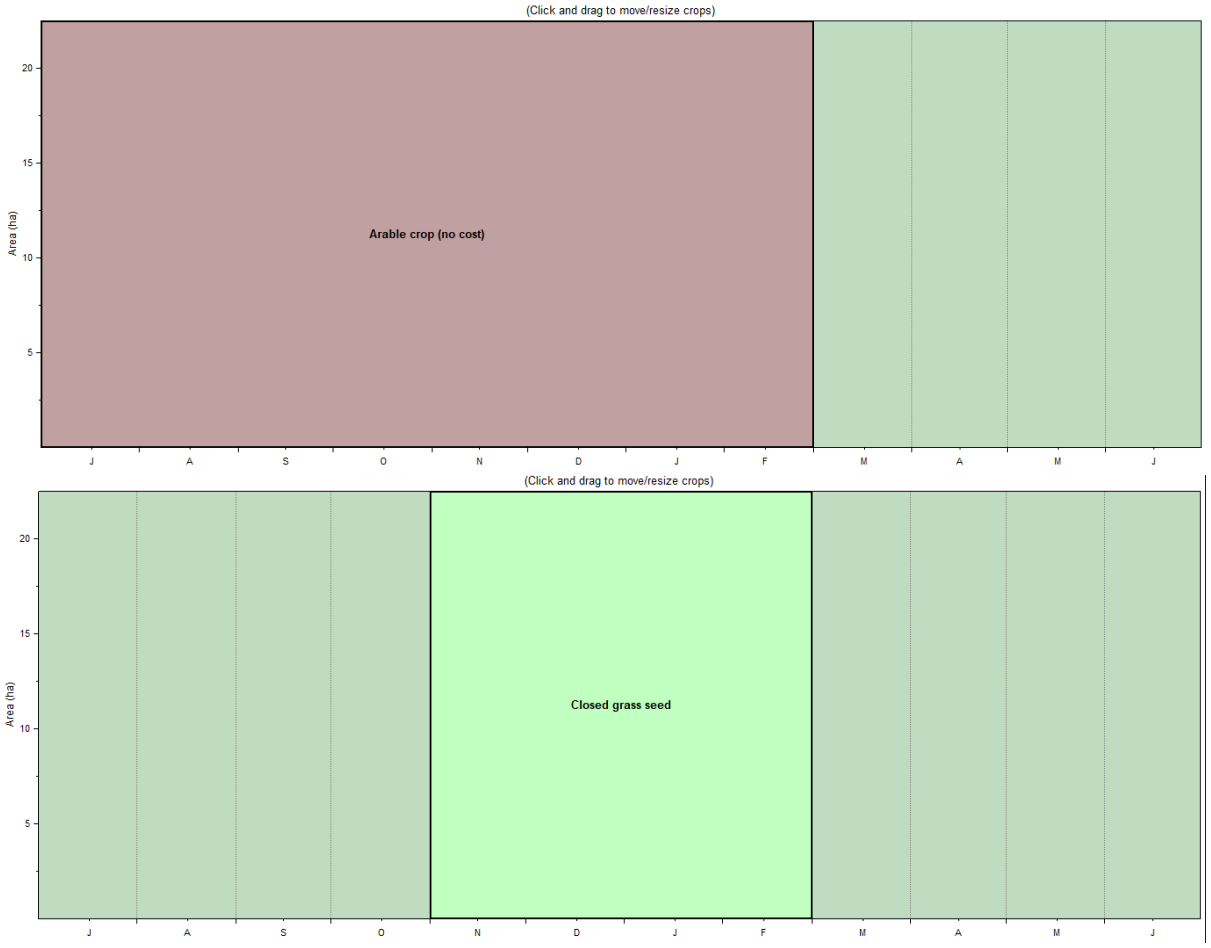



| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,154 | 2,235 | 2,357 | 2,099 | 1,604 | | | | | 475 | 1,075 | 1,805 | 2,154 |
| Minimum | 147 | 152 | 350 | 1,417 | | | | | | | | | 84 |

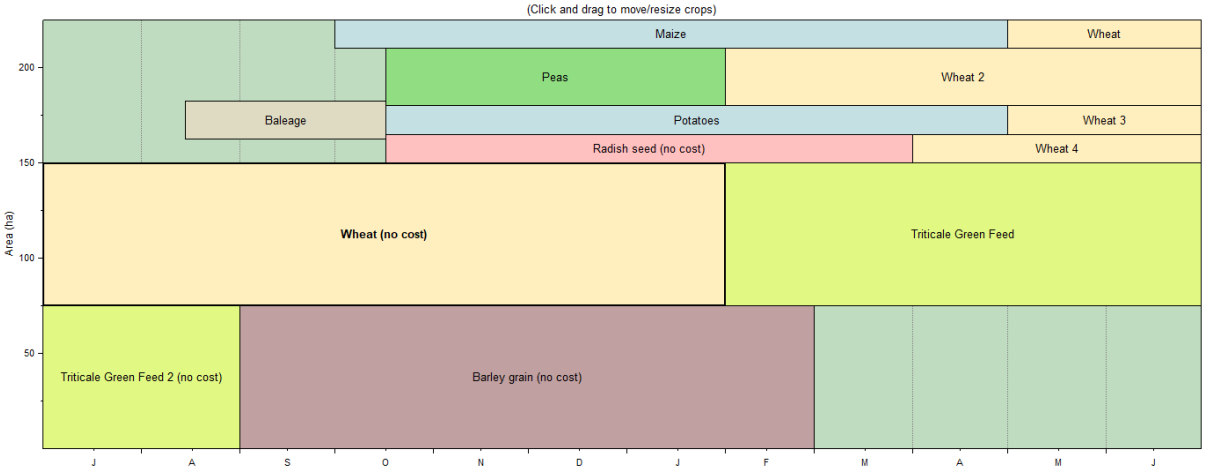
Crops by Block (Clover Seed)



## Crops by Block (Post Grass Seed Block)




## Crops by Block (Main Crop Block)




## Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| Wheat grain | | | 900 | | | 900 |
| Rape | 156 | | | | | 156 |
| Peas - Seed | | | | | | |
| Maize | | | | | | |
| Greenfeed Oats | 150 | | | | | 150 |
| Grass Seed | | | 22.5 | | | 22.5 |
| Triticale Green Feed | | | 413 | | 413 | -0.50 |
| White clover seed | | | 13.5 | | | 13.5 |
| Radish seed | | | | | | |
| Barley grain | | | | | | |
| Baleage | | | 59.8 | | | 59.8 |
| **Total** | **306** | **0.00** | **1,408** | **0.00** | **413** | **1,301** |

Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Lambs | | | | | | | | | | | 3,480 | 3,460 |
| Mixed Hoggets | 3,440 | 3,420 | 2,321 | | | | | | | | | |
| **Total** | **3,440** | **3,420** | **2,321** | | | | | | | | **3,480** | **3,460** |

## Overseer Summaries

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

### ADC-Arable 5-NPS

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 21 Jun 2021, 4:36AM |
| Model version | 6.3.5 |

### Farm details

N: 5,032 N/ha: 16 P: 148 P/ha: 0.5 GHG/ha: 3,435 NCE: 65%

| | |
|---|---|
| Total area | 320 ha |
| Productive block area | 300.00 ha |
| Nitrogen conversion efficiency (NCE) | 65% |
| N Surplus | 53 kg/ha |
| Region | Canterbury |
| Sheep stock rate (RSU) | 1084 |

## 8.14. Appendix 14: Dairy 4 - Forecast

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 220ha |
| Effective | 210ha |

Irrigated balance:

100% Irrigated with centre pivots

Stock policy:

581 peak cows
2.8 cows/ha
600kgMS/cow
Winter barn in use with cows fed indoors from 1 April to 1 September. Cull cows sold in March and April to provide room for the replacement heifers to arrive on 1 April.

Labour Policy:

Waged:
Four full time plus casual labour over calf rearing.

Contractors:
Specialist contractors employed for all cultivation, drilling and forage making or freight.

Crop Rotation:

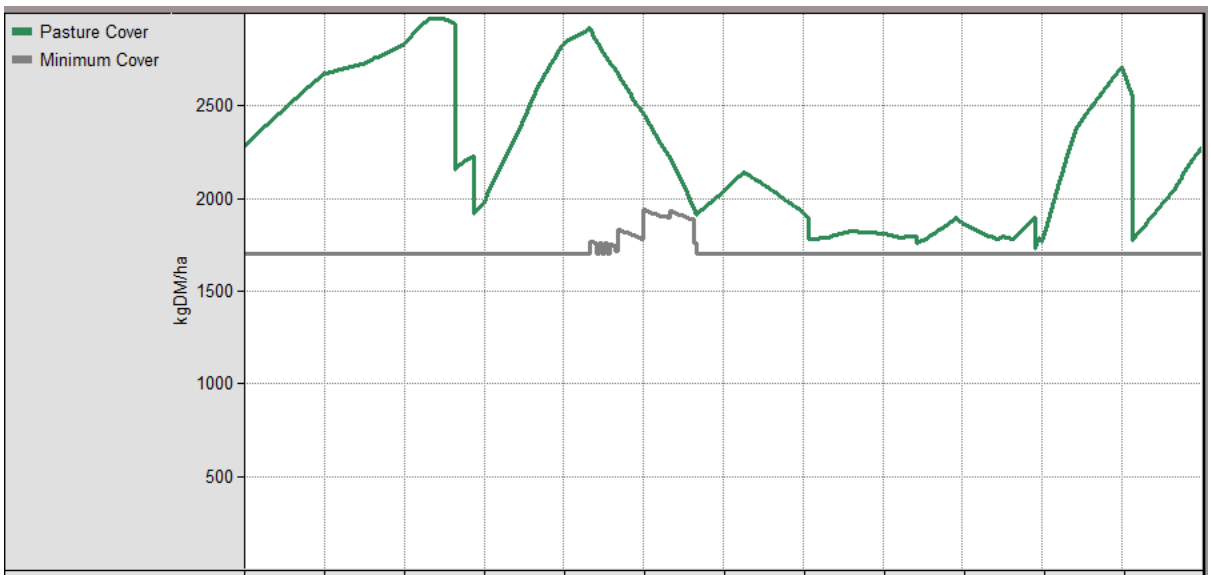
Regrassing only (no forage or feed crops grown). All grasses are Italian and plantain pasture so there is high winter growth to try and manage leaching risk further.

## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY | | | | |
|---|---|---|---|---|---|---|
| | | 220 Su or Ha | | | | |
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 248,700 | 1,130.5 | SHEEP | | | |
| VETERINARY AND ANIMAL HEALTH | 146,896 | 667.7 | WOOL | | | |
| STOCKFEED - Grazing | 102,938 | 467.9 | CATTLE | | 114,195 | |
| STOCKFEED - Domestic | 605,778 | 2,753.5 | GRAZING | | | |
| STOCKFEED - Imported | | | MILK | | 2,420,902 | |
| OTHER STOCK EXPENSES | 14,400 | 65.5 | DEER | | | |
| STOCKFEED - Conservation | 190,000 | 863.6 | VELVET | | | |
| CONTRACTING | 4,760 | 21.6 | GRAIN AND PULSE PRODUCE | | | |
| FREIGHT | 3,308 | 15.0 | Previous Yr Sales | | | |
| FERTILISER - Product | 141,275 | 642.2 | Current Yr Sales | | | |
| FERTILISER - Cart and Spread | 23,524 | 106.9 | Unsold At Year End | | | |
| SEED | 8,568 | 38.9 | SMALL SEED PRODUCE | | | |
| CERTIFICATION AND DRESSING | 500 | 2.3 | Previous Yr Sales | | | |
| AGRICHEMICAL - Product | 6,862 | 31.2 | Current Yr Sales | | | |
| AGRICHEMICAL - Application | 2,992 | 13.6 | Unsold At Year End | | | |
| REPAIRS & MAINTENANCE | 126,200 | 573.6 | MISCELLANEOUS INCOME | | 5,800 | |
| VEHICLES - Fuels | 42,000 | 190.9 | | | | |
| VEHICLES - Repairs and Maintenance | 46,400 | 210.9 | STOCK PURCHASES | | | |
| ELECTRICITY | 67,260 | 305.7 | | Sheep | | |
| OTHER WORKING EXPS | 10,360 | 47.1 | | Cattle | -21,600 | |
| ADMINISTRATION | 25,935 | 117.9 | | Deer | | |
| STANDING CHARGES - Rates | 17,160 | 78.0 | | Other | | |
| STANDING CHARGES - Insurance & ACC | 62,680 | 284.9 | | | | |
| STANDING CHARGES - Other | 48,756 | 221.6 | | | | |
| **CASH FARM WORKING EXPENSES** | **1,947,251** | 8,851.1 | **CASH FARM INCOME** | | **2,519,297** | 11,451.3 |
| **EBIT (Earnings Before Interest and Tax)** | **572,046** | 2,600.2 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 40,892 | 185.9 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **1,988,143** | 9,037.0 | **CASH OPERATING INCOME** | | **2,519,297** | 11,451.3 |
| **CASH OPERATING SURPLUS/DEFICIT** | **531,153** | 2,414.3 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 84,000 | 381.8 | | | | |
| PLANT REPLACEMENT | 229,500 | 1,043.2 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **2,301,643** | 10,462.0 | **TOTAL CASH INCOME** | | **2,519,297** | 11,451.3 |
| **TOTAL CASH SURPLUS/DEFICIT** | **217,653** | 989.3 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **217,653** | 989.3 | | | | |

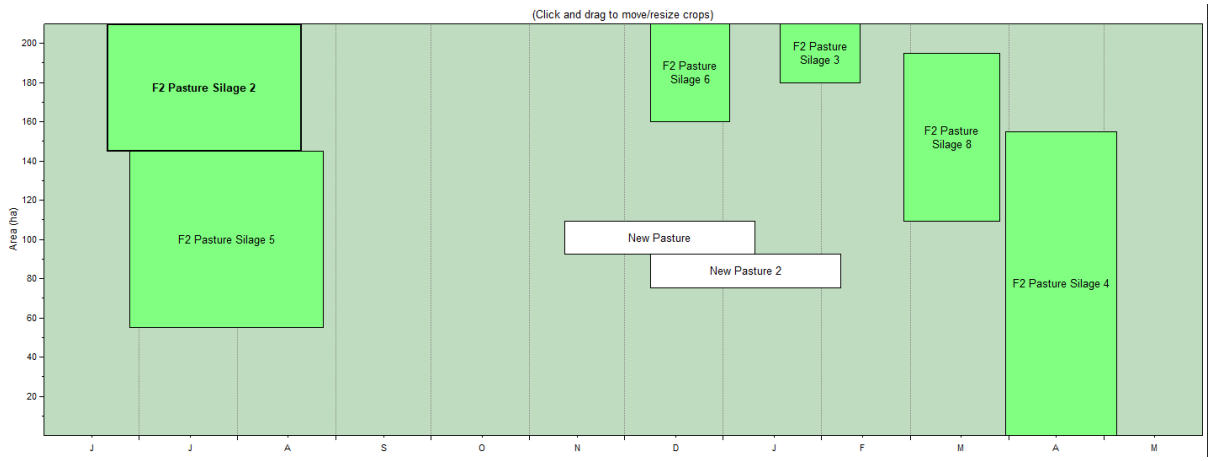
**Farmax Summary**

Pasture Covers




| (kgDM/ha) | Start | J | J | A | S | O | N | D | J | F | M | A | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,278 | 2,674 | 2,831 | 1,976 | 2,836 | 2,460 | 2,035 | 1,927 | 1,811 | 1,865 | 1,764 | 2,710 | 2,278 |
| Minimum | | | 3 | 224 | 414 | 1,782 | 991 | 988 | 1,025 | 1,008 | 636 | 166 | 324 |

Crops by Block




Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| F1 Meal and Grains bought | | 1,009 | | | 1,009 | |
| F2 Pasture Silage | 600 | | 951 | | 953 | 599 |
| New Pasture | | | | | | |
| F3 Maize/barley Silage bought | | 641 | | | 641 | |
| **Total** | **600** | **1,650** | **951** | **0.00** | **2,603** | **599** |

Stock Numbers by Month

| Mob | 30 Jun | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cows at home | 600 | 598 | 586 | 581 | 581 | 581 | 581 | 579 | 579 | 579 | 458 | 458 |
| Cows Grazing | | | | | | | | | | | | |
| 2011 Born Heifers at Home | | | | | | | | | | | 135 | 135 |
| 2011 Born Heifers Grazing | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 | | |
| 2012 Born Heifers Grazing | | | | | | | 135 | 135 | 135 | 135 | 135 | 135 |
| 2012 Born Heifers at Home | | 11 | 135 | 135 | 135 | 135 | | | | | | |
| Bobby Calves | | 7 | 64 | 8 | | | | | | | | |
| **Total** | **735** | **751** | **920** | **859** | **851** | **851** | **851** | **849** | **849** | **849** | **728** | **728** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## ADC-Dairy4-NPS

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 21 Jun 2021, 2:20PM |
| Model version | 6.3.5 |

## Farm details

N: 2,534 N/ha: 12 P: 102 P/ha: 0.5 GHG/ha: 22,783 NCE: 39%

| | |
|---|---|
| Total area | 215 ha |
| Productive block area | 210.00 ha |
| Nitrogen conversion efficiency (NCE) | 39% |
| N Surplus | 213 kg/ha |
| Region | Canterbury |

| | | | |
|---|---|---|---|
| Total liveweight brought (kg/ha grazed) | 407 | Milk solids (kg/ha grazed) | 2221 |
| Total liveweight reared (kg/ha grazed) | 118 | Milking herd size (peak cows/ha grazed) | 3.4 |
| Total liveweight sold (kg/ha grazed) | 489 | Dairy stock rate (RSU) | 8113 |
| Default calving date | 06 August | Dairy replacements stock rate (RSU) | 193 |
| Milk production per cow (kg milk solids / cow) | 651.4 | | |

## 8.15. Appendix 15: Dairy Support 4 - Forecast

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 270ha |
| Effective | 260ha |

Irrigated balance:

100% Irrigated with centre pivots

Stock policy:

600 R1 dairy grazing heifers

600 R2 IC dairy grazing heifer (depart 1 April to winter in the barn as an R2 at the dairy farm)

Feeding maize silage over summer to balance surplus protein from pasture.

All cattle wintered in a straw based barn from 1 April to 1 September.

Labour Policy:

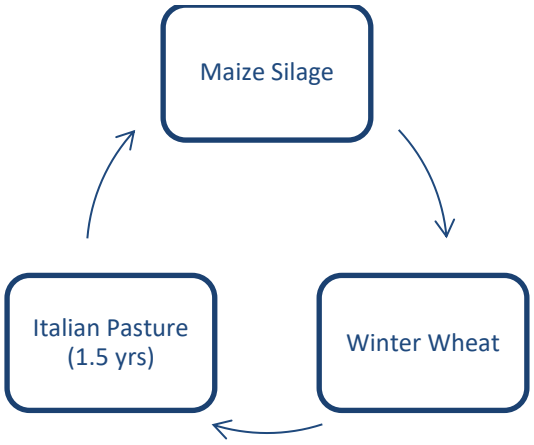
Waged:

Two full time plus casual labour, completing cultivation and drilling of wheat and grass but not maize.

Contractors:

Specialist contractors employed for all silage making and manure spreading.

Crop Rotation:

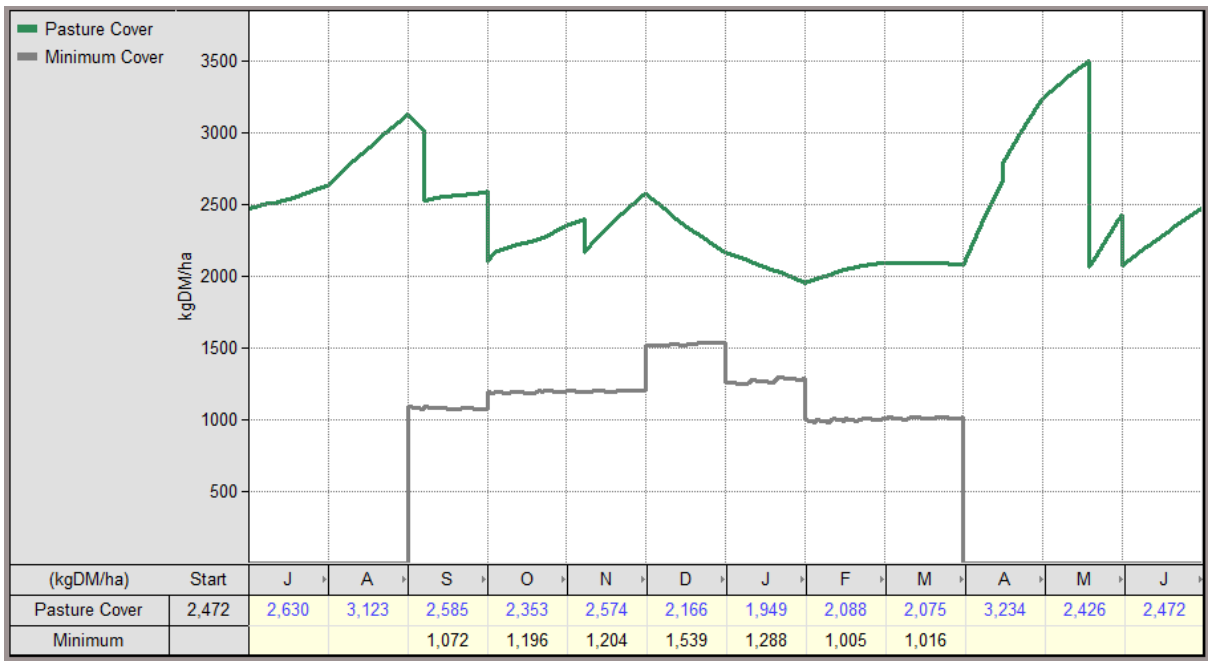


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | | BUDGET SUMMARY 270 Su or Ha | | | | |
|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 127,000 | 470.4 | GRAZING | | 452,215 | |
| VETERINARY AND ANIMAL HEALTH | 9,105 | 33.7 | SHEEP | | | |
| STOCKFEED - Grazing | | | WOOL | | | |
| STOCKFEED - Domestic | | | CATTLE | | | |
| STOCKFEED - Imported | | | MILK | | | |
| OTHER STOCK EXPENSES | | | DEER | | | |
| STOCKFEED - Conservation | 102,760 | 380.6 | VELVET | | | |
| CONTRACTING | 43,700 | 161.9 | GRAIN AND PULSE PRODUCE | | | |
| FREIGHT | 19,620 | 72.7 | Previous Yr Sales | | | |
| FERTILISER - Product | 80,845 | 299.4 | Current Yr Sales | | 536,580 | |
| FERTILISER - Cart and Spread | 18,176 | 67.3 | Unsold At Year End | | | |
| SEED | 83,764 | 310.2 | SMALL SEED PRODUCE | | | |
| CERTIFICATION AND DRESSING | 500 | 1.9 | Previous Yr Sales | | | |
| AGRICHEMICAL - Product | 56,354 | 208.7 | Current Yr Sales | | | |
| AGRICHEMICAL - Application | 30,822 | 114.2 | Unsold At Year End | | | |
| REPAIRS & MAINTENANCE | 44,500 | 164.8 | MISCELLANEOUS INCOME | | 26,880 | |
| VEHICLES - Fuels | 33,973 | 125.8 | | | | |
| VEHICLES - Repairs and Maintenance | 20,500 | 75.9 | STOCK PURCHASES | | | |
| ELECTRICITY | 58,480 | 216.6 | | Sheep | | |
| OTHER WORKING EXPS | 3,500 | 13.0 | | Cattle | | |
| ADMINISTRATION | 24,900 | 92.2 | | Deer | | |
| STANDING CHARGES - Rates | 7,020 | 26.0 | | Other | | |
| STANDING CHARGES - Insurance & ACC | 21,346 | 79.1 | | | | |
| STANDING CHARGES - Other | 23,950 | 88.7 | | | | |
| **CASH FARM WORKING EXPENSES** | **810,815** | 3,003.0 | **CASH FARM INCOME** | | **1,015,675** | 3,761.8 |
| **EBIT (Earnings Before Interest and Tax)** | **204,860** | 758.7 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 17,027 | 63.1 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **827,842** | 3,066.1 | **CASH OPERATING INCOME** | | **1,015,675** | 3,761.8 |
| **CASH OPERATING SURPLUS/DEFICIT** | **187,833** | 695.7 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 16,000 | 59.3 | | | | |
| PLANT REPLACEMENT | 129,000 | 477.8 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **972,842** | 3,603.1 | **TOTAL CASH INCOME** | | **1,015,675** | 3,761.8 |
| **TOTAL CASH SURPLUS/DEFICIT** | **42,833** | 158.6 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **42,833** | 158.6 | | | | |

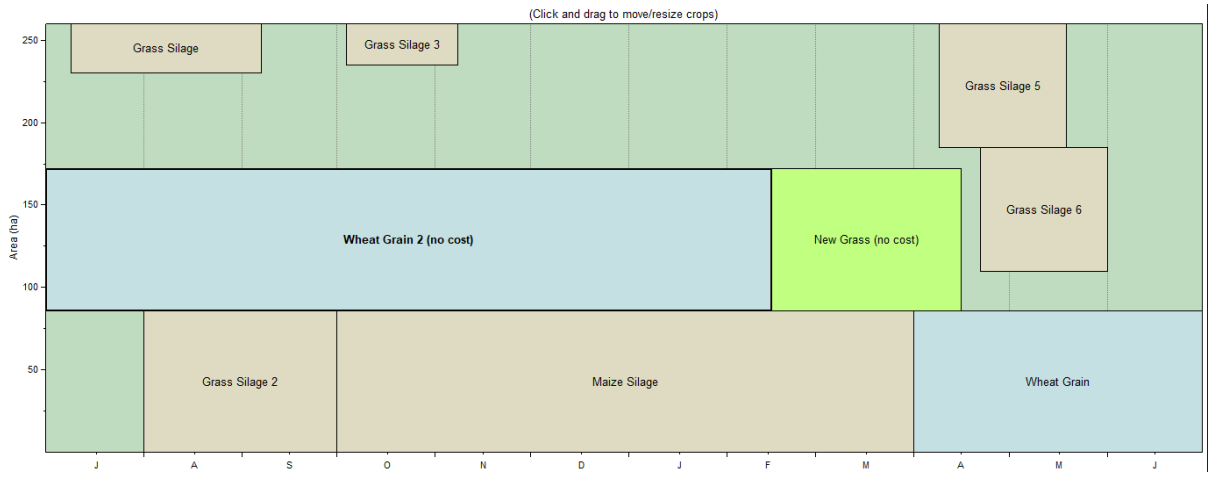
**Farmax Summary**

Pasture Covers




| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,472 | 2,630 | 3,123 | 2,585 | 2,353 | 2,574 | 2,166 | 1,949 | 2,088 | 2,075 | 3,234 | 2,426 | 2,472 |
| Minimum | | | | 1,072 | 1,196 | 1,204 | 1,539 | 1,288 | 1,005 | 1,016 | | | |

Crops by Block




Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| Grass Silage | 189 | | 582 | | 574 | 197 |
| Maize Silage | 163 | | 1,548 | | 262 | 1,449 |
| Wheat Grain | | | 832 | | 303 | 530 |
| New Grass | | | | | | |
| **Total** | **352** | **0.00** | **2,962** | **0.00** | **1,139** | **2,176** |

Stock Numbers by Month

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heifer Calves | | | | | | 607 | 607 | 607 | 607 | 607 | 607 | 607 |
| 1-Year Heifers | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 577 | 577 | | | |
| **Total** | **607** | **607** | **607** | **607** | **607** | **1,214** | **1,214** | **1,184** | **1,184** | **607** | **607** | **607** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## ADC-Dairy Support 4-NPS

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 21 Jun 2021, 12:43PM |
| Model version | 6.3.5 |

## Farm details

N: 6,432 N/ha: 24 P: 21 P/ha: 0.1 GHG/ha: 7,201 NCE: 108%

| | |
|---|---|
| Total area | 270 ha |
| Productive block area | 260.00 ha |
| Nitrogen conversion efficiency (NCE) | 108% |
| N Surplus | -10 kg/ha |
| Region | Canterbury |

| | |
|---|---|
| Dairy grazing stock rate (RSU) | 3332 |

## 8.16. Appendix 16: Red Meat 3 - Forecast

**Farm System Summary**

Area:

| | |
|---|---|
| Total | 360ha |
| Effective | 350ha |

Irrigated balance:

50% Irrigated with centre pivots
50% dryland

Stock policy:

200 Dairy based Friesian bulls purchased at 100kg and finished before second winter.
250 head of angus weaner steers bought in March and sold as forward stores to Five Star the following December.
400 Dairy cross beef steers and heifers bought at 100kg as weaners and finished (mostly) before the second winter.
250 R2 steers wintered.
750 weaner deer traded.
2500 summer traded lambs.
2800 winter traded lambs.
All cattle in winter barn from 1 April to 1 September.

Feeds:

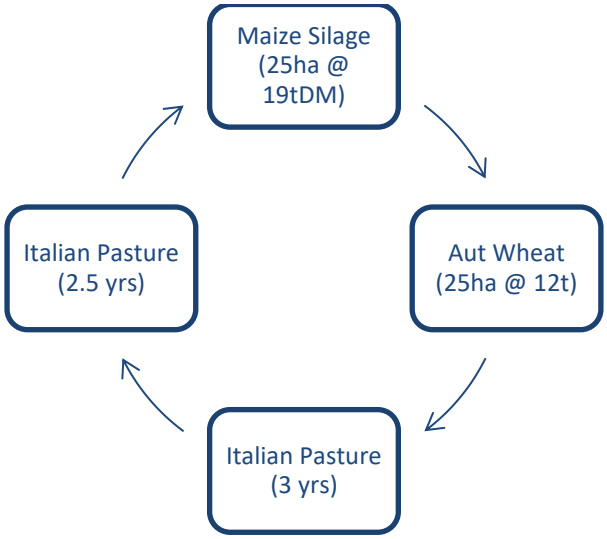
Maize silage fed as 25% of diet over summer period to balance the surplus pasture protein.
Wheat grain and barley silage fed over winter in feed barn (straw bedding).
All straw from wheat is retained for shed bedding.

Labour Policy:

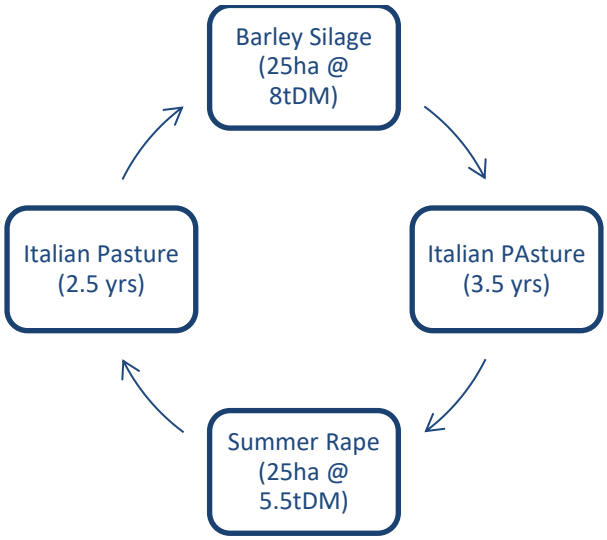
Waged:
Four full time plus casual labour over calf rearing.

Contractors:
Specialist contractors employed for all cultivation, drilling and forage making or freight.
Solid manure spread by contractors with spreader wagon.

Crop Rotation (Irrigated):




Crop Rotation (Dryland):

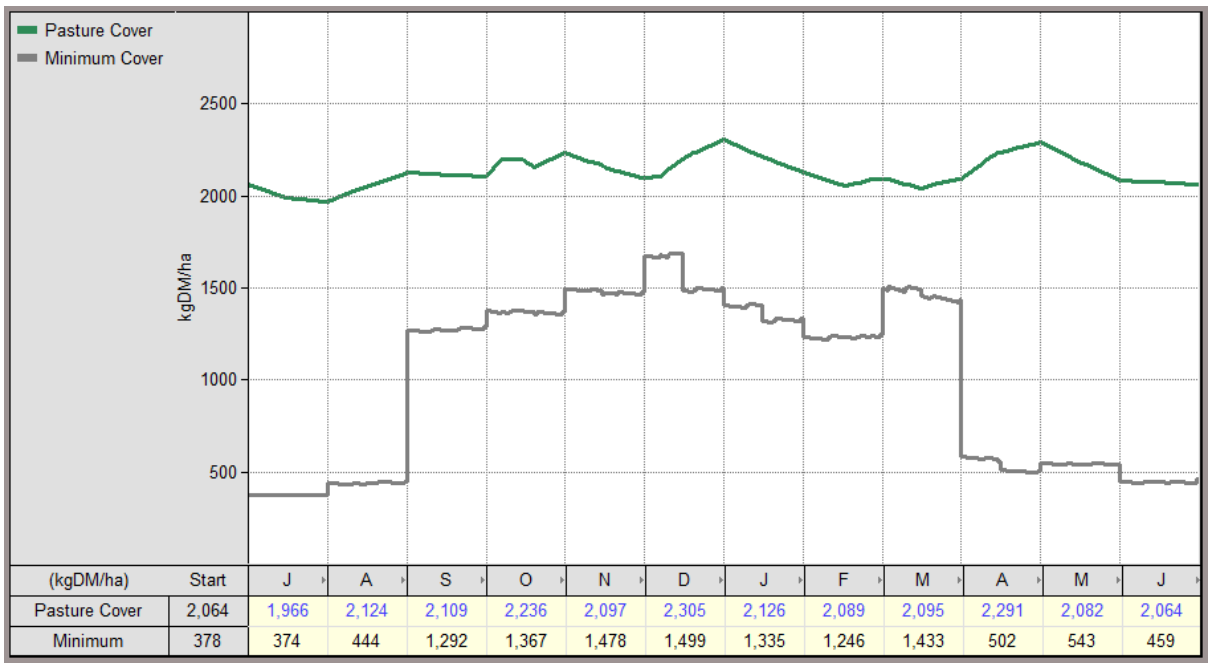


## Budget Summary

| MACFARLANE RURAL BUSINESS LTD | BUDGET SUMMARY 360 Su or Ha | | | | | |
|---|---|---|---|---|---|---|
| | TOTAL $ | Income | | | TOTAL $ | Income |
| WAGES | 167,089 | 464.1 | SHEEP | | 626,586 | |
| VETERINARY AND ANIMAL HEALTH | 59,143 | 164.3 | WOOL | | 21,465 | |
| STOCKFEED - Grazing | | | CATTLE | | 1,626,349 | |
| STOCKFEED - Domestic | 26,644 | 74.0 | MILK | | | |
| STOCKFEED - Imported | | | DEER | | 358,046 | |
| OTHER STOCK EXPENSES | 4,959 | 13.8 | VELVET | | 9,219 | |
| STOCKFEED - Conservation | 151,020 | 419.5 | GRAIN AND PULSE PRODUCE | | | |
| CONTRACTING | 52,125 | 144.8 | Previous Yr Sales | | | |
| FREIGHT | 38,128 | 105.9 | Current Yr Sales | | | |
| FERTILISER - Product | 128,191 | 356.1 | Unsold At Year End | | | |
| FERTILISER - Cart and Spread | 21,128 | 58.7 | SMALL SEED PRODUCE | | | |
| SEED | 48,100 | 133.6 | Previous Yr Sales | | | |
| CERTIFICATION AND DRESSING | 500 | 1.4 | Current Yr Sales | | | |
| AGRICHEMICAL - Product | 28,625 | 79.5 | Unsold At Year End | | | |
| AGRICHEMICAL - Application | 14,300 | 39.7 | MISCELLANEOUS INCOME | | 3,500 | |
| REPAIRS & MAINTENANCE | 46,750 | 129.9 | | | | |
| VEHICLES - Fuels | 40,487 | 112.5 | STOCK PURCHASES | | | |
| VEHICLES - Repairs and Maintenance | 28,000 | 77.8 | | Sheep | -468,380 | |
| ELECTRICITY | 41,650 | 115.7 | | Cattle | -741,500 | |
| OTHER WORKING EXPS | 3,500 | 9.7 | | Deer | -187,688 | |
| ADMINISTRATION | 27,500 | 76.4 | | Other | | |
| STANDING CHARGES - Rates | 9,450 | 26.3 | | | | |
| STANDING CHARGES - Insurance & ACC | 28,068 | 78.0 | | | | |
| STANDING CHARGES - Other | 23,950 | 66.5 | | | | |
| **CASH FARM WORKING EXPENSES** | **989,306** | 2,748.1 | **CASH FARM INCOME** | | **1,247,598** | 3,465.5 |
| **EBIT (Earnings Before Interest and Tax)** | **258,292** | 717.5 | | | | |
| DEBT SERVICING | | | | | | |
| Mortgage | | | | | | |
| Term Interest | | | | | | |
| Current Account | 20,775 | 57.7 | | | | |
| Rent | | | | | | |
| Other | | | | | | |
| **CASH OPERATING EXPENSES** | **1,010,082** | 2,805.8 | **CASH OPERATING INCOME** | | **1,247,598** | 3,465.5 |
| **CASH OPERATING SURPLUS/DEFICIT** | **237,516** | 659.8 | | | | |
| PERSONAL DRAWINGS | | | NON OPERATING INCOME | | | |
| OTHER PERSONAL | | | | | | |
| TAXATION | 22,000 | 61.1 | | | | |
| PLANT REPLACEMENT | 158,137 | 439.3 | INVESTMENT INCOME | | | |
| INVESTMENTS | | | | | | |
| UNPAID ACCOUNTS | | | | | | |
| **TOTAL CASH EXPENDITURE** | **1,190,219** | 3,306.2 | **TOTAL CASH INCOME** | | **1,247,598** | 3,465.5 |
| **TOTAL CASH SURPLUS/DEFICIT** | **57,379** | 159.4 | | | | |
| Change in value of stock on hand | | | | | | |
| Change in value of produce on hand | | | | | | |
| Depreciation | | | | | | |
| **TRUE SURPLUS/DEFICIT** | **57,379** | 159.4 | | | | |

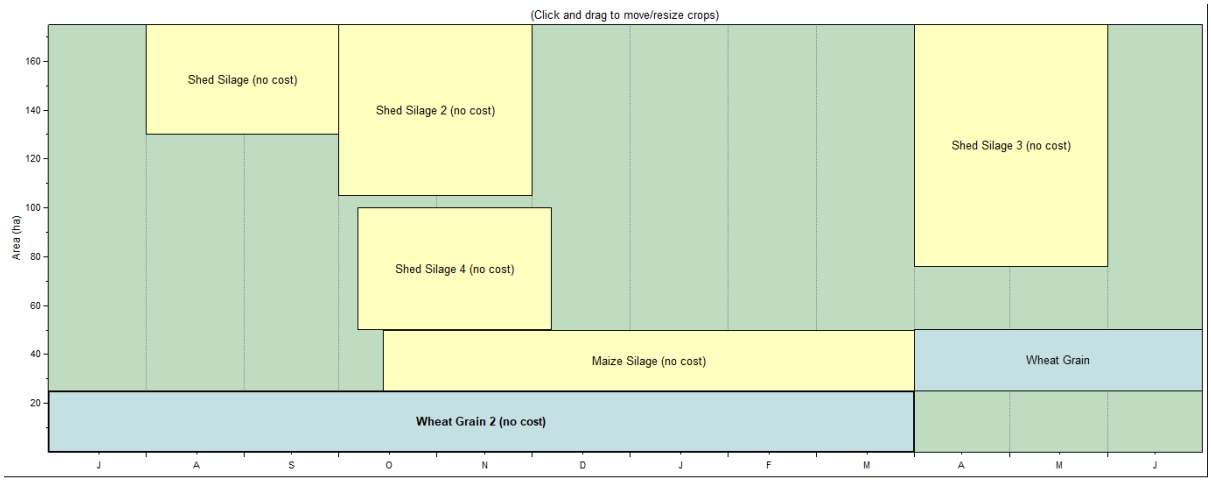
**Farmax Summary**

Pasture Covers

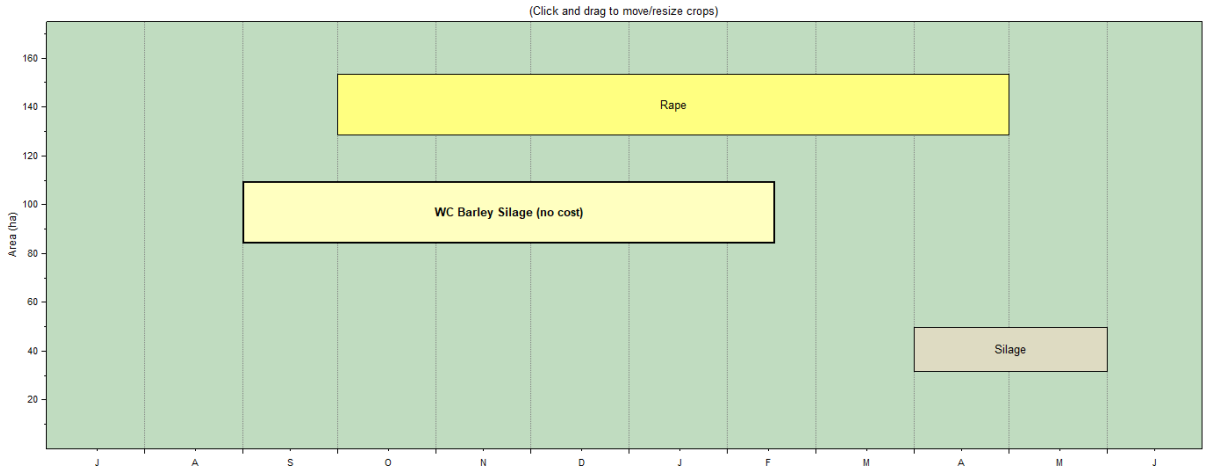



| (kgDM/ha) | Start | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pasture Cover | 2,064 | 1,966 | 2,124 | 2,109 | 2,236 | 2,097 | 2,305 | 2,126 | 2,089 | 2,095 | 2,291 | 2,082 | 2,064 |
| Minimum | 378 | 374 | 444 | 1,292 | 1,367 | 1,478 | 1,499 | 1,335 | 1,246 | 1,433 | 502 | 543 | 459 |

Crops by Block (Irrigated)



## Crops by Block (Dryland)




## Supplements

| tonnes DM | Open | Buy | Produce | Sell | Feed | Close |
|---|---|---|---|---|---|---|
| Maize Silage | 475 | | 475 | | 475 | 475 |
| WC Barley Silage | 200 | | 200 | | 200 | 200 |
| Fallow | | | | | | |
| Shed Silage | 384 | | 792 | | 792 | 384 |
| Wheat Grain | | | 264 | | 264 | |
| Silage | 60.0 | | 54.0 | | 54.0 | 60.0 |
| Rape | | | 138 | | 138 | -0.50 |
| **Total** | **1,119** | **0.00** | **1,923** | **0.00** | **1,923** | **1,119** |

## Stock Numbers by Month (Bull Calves)

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beef Weaners | | | | | 200 | 199 | 199 | 198 | 198 | 198 | 198 | 198 |
| R1 Beef | 198 | 198 | 198 | 198 | 198 | 197 | 197 | 132 | 66 | | | |
| **Total** | **198** | **198** | **198** | **198** | **398** | **396** | **396** | **330** | **264** | **198** | **198** | **198** |

## Stock Numbers by Month (Lambs)

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Lambs | | | | | | 1,300 | 2,418 | 1,766 | 1,533 | 2,848 | 2,843 | 2,024 |
| Mixed Hoggets | 2,019 | 1,511 | | | | | | | | | | |
| **Total** | **2,019** | **1,511** | | | | **1,300** | **2,418** | **1,766** | **1,533** | **2,848** | **2,843** | **2,024** |

## Stock Numbers by Month (Deer)

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mixed Fawns | | | | | | | | 750 | 749 | 748 | 747 | 747 |
| R1 Mixed Deer | 746 | 745 | 596 | 447 | 299 | 149 | | | | | | |
| **Total** | **746** | **745** | **596** | **447** | **299** | **149** | | **750** | **749** | **748** | **747** | **747** |

## Stock Numbers by Month (Five Star Beef Steers)

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steer Calf | | | | | | | | | | 250 | 249 | 249 |
| R1/R2 Steers | 249 | 248 | 248 | 185 | 93 | | | | | | | |
| **Total** | **249** | **248** | **248** | **185** | **93** | | | | | **250** | **249** | **249** |

## Stock Numbers by Month (Finishing Beef Heifers)

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heifer Calf | | | | | 200 | 200 | 200 | 199 | 199 | 199 | 198 | 198 |
| R1/R2 Heifer | 198 | 197 | 197 | 197 | 197 | 197 | 100 | 59 | 18 | | | |
| **Total** | **198** | **197** | **197** | **197** | **397** | **397** | **300** | **258** | **217** | **199** | **198** | **198** |

## Stock Numbers by Month (Finishing Beef Steers)

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steer Calf | | | | | 200 | 200 | 200 | 199 | 199 | 199 | 199 | 198 |
| R1/R2 Steers | 198 | 197 | 197 | 197 | 197 | 197 | 197 | 122 | 72 | 26 | 26 | 26 |
| 2-Year Steers | 26 | 26 | 13 | | | | | | | | | |
| **Total** | **224** | **223** | **210** | **197** | **397** | **397** | **397** | **321** | **271** | **225** | **225** | **224** |

## Stock Numbers by Month (Finishing R2 Beef)

| Mob | 31 Jul | 31 Aug | 30 Sep | 31 Oct | 30 Nov | 31 Dec | 31 Jan | 28 Feb | 31 Mar | 30 Apr | 31 May | 30 Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Year Steers | | | | | | | | | | 250 | 250 | 250 |
| 2-Year Steers | 250 | 249 | 249 | 59 | | | | | | | | |
| **Total** | **250** | **249** | **249** | **59** | | | | | | **250** | **250** | **250** |

**Overseer Summaries**

MRB
189 Alford Forest Rd, Allenton, Ashburton 7700, New Zealand

OverseerFM

## ADC-Red Meat 3-NPS

| | |
|---|---|
| Analysis type | Predictive |
| Is publication | No |
| Application version | 3.4.1.3 |
| Printed date | 21 Jun 2021, 2:24PM |
| Model version | 6.3.5 |

## Farm details

N: 6,371 N/ha: 18 P: 37 P/ha: 0.1 GHG/ha: 13,709 NCE: 31%

| | |
|---|---|
| Total area | 360 ha |
| Productive block area | 350.00 ha |
| Nitrogen conversion efficiency (NCE) | 31% |
| N Surplus | 142 kg/ha |
| Region | Canterbury |

| | | | |
|---|---|---|---|
| Total liveweight brought (kg/ha grazed) | 1940 | Beef / dairy grazing stock rate (RSU) | 5463 |
| Total liveweight reared (kg/ha grazed) | 1596 | Deer stock rate (RSU) | 726 |
| Total liveweight sold (kg/ha grazed) | 3481 | Sheep stock rate (RSU) | 1162 |
| Percent male beef animals | 80 | | |

## 8.17. Appendix 17: Mitigation Tools in the Forecast Models

- Italian pastures (for winter activity)
- Plantain in all pastures at 30% unless arable farming.
- No grazing pastures or forages with cattle between 1 April and 1 September to minimise N leaching risks form urine patches (cattle in a barn).
- No winter forages (only oats for lambs) to minimise fallow period exacerbating leaching risks.
- Planting not later than April and not earlier than September (maintain leaf cover and rooting depth over winter to intercept any potentially mobile nitrogen).
- Centre pivots or drip tape irrigation only.
- Variable rate irrigation where required.
- Soil moisture monitoring, 1 per 30ha.
- Deficit irrigation in shoulders more so than at peak to capture more potential rainfall and therefore reduce the risks of drainage.
- Diet balancing with high carbohydrate supplements.
- Regular tissue and ANM testing to ascertain nitrogen application requirements.
- Coated urea's only.
- No August or May N
- More frequent and lower volume N applications to pastures and crops
- Nitrification inhibitors where applicable.
- Gibberellic acid use on pastures.
- Within paddock and individual paddock testing.
- Variable rate fertiliser spreading.
- Yield mapping, sensor technology and target timing.
- Fallow periods set to 0 days.
- Full farm nutrient budgeting and considering N cycles and manure contributions.

## 8.18. Appendix 18: Commodity Inputs

| Category | Item | Note | Rate | | | | |
|---|---|---|---|---|---|---|---|
| Lamb | Spring/winter | | $6.80 | | | | |
| | Summer | | $5.70 | | | | |
| | Prime Lamb | A/S/O | $6.80 | | | | |
| | | J/F/M | $5.40 | | | | |
| | | A/M/J | $5.70 | | | | |
| | Store lamb | N/D | $3.00 | | | | |
| | | J/F/M | $2.70 | | | | |
| | | A/M/J | $2.90 | | | | |
| | Cull ewe | | $90 | | | | |
| | Winter margin | | $55 | (calculate) | | | |
| | Summer margin | | $16 | (calculate) | | | |
| | | | | | | | |
| Wool | Ewe | | $4.00 | | | | |
| | Lamb/hogget | | $4.50 | | | | |
| | | | | | | | |
| Crop | Wheat - Feed | | $410 | del (less $10 commission; $20 freight) | | | |
| | Wheat - Premium Milling | | $445 | del (less $10 commission; $20 freight) | | | |
| | Barley - Feed | | $390 | del (less $10 commission; $20 freight) | | | |
| | Barley - Malting | | $430 | del (less $10 commission; $20 freight) | | | |
| | Peas - Vining | | $320 | | | | |
| | Peas - Garden seed | | $1,000 | del (less $10 freight) | | | |
| | Potatoes | | $240 | | | | |
| | Onions | | $300 | | | | |
| | Sweet Corn | | $190 | (nett of bypass pool) | | | |
| | Maize | | $230 | | | | |
| | PRG Ryegrass seed - Proprietary | | $2,300 | del (less $10 freight) | | | |
| | IRG Ryegrass seed - Proprietary | | $2,100 | del (less $10 freight) | | | |
| | White clover seed - Proprietary | | $5,750 | del (less $10 freight) | | | |
| | OP Cabbage | | $2.50 | del (less $10 freight) | | | |
| | Linseed | | $940 | del (less $10 freight) | | | |
| | Sunflower | | $820 | del (less $10 freight) | | | |
| | Hemp | | $4,000 | del (less $10 freight) | | | |
| | Lucerne /kgDM | | $0.20 | /kgDM | | | |
| | Baleage (sell baled 250kgDM | 285kgDM | $57 | royalty (20c/kgDM) | | | |
| | Straw buy /bale | | | | | | |
| | Straw wheat sell /kgDM (sell | 500kg fresh; 90%DM | $36 | /bale royalty (plus $20 baling; $7 freight cost to buyer) | | | |
| | Straw barley sell /kgDM (sell | 500kg fresh; 90%DM | $43 | /bale royalty (plus $20 baling; $7 freight cost to buyer) | | | |
| | Straw ryegrass/Pea Vine se | 500kg fresh; 86%DM | $74 | /bale royalty (plus $20 baling; $7 freight cost to buyer) | | | |
| | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Grazing | R1 Calf ($/head/week) | | $7.75 | gross (less $0.50 commission) | | | |
| | R2 Heifer ($/head/week) | | $12.75 | gross (less $0.50 commission) | | | |
| | R2 I.C. Heifer ($/head/week) | | $24.00 | gross (less $0.50 commission) | | | |
| | Cow winter ($/head/week) | | $30.00 | gross (less $0.50 commission) | | | |
| | Standing winter feed | | $0.290 | nett with no commission | | | |
| | | | | | | | |
| Dairy | Cull cow | | $638 | | | | |
| | Bobby calf | | $35 | | | | |
| | Milk solids base | | $6.20 | | | | |
| | Cull Heifer | | $816.75 | | | | |
| | | | | | | | |
| Beef | | | Works Price | 100kg | 230kg | 330kg | 450kg/18 mth |
| | Prime beef - Winter/Spring | | $5.60 | $4.50 | $3.20 | $3.00 | $2.80 |
| | Prime beef - Summer kill | | $4.95 | $4.32 | $3.07 | $2.88 | $2.69 |
| | Manufacturing - Winter | | $5.20 | $4.30 | $2.90 | $2.80 | $2.55 |
| | Manufacturing - Summer kill | | $4.60 | $4.13 | $2.78 | $2.69 | $2.45 |
| | Cull cow | | $900 | | | | |
| | | | | | | | |
| Deer | Store | | $4.55 | | | | |
| | Prime Oct-Dec average | | $8.50 | | | | |
| | Velvet - Spiker | | $125 | | | | |
| | | | | | | | |
| Dairy feed buy | Barley/Wheat average | | $400 | landed | (average of wheat and barley) | | |
| | Silage (incl choped & landed) | | $340 | landed | ($120/t making on farm) | | |
| | Baleage | 285kgDM | $113 | landed | (20c/kgDM; $52 mow/rake/bale/wrap; $10 car | | |
| | Maize silage | | $310 | landed in pit | ($230/tDM to grower) | | |
| | PKE (landed) | | $280 | | | | |
| | Calf meal | | $850 | | | | |
| | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Fertiliser | Superphosphate | | $350 | | | | |
| | triple Super | | $720 | | | | |
| | Sulphur Super 15 | | $355 | | | | |
| | Sulphur Super 20 | | $370 | | | | |
| | Sulphur Super 30 | | $385 | | | | |
| | Moly S Super | | $410 | | | | |
| | 10% Pot S Super | | $390 | | | | |
| | 15% Pot S Super | | $400 | | | | |
| | 20% Pot S Super | | $410 | | | | |
| | 30% Pot S Super | | $460 | | | | |
| | Nitrophoska Select | | $890 | | | | |
| | CAN | | $750 | | | | |
| | Cropmaster 15 | | $720 | | | | |
| | Cropmaster 20 | | $675 | | | | |
| | DAP | | $850 | | | | |
| | DAP + B | | $940 | | | | |
| | DAP 13S | | $700 | | | | |
| | Sulphate of Ammonia | | $500 | | | | |
| | Ammo31 | | $575 | | | | |
| | Ammo36 | | $600 | | | | |
| | Urea | | $675 | | | | |
| | N Protect | | $743 | | | | |
| | Potassium sulphate | | $1,100 | | | | |
| | Potassium chloride | | $740 | | | | |
| | Lucerne mix + TE | | $530 | | | | |
| | Sulphur90 | | $615 | | | | |
| | Magnesium oxide | | $570 | | | | |
| | Kieserite | | $570 | | | | |
| | Borate46 | | $1,590 | | | | |
| | Sodium chloride | | $200 | | | | |
| | Molybor | | $17 | | | | |
| | Lime | | $32 | $50 supply, cart, spread | | | |
| | Cartage/tonne | | $18 | | | | |
| | Spreading/ha say | | $8 | | | | |
| | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Crop costs | Change as per budgets | | | | | | |
| | | | | | | | |
| Repairs & maint | Change as per budgets | | | | | | |
| | | | | | | | |
| Vehicles | Change as per budgets | | | | | | |
| | | | | | | | |
| Electricity | Irrigation | | 198 | based on sheme 57,000 supplied under pressure, 48,000ha s | | | |
| | Electricity | | 25c/kwh | includes lines charges off peak | | | |
| Water charges | Operating cost only | | 134 | based on $280/ha for scheme management on 105,000ha of | | | |
| | | | | | | | |
| Livestock capital | Stock unit | | $170 | | | | |
| | Dairy cow | | $1,850 | | | | |
| | Heifer | | $850 | | | | |
| | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Term debt interest rate | | | 5.50% | | | | |
| Current account | | | 7.00% | | | | |
| | | | | | | | |
| | | | | | | | |
| Wages | Dryland D Stock Manager | | $70,000 | (cash only) | | | |
| | Dryland D Stock Staff/Head Shepherd | | $56,000 | (cash only) | | | |
| | Dairy Manager | | $78,000 | (cash only) | | | |
| | Dairy Assistant Manager | | $60,000 | (cash only) | | | |
| | Dairy Assistant | | $52,000 | (cash only) | | | |
| | Arable Manager | | $70,000 | (cash only) | | | |
| | Arable Senior | | $62,000 | (cash only) | | | |
| | Arable Junior | | $52,000 | (cash only) | | | |
| | Casual per hour | | $28.50 | (cash only) | | | |
| | + Kiwisaver @ 3.5% | | | | | | |
| | ACC | | 2.60% | total wages incl KS | | | |
| | Shearing | | $5.50 | ewes/full shear | | | |
| | | | $4.70 | lambs | | | |
| | | | $2.80 | crutching sheep | | | |
| | | | $1.50 | crutching lambs (assumes trailer) | | | |
| | | | | | | | |
| Agwork | Harvest | | $310 | | | | |
| | Windrow | | $170 | | | | |
| | Drilling | | $110 | std | | | |
| | | | $140 | Direct | | | |
| | | | $175 | planter | Precision? | | |
| | | | $140 | maize planter | | | |
| | Full Cultivation | | $380 | | | | |
| | Spraying | | $22 | | | | |
| | Inter-row spraying | | $120 | | | | |
| | Dressing - Grass | | $350 | | | | |
| | Dressing - Small Seed | | $500 | | | | |
| | | | | | | | |
| An Health | Ewes | | $5.50 | | | | |
| | Lambs | | $2.60 | | | | |
| | Weaners | | $7 | | | | |
| | 100kg Calf | | $25 | | | | |
| | FSB Steer | | $15 | | | | |
| | R2 | | $10 | | | | |
| | | | | | | | |
| Freight | Lambs | | $3.00 | | | | |
| | Ewes | | $5.00 | | | | |
| | Wool bale | | $15 | | | | |
| | Cow | | $18 | | | | |
| | Heifer | | $15 | | | | |
| | Calf | | $6 | | | | |
| | Grain | | $20 | | | | |
| | Seed | | $28 | | | | |

# 9. References

Scott, L. (2013); ***Hinds Plains water quality modelling for the limit setting process;*** Report No. R13/93; (pp 34-35)

Everest (Macfarlane Rural Business Ltd) *et.al* (2013); ***Hinds catchment nutrient and on-farm economic modelling***; Report No. R13/109

Horticulture NZ (2019); ***Fresh Facts;*** ISSN 1177-2190

Kerr+Partners (2020); ***Hekeao/Hinds Managed Aquifer Recharge Scheme, Detailed Business Case;*** Version D, Final Issue

# Appendix 2

# Economic impact of freshwater environmental standards in Ashburton District

## for Ashburton District Council

July 2021

Infometrics
Economics put simply

## Authorship

This report has been prepared by Nick Brunsdon, with the input of Dirk van Seventer.

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# Table of contents

# Executive summary

Ashburton District Council (ADC) sought to understand how new National Environmental Standards for Freshwater (NES-F) will affect the District's farmers and community at large. ADC commissioned Mcfarlane Rural Business (MRB) to carry out detailed modelling of the economic impact of achieving the NES-F requirement of a maximum 2.4ppm nitrogen in ground and surface water. MRB have forecast how the District's land uses could be changed to achieve the requirement, and estimated the resulting changes in farm expenditure and profitability.

Infometrics were commissioned by ADC to model the economic impact of land use change as modelled by MRB. We have used an input-output multiplier approach to model these effects, considering direct, indirect and induced effects.

## Large scale changes in land use, $277m decline in farm profit

The MRB report indicates large scale changes in land use, as dominant existing land uses in Ashburton such as arable and dairy either reduce their intensity or change to forestry. Forestry is forecast to grow substantially; however, it requires very little in the way of inputs and has a far lower level of profitability. This leads to a $277.3m decrease in gross profit (EBIT), and a $65.6m decrease in wages and salaries.

## Direct effect is $343m decline in agriculture and forestry GDP…

The direct effect of the changes, as modelled by MRB, is for a $343m (2020 dollars) decline in GDP across Ashburton's agriculture industries. This amounts to 51% reduction from 2020 levels. This is driven by a $291m decline in dairy cattle farming GDP, followed by an $93m decline in sheep, beef cattle and grain farming. This is only partially offset by GDP growth in forestry and logging of $40m.

## …and 1,176 decline in agriculture jobs

The direct effect on agriculture, forestry and fishing industry employment is a decrease of 1,176 jobs, a 26% decrease from 2020 employment. This is a result of a 1,258 decline in dairy industry employment, which is barely offset by an increase of 82 jobs in sheep, beef cattle and grain farming.

## Overall negative effect on GDP and employment.

The total effect of the land use changes is estimated as a $409m reduction in Ashburton's overall GDP, including negative indirect and induced effects which add to the direct effect of a decline in agricultural GDP. This represents a 16.3% decrease to Ashburton's GDP level in 2020. Similarly, the negative effect on employment is more pronounced once indirect and induced effects are considered, with an estimated total decrease in employment of 1,735 or a 9.1% reduction on 2020 employment.

## Total effects concentrated in agriculture

The direct effect of the forecast land use changes is felt by the agriculture industry, so logically total effects are concentrated in that industry too. Agriculture, forestry and fishing GDP is estimated to decline by $297m or 44.1%, and employment to decline by 1,475 or -32.6%.

## Total earnings estimated to fall 8.7%

Total earnings across the Ashburton District are estimated to fall $97.6m or 8.7% as a result of the reduction in employment, assuming average earning rates remain the same in each industry.

## Changes unwind previous growth

Ashburton's economy has experienced sustained growth over the past two decades, with employment 35% higher in 2020 than 2000, and real GDP 63% higher over the same period. The forecast land uses changes effectively drive overall employment and GDP down to levels last seen in 2013. Within Ashburton's agriculture, forestry and fishing industry specifically, the decrease in employment represents a return to pre-2000 levels of employment and GDP.

## Change in agriculture and forestry employment amounts to 8 years of replacement of lost workers

Infometrics forecasts that on average a net 187 workers will be required per year over the next five years across Ashburton's agriculture, forestry and fishing industry to replace workers that leave the industry due to retirement, leaving the country etc. This indicates that if the forecast land use changes were implemented over a period of at least eight years, then the decrease in agriculture, forestry and fishing industry employment could be accommodated within usual rates of net replacement. The effect on specific subindustries or communities may be more pronounced.

## Ashburton's economy will adapt

The land use changes modelled by MRB represent a substantial shift to Ashburton's economy, however the effect on the community is highly sensitive to the length of time over which the land use changes take place. A transition over an extended period of time will give Ashburton's residents and businesses – their economy – a chance to adapt. The loss of jobs and reduction in farm values does present an opportunity for different industries to expand using the resources freed up by the changes. We would not expect the negative effects to persist over the long term; however, they may persist for several years if land use change is rapid.

## One-off boost from MAR construction

The MRB report estimates that construction of Managed Aquifer Recharge (MAR) will cost $23.5m over an unspecified period, which will create a one-off boost to the Ashburton economy. We expect the construction of MAR to contribute $23m to the Ashburton economy and create the full time equivalent of 40 jobs.

## Environmental benefits not quantified

We have not made an allowance for any positive economic benefits which may result from improved water quality in Ashburton District, nor the costs from not improving water quality.

# Introduction

Ashburton District Council (ADC) sought to understand how new National Environmental Standards for Freshwater (NES-F) will affect the District's farmers and community at large.

ADC modelled the effects at a high level in late 2020, and Infometrics peer reviewed this work. ADC commissioned Mcfarlane Rural Business (MRB) to carry out detailed modelling of the economic impact of achieving the NES-F requirement of a maximum 2.4ppm nitrogen in ground and surface water. MRB has considered how the District's farmers may achieve the requirement by forecasting land use changes, and estimated the resulting changes in in farm expenditure and profitability.

We have taken the changes in farm expenditure and profitability from the MRB report and applied a regional input-output multiplier analysis to model the effects on Ashburton's economy.

# Key assumptions and limitations

## Land use changes

We have drawn upon the work of MRB[1] to understand how land uses may change as a result of NES-F, taking their assumptions and modelling at face value. We have mapped the land use types from the MRB report to the Stats NZ ANZSIC 54-industry framework.

## Uncertainty around timing

Given uncertainty around the timeframe for implementation of the nitrogen requirement, the MRB work makes no assumption around timeframes, simply calculating the difference between the current state and the final future state, which could be 5-40 years away. This report therefore does the same – its results should be interpreted as applying to a non-specified future year in which Ashburton District fully achieves nitrogen loss requirement. In reality, the effects may be sensitive to timing, particularly given the strong role for forestry in land use change. If large areas of forestry are planted over a concentrated period, then the economic effects of forestry may be lumpy in future, with, for example, harvesting activity concentrated over a limited period in future as the trees reach maturity together.

We have assumed that the costs of land use change will take place over an extended period of time in order to coincide with scheduled on-farm asset renewals. Accordingly, we have not quantified the economic impact of land use changes as this capital expenditure would have occurred regardless.

## Input-Output multiplier approach

We use a regional input-output (IO) multiplier model to estimate the impact of the construction and operating phases of the proposed facility. The IO model is based on inter-industry relationships within an economy, mapping how economic activity in one industry flows through to other industries and ultimately households.

Note that as part of this approach, we do not consider the impact on asset values, although this is covered in the MRB report. This is because we do not know where the owners of the assets reside – it is likely that many of Ashburton's farms have owners residing out of the District.

Our multiplier approach is described in more detail in the appendix. All dollar figures referred to are in 2020 prices.

## Direct, indirect and induced economic effects considered

We consider the direct, indirect and induced economic effects as a result of changes to achieve the nitrogen target, as modelled by MRB. Direct effects include the direct effects on the agriculture industry, such as the reduction in profit and employment on dairy farms from reduced production. Indirect effects include effects on supplying industries,

[1] Mark Everest, *Economic Impacts of Achieving 2.4ppm N in Ashburton District Surface Water Draft 2.2*, 18 July 2021: Macfarlane Rural Business Ltd

such as dairy support farms, rural contractors and irrigation scheme operators. Induced effects include the effect of changes in wage earnings – such as lower spending in retail and hospitality businesses as a result of the decrease in agriculture employment.

## Only net effects are modelled

This report is focused on the community-level impact; therefore, we only consider the net effect on the economy. This is a composite of the positive and negative effects felt by various individuals and groups within the community. This means that the effect could b be far more pronounced for some than these net figures suggest. For example, the net effect for the agriculture, forestry and fishing industry is a composite of negative effects on dairy farming and positive effects on forestry (among others). Dairy farm workers who lose their jobs as a result of the reduction in dairying activity may struggle to gain employment in forestry contracting on similar terms.

## Impact on rates

The MRB report includes a $10m reduction in rates payable by farms due to a reduction in farm capital values, which has a flow on effect to farm profitability as it represents a net change in costs. While farm capital values are likely to decline if the forecast land use changes take place, ADC advises that the impact of this on the distribution of rates is yet to be determined, and expects that they will maintain a similar level of rating income and expenditure. As a result, the effect of the $10m reduction in rates payable is not included in this EIA, and has been deducted from the farm earnings before interest and taxation (EBIT) estimated by MRB. This effectively assumes that farms continue to pay the same rates as they did under previous land uses.

## Costs of Managed Aquifer Recharge

The MRB report models the use of Managed Aquifer Recharge (MAR) as a key element to achieving the nitrogen concentration requirements of NES-F. Given this, we have assumed that MAR takes place despite no clarity on how it will be funded. If these costs were borne by the farming community, then this would reduce farm EBIT and therefore direct GDP contribution by the same amount. On the advice of MRB, it is assumed that irrigation providers can provide water for MAR while reducing their costs overall, as there would be less work involved in farm-specific administration such as metering or dispatching water.

## Economic benefit of environmental improvements not quantified

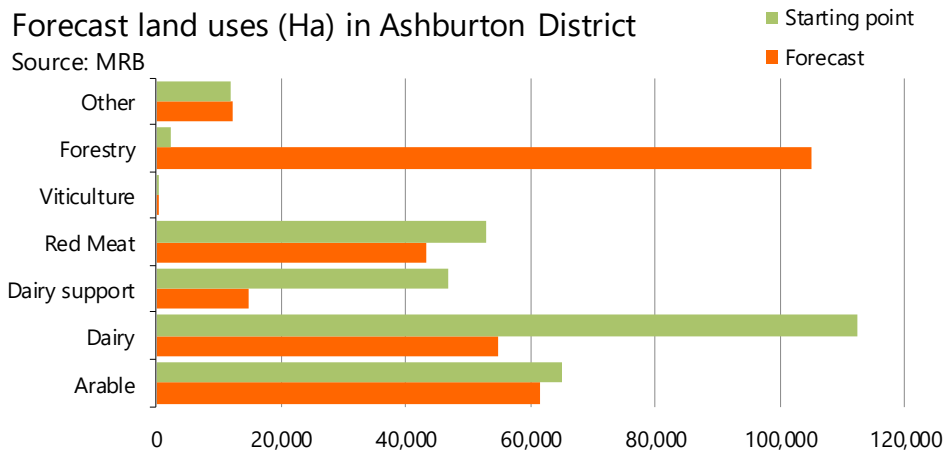
We have not made an allowance for any positive economic benefits which may result from improved water quality in Ashburton District. These may exist but would be challenging to quantify in economic terms.

# Findings

## Large scale changes in land use

The MRB report indicates large scale changes in land use, as dominant existing land uses in Ashburton such as arable and dairy either reduce their intensity or change to forestry. This has a multitude of impacts. Arable and red meat farm types are forecast to increase their expenditure, while dairy and dairy support substantially reduce expenditure. Forestry is forecast to grow substantially; however, it requires very little in the way of inputs and has a far lower level of profitability. Graph 1 shows the current and forecast land use from the MRB report, including a 56% decrease in the area of land used for dairy or dairy support, and an extremely large increase in forestry.

**Graph 1**



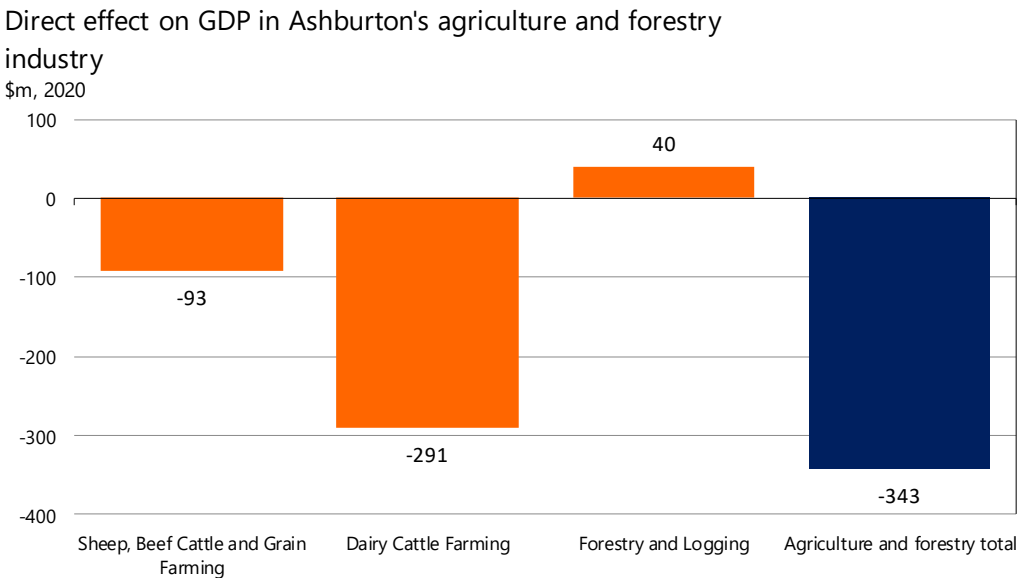

## Decline in farm profit of $277.3m

The MRB report forecasts a $277.3m decrease in gross profit (EBIT), and a $65.6m decrease in wages and salaries. We have reversed the reduction in local body rates payable from the MRB report, which decreases farm profit by $10m.

## Direct effect is $343m agriculture and forestry GDP decrease

The direct effect of the forecast land use changes is a $343m (2020 dollars) decline in GDP across Ashburton's agriculture industries. This amounts to 51% reduction from 2020 levels.Is. This is driven by a $291m decline in dairy cattle farming GDP, followed by a $93m decline in sheep, beef cattle and grain farming. This is only partially offset by GDP growth in forestry and logging of $40m, shown in Graph 2.

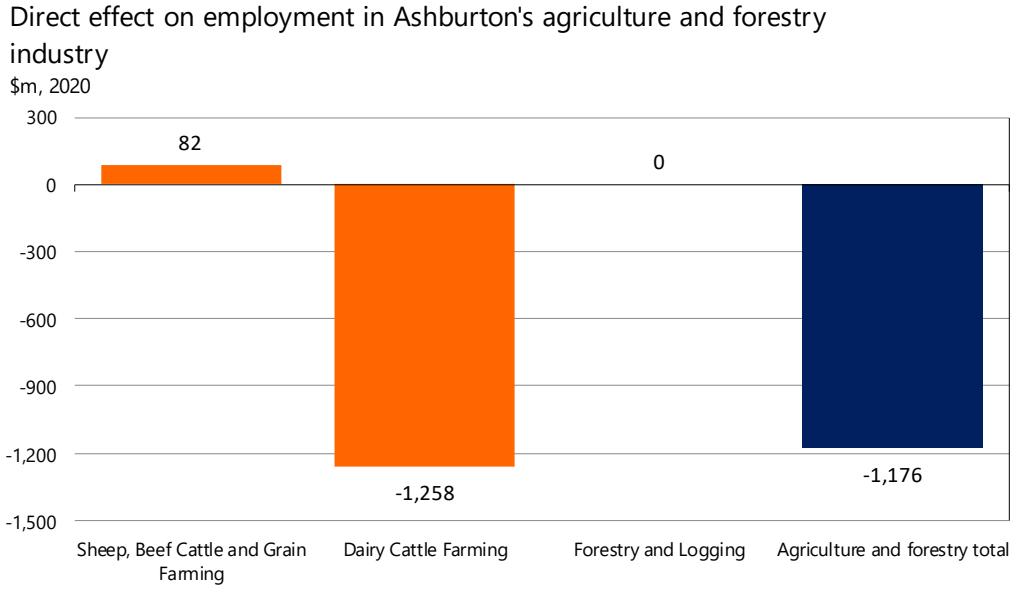
### Graph 2




## Direct employment effect is negative overall

The direct effect of the forecast land use changes on agriculture industry employment is a decrease of 1,176 jobs, a 26% decrease on 2020 levels. This is a result of an employment increase of 82 in sheep, beef cattle and grain farming, which barely offsets the 1,258 decline in dairy industry employment. No direct increase in forestry employment is expected as forestry management and operations are typically outsourced to other industries – this is an indirect effect.

### Graph 3



## Overall negative effect on GDP and employment

The total economic effect of the land use changes is estimated as a $409m reduction in Ashburton's overall GDP, with negative indirect and induced benefits adding to the direct effect of a decline in agricultural GDP. This represents a 16.3% decrease to Ashburton's GDP level in 2020. Similarly, the negative effect on employment is more pronounced once indirect and induced effects are considered, with an estimated total decrease in employment of 1,735, or a 9.1% reduction on 2020 employment.

The indirect and induced effects are negative overall for both GDP and employment; however, this net effect does mask the positive indirect and induced effects in some industries resulting from land use changes. Notably, the agriculture, forestry and fishing support service sub-industry are estimated to gain a net 121 jobs, or an $87m increase in GDP. This is largely driven by a greater need for contractors to service the expanded area of forestry.

## Industry effects concentrated in agriculture

The direct effect of the forecast land use changes is felt by the agriculture industry, so logically total effects are concentrated in that industry too. Agriculture, forestry and fishing GDP is estimated to decline by $297m or 44.1% compared to 2020 levels, and employment to decline by 1,475 or -32.6%. Table 1 details the effect on each industry, with industries beyond agriculture affected through changes in demand for their products and services by the agriculture industry and its workers.

Electricity, gas, water and waste services is hit by a reduction in demand for water for irrigation and electricity, leading to a 20.7% reduction in GDP and 7.8% reduction in employment. Rental, hiring and real estate services are affected by a reduction in overall incomes in the community, leading to a 13.0% reduction in GDP and 0.7% reduction in employment. Transport, postal and warehousing are largely affected through a reduction in demand for road transport services from the agriculture industry, leading to a 25.9% reduction in GDP and 15.0% reduction in employment. Other services, which includes vehicle and equipment maintenance, is affected through reduced demand for maintenance from the agriculture industry, leading to a 37.0% reduction in GDP and 11.4% reduction in employment.

Notably, all industries except one are estimated to experience a negative effect from the land use changes overall. The only exception is mining, which is expected to experience a fractional increase in GDP and employment as a result of quarried materials needed for maintenance of MAR.

Table 1

**Total effect on GDP and employment**

Includes direct, indirect and induced effects. % change from 2020

| | GDP ($m) | | Employment | |
|---|---|---|---|---|
| **Industry** | **Level** | **% change** | **Level** | **% change** |
| Agriculture, Forestry and Fishing | -297.1 | -44.1% | -1,475 | -32.6% |
| Electricity, Gas, Water and Waste Services | -27.8 | -20.7% | -18 | -7.8% |
| Rental, Hiring and Real Estate Services | -19.1 | -13.0% | -3 | -0.7% |
| Transport, Postal and Warehousing | -13.2 | -25.9% | -70 | -15.0% |
| Other Services | -12.5 | -37.0% | -72 | -11.4% |
| Financial and Insurance Services | -6.8 | -10.7% | -8 | -2.4% |
| Retail Trade | -6.2 | -5.5% | -22 | -1.3% |
| Wholesale Trade | -5.8 | -4.8% | -7 | -0.7% |
| Professional, Scientific and Technical Services | -4.5 | -5.1% | -5 | -0.7% |
| Manufacturing | -4.0 | -1.5% | -2 | -0.1% |
| Administrative and Support Services | -1.9 | -6.8% | -6 | -1.0% |
| Accommodation and Food Services | -1.9 | -5.3% | -15 | -1.6% |
| Information Media and Telecommunications | -1.7 | -5.8% | -3 | -1.4% |
| Health Care and Social Assistance | -1.6 | -1.9% | -6 | -0.5% |
| Education and Training | -1.6 | -2.7% | -13 | -1.3% |
| Arts and Recreation Services | -1.5 | -4.9% | -5 | -1.2% |
| Construction | -1.3 | -0.9% | -5 | -0.3% |
| Public Administration and Safety | -0.5 | -1.1% | -1 | -0.3% |
| Mining | 0.1 | 5.3% | 0 | 1.2% |
| **Total** | **-409** | **-16.3%** | **-1,735** | **-9.1%** |

## Earnings estimated to fall 8.7%

Earnings across the Ashburton District are estimated to fall $97.6m or 8.7% of the 2020 level as a result of the reduction in employment, assuming average earnings remain the same in each industry. This reduction is less than the decline in employment of 9.3% because average earnings in agriculture, forestry and fishing are lower than the average earnings across all industries.

## Changes unwind previous growth

Ashburton's economy has experienced sustained growth over the past two decades, with employment 35% higher in 2020 than 2000, and real GDP 63% higher over the same period. The forecast land uses changes effectively drive overall employment and GDP down to levels last seen in 2013. Within Ashburton's agriculture, forestry and fishing industry specifically, the decrease in employment represents a return to pre-2000 levels of employment and GDP.

## Change in agriculture and forestry employment amounts to 8 years of worker net replacement

Infometrics forecasts the number of net number of workers required in each industry to replace workers that leave due to retirement, emigration etc. Within Ashburton's agriculture, forestry and fishing industry, Infometrics forecasts average of 187 replacement job openings per year over the next five years. This indicates that if the forecast land use changes were implemented over a period of at least 8 years, then the decrease in agriculture, forestry and fishing industry employment could be accommodated within usual rates of workers leaving the industry.

## Ashburton's economy will adapt

The land use changes estimated by MRB represent a substantial shift to Ashburton's economy, however the effect on the community is highly sensitive to the length of time over which the land use changes take place. A transition over an extended period of time will give Ashburton's residents and businesses – their economy – a chance to adapt. The loss of jobs and reduction in farm values does present an opportunity for different industries to expand using these resources. As a result, we would not expect the district wide effects of a 16.3% reduction in GDP and 9.1% reduction in employment to persist over the long term. However, these effects may persist for several years if land use change occurs more quickly than the economy can adapt.

## One-off boost from MAR construction

The MRB report estimates that construction of Managed Aquifier Recharge (MAR) will cost $23.5m over an unspecified period, which will create a one-off boost to the Ashburton economy.

We have assumed that a third of the construction cost of MAR will go towards the professional services industry and, two thirds to heavy and civil construction. Based on these assumptions, we expect the construction of MAR to contribute $23m to the Ashburton economy and create the full time equivalent of 40 jobs. This includes indirect and induced effects. The economic effect of MAR construction by industry is not specified, as it is highly sensitive to the estimate of MAR costs, method of construction and industry apportionment.

The positive economic effect of MAR construction has not been included in the overall economic analysis, which reflects the annual, enduring effects of land use change, although it should be considered in developing a view on the overall impact of land use change.

# Appendix

## Multiplier analysis

We use input-output (I-O) multiplier analysis to estimate the impact land use changes. The IO model is based on inter-industry relationships within an economy, understanding how economic activity in one industry flows through to other industries and ultimately households.

For earnings and employment, we also apply marginal output-employment ratios based on econometrically estimated employment-output elasticities because when faced with changes in demand at the margin, many businesses will continue to operate with the same level of employment.

Our IO model uses regional multipliers estimated by Infometrics for each territorial authority in New Zealand. These are derived from the 2013 New Zealand Input-Output from Stats NZ. The 2013 Input-Output Table is the latest table available.

The IO model estimates the direct, indirect and induced effects of the project.

**Direct effect.** This is the effect associated with increased spending directly in each industry associated with the project. For example, if a dairy farm reduces its herd size and its profit (EBIT) reduces by $10,000, then GDP (or value add) in the dairy farming industry will decrease by $10,000.

**Indirect effect.** The indirect effects are the second round of economic effects associated with the direct effect. For example, a dairy farm which reduces its herd size may require less maintenance of its dairy shed. This in turn will lead to a reduction in demand for services from the repair and maintenance (other services) industry – this is an indirect effect.

**Induced effect.** The induced effect arises from changes in spending from changes in employment. For example, if a dairy farm worker works less hours due to their employer having a smaller herd, then will lead to a reduction in their spending, for example at local retailers or bars. The change in activity in retail and hospitality industries would be an induced effect.

**Total effect**. The total effect is the sum of direct, indirect and induced effects. Due to the small magnitude of induced effects, and for ease of reading, we only refer to the direct and total effect.

The various effects outlined above are measured in terms of value added (or GDP) and employment.

## Earnings

Changes in the earnings are estimated based on the estimated change in employment by industry (described above), and mean earnings by industry across the Canterbury region in the 2020 calendar year.

# ESSENTIAL FRESHWATER SOCIAL IMPACT REPORT

# ASHBURTON DISTRICT

**A report prepared for the Mid-Canterbury Rural Support Trust**

**By Rachael Inch.**

**2021**

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**Disclaimer**:
This report was prepared by Rachael Inch for Mid Canterbury Rural Support Trust (RST). RST is confident in the integrity of the data contained in this report; however, they have no influence over how the report may be interpreted or applied. RST expressly disclaims any and all liabilities, contingent or otherwise, that may arise from the use of this material.

# Acknowledgements

I would like to express gratitude to Dr Heather Collins for her constructive suggestions during the planning and development of this research report. Her expert guidance in working through the intricacies of the research data has been appreciated.

The data presented and analysed in this report was made possible through the participation of many people living and working in the Ashburton District. I would like to acknowledge all those who participated and sincerely thank them for freely giving me their time to share their stories.

I also give a special thank you to my mentor who has provided me the support and encouragement needed to work consistently through many hours of interviews, researching and writing this report.

# Executive Summary

The National Policy Statement for Freshwater Management and associated legislation came into force in August 2020. The legislation intends to address water quality issues in New Zealand by providing a national objectives framework for freshwater management. The legislation affects all farming types. Given that water is a vital resource underpinning the socio-economic development of the Ashburton District, it is essential to understand the impacts of the rules and regulations on the people of the district.

The Mid Canterbury Rural Support Trust commissioned research to explore the social impact of the new Freshwater rules and regulations on the Ashburton District. A qualitative research method was chosen to enable a wide range of individuals and groups to share their ideas and experiences. The field work was completed between April and May 2021. This research also adds to the Essential Freshwater Economic Impact Report, produced in 2020 by the Ashburton District Council.

The research suggests that there has been an increasingly adverse impact on farmers and their families. Farmers were already struggling to cope with the pressures they were experiencing. Participants described multiple events, such as; Mycoplasma Bovis, banking reforms, Covid-19, and drought, as causing stress to farmers. The new rules and regulations then compounded the existing pressures, adding even more anxiety and tension to farmers.

According to the research, the initial engagement process for the freshwater rules, specifically the consultation seminar held in Ashburton, created anxiety, stress, and uncertainty for the agri-sector. The consultation seminar did not provide attendees a clear pathway; or a reassurance that there had been a thorough investigation into different farming systems' impact. Attendees also felt there was insufficient acknowledgment for the positive progress completed by farmers in the District under the Canterbury Water Management Strategy. There was little clarity about what the changes meant or how to implement the changes. The lack of clarity created confusion, distrust, and uncertainty.

Uncertainty has increased as time progressed. As the uncertainty filtered out to the Ashburton community, it impacted both farmers and agri-professionals. One of the critical impacts for agri-professionals was the increasing stress and tension when interacting with farmers. The uncertainty hindered their ability to plan, provide practical advice, and progress forward with projects. Simultaneously, banks and lending organisations were taking a more conservative stance with farm lending, restricting the ability of some farmers to access capital and stalling progress. In the absence of clarity, banks and agri-professionals took a more conservative approach to advising farmers, often referring farmers back to Environment Canterbury (ECAN). However, ECAN could not provide certainty around the required targets and limits or whether the CWMS still stood, resulting in more confusion and tension for farmers.

The research also explored the impact of the new rules and regulations on farm businesses. The findings suggested that the new rules and regulations could negatively affect farm sustainability indicators in several ways. Some farms would need to reduce production, limit diversification options, and increase capital and compliance maintenance and costs. In some cases, particularly in the Hekeao/Hinds area, participants felt the rules and regulations could mean losing many farming operations in the area. The findings suggested that the rules and regulations could mean an early exit from farming for some farmers. The investment required to meet the current rules and regulations

and the increased compliance and capital investment needed to change farm systems could exceed the capability of some farms. Some participants felt that there could be an impact on land value. However, it was speculative to say whether it would be positive or negative.

The decreased confidence in farming was a theme for young farmers as they described how the new freshwater rules impacted them. One of the concerns for young farmers was the way that the public viewed them. While many farmers use social media, the younger farmers reported having greater exposure to the negative public views on social media. Many young farmers felt that public view was so negative that it had begun to impact how they felt about themselves and what they do. Many reporting that they no longer saw a future in farming. Fewer young farmers willing to enter the sector could impact traditional family farm ownership in New Zealand, potentially shifting ownership towards corporatisation.

The research also explored the impact on the broader community. The findings suggested that the flow-on impact from a loss of farms and reduced spending in the district could affect the viability of some rural supply businesses increasing unemployment. Families could relocate away from the district, searching for work.

The research investigated the impact of the rules and regulations on the community and found that there could be an increased demand for social services. Smaller community groups and clubs have traditionally relied on sponsorship, donations, and volunteers from the rural community. The findings suggest that they could also see an indirect impact from the rules and regulations, with an increasing reliance on community funding to stay viable.

Participants of the research mentioned that there could also be a negative impact on smaller rural schools. For example, reduced school rolls as families move away from the district and the prevalence of increasingly negative interactions between urban and rural children discussing water quality in the classroom.

Mid-Canterbury Rural Support Trust continues to provide free and confidential support to rural people living in the Ashburton District. The Trust has a vital role in strengthening relationships with stakeholders in the Ashburton District. It is a recommendation that the Trust continues collaborating with key community stakeholders to provide support, tools, and resources to improve rural well-being and resilience in the district as farmers continue improving water quality on farm.

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# Introduction

Land and water are important natural resources which underpin the socio-economic development of the Ashburton District. The Ashburton District is considered a rich agricultural region that relies on the use of these resources to provide economic growth. In 2020, several pieces of legislation were passed into law that form the new essential Freshwater Package and have changed the way land and water is managed in New Zealand (Ministry for the Environment, 2020). Including:

- The National Environmental Standards for Fresh Water Regulations (NES-F),
- The National Policy Statement for Fresh Water Management (NPS-FM),
- Stock Exclusion Regulations,

The NES-F is intended to provide an immediate, short-term response to prevent any further degradation or loss of streams and wetlands. The NPS-FM provides a longer-term framework for improving freshwater quality. The fresh water package rules affect all types of farming with a greater impact on more intensive land uses. Feedlots, stockholding areas, winter grazing practices, nitrogen use and agricultural intensification are all outlined in the NPS-FM as being activities that will need to comply with the rules. These regulations could change the way a number of these farms are structured and how they operate. How different farming types are impacted by the rules depends on the way that the farming system operates and makes use of the land and resources.

In December 2020, the Ashburton District Council released a Land and Water Management Economic Impact Report detailing the freshwater reform's expected impact on agricultural productivity and the flow-on effects on the Ashburton economy (Fitzgerald, 2020). The report outlined the possible economic impact of the NPS-FM and associated legislation. The Economic report used conservative modelling data based on the current Canterbury Water Management Strategy; specifically, Plan Change 2, to estimate the economic impact of the new legislation. To date, there has been a limited evaluation of the potential social impact of this legislation. It is essential to identify how the rules and regulations may affect the people of the Ashburton District, and to determine whether the intervention will lead to any adverse effects on the way that people live, work, play and interact with each other.

This social impact report outlines the potential impacts of the NPS-FM and associated legislation on communities in the Ashburton District. It contributes to the Economic Impact Report that Ashburton District Council undertook. It also explores the potential effects on; farmers and their families, farm businesses, rural supply services, and the wider Ashburton community.

# Methodology

A qualitative research method was chosen to explore the potential impacts of NPS-FM and associated legislation on people and communities in the Ashburton District, New Zealand. This strategy enabled participants to share their stories, and enabled a deep and richer exploration of the complexity and connections between the rules and regulations and the unintended social consequences of the planned intervention.

## Ethical considerations

This research follows Massey University's Code of Ethical Conduct for Research Involving Human Participants (Massey University, 2017).

Research integrity and ethical responsibility underpinned the research process. In this research, integrity involved reaching conclusions that are not affected by bias or error, acting within the law, recognising and balancing any subjectivities or personal influences that a researcher may have, and ensuring the rights and well-being of participants are protected at all times. Ethics is about protecting the research participants. Ethics involves researchers showing respect for cultural beliefs, treating participants in an equitable manner, obtaining informed consent from participants, doing no harm during the research, and ensuring participant's confidentiality of private information.

## Data Collection

The purpose of the research and the information sheet were sent to participants before each interview, permission was obtained to audio record interviews, and confidentiality issues were discussed before the participants gave their informed and voluntary consent. The information sheet prepared for this research is located in Appendix A of this report.

Community meetings and semi-structured interviews were the primary data collection methods used. Participants were selected using snowball sampling. The interviews lasted approximately 25 minutes each.

At the beginning of each interview, participants were each given a short background description that defined the purpose of the research and some key facts. A copy of this can be found in Appendix B of this report. Research participants were then asked for permission to record their interview and their answers were formalised by note-taking, voice recording with consent and by transcribing the recordings. Two interviewees preferred not to be recorded but gave permission to use notes from their interview. Street intercept interviews were recorded by note taking only. Two participants chose to be interviewed via telephone. Both agreed to recording the conversation. Those participants were sent the same information sheets via email prior to the interview and participants were asked for confirmation that the information had been read prior to starting. Confirmation was received on both occasions.

After reading the background introduction paragraph, participants were asked six key questions which can be found in Appendix C. The first three questions were used to determine the level of understanding of the participants and which intervention they were responding to. This information has been integrated into the findings section of this report.

The community engagement phase of the data collection occurred between 12 April 2021 and 5 May 2021. The interviews were completed in a range of locations using a variety of methods. In total 39 participants were interviewed either individually or as a group including:

- Semi-structured interviews via telephone with 2 participants;
- A short workshop with rural professionals in Ashburton;
- Semi structured street intercept interviews with randomly selected Ashburton residents;
- A drop-in session at the Rakaia pub – young farmers, farmers, pub staff, community members;
- An informal discussion with Ashburton District Council and Environment Canterbury staff;
- Face-to-face semi-structured interviews in various locations with;
    - A Spokesperson for Hakatere Marae,
    - A rural contractor,
    - Seed merchant,
    - Filipino Dairy Worker,
    - Farmers,
    - Urban and rural business owners,
    - Agri-bankers,
    - Representative for a local meat processing company,
    - Representative who works in the social wellbeing space,
    - Real estate agent,
    - Water zone committee representatives,
    - Irrigation scheme representatives,
    - Environmental interest groups.

Other individuals and groups were contacted via email with an invitation to participate, including;

- Local veterinarians,
- Co-operative businesses,
- Federated Farmers,
- A representative at Arowhenua marae.

Given the importance of ensuring Tangata Whenua is included, a representative of Arowhenua Marae was approached via telephone, and a pre information sheet was sent via email. A follow up call was made and the representative forwarded the information to Aoraki Environmental Consultancy – who are a part of Te Rūnanga o Arowhenua (the environmental consultancy associated with the marae). Aoraki consulted with their team and declined to participate.

## Data Analysis

Interviews and workshops that were recorded were all transcribed by the researcher. Consent was given by all interviewees except one. One participant was approached via telephone for further clarification of the data.

An inductive thematic analysis strategy was used to analyse the data from the recorded interview transcripts, discussion notes and documents. This method was chosen to help identify common themes – topics, ideas and patterns of meaning that were repeated in the responses. The data collection questions have not been used as themes.

Data saturation was used as an indicator of the point where the interviews produced little or no new information relative to the purpose of the report. Data saturation is reached when the ability to obtain additional new information has been attained (Guest et al., 2006). This meant that a robust and valid understanding of the research was achieved.

### Limitations

This research was completed over a three-month period. This is generally a short time frame to complete the research and measure change over time, and this may have placed constraints on the availability of some data. There may be a case for a further Social Impact Assessment to be completed of the findings. With the exception of the random street interviews, sample bias may be present. The use of snowball sampling was used to determine participant selection. While every effort was made to include a cross representation of people from different backgrounds, it may mean that it is not a truly random sample of participants as it could be influenced by the potential bias of participants.

Although the research team are not located within the Ashburton District, one of the researchers resides in a neighbouring district and is familiar with the agricultural industry and was carefully monitored throughout the study by the senior social researcher who designed the methodology.

Another limitation is the presence of existing stress in the community. The participants of this study outlined adverse factors and events which have occurred prior to the research resulting in negative attitudes. It is possible that this could have contributed to how positively participants responded to the research. There was a strong negative response to the freshwater package, and as a result the findings reflect that the participants did not highlight many positive impacts.

## Background

### The Ashburton District

The Ashburton District is located in the centre-east of the South Island of New Zealand and spans from the Southern Alps to the Pacific Ocean. The district is also sometimes referred to as Mid-Canterbury. The district is bordered by two large braided rivers; the Rakaia and the Rangitata. The district also contains two other rivers which are referred to by locals by the English or Māori name for the river: the Hakatere (Ashburton) and Hekeao (Hinds) rivers. The district contains six rural townships: Ashburton; Methven; Rakaia; Mayfield; Mt Somers; and, Hinds. All of these townships are considered rural servicing towns for the surrounding farming enterprises (Ashburton District Council, 2021).

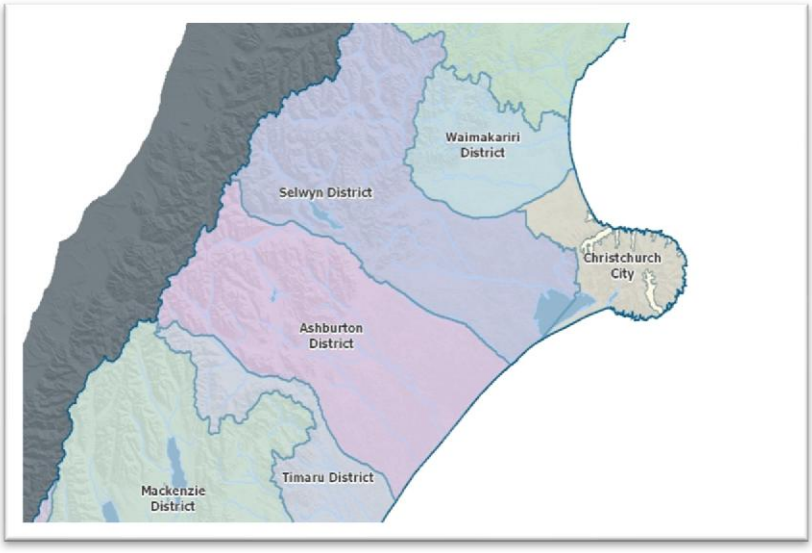


*Figure 1: Location of the Ashburton District in the South Island of NZ*

## History of the Ashburton District

The history of the Ashburton District provides context as to how the district became a strong agricultural area. During the research, agriculture was referred to by some people as *'the pillar that held the district up'.* People described the importance of agriculture through the years and referred to the township as being originally a *'trading town'*. There was limited availability of historic information on Māori in Ashburton, however according to the Ashburton District Council website, Māori travelled through Ashburton District as early as 850AD. Before colonisation, the district was a vast tussocky grassland with few trees and large braided rivers to the north and south which made crossing the river difficult. (Ashburton District Council, 2018)

The Hakatere Marae website www.hakateremarae.weebly.com displays some information from various sources, that provide a short history of Māori in Ashburton. It states:

'*It is recorded that early canoe travellers used Hakatere*[1] *as a resting point and food gathering place. These included Rapuwai, Hawea, Waitaha moa hunters and Ngāi Tahu.*[2]' The Deed of *Recognition for Hakatere between The Queen and Te Rūnanga O Ngāi Tahu states – "the Hakatere was a major kai provider for Canterbury Ngāi Tahu, particularly those based at Kaiapoi Pa. The main foods taken from the river were tuna (eels), inaka (whitebait) and the giant kōkopu. Rats, weka, kiwi and waterfowl such as pūtakitaki (paradise duck) were also hunted along the river'.*

The website further describes how the Māori population was involved with agriculture in Ashburton and further states:

*'The Māori population of Ashburton district has never been large, though a small and transient population was encouraged by the Fairfield Freezing Works and in shearing gangs. A Māori Women's Welfare League and a Youth Club were established in the 1960's. In 1970 the Canterbury Māori Committee obtained a lease from the Government for the disused Fairton school building and established the Hakatere Marae'.*


*Figure 2: Historic Photograph of East Street Ashburton*

The first building in Ashburton was an accommodation house that was built on the north bank of the Ashburton River in 1858. Ashburton town was surveyed in 1863, and transport through a coach service opened up the next year. Farming was the founding industry of the area with John Grigg of Longbeach recognised as a leading farmer of the time. Mr Grigg later established the Canterbury Frozen Meat Company. Ashburton's population slowly grew and the first school was built in 1872. The Canterbury Flour Mills

[1] Hakatere – The Māori name for Ashburton

[2] Earliest peoples to inhabit Te Waipounamu were tribal groups known as Hāwea, Rapuwai and Waitaha who inhabited the island for centuries before the arrival of more recent tribal migrations of Ngāti Māmoe, Ngāti Wairaki and Ngāi Tahu. – source https://my.christchurchcitylibraries.com/ti-kouka-whenua/tribal-history/

was built the same year. Shortly after the establishment of the Canterbury Flour Mill, the Rakaia River was bridged connecting Ashburton with the fast-growing Christchurch just under 90kms to the north (Ashburton District Council, 2018).

## Present Day

Today, the Ashburton District is considered one of the most productive agricultural regions in New Zealand. Total agricultural land in the Ashburton District equates to 395,658 hectares located in the high country and 281,505 hectares in the plains. (Fitzgerald, 2020)

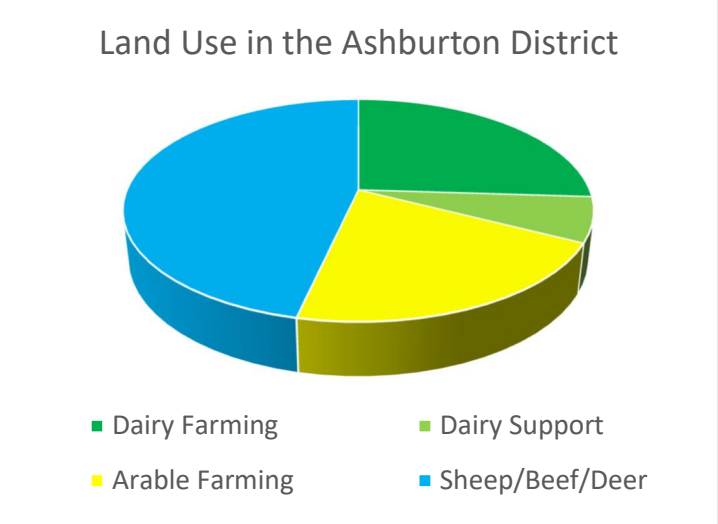


*Figure 3: Land Use in the Ashburton District*

Currently, land used for dairy farming in the Ashburton district equates to 25.5% of the district with a further 6.4% devoted to dairy support giving a total dairy footprint of 31.9% of the district's agricultural land. Arable farming covers 20.6% of land, with sheep, beef and deer using a further 45.6%. This includes high country farming which makes up two thirds of that area (Fitzgerald, 2020). The district is described in this research by farmers and some industry representatives as having three areas of agricultural land. The Hekeo/Hinds zone, the hill country and the northern zone. This is further explored in the background section under the regional information.

The Ashburton District is of mainly European decent with approximately 10% of people identifying as Māori. According to the 2018 census (Statistics New Zealand, 2018), 83.8% of the population in Ashburton District identified their ethnicity as European, 3,333 people or 10.0% of the population in Ashburton District identified themselves as having Māori descent. Agriculture continues to be the strength of the district's economy. The Infometrics New Zealand Regional Economic Profile (Infometrics NZ, 2020) highlights that agriculture and food processing accounted for 32.9% of Ashburton's employment in 2020. Primary industries accounted for the largest proportion of GDP (27.0%) in Ashburton District, which is higher than in the national economy (6.2%).

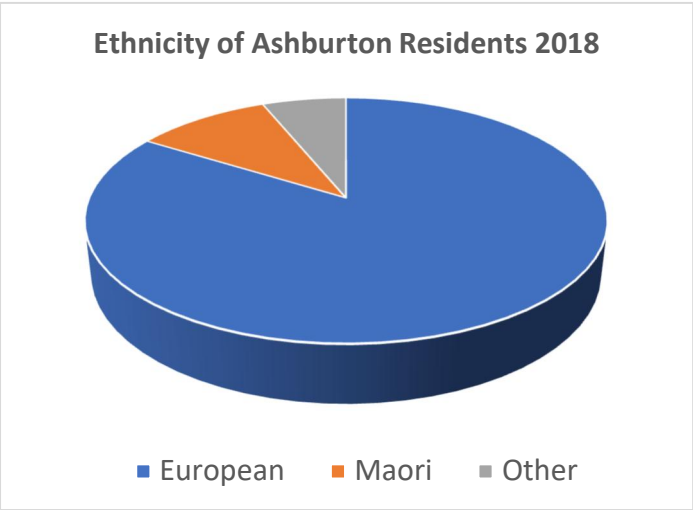


*Figure 4: Ethnicity of Ashburton Residents*

In 2015 the Ashburton District Council made a decision to attract migrant workers to the district in an effort to combat the aging populations and economic decline of small rural townships. As a result, there are many migrant workers of different

nationalities who are employed in the district. Many of these workers are employed by the agricultural industry.

## Environment Canterbury

Environment Canterbury (ECAN) is the regional council responsible for managing Canterbury's natural resources (air, soil, water), and how land use affects the environment. The Ashburton District Council is responsible for looking after local roads and reserves, sewerage, building consents, the land use and subdivision aspects of resource management, and other local matters. ECAN has a legal responsibility under the Local Government Act 2002, the Resource Management Act 1991 (RMA), and within the resource consent process to account for Tangata Whenua[3] concerning the management of natural resources. ECAN works with and informs local authorities within the region in the nine districts of: Christchurch; Ashburton; Hurunui; Kaikoura; Mackenzie; Selwyn; Timaru; Waimakariri; Waimate; and Waitaki. The Ashburton District Council's work is guided by national and local legislation (for example, the National Statement for Freshwater Management, The Canterbury Water Management Strategy, the Ashburton District Plan).

## Water Management in Canterbury

During the research, people refer to the work of Environment Canterbury in improving freshwater environmental outcomes through the Canterbury Water Management Strategy (CWMS). The following section provides some background information as to what the CWMS is and its relevance to sustainable water management in the Ashburton District.

*Figure 5: Canterbury Water Management Strategy Zones*

Prior to the Freshwater Package, Environment Canterbury (ECAN) had adopted a collaborative, community-led approach to sustainable water management under the Canterbury Water Management Strategy (CWMS). The CWMS is a statement of shared values and outcomes for water resource management in Canterbury. Targets of the CWMS are set for: 2015; 2020; 2040 and provide long-term environmental, social, economic, cultural outcomes reflecting a sustainable development approach to achieve the goals.

To achieve the outcomes of the CWMS, the wider community was able to have input via water zone committees. A zone committee was established for Ashburton District. The water zone committee recommend actions and tactics to the Ashburton District Council which are recorded in Zone Implementation Programmes (ZIPs). Regional and sub-

[3] Tangata Whenua - used to describe the Maori people of a particular locality, or as a whole as the original inhabitants of New Zealand.

regional implementation plans and addendums were then adopted for each of those zones under the Canterbury Land and Water Regional Plan (Environment Canterbury , 2013).

The Ashburton District water zone committee consists of representatives from the Ashburton Community, Te Rūnanga o Tūāuriri, Te Rūnanga o Arowhenua, Te Rūnanga o Taumutu, Environment Canterbury and the Ashburton District Council. The Ashburton water zone committee, informed the subregional plan, known as 'Plan Change 2 of the Canterbury Land and Water Management Plan. Plan Change 2 included rules around irrigation schemes in the Ashburton District, guiding how they would and would not operate within the zone and provided targets for freshwater Nitrate – Nitrogen attribute levels for rivers. Under Plan Change 2, 6.9mgN/L or less is required. On 10 May 2018, ECAN announced that the Council had resolved to make the Hinds Plan Change (Plan Change 2) to the Canterbury Land and Water Plan. Further information on Plan Change 2 can be found located in Appendix E.

The NPS-FM requirements bought into force in 2020 are similar but different from Plan Change 2. For example, one of the new baseline nitrogen levels is for the Nitrogen attribute level to be reduced even further to a level of 2.4mgN/L per litre or less. The work for regional councils and communities to implement the new Freshwater Package is significant because the new regulations will supersede the current regional plan being the Canterbury Water Management Strategy. As a result, ECAN is now required to rewrite existing plans.

## The Ashburton District Council Economic Impact Report

During this research, there were many references to the impacts in the Hekeao/Hinds catchment and community. To provide context the following section refers to the Ashburton District Councils Essential Freshwater Economic Report (Fitzgerald, 2020) and highlights the significance of the NPS-FM rules and regulations to the Hinds area. According to the Economic Impact Report from the Ashburton District Council:

*'The Hinds Plains Catchment represents nearly half (47%) of all the plains area of the Ashburton District and is one-third of the entire agricultural land-use, including the high country. The natural resources (soils, rainfall, topography), geography, and community infrastructure are broadly similar but not the same as the rest of the district. The variation within the catchment is reasonably representative of the variation across the remaining plains area of the district'* (Fitzgerald, 2020, p. 4)

Fitzgerald's report identified a significant change in land use as farm businesses responded to the freshwater legislation. The impact assessment completed by the council used modelled data on current nitrogen targets of 6.9 mgN/l of dissolved nitrogen. The report estimated farm profitability across the district would decline by $57.9 million/year (or 83 %), while farm expenditure within the district was estimated to decline by $139.9 million/year (or 23%). Other impacts outlined included: impacts to all farming types, impact to service and support businesses, and employment impacts. An estimated 1,233 fewer people will be employed on farm or across the district because of the potential decreases in farm income. It was identified that farm businesses could move away from intensive, high input systems to less intensive, lower input farm systems. Complete system changes and land use changes were predicted to occur as the regulations became more stringent.

### Freshwater Reforms Announcement

In 2018 the New Zealand Government announced freshwater reforms that proposed a range of new rules and standards that set out a national direction for freshwater management. New regulations included:

- A new National Policy Statement on Freshwater Management (NPS-FM);
- National Environmental Standards for Freshwater (NES-F);
- Stock exclusion regulations; and
- Regulations in the measurement and reporting of water takes.

The requirements for the essential freshwater rules and requirements are set out on the Ministry for Environment website (www.environment.govt.nz). A summary of some of the requirements are located in Appendix D of this report.

The Government opened public submissions to the proposed changes to the freshwater policy package in September 2019. An update on consultation presented to the Minister for Environment outlined details of a two-hour consultation workshop held in Ashburton in September 2019 (Denny, 2019). The document stated that:

- 340 attended this session – twice the capacity of the room booked;
- People engaged constructively with the proposals; however, there was much cynicism that they would be listened to;
- Attendees were concerned about nitrate bottom lines and potential impacts on peoples' mental health and the future viability of rural communities; and
- Attendees also expressed concern that the science behind the proposals was not robust enough and that there was a lack of supporting economic analysis.

## Other Interrelated factors

This report looks at the potential social impacts of the freshwater legislation; however, other factors were mentioned during the research and interrelate with the findings. These factors include unforeseen events that have occurred in the Ashburton district, and other legislative reforms released at the same time as the freshwater reforms which have impacted the Agri-sector; such as:

- The 2019 banking reforms,
- The Mycoplasma Bovis outbreak and eradication program in the Ashburton district,
- The 2021 Canterbury Drought.

In some cases, the above factors have either had a knock-on effect or compounded the reported impacts. The following section provides some context for these events in participant responses.

### The 2019 banking reforms

The way that banks have been interacting with their agricultural clients has reportedly changed in recent years, some of the changes are attributed to banking reforms which were happening around the same time as the freshwater reforms were announced. Under its mandate to maintain our economy's financial stability, the Reserve Bank of New Zealand (RBNZ) has been reported as

expressing repeated concerns about agribusiness. In an article published by DairyNZ (DairyNZ, 2020) the RBNZ expressed concern over the growth of agri-business debt and the effect of volatile commodity prices on how this borrowing is managed. As a result, lending rules have changed. Giving a background about the changes that the RBNZ have made provides context for how some farmers have described the impact of the freshwater requirements on their ability to meet costs; and the way that some banks are describing the interaction with their clients around this legislation.

The RBNZ's changes to bank capital requirements mean banks will need to hold additional capital against lending. The higher the risk profile of the business, the more capital banks must hold against each loan. A media report published on Stuff News quoted the Minister of Agriculture, Hon. Damien O'Connor; as being aware of this issue, saying; '*that the banks were already coming down hard on pretty much all farmers to reduce their debt and limit their access to working capital and were generally being bloody difficult to farmers'* (Anthony, 2020).

## Ashburton's Mycoplasma Bovis Eradication Programme

Mycoplasma Bovis (M. Bovis) is a common cattle disease in overseas dairy countries but had not been detected in New Zealand until July 2017. The Ministry for Primary industries (MPI) announced a national eradication program on 28 May 2018. MPI reports that Canterbury, including Ashburton, had the largest number of outbreaks in New Zealand and has recorded 132 cases of the disease. Of these, eight properties are still affected with active cases (Ministry for Primary Industries, 2021).

During the research M. Bovis was mentioned by some respondents as having an impact on the Ashburton community. Some interviewees were directly involved in the M. Bovis response either through providing social support, or on farm. Those interviewed who provided social support were not currently connected with the Rural Support Trust but described the pressure on availability of counselling. M. Bovis depopulation orders were placed on some farms that tested positive for the disease, which meant whole herds of cows had to be culled. The culling had a reported economic impact on farms and reportedly placed farmers under mental distress. A spokesperson for a beef farm described ongoing stress for farmers dealing with M. Bovis and believed that the freshwater package rules and regulations have added an extra layer of financial and emotional burden on some of those farmers.

## The 2021 Canterbury Drought

The region has also experienced extreme weather events that have impacted farmers. On 28 April 2021, the government announced support for the drought-stricken areas of New Zealand. The Ashburton District was included in this announcement. The drought is recorded as the second consecutive year of drought where low groundwater levels have not been able to recharge.

Some respondents in the research spoke about the drought as having an impact on their stress levels and spoke about the need for farmers to be resilient in times like these. Respondents referred to the impact of the freshwater legislation changes resulting in increased financial pressure and additional stress.

# The Findings:

## Introduction to Findings

The findings of this research are presented in three sections and written in an order that takes into consideration the timeline and importance of some events related to the National Policy Statement for Freshwater Management and associated legislation. The first section begins when the NPS-FM was introduced, specifically, the consultation meeting where some participants of the research attended in Ashburton in September 2019. The first section gives context to the introduction of the rules and regulations, and describes the environmental work that had been already completed as part of the Canterbury Water Management Strategy.

The second section of findings describes the uncertainty that was generated following the NPS-FM consultation meeting and explores how the participants responded to the uncertainty.

The third section of findings describes the potential impacts of the freshwater package. The findings look more closely at the ways that the freshwater rules and regulations could impact farm businesses, farmers and their families, and the community.

# Section 1.

## The NPS-FM consultation seminar

When the government announced the freshwater reforms, Environment Canterbury (ECAN) and some farmers were engaged with the Canterbury Water Management Strategy (CWMS). During the research participants reported that ECAN have already *'spent a considerable amount of time and money'* to oversee the CWMS. According to a spokesperson for ECAN, *'there are still onerous targets for farmers to meet in those plans.'*

During the research, farmers and industry representatives described attending a seminar in Ashburton introducing the new NPS-FM in September 2019. Attendees represented different backgrounds, including; farmers, Agri professionals, Agri-sector groups, environmental groups, and urban people. Some research participants described what it was like to be at the seminar. A few participants mentioned that they saw the farming community expressing stress, upset and anger. For example, a spokesperson for an environmental group described:

*'I went to the seminar in Ashburton where the National Policy Statement was introduced. The seminar was well attended by the farming community. There was a lot of upset and anger with what was produced. I cannot comment on the financial impact, but there was definitely mental stress. There was a lot of yelling and comments made on the impact of the rules'.*

She also commented on the mixture of rural and urban attendees and made mention that she believed the urban attendees to be more supportive of the legislation, but felt the legislation did not impact them the same way as farmers who may experience more financial impact from the rules. She explained:

*'There were not as many people there from the more township areas, but those who attended were perhaps a little more supportive of the legislation coming down. They were looking at it in terms*

*of water quality and a recreational view. However, they would not be required to make the rural industry changes, so it is probably unfair to say that they were coming at it from the same angle'.*

A spokesperson for a different environmental group mentioned that the turnout to the consultation seminar was *'quite massive'* and felt that the government representatives were unprepared and unable to answer the concerns raised. She said that this created uncertainty for the industry. She commented:

*'The representatives of Ministry for Environment were unprepared and could not answer the questions, so they went to a minister who was better able to answer questions. One of the ladies answered the initial questions, but as soon as people tried to pare back what it meant at ground level, they were left entirely wanting. So, all that did was raise concerns again because these guys had no idea'.*

An agri-banker also recalled attending the meeting and described seeing people in attendance displaying heightened anxiety, anger, and a *'sense of hopelessness'* at the changes. He said that there was a *'strong negative vibe in the room'* and felt that it was due to the lack of acknowledgment for work already done. He further explained:

*'The obvious thing was that there were some questions asked, and the guy that was presenting could not answer them. He came across as unprepared and with the attitude of 'well, I did not deal with that, so it is not my problem'. He delivered someone else's message and did not know the basis behind the message'.*

The Agri banker also indicated that the attendees were told that the work of ECAN as part of the CWMS had to be re-written. He described the anger that he saw his clients displaying, citing a waste of time and resources. He said that farmers were worried about their ability to continue farming. He commented:

*'The district has done much work around environmental change over the last decade, and then the government presents a lot of new rules that meant what we had all done had to be thrown out and start again. Clients are saying they have done all this work and spent money around environmental plans, set limits, done their research, come to understand what operations are doing and doing their best, and now they have to add another level of cost. What underpins all of what they are saying is them questioning what impact it will have on their ability to continue to farm'.*

The following responses describe the work that Canterbury farmers and ECAN had done as part of the Canterbury Water Management Strategy, giving context to why there was a strong negative reaction to the introduction of the freshwater rules and regulations.

## Water Management pre NPS-FM

Many of the farmers interviewed reported contributing resources and manual labour for collaborative projects that improved environmental outcomes on-farm. Farmers described their contribution in different ways. Several respondents spoke about the work with ECAN as *'working very well as it worked with individual agribusiness systems and farmers*' but also made statements like *'the government had ignored them as farmers, and ignored the positive work of ECAN in Canterbury'*.

There were a number of non-farming participants who also gave recognition for the work that farmers had done. These participants recognised the work was in a primarily voluntary capacity but expressed concern that other areas of the country might not be as far along in the journey as the Ashburton District. An agri-consultant felt that progress that has been made was not recognised in the *'One-size-fits-all approach'* from government. He stated:

*'Many people throughout Canterbury have made changes on-farm; some of it has been voluntary. Farmers have nutrient budgets and farm environment plans in place. Many are on the journey doing lots of good stuff nationally, but they have not got the same teeth in the environment plans and budgets as Canterbury does'.*

One sheep and dairy farmer spoke about contributing land through partnerships with environmental groups such as QEII trust and proudly explained how he had contributed to improving environmental outcomes. He said that he had spent thousands of dollars to plant and fence. He also said that he was proud of his wife, who had completed much of the planting and acknowledged the many hours of labour that she had contributed. He explained:

*'We donated 6.5 hectares to the QEII Trust and probably spent about $30,000 on planting and more on fencing. We have probably spent about $80,000 over the year. My wife does a lot of the planting. She works two or three hours a day just planting and weeding'.*

The sheep and dairy farmer's demeanour changed when he finished his description of the work that had been done with a comment about the lack of recognition from the government and New Zealand. He added:

*'People don't realise what has been done for them. People need to realise that we farmers have been helping them. Maybe then they will recognise that we have done a lot instead of calling us bad farmers'.*

A young fifth generation intensive cropping farmer wearily spoke about how he felt about the lack of acknowledgement for the work that had been done by farmers. He gave a personal account of how he felt the country had forgotten about farmers. He added:

*'It costs ECAN about $25 million to overwrite the plans, yet we have spent to get to that standard. There's no acknowledgment of what we have all done to get here and get their targets done. It makes me feel disappointed and completely over it. It feels like the country has forgotten about us'.*

# Section 2

This section of findings describes the impacts of the uncertainty generated following the NPS-FM consultation meeting. Uncertainty was a major theme of the research. Initially, uncertainty emerged in response to the NPS-FM seminar in Ashburton, then, as time has progressed, and the rules have become clearer, the participants responded to the new freshwater rules and regulation changes. Specifically, participants were uncertain about how to implement the required changes and what the potential impacts could be on farms.

## Uncertainty emerges

Uncertainty was a key impact of the announcement and consultation process of the freshwater rules and regulations. According to participants, the NPS-FM consultation held in Ashburton in 2019 created a great deal of uncertainty around what farmers are and are not allowed to do, when they must meet targets; and what will be involved to reach those targets. At the time of the NPS-FM coming into force in 2020, some participants described how Environment Canterbury still had not provided Canterbury farmers with clarity about what the NPS-FM will mean to the existing timeframe and targets of the Canterbury Water Management Strategy.

An agri-professional described the emerging uncertainty as '*affecting the entire agri-sector'*. She believed this was because ECAN had not indicated whether the existing CWMS would continue its current targets or whether it would immediately cease and a new strategy written. She explained:

*'ECAN has not indicated whether they are having to start again with these planning processes or allowing the current planning processes of the Canterbury water management strategy already in place to run out their term. Then another one comes out after that. There is a great deal of uncertainty that has generated for the agri-sector'.*

## Impact of uncertainty on Agri Professionals

After hearing about the uncertainty about what the rules will mean for the district, agri-professionals described how the uncertainty impacted the way that rural professionals and banks interacted with their farmers and in some case with ECAN. The following sections describe the impact of this emerging uncertainty on rural professionals.

Several rural professionals described a range of ways the uncertainty affected them. These impacts, included: affecting their ability to plan with and advise their clients; changing how clients interact with professionals; and making their roles more stressful.

Agri bankers described how the uncertainty impacted their ability to support farmers with budgeting and planning. One agri-banker said the uncertainty was widespread and felt that it caused an inability to create environmentally and economically sustainable plans with clients. A key concern for him was that farmers were unable to provide banks with proof of future income. This was because the freshwater rules and regulations could decrease productivity, resulting in a difficulty for farmers to satisfy the banks' lending criteria. He explained:

'*At the moment, the lack of clarity creates much uncertainty. From an environmental perspective, there are many things that we are unsure about. Our farmers are unsure; our trusted advisors outside the bank are also unsure. When we are trying to create a sustainable strategy, both environmentally and financially, which is essential to a bank, there is no certainty around what the rules may look like for everyone.'*

Other agri-professionals also responded to the uncertainty as affecting their ability to support their clients properly. One advisor who works closely with farmers on farm summed up how difficult it was to do his job and advise farmers on the rules. He said that it affected his ability to advise on the next steps to take as a business. He appeared frustrated and animated when describing how the uncertainty had hindered farmers ability to make operational change. He commented:

*'Our job is to know these sorts of rules and regulations and know-how to point farms in the right direction to get help, but if I still do not fully understand then how are these farmers expected to understand it and plan for it? If rural professionals like me cannot provide the support and clarity that a farmer needs to make an operational change, how can they change?'*

Another group of rural professionals who work with farmers are the private irrigation schemes. There are a number of irrigation schemes within the Ashburton District, operated by private irrigation companies. A spokesperson for one of the Ashburton based irrigation schemes felt that being able to represent their shareholders and understand the approach of local authorities gave them a broader perspective on the current and potential impacts of the legislation change. She felt that one of their roles is to work closely with farmers and provide information on what legislation changes mean from a *'practical perspective'*. The spokesperson said that the uncertainty had changed parts of her job because the company was *'busy having to be a change management company'*. She recalled how the uncertainty had meant that she was unable to provide farmers with guidance during this *'really volatile, uncertain and ambiguous time.'* In her view the irrigation scheme had taken an approach to protect the entire scheme and had been directing farmers towards the more stringent rules of the CWMS in the absence of clarity. She further explained:

*'ECAN is not sure what the legislation means. They take a very cautious approach in needing to do what they already have in place and dealing with what the central government wants. We cannot tell our shareholders what ECAN wants. So, when a farmer comes to us wanting to make a change, we cannot give them any answers. Usually, it would fall under the discharge consent that we hold for land use activities, but we do not hold consents under the freshwater legislation, which controls the same thing, so we have to send them to ECAN. Then there is a potential confusion that arises because ECAN advises that a farmer can do something when we are firmer to protect our global discharge as a whole'.*

The uncertainty about what the rules mean was highlighted as a key issue for an environmental group working on current environmental projects. A spokesperson for an environmental group expressed that she was pleased that there was some action around improving water quality, but had concerns about the way that the freshwater package had been announced. She described the collaborations she had with farmers prior to the NPS-FM being announced as being upbeat. She happily described her work with farmers and said that she enjoyed focusing on finding *'wins between environment and agriculture'.* She became serious when speaking about the uncertainty generated in response to the NPS-FM seminar. One of her concerns was the shift in the willingness of farmers to collaborate. She felt that the uncertainty *was 'creating tension, thwarting progress, and disengaging the more proactive farmers.* She further explained:

*'When the draft NPS landed here, there were many unknowns. It had a rippling effect, people dived into the bottom lines, and that shock and concern grew. The change coming from top down concerned me as there was no recognition for work already done. I saw it disengaging those that we had already engaged on the journey, and their attitudes shifted from being along the journey to feeling that there was no bloody point because now they were being lumped in with the guy down the road who was not doing anything to improve environmental outcomes. There was a large volume of people who were seeing opportunities around community or farmer led change and now people were saying things were being imposed like a blunt instrument. Everything has now slowed down and what we*

*have to do has beefed up considerably, but our ability to do it has stopped and that feels quite paralysing'.*

# Section 3

The third section explores the potential impacts of the freshwater package on: farmers; their families; their businesses; rural supply services; the community and the wider district. The data presented also describes some key findings about Hekeo/Hinds; and describes some of the ways that the freshwater rules and regulations affect some key sustainability indicators of farming businesses.

## The Impact on Hekeo/Hinds Area

During the research, people repeatedly referred to the area that includes Hinds and all land surrounding the Ashburton River. This is an area that participants believed would experience the biggest impacts from the Freshwater rules and regulations.

According to a spokesperson for an irrigation scheme, Plan Change Two of the CWMS involves a target of 30% reduction in Nitrogen levels in rivers and waterways by 2035. He explained that the new freshwater rules and regulations requiring a level of 2.4mgN/l could mean that there would be no farming in the Hekeo/Hinds area. He went on to describe people as feeling afraid that their '*community would be decimated*'. Participants in the research reported feeling apprehensive that there may be an expectation set for everyone to achieve the same level as Hinds across the district. The irrigation scheme spokesperson also felt that although there were hotspots that needed to be addressed, the blanket approach of the rules and regulations could mean there would be a mass loss of farms to achieve the targets. He explained:

*'Everyone is apprehensive to say what they can achieve; bear in mind that we have just talked about getting to 6.9 mg/l People are saying they are not even getting to 6.9 mg/l and at a loss at how we can as a farming community achieve 2.4mg/l. For many people, that is unimaginable, and that is our community decimated. It would be better if that were required to be done in the next 10 to 15 years after the current targets. However, if these levels were required now, we are looking at a huge impact. So that is the concern that's starting to percolate out there. Whether you like it or not, there are hotspots around Canterbury, and in those hotspots, stuff will have to be done. However, the concern is, what happens in those hotspot areas then gets to set the expectation for everywhere else'.*

According to a different irrigation scheme spokesperson, a modelling report has been completed and showed that at a target of 2.4mgN/L, *'farms in Hekeo/Hinds including viticulture could not achieve the necessary reductions in leaching required.'* She explained:

*'At the moment, that is impossible to achieve 2.4 mg/l in the drains at the bottom of the Hinds Plain. Farms need to be at 3.8mgN/L without irrigation, and when viticulture leeches a level of 10mgN/L, then there would effectively be no farming on the plains at all'.*

Other Agri-professionals echoed the concern about the potential loss of farms in Hekeo/Hinds. One spokesperson described the possible situation in some farming areas by comparing it to a similar situation in another Canterbury Water Management Scheme area – Waimakariri. He said that in

Waimakariri, farmers have been required to make changes and the farms had become unsaleable. He described a current situation where farmers were now exiting in that area and he felt that this situation could occur in Hinds. He further explained:

'*Farmers were required to make six tranches of 15% reduction over the next 50 years, which is a 90% reduction after getting to good management practice. I believe 24 farmers are in that catchment now, even though the plan is still going through the hearing process. Those farms today are unsaleable. You cannot bank them, you cannot attract staff, so effectively, those farms are changing land use. The farmers will do whatever they can now to exit those farms because now they are tarnished. Now initially, I thought that was incredibly unfair; that is like someone dying not over five years, but over 50 years; you would not wish that on your worst enemy, but that is the consequence of what we are seeing play out at the moment'.*

## Impact on farms and farm businesses

The following data relates to how the freshwater rules and regulations could impact farms and farm business and provide a deeper insight into the frustration and stress that farmers were reporting. One of the major concerns that farmers repeatedly mentioned was economic viability of their farms and for other businesses in the Ashburton District. Farmers also described how the freshwater rules and regulations could affect factors such as: productivity; stability; equity; and resilience of their farm. Such as:

- The rules would reduce the amount of productive land available to use,
- The nitrogen limits would mean that they had to limit the number of livestock, resulting in reduced income
- The cost of upgraded technology, consents, fencing and consultants would cause economic strain on the farm, with some farmers saying that it would be unviable to continue to farm
- The restriction on diversification, limited productivity options which affected the resilience of the farms to cover input costs in times of market fluctuations
- The capital value of their farm could change if there were fewer effective areas and diversification options because the land could be unattractive to buyers.
- The ability to service debt could be impacted by the change in production
- The changes that needed to be made in order to remain productive would require new irrigation systems, and that could mean removing several hectares of fencing and trees used as shelterbelts.

An example of how farm productivity could be affected was commented on by a rural professional. He described the impact that the freshwater rules had on reducing the farm's ability to increase production and feared that some farm businesses would not survive. He said:

'*The ability to increase production has gone. For as long as I can remember, farming has survived from increased productivity. Every year the farmers have improved what they do and get better at it. However, it only holds them in the same place financially; Not everyone will be able to decrease production and still stay viable, and people will fall off the ladder'.*

A hill country sheep, beef, and deer farmer described the requirements to fence waterways and the winter grazing rules from the freshwater package and what it meant for his farm. He felt that there were limited alternative options available to work with. He commented:

*'The rules dictate where we can and cannot graze stock. What it means is that we have to find alternative water sources for our livestock. By fencing off land we lose the ability to graze land. The reduced grazing area means we would have to increase the intensity of how we use the land. That increases our input costs. The way the land is, it is virtually impossible to fence every waterway. It is unviable to complete the fencing in just a couple of years. Economically we think we will be finished. The cost of compliance to meet the regulations exceeds our profitability. We also have an impossible task of trying to reticulate water up the back of the farm for stock to survive, let alone find the money at a cost of $25 odd dollars a metre. Planting trees for carbon is not going to work for us either because; if we plant pines, 30% of the existing moisture will be sucked up to feed the trees, it is going to leave even less for animals and you can't earn enough from credits to stay farming'.*

According to a real estate agent, one of the restrictions around planting winter feed is centred on how much land can be used for winter grazing without consent. He gave an example of a client who has found it challenging to change his farming system because of the reduced options available to him. He described a situation of the client wanting to change operations to reduce leaching, but the halt on intensive dairy practices by the irrigation schemes meant that he was unable to make the change. He explained:

*'One example is the 10% of winter grazing rule which means no intensification. I have a client who runs a 200-hectare block of intensive bull finishing. He wants to convert to dairy, and his N leaching will drop almost half, but he cannot change because that is considered an intensification. Now tell me what is the difference between a bulls**t and a cows**t? It doesn't make sense. Surely if there is a 50% reduction in N loss then common sense would say that's better than what he is doing now?'*

Some farmers spoke about how the freshwater changes have meant there has been a move by irrigation companies and the council towards more stringent water takes for irrigation. One farmer said that restrictions on water allocation would have many consequences to his farm, for example, removing shelterbelt trees, upgrading an irrigation system, removing his flood protection set up, and drilling a well. The costs of making the changes would mean that he would be forced into either going dryland, which meant losing two-thirds of his income or selling the land. He explained:

*'From November to March, we will not be allowed to take the water we need. The only way around that for me is to put a well down, and I would need irrigating setups. I would have to remove all the shelterbelts on the farm except for the boundary ones. At present, every paddock has at least one or two shelterbelts of trees on it. I would have to remove all of that, and I would have to take out all my flood irrigation set up. So, the short and long of it is that it is going to cost about 3.4 million. Until the council comes up with their final decisions, there is no guarantees. According to my consultant, this farm will go dryland, which means our income returns will reduce by two-thirds. So at my late stage of life we just walk off farm, we will not be able to stay here, we just cannot do it'.*

The rules to fence waterways was also a concern to a young farmer. She wanted to highlight what the rules meant for the way that land is managed. She spoke about working on a high-country station and believed that the beef cows behaved differently to dairy cows. She described how farmers would graze the land on the river's edge to help manage weeds. In times of flood risk, the farmers would shift the stock. The rules to fence these areas meant that there would be an ongoing cost to farmers to re-fence the area every time there was a flood. She commented:

*'The stock exclusion rules are out in place all wrong. I worked on a high-country station; the animals did not even care about the water because it is just part of their natural landscape; dairy cows are a bit different because they do not see water much, and when they do, they all want to get in it. I have a friend that works on a farm up the back there it is on the banks of the river, runs 12km, now that gets flooded at least twice a year, he will be refencing it twice a year – it is just the way rivers run, and there is a creek at the front of it. He grazes it, but if there is a flood due, he moves all his stock out. Are you telling me that he needs to fence that every time it has gone underwater? It is just mad. Anyone knows that it's rough land up there, grazing it keeps the weeds down, but this new rule will kill his farm, and that means less stock, fewer lambs bought onto the plains for winter grazing, another job gone. It's just another roll-on effect to create two jobs that tick boxes. Sheep hate water, and beefies do not look at it twice. Dairy cows, I agree, should be fenced off'.*

## Increased Compliance

A key tool for farmers to prove the improved environmental outcomes on farm is the Farm Environment Plans (FEP). A FEP was required by ECAN to gain consent to farm under the CWMS. This compliance required farmers who did not understand the rules to engage with consultants. The costs involved were reported as being *'significant'.* Increased compliance costs were identified as a potential impact, some farmers having to re-write existing farm plans to account for the new rules and regulations. According to many of the farmers and some professionals interviewed, the effects of implementing the new rules on the farm may also mean higher expenditure on capital in order to meet the requirements. One spokesperson for a beef operation said that '*there would also be higher costs in maintaining and monitoring the capital cost, which would then be passed onto shareholders*.' He said that shareholders are seeing increasing overhead costs and compliance costs which decreased profit margins. He explained:

*'We have the same amount of cattle, same kgs produced and our overheads are increasing. The shareholders ultimately pay for that, and they are questioning why they are investing in NZ when they can earn more money elsewhere like overseas and do really well'.*

An increase in compliance over more recent times has impacted some farmers more than others. Some farmers described the increasing paperwork requirements as *'stopping them being able to do the farm work'.* Many farmers reported feeling *'overwhelmed with paperwork'*, feeling *'farming has become something different and not what they signed up for'.* A few participants said that the freshwater package would mean that they had *'another level of paperwork to deal with'*. One spokesperson for an agri-business reflected on this increased compliance, and added:

*'The farmers are spending too much time with compliance issues than farming, which is probably the more significant impact on many of them. Farmers are fed up with time in the office when they need to be out making the farm work'.*

An agri-professional highlighted that the compliance requirements would increase technology use and felt that the legislation would increase the requirement for farmers to adopt technology such as Overseer, and monitoring equipment. He believed that the monitoring and measurement requirements had not been the same across agriculture. As a result, he felt that farmers who were not previously up to speed with compliance requirements perhaps were impacted differently to those who had already adopted some change. He described how some farmers may be affected by the compliance more than others. He commented:

*'Some farmers, particularly those towards the hills, are less likely to have irrigation like the plains; it is a different style of farming. The monitoring and measurement processes have not been adopted quite the same. There is a lag in technology and skills, which has left many farmers suddenly in a panic, not understanding what is required'.*

## Impacts on farmers' ability to access bank support

A few of the farmers interviewed reported feeling pressured by the banks to repay debt. This was a common theme with some farmers who said that it has impacted the way that they could farm.

Some of the farmers were worried that their ability to make changes to meet new freshwater rules and regulations would be hindered because they were *'just trying to make ends meet'* and thought that they may not be able to access the funds that they needed to make the changes on farm. This is because they couldn't prove their future income through diversification such as dairy support, and production with a change in stocking rates.

An Agri-banking advisor explained the way that the freshwater rules could impact on some farms and their productivity from a bank's perspective. He spoke about the bank's requirements for an agribusiness to have financial resilience to meet fluctuations in income. He expressed concern for clients who may be experiencing challenging times such as a drop in market price or drought, and acknowledged that the freshwater rules would impact the financial stability of some farms. He also noted that banks were now questioning the viability and value of some agribusiness customers. He explained:

*'We know that one of the rules is 190kg N/ha/year which is blunt from an operative view. What that means is that farms will need to reduce stock, and that has two effects – income and productivity. So now we are saying, what is your farm worth now that it is less able to produce and you have less ability to generate income? So absolutely that has an impact on what we can lend and, in some respects, we have to take a more conservative approach'.*

A sheep/beef farmer displayed a multitude of emotions when describing the impacts of the legislation and its meaning for his ability to farm. Putting his head in his hands, he described feeling *'backed into a corner'* with his recent dealings with his bank and described feeling *'too much pressure.'* He described some of the increased costs to his farming system and compounded existing requirements from banks. He commented:

*'The bank will not finance us properly now, so I do not know how we can afford to do any of it; they have pulled back their support, removed our ability to access cash flow in rough times, and have been pressuring us to reduce debt. It is not just the cost of fencing and other water systems, but also the increased cost of compliance paying for advisors, then changing our stocking rates. We are already tight in the cost of genetics and meeting the increasing costs of breeding stock. I feel that we are being squeezed in every direction, and there is no relief in the money we get in from the markets – we have to pay more and earn less, and if you do not, then you are considered a bad farmer. Some days I think what's the point?'*

## Impacts on land value

Some participants mentioned that the freshwater package was having an impact on the value of the land but they were not sure if the impacts would be more positive or negative in the long run. A real-estate agent spoke about land values changing because of the new freshwater rules. He said that the issues around environmental legislation was a *'hot topic'* for his clients. He felt that the impact of the freshwater legislation is unclear because the impact on farming profitability had not been fully realised yet. He added:

'*There would not be a day go by where these issues do not come up. The freshwater package is the number one topic for purchasers and vendors. It is hard to know the true impact because, on the one hand, it could increase the value of the land. After all, there is no more supply, but then, depending on how these issues affect farm profitability, it will become less attractive to go farming and reduce the value'.*

An agri banker described seeing a reduction in dairy sales from a banking perspective and felt that it was a direct impact of the uncertainty about the profitability of farms under the new legislation. He commented:

'*We went through 12 months of very few sales after the announcement of the freshwater rules because the dairy industry was unsure where they sat. This had an impact on both value and confidence, and this is happening across the board'.*

## The impacts on farmers and their families

Farmers shared stories about the deep connection to the land. Some identified with farming as '*who they are not just what they do'*. Many farmers who were interviewed said that they had been farming for their entire lives, and some young farmers were from a line of inter-generational farmers. Older farmers expressed their commitment and dedication to farming with pride. Overall, farmers passionately described a *'sense of responsibility'* to provide for their family, the district, and New Zealand. One older farmer shared memories of the early years of farming and the pathway to building a better life for his family under some challenging times. He described working many jobs to be able to survive the 1980's and the involvement of his family to build the farm. He said he felt that the freshwater rules '*undoes all the hard work done'* because he had to invest so much money into making changes to the water system on farm. He had tears in his eyes as he described the pressure that he felt.

Some farmers described the pressure that they were feeling from the media and government. One farmer said *'I'm shutting down because of it all'* and another commented that the freshwater issues had increased the *'negative perception of farmers in the public.*' Some participants believed that '*people don't really understand what's going on, you just feel forgotten about.'* One farmer commented that the pressure around public views was coming from both the government and the media. He said:

*'The pressure is not just coming from the government. It is the media as well. I think everything you read is negative, and it is all about how bad we are. Nobody gets up in the morning and says, we are going to screw over the environment today because we all know if we do not have clean water, then we all suffer, but people treat us that way as if we do'.*

A common theme from farmers was that they were feeling increasingly unable to participate properly in the decisions about things that affected their lives. One dairy farmer cited the freshwater package process as *'another example of people making decisions without talking to farmers properly'*. She also thought that there was not enough time given to farmers to help people understand the way farms work. She explained:

*'I guess that people do not understand what's going on. They make these decisions based on numbers and do not think about how it will work. They don't give you enough time to work it out and they don't talk to us about how it will work either. You just feel forgotten about'.*

A sheep and dairy farmer shared his story. He described feeling constantly stressed since the freshwater package was announced. He felt that the relationship between farmers and environmental groups had changed since the rules were announced. He gave an example of donating 6.5 hectares of land and fencing it off to protect it for future generations. He said that he felt *'incredibly upset'* because the same environmental group opposed his recent resource consent for water takes, he believed that it was because of the new rules and regulations. He said that he was *'struggling to keep up'* with the requirements of the regulations. He further commented:

*'When we came to our consent hearing the other day, I thought we had everything signed off and all right. Our irrigation take was already registered with the council, it was ok, we have had it since we bought the place, and before that, there was consent to take water from the river for the last owner. And the environmental trust objected to it because we are taking water? I'm still upset about that. I went to the doctor because I was getting a bit stressed from all of this stuff about the rules, measuring our water and the costs of consents'.*

Farmer's wellbeing and stress levels were a concern of many non-farmers. Comments were made about a *'shared concern for farmer's wellbeing'* by agri-professionals, industry representatives, and members of environmental groups. Some participants mentioned that the farmers who were living in more isolated areas would be more vulnerable to the negative change in mental health because the new rules would cause extra stress and worry, and there was less opportunity for farmers living in more remote locations to talk about it with others. One agri-professional described his interactions with farmers and what he was hearing from them:

*'It is quite a lonely existence for some of those farmers. They might not get off the farm for over a week and the only contact they have is with their wife, so they are sitting there thinking about it themselves and people like us as reps will come up the drive and will hear it all because they don't have anyone else to talk to. It concerns me because it's all we hear – its constant. Farmers are pretty stressed and worried about the new rules and regulations. So, I know that it is having an effect on their health just in listening to them'.*

A local community connector who works alongside the rural community, highlighted a concern for the growing number of people experiencing wellbeing issues in the district. She responded to the potential impact as being *'really concerning' for* farmers and how they would cope. She said that she was worried that the farmers would '*either not show how they were feeling or admit to needing help*'. She described pressures that farmers and Ashburton community members were experiencing as not just coming from the introduction of the new freshwater rules and regulations, but also from several concurrent events such as; Mycoplasma Bovis, Covid-19, and the Canterbury drought (refer to context section of the report). She was concerned about the resources available in the district to support the

rural community and described them as being '*already stretched'* she felt that there would be an impact on wellbeing services if farmers continued to be affected by the changes:

*'There are many farmers experiencing stress already and as a community we are actually under a lot of pressure as it is from the knock-on effects of covid-19 and things like M-Bovis in the community. So, I am thinking – how much more can we take -and wondering - is there going to be funding put into resourcing these services? With farmers and men in particular, it's really difficult for them to admit when they are not coping. When farm owners are under a huge amount of stress or when business owners who rely on the farming industry come under a huge amount of stress, then it becomes this knock-on effect and can become an even bigger problem to everyone around them, such as their staff.'*

A spokesperson for an environmental group had a concern for the stress and tension that she saw some *'good'* high country farmers displaying. She explained that the freshwater package required hill country farmers to fence off waterways and some of the farmers were saying to her that it could be virtually impossible given the way that the water runs on their property. The spokesperson mentioned feeling sad for those farmers who were doing everything they could to meet the rules and said that one of the farmers she worked with had begun to lose confidence for their future generations to be able to farm. She explained:

*'When I hear environmentally responsible farmers say to me – well we might as well shut the gates with the way it is legislated, I think it's sad. Here I am, seeing people who have done such a good job, and they are now asking what the future is for their children'.*

During the street intercept interviews, some urban residents commented about the potential impacts of the freshwater package on farmers and families. Some of these comments drew a comparison to the agriculture reforms of the 1980's. One resident used her memories of the past to describe what happened in the 1980's to farmers and believed that the current freshwater package was going to place farmers and their families in similar positions. She said she was worried for the farmers suicide rates could increase. She commented:

*'I can see farms crumbling as they did in the 80s. I heard stories in the 80s, where people just walked off their farms, and the suicide rates went up from the stress. I can see the stress on families around Ashburton now, and dare I say it, but I think there will be an increase of suicides. If the farmers feel stressed about money they have to find to pay for consents and try to keep it from their families, it is not a good situation'.*

A spokesperson for an irrigation scheme also expressed a deep concern for farmers. She cited the angst, disengagement, and shifts in wellbeing that they were seeing since the introduction of the freshwater rules and regulations. She said that there was a rise in the number of farmers expressing *'they may not be good enough to continue to farm.'* She mentioned that she was worried for the mental health of farmers and was concerned because one of the shareholders had ended their life a few years back. She said that she was worried that a potential impact could be that the pressure that farmers were already facing could compound with the stress around making changes under the freshwater package, and was worried that there could be an increase in suicide rates. She explained:

*'There are already pressures on farmers, we lost someone in our scheme a few years ago, and I do not even think we have seen the rubber hit the road yet. I am really worried about people's mental*

*health. It's not my area of expertise, but it is something that I am apprehensive about. I see that farmers have been doing everything that they possibly can do within their farming systems to make them better. We see improvements in groundwater quality, but now an arbitrary limit put on everything without considering the features of these drains, and people are saying - what more can I possibly do - how can I do this? I do not think I can do this - what is left for me? do I even want my children to get involved in the farm anymore? There is definitely great concern out there'.*

The pressure to exit farming was highlighted by some participants as a potential impact of the freshwater package on farmers and their families. Some participants suggested the increased exits were attributed to an aging generation of farmers who no longer had the desire to farm through the changes. Other participants said that it was due to the pressure farmers were under. According to a spokesperson for an irrigation scheme, some farmers are currently facing an *'unbelievably daunting decision*' to make in light of the freshwater package. Farmers who did not feel confident, or could not afford to make changes to their business to meet the rules may have to make a decision to sell their farm. One of the types of farmers he thought would be most affected was the older generation who were looking to retire. He commented:

*'It is unbelievably daunting for them, so if they are looking at that and saying, geez, this is a whole new world and their decision, do I sell today or sell in 5 years? They have already decided that they are selling; they are more than likely to make that call earlier'.*

The irrigation spokesperson further explained that if there were not enough young people with confidence in the future of farming then there would be an issue with the value of farms and exiting farming would be difficult for the older generation. He added:

*'The challenge is when that young farming couple loses confidence in the future. Then the older couple cannot get out and have golden handcuffs with the farm, and that is when you have got values that will drop, properties will become unmarketable, but that is the extreme position once you hit that you only go there once. Currently, we are not seeing enough good young people stepping up to buy the neighbours because we are going through a reset in our economy'*.

An agri-professional spoke about the increasing number of people selling their farms since the freshwater package was announced. He said that many farmers who were selling were saying that they did not see a future in farming anymore. He felt that farmers were now saying that they did not want the children to continue farming. He said that he could see this trend continuing as the freshwater requirements come into force. He further explained:

*'We have seen many people who have come onto the market and had to sell, saying we don't enjoy this anymore. How can we possibly do this? I do not think I can do this. What's left for me? I don't even want to get my children involved on the farm anymore'.*

## Impact on young farmers

Young farmers who were interviewed reported many potential impacts for them and their families in response to the freshwater legislation. Most of the young farmers interviewed spoke about the freshwater package creating extra compliance and costs. A few young farmers made comments that indicated that they had begun to lose interest in continuing to farm such as; the freshwater rules were *'adding to the reasons why I don't feel like going farming anymore.'*

One fourth generation young arable and vegetable farmer spoke about how the future is often discussed in the family. She spoke about the need for farmers to hire consultants to understand the freshwater package. She felt that the freshwater package was another level of paperwork that would disadvantage farmers who might not be able to keep up with paperwork. She used her brother as an example, and how she felt the new requirements could *'disadvantage him'* because he might not be able to meet the compliance requirements (complete the paperwork). She mentioned that it frightened her to think about the costs to meet the freshwater rules and felt that farming was moving towards corporatisation and family farming would end soon. She explained:

*'I reckon unless you corporatize, farming and family farming is finished here in New Zealand. Dad and I stay up all night debating this sort of stuff. You are going to have to go pay big bucks for someone else to do it and it's just another person on the gravy train isn't it and we just can't afford that. Some of those bigger farms pay someone to do the overview of the farm they are big enough to do it and we can't do it. I see the historic culture of family owning farms in NZ is getting less and less.*

A young fifth-generation crop and dairy farmer running their family farm spoke with a great deal of heaviness in his voice about what the freshwater legislation could mean for their agribusiness. He spoke about the modelling undertaken by their farm consultants to meet the required changes for reducing nitrogen limits, and their solution was a reduction in stock numbers. The young farmer and his family had played around with different farming system scenarios to see if they could reach the targeted levels without reducing their ability to repay debt and stay a viable business, but did not see a possibility. He described the stress of getting to a financial surplus after converting to dairy nine years ago and said that he had hoped to continue farming this way but was worried because he was not seeing a great future, especially as he saw people leave the industry. He explained:

*'We are in the 9th season since we converted to dairy and only just set ourselves up. It is a tough one because we do not know what we can do for our system, we might have to change between crop and dairy, but then it takes more than that to grow a paddock of wheat. It makes you so nervous because it is all unknown, and you feel so stressed about how to make it work. You can't see these things coming and do not know what is coming next. You sort of wake up one day and get slapped in the face with more rules. It is a drain on everything you do and gets you down a lot. My old man is getting sick of trying to make things work so that I can take over. I hope I can farm in the future, but I do not know. It has driven people out of the industry. My brother is a perfect example; he is working in town and does not want the stress of farming. He tells me there is no point in working 70 hours for nothing when he can earn a better living in town earning wages'.*

## Impacts on the community

The socio-economic impact created from the freshwater rules and regulations could impact the wider Ashburton district. One of the key concerns of participants was the economic viability of farms and how that affected the districts businesses and smaller townships. Many participants described the potential impacts on the community, such as:

- Rural and urban businesses closing due to an economic downturn on farms;
- Increased unemployment;
- Less spending in the district resulting in less support to community;
- Families relocating out of the district looking for employment;

- Negative impact on school rolls and interactions between rural and urban children;
- Reduced volunteers, sponsorship and donations in the district; and
- Increased demand for rural wellbeing services.

A resident living in the Ashburton township described feeling worried for the survival of some of the district's smaller townships. She felt that the changes farmers needed to make to meet the new freshwater rules and regulations would be too burdensome financially. She believed that there was a real possibility of forcing an early exit from farms, businesses in rural areas closing, and the family farms becoming corporate. She explained:

*'I am worried that the little communities will not survive as a result of the economic impact from the rules. It is the little stores like Mt Somers that will suffer the most because people will walk off the farm, and it will turn to corporate-owned – they do not support local like family farmers do'.*

An Agri-banker who works with farmers in smaller townships spoke about the potential knock-on effect of economic challenges from the costs of meeting freshwater rules. He felt that families could relocate out of the district, which could mean fewer children in rural schools, which would either affect the ratio of teachers to students as schools lost funding or could mean that attracting quality teachers to roles could be more challenging. He explained:

*'Our district is driven on agriculture around here. So, if these freshwater rule changes have the impact that I think they will, then there will be fewer people on farms. Fewer people mean fewer families at schools, families move out of the district, and that has an on-flow effect to teachers' jobs'.*

An agri-professional recalled her conversation with an owner of an Ashburton service business. She explained that the owner had done some budget modelling after the Ashburton District Council Economic Impact Report was released. The result of the economic impact caused by the freshwater rules and regulations was that his business would need to close, and 35 staff could lose their jobs. She explained:

*'Ashburton itself, as a service town to the rural sector, will fold. There was a local business who did some work on projected figures released by the council and found that it decimated his electronics business. So, he has 35 staff that he would lose. Thinking about that as a minimum impact - that's 35 families so it's a whole of community. Maybe you would still have Methven servicing the ski-fields'.*

Donations and sponsorship could also be impacted by the changes in farm incomes as farmers try to meet the freshwater rules and regulations. An agri-professional could see an impact on the availability of money for donations and sponsorship for local community events and activities. He felt worried as he believed that these are important for small communities that often rely on volunteers, donations, and sponsorship to stay viable. He further explained:

'*Anytime that you see money from farming draw back out of the community, then all of a sudden you have lost your clubs or donations to clubs. Whether you are into horse racing, the brass band the hockey club, the kids school fundraiser for their camp or whatever, it will draw out. You also won't get the parents fundraising for the kids for the local Christmas party to do catering and you think because businesses like ours will have to cut costs'.*

## Employment

Employment was raised as a potential impact of the changes that farms would have to make to meet the freshwater package rules. Those who mentioned employment were referring to the potential reduction in farm production and economic impact. An Agri-banker explained:

*'Stocking rates will drop, production will drop, then there is less money into businesses, less into the community that lives and breathes off the income. By default, less intensity means fewer resources, and given that labour is a resource – displacement of jobs will happen'.*

Another participant said that the rules and regulations could mean the district has a big change in farming types which would affect employment. She reflected on memories of the 1980's and believed that similar things could happen as a result of the rules and regulations. She added:

*'There used to be heaps of sheep, and now you hardly see a sheep at all. My husband was a shearer, so the reduction in sheep means a reduction in work that he has and was available, which meant he had to go further and further away to get the same amount of work as there was in our district. It meant he had to leave his family for long periods and that had a strain on us. I think you will see people begin to move further away from families looking for work if there are big changes in farming types'.*

A seed merchant said that there could be a *'huge impact on the district*' from the freshwater rules and regulations. He described what impact the freshwater rules and regulations would have on his own company. He said that the staffing numbers of his company could halve. He highlighted the winter feed requirements and the nitrogen limits as an example of how his business was affected. He explained:

*'One of the worst-case scenarios is if farmers can't graze dairy cows to the extent that they were. Obviously, that impacts their business, and if that impacts profitability, then it impacts on us. If they keep going down the track with the nitrogen levels, we are going to be virtually decimated. We have 18 employees throughout the company and seven reps on the road, so if this goes off the way it is I would say that we would be cut in half. I know that the Main Street is struggling now. If this continues the way it is, we would see a huge number of jobs lost'.*

## Schools

Schools were mentioned by some community members, as potentially being affected. Some participants felt that the economic impact from the freshwater rules would mean there could be less employment and cause families to move away from the district looking for alternative employment. A community member said that there was already an issue with sustainability of small rural schools and was concerned that schools in the smaller area would struggle and people's sense of belonging to the area could be affected as a result. She explained:

*'We look at the physical health but do not look at the social context. There will be an effect on the schools, especially up our way. There are already not enough kids going in and out, so it will be hard for schools to stay open and sustainable. People's whole sense of belonging will be affected, and I think people who are affected by the changes need to have somewhere to go'.*

Early indications of tension between urban and rural children have begun to emerge in some local schools since the freshwater package had been announced. A representative for an environmental group explained that she had heard about teachers having difficulty managing the interactions between children from rural and urban backgrounds. She further explained:

*'I hear of tension in terms of everyone being a part of the community and having an interest in water. We have heard of different incidents where there is an impact on different schools or families. When you have children from a farm environment and those from an urban environment, it can be difficult for the teachers to manage those interactions. Trying to move forward with environmental changes as a community can be quite challenging because there is such a stark disagreement between the two different views'.*

An Agri-professional working with farmers spoke about how farmers' work regimes had increased through extra compliance and environmental work on top of what they already have to do on farm. He felt that this had already begun to impact the availability of volunteers at schools. He stated that he could see the freshwater package placing further financial strain on farmers and their families and felt that it would have an on-flow impact on the schools. He said that there could be a further reduction in volunteers, sponsorship, and donations. He commented:

*'Farmers will have a bigger financial strain and because of that you will see fewer and fewer volunteers at the school and that will flow on to fewer volunteers and community sponsorship is suddenly not available, donations from the farm businesses dry up.'*

# Discussion

This study examined the potential social impacts of the National Policy Statement for Freshwater Management (NPS-FM) and associated legislation on the Ashburton District.

The data suggested that the initial engagement process for the freshwater rules, and the consultation seminar held in Ashburton, created anxiety, stress, and uncertainty for the agri-sector. This consultation seminar held in Ashburton did not provide attendees a clear pathway, or a reassurance that there had been a thorough investigation of the way that the rules and regulations would impact farming systems. However, it was felt there was insufficient acknowledgment for the positive progress completed by farmers in the district under the Canterbury Water Management Strategy. While it was acknowledged that the current targets had to be rewritten, there was little clarity as to what the changes meant or how to implement change. This lack of clarity created confusion, distrust and uncertainty. This uncertainty increased as time went on, and Environment Canterbury were unable to clarify what the changes mean to the current CWMS targets. This resulted in a decreased confidence in the sector on top of the uncertainty and confusion.

The confusion and increasing uncertainty about the rules and regulations also impacted on agri-professionals. These agri-professionals experienced added stress and tension in their interactions with farmers because they were also unclear about how the rules would affect agribusinesses. The lack of clarity meant that agri-professionals were unable to provide effective support and advice to farmers. Banks and lending organisations took a more conservative stance with farm lending, restricting the ability of some farmers to access capital and stalling progress.

There is an overwhelming indication that the introduction of the freshwater rules and regulations are having an increasing adverse impact on the well-being of farmers. The findings indicate that farmers were already struggling to cope with the pressures that they were under, caused by a series of events such as M.Bovis, and drought; and are now experiencing extra stress and anxiety from the introduction of this new legislation. The result of this is an increased need for wellbeing support and resources for the rural sector in the district.

The potential impacts of the freshwater rules and regulations on farm agribusinesses were analysed in depth. The data suggested that there could be a negative impact on all four sustainability indicators of an agribusiness which are: Productivity; Stability; Resilience; and Equity. The potential reduction in farm productivity from the rules and regulations coupled with increased compliance, and increased capital costs, could mean that some farms may become unviable, particularly in the Hekeao/Hinds area. Older farmers could be most impacted by the impacts, as they could struggle more with meeting the financial investment required to meet the rules and regulations; and they could struggle with the increased paperwork requirements forcing an early exit from farming for some.

The flow-on effects of the reduced farm productivity could also impact on the agricultural supply businesses. It is feared that some agricultural supply businesses may close. Closures could result in a rise in unemployment fewer jobs for farm workers and some supply business employees, a dislocation of families from the area, and an impact on schools through reduced rolls, and increased tensions between urban and rural children.

It was unclear if there would be a long-term decrease in value of farmland, however in the interim, the rules and regulations have created a stall in land sales and a decreased confidence for buyers. The restriction on diversification may negatively affect the value of some land types more than others, it was highlighted that this could include high and hill country farms.

Smaller townships could see a decrease in land value. The Hekeo/Hinds area would see the greatest impact with mass loss of small business and farms making the area unattractive to people to live.

There was a negative correlation between young farmers, the rules and regulations and their hope for the future. Some young farmers had lost confidence in agriculture and this may create a shortage of young farmers willing to purchase land, a decrease in family farming and increase corporate farming.

The economic changes to farms could impact on community organisations such as local clubs. The data indicated that there could be less participation and support from the farming community as the economic changes in response to the freshwater rules and regulations begin to affect farms. Farmers would have less financial ability to support local and this reduced community support from agriculture could create an increased need for these groups to rely on alternative funding sources, such as; The District Council and external community funders. The reduction in volunteer participation could reduce community connectedness and increase social isolation for rural families.

# Conclusion

The new freshwater rules and regulations have wide social implications for people in the Ashburton District. In the past, water quality issues have been addressed through a community led approach to water management. The new rules and regulations have been introduced in a way that has accelerated the urgency of achieving improved water quality; but fails to take into consideration the on-flow socio-economic impacts of such an intervention on some rural communities such as the Ashburton District.

It was evident during the research that the people of the Ashburton District are proud of their agricultural sector and work together to strengthen the community in which they live. A shared commitment to tackle the complex environmental issues, including a willingness from government to work with farmers to create a time appropriate pathway for water quality improvements would result in a more effective and sustainable change in the way that land and water is managed and could achieve more positive social outcomes.

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# Appendices

## Appendix A

## Social Research

## Information for interview participants

### Background

This social research is funded by the Mid-Canterbury Rural Support Trust. The Trust want to explore the potential social impact of legislation on people and communities in the Ashburton District, including the impact of:

- The National Policy Statement for Fresh Water Management (NPS-FM)
- The National Environmental Standards for Fresh Water Regulations
- Stock Exclusion Regulations

**Social Research Purpose**

- To explore the potential social impacts of the NPS-FM, and associated legislation, on communities in the Ashburton District; and
- To inform and contribute to the Economic Impact study being undertaken by Ashburton District Council.

**Research methodology**

This qualitative research will include workshops, community meetings and semi-structured interviews. A range of individuals will be involved, including: farmers, rural professionals, rural industry representatives, interest groups, council staff, urban people and business owners.

**Research team**

The research team comprises Rachael Inch and Dr Heather Collins.

**Research ethics and participant's rights**

All answers will be confidential and anonymous. Your name and identity will not be stated in the report.

With your agreement, the interview will be tape recorded to ensure your ideas are captured accurately. The taped interviews will be transcribed. Either the researcher, or a transcriber who is bound by a confidentiality agreement, will transcribe the interviews.

If you agree to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- ask for the audio tape to be turned off at any time during the interview; and
- be given access to a summary of the project findings when it is concluded.

# Appendix B

**Background information given to participants prior to interview.**

Land and water are an important resource which forms the basis of how people in the Ashburton District live, work, play and interact with each other.

Several pieces of legislation were passed into law in 2020. These include:

- The National Policy Statement for Fresh Water Management
- The National Environmental Standards for Fresh Water Regulations
- Stock Exclusion Regulations

This legislation is intended to address a range of issues associated with freshwater quality and land management.

This legislation could impact on farm businesses in the Ashburton District. Economic impact research conducted by the Ashburton District Council suggests that these regulations could:

- Have more impact on intensive land uses.
- Reduce farm productivity and profitability.

## Appendix C

**Research questions presented to all participants.**

The research questions asked were:

1. Have you heard about this legislation?
2. Where did you hear about it?
3. What have you heard?
4. How do you think this legislation might impact on farmers and their families?
    a. On farmer's businesses?
    b. On rural service and supply firms?
    c. On rural communities?
5. How do you think this legislation might impact on you and your business?
6. How do you think this legislation might impact on the towns? On the wider District?

## Appendix D

The Freshwater requirements listed below have been directly sourced from the Ministry for Environment website:

https://environment.govt.nz/acts-and-regulations/national-policy-statements/national-policy-statement-freshwater-management/

Prioritise the health and wellbeing of water bodies, then the essential needs of people, followed by other uses.

- Designed to improve degraded water bodies, and maintain or improve all others using bottom lines defined in the Freshwater NPS-FM.
- Give an expanded national objectives framework with two additional values - threatened species and mahinga kai[4] - join ecosystem health and human health for recreation, as compulsory values
- Direct councils to develop plan objectives that describe the environmental outcome sought for all values
- Provides new attributes, aimed specifically at providing for ecosystem health, include fish index of biotic integrity (IBI), sediment, macroinvertebrates (MCI and QMCI), dissolved oxygen, ecosystem metabolism and submerged plants in lakes;
- tougher national bottom lines for the ammonia and nitrate toxicity attributes to protect 95% of species from toxic effects (up from 80%)
- Avoid any further loss or degradation of wetlands and streams, map existing wetlands and encourage their restoration.
- Identify and work towards target outcomes for fish abundance, diversity and passage and address in-stream barriers to fish passage over time.
- Set an aquatic life objective for fish and address in-stream barriers to fish passage over time.
- Monitor and report annually on freshwater (including the data used); publish a synthesis report every five years containing a single ecosystem health score and respond to any deterioration.

Local authorities are also required to give effect to:

- National Environmental Standards for Freshwater
- Stock exclusion regulations
- Water measurement and reporting regulations.

The Freshwater NES-F set requirements for carrying out certain activities that pose risks to freshwater and freshwater ecosystems. Anyone carrying out these activities will need to comply with the standards. The standards are designed to:

- protect existing inland and coastal wetlands
- protect urban and rural streams from in-filling
- ensure connectivity of fish habitat (fish passage)

[4] Mahinga kai/mahika kai literally means 'to work the food' and relates to the traditional value of food resources and their ecosystems, as well as the practices involved in producing, procuring, and protecting these resources.

- set minimum requirements for feedlots and other stockholding areas
- improve poor practice intensive winter grazing of forage crops
- restrict further agricultural intensification until the end of 2024
- limit the discharge of synthetic nitrogen fertiliser to land, and require reporting of fertiliser use.

Under the stock exclusion rules from 2023 (regardless of slope):

- All dairy cattle must be excluded from lakes and rivers more than 1 metre wide and all dairy support from 2025.
- All cattle and deer must be excluded from lakes and rivers more than 1 metre wide, where land is used for fodder-cropping, break feeding or grazing on irrigated pasture.
- Wetlands (regardless of slope) already identified in a regional or district plan must have cattle, deer and pigs excluded by 1 July 2023. Otherwise, cattle, deer and pigs must be excluded by 1 July 2025.
- On land mapped as low slope (which is supposed to be “less than 10 degrees slope”) beef cattle and deer must be excluded from lakes and rivers more than 1 metre wide by 1 July 2025.

# Appendix E.

**Key features of the Plan Change 2**

As referenced in the following source - (Environment Canterbury, 2018)

Restrictions on further land use intensification until nitrate levels are at or below an average annual groundwater concentration of 6.9 milligrams per litre (the national bottom line).

Properties will still be able to develop under the Rangitata Diversion Race Management Ltd (RDR) and Barrhill-Chertsey (BCI) irrigation scheme discharge permits until their expiry. The plan change provides a pathway (through a resource consent) for the continuation of the RDR and BCI schemes, but there are limits on the amount of nitrogen leaching that is allowed.

Good management practice is required for all farming activities. Land users are permitted to increase nitrogen losses up to 15 kilograms per hectare per year without requiring consent.

Properties exceeding 20 kilograms of nitrogen per hectare per year will be required to progressively reduce their discharge beyond good management practice levels by:

15% by 2025

25% by 2030

36% by 2035

They will not be required to reduce nitrogen losses below 20 kilograms per hectare per year.

Switching of surface water takes and hydraulically connected groundwater takes to deep groundwater is enabled. No overall increases in takes will be allowed and water surrendered must be left in the river.

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Jenny Hughey, Environment Canterbury

## Canterbury Water Management Strategy update

## Purpose

1. This paper provides an update on region-wide progress of the Canterbury Water Management Strategy (CWMS) partners' work towards implementing the CWMS for July to September 2021.

## Recommendations

**That the Canterbury Mayoral Forum:**

1. **receive the CWMS update report**
2. **note Councils will need to approve an extension for some CWMS community representatives by December 2021.**

## Update on region-wide progress towards implementing the CWMS

2. The CWMS implementation is carried out throughout the Canterbury region by the CWMS partners through a range of statutory and non-statutory obligations and working with a number of agencies and community groups.

3. Following the work undertaken by CWMS partners to develop the Fit for the Future work programmes, future CWMS updates will focus on reporting on the delivery of actions by CWMS partners to meet the 2025 goals.

### Zone and Regional committee updates

4. The timing of CWMS Zone Committee Refresh has been adjusted so it better aligns with Councils' LTP planning cycles and avoids future conflicts with local body elections. Consequently, each Council will need to approve an extension for those community representatives whose three-year term concludes at the next CWMS Zone Committee Refresh. This extension will need to be sought by December 2021, and CWMS Facilitation will provide assistance with this.

5. This extension, from 31 December 2021 to 31 August 2022, will allow those community representatives to continue to participate fully through to the conclusion of the next CWMS Zone Committee Refresh which will be conducted between April and July 2022.

6. Following the completion of the CWMS Zone Committee refresh in August 2021, zone committees will have advanced Action Plans to guide their focus and implementation priorities over the next three years. To support implementation of these Action Plans, a new budget has been provided through Environment Canterbury's Long-Term Plan 2021-31.

7. The Hurunui Waiau Uwha Zone Committee was formally discharged by Hurunui District Council and Environment Canterbury, with a new Hurunui Water and Land Committee being established in its place. This new committee is being co-designed by representatives from the Hurunui District Council, Ngāti Kurī and Ngāi Tūāhuriri Rūnanga, and Environment Canterbury.

8. Zone managers and facilitators have summarised the focus for the CWMS Zone Committees from July to September 2021 (see Attachment 1). Note that the COVID-19 Level 4 lockdown and restrictions under Levels 3 and 2 have impacted on the delivery of some aspects of work programmes.

9. The refresh of the CWMS Regional Committee commenced this quarter. Environment Canterbury, with endorsement from Te Rūnanga o Ngāi Tahu, approved the appointment of Jane Demeter as the independent Co-Chair. The appointment processes for the Te Rūnanga o Ngāi Tahu and Papatipu Rūnanga representatives, and Ngāi Tahu Co-Chair are underway with Te Rūnanga o Ngāi Tahu. Appointments for the community representatives will likely be approved by Council in the second quarter.

## CWMS Targets Progress report 2019-2021

10. The CWMS Targets Progress report is online (ecan.govt.nz/cwms-progress) and provides links to a range of information on the work undertaken by zone committees, Environment Canterbury, Canterbury's city and district councils and other agencies.

11. The report provides a high-level regional assessment of progress on the CWMS 2020 goals and is intended to report on outcomes rather than only reporting on activities. The report measures results strictly against the goals set for 2020 and shows that, as a region, not all the goals have been achieved, partly because some of those goals were too ambitious, and some leave no room for nuance.

12. This is not an indication that progress has not been made but rather a guide to where CWMS partners need to focus in the future. This may mean a greater focus on data collection and sharing of data by CWMS partners to enable a better demonstration of how the progress made provides measurable results.

13. Useful feedback from partners and stakeholders regarding the online targets report has been provided to Environment Canterbury. This includes some concern around how the report was released and how sub-regional highlights are captured, and positive comments around the shift to monitoring progress against outcomes rather than outputs. In light of this feedback, work is underway to improve how efforts across the region are captured within the online report, and ensuring future updates are well communicated with key CWMS partners.

## RMA planning and implementation

14. In August MPI and MfE released the 'Scientific Advisory Panel Overseer model peer review' and the Government's response and recommendations. Environment Canterbury is working with Papatipu Rūnanga to co-design the interim approach to implementing parts of the regional planning framework that use Overseer.

15. The independent hearing commissioners have delivered their recommendations on proposed Plan Change 7 (PC7) to the Canterbury Land & Water Regional Plan and proposed Plan Change 2 (PC2) to the Waimakariri River Regional Plan. Both PC7 and PC2 were informed by recommendations from the Orari Temuka Opihi Pareora and the Waimakariri CWMS Zone Committees and seek to achieve previously established water zone outcomes.

16. The Minister for the Environment has granted an extension, until 9 December 2021, for the Council to make its decisions on PC7 and PC2. The extension was granted so the Council could understand the Overseer review outcomes and any implications before making its decisions on PC7 and PC2.

17. The commissioners' recommendations will be discussed at the 17 November Council meeting when the Council decides whether to adopt the recommendations on PC7 and PC2.

18. Environment Canterbury is exploring the development of a more integrated planning framework, which would combine regional plans (Land and Water Plan, Coastal Environment Plan, Air Plan and various catchment plans) into a simpler and more cohesive single plan – ki uta ki tai. This is consistent with the Planning Standards and will help prepare for the likely requirements of the Natural Built and Environments Act for a single plan per region.

19. Environment Canterbury is working with Papatipu Rūnanga to build an understanding of Te Mana o te Wai in Canterbury. On 8 October Tuia Partners (Canterbury Regional Council and Papatipu Rūnanga) held a governance wānanga to discuss the co-design of an integrated planning framework.

20. The Tuia Partners instructed staff from Environment Canterbury, Mahaanui Kurataio, Aoraki Environmental Consultancy, Aukaha and the Kaikōura Environmental Entity to work with Tokona Te Raki to co-develop a model for Council and Papatipu Rūnanga to consider. Once developed it will be considered at the second Wānanga due to be held at Te Rōpū Tuia on 10 December.The CE's Forum will continue to be updated as this work progresses.

## Key regional projects/campaigns

21. Environment Canterbury is developing a number of campaigns (including key messages, factsheets and resources) for wetland protection, synthetic nitrogen cap and intensive winter grazing to help landowners understand the requirements of the Essential Freshwater National Environmental Standards.

22. The Wilding Conifer Control programme continues to be a significant region-wide workstream to control infestations of wilding conifers which pose a serious threat to indigenous ecosystems. Over 5000 ground control hectares and more than 3000 aerial control hectares were covered in the first quarter of FY2021. Three new management units in south and north Canterbury are the focus this year: Hunter Hills, Albury and Waiau.

23. Braided River Revival Strategies are progressing for the Ashley River/Rakahuri and Rangitata River. Environment Canterbury has committed to working with Papatipu Rūnanga and other parties to complete nine strategies. The strategies' purpose is to seek landscape scale alignment of the Papatipu Rūnanga, agencies and communities involved in braided river management – reviving the critical ecological link, ki uta ki tai, from the mountains to the sea and the connections between people and rivers, key to maintaining the natural character of braided rivers.

24. Braided river environments are a major beneficiary of the Jobs for Nature funding with LINZ and DOC implementing multi-million-dollar projects on the ground in Canterbury to improve braided river health. These include landscape scale pest control operations and habitat protection and enhancement involving Papatipu Rūnanga, Environment Canterbury and other parties across the region. Specific projects include sites in the Mackenzie Basin, Waitaki, Rangitata, Ashburton / Hakatere, Opihi and Rakaia rivers. Projects are also underway in the Waimakariri, Hurunui and Waiau Toa / Clarence Rivers.

25. Environment Canterbury is evaluating the monitoring and reporting requirements of the Water Services Act 2021 and is progressing an in-depth programme of compliance monitoring of territorial authorities' and industrial wastewater and stormwater discharge consents. Environment Canterbury staff are working closely with key territorial authority and industry staff and have provided an update to the Operations Forum in March 2021.

26. Key aspects of the ongoing Fish Screens Improvement project include execution of the Irrigation NZ led "fish screen design knowledge gaps" project and identification of future compliance needs, including developing a process to support industry and consent holders seek engagement with Papatipu Rūnanga and treaty partners to agree designs to address native fish requirements.

27. Water modelling of large river catchments, such as the Rakaia and Rangitata, are in progress to improve understanding of the interactions between the river, the natural environment and human activities. A draft report for a water balance model of the Rakaia has been made available to key stakeholders to help validate the model.

28. A number of projects to improve biodiversity outcomes and land management practises are taking place across the 10 water management zones:

    - In North Canterbury the Soil Conservation and Revegetation (SCAR) programme is well known and received by the community. There is ongoing interest for information on grants and advice on improving land management on erosion prone land.

- In Central Canterbury ongoing work with a range of community groups is supporting riparian planting and pest control work.
- The South Canterbury Environment Canterbury team is working with Ahuriri catchment consent holders to implement actions required as a result of lake Trophic Level Index consent triggers being exceeded.

29. The following projects to improve water quality, increase river flows and groundwater levels continue to be trialled in the region:

    - Repairs to the Selwyn/Waikirikiri Near River Recharge (NRR) scheme (from the 29-31 May flooding event) were completed during the winter months. In September, high winds toppled approximately 20% of the trees in the surrounding pine plantation. Site access is currently restricted until the windfall can be cleared.
    - Year 5 of the Hekeao Hinds Managed Aquifer Recharge (MAR) trial concluded on 31 May. The Year 5 summary report is available at www.hhwet.org.nz.
    - Remedial and enhancement activities (following the 29-31 May flooding event) to the upper Hekeao Hinds Near River Recharge site (including new recharge basins and an extended Kōwaro / Canterbury mudfish wetland) were completed by late September. A community planting day was held on 3 October.
    - Broadacres TSA Kōwaro / Canterbury mudfish habitat construction is temporarily halted due to high spring flows through the site. The wet winter has extended the planting season, enabling the planting of over 3,300 seedlings.

## Central government policy

### Essential Freshwater implementation

30. Environment Canterbury continues to develop its approach to implementing the new requirements of the Essential Freshwater package and provides regular updates on Environment Canterbury's website[1].

31. Environment Canterbury has commissioned Lincoln University's Agribusiness and Economics Research Unit (AERU) to undertake a Canterbury regional economic model to help inform the economic implications of future plans.

32. Ashburton District Council is leading the Resilient Business project to understand and identify opportunities and risks faced by the farming sector in adapting to climate change.

33. Consultation on: the Government's Freshwater farm plan regulations discussion document; Stock exclusion regulations: proposed changes to the low slope map discussion document; and Managing intensive winter grazing discussion document; closed on 7 October. Consultation on the Managing our wetlands discussion document closed on 27 October.

[1] https://www.ecan.govt.nz/your-region/your-environment/water/essential-freshwater-package

## Attachments

- Attachment 1: Zone overview from July to September 2021

- **Attachment 1: Zone overview from July to September 2021**

| CWMS Committee | Focus of the Zone Work Programme | Highlights of practical work underway |
|---|---|---|
| **Kaikōura** | **Lyell Creek/Waikōau Kaikōura Flats**<br><br>**Clarence/Waiau toa** | • Working with all adjacent landowners of creeks, streams and significant drains on the Kaikōura Flats to identify priorities and projects for the Flats.<br>• Lyell Creek Connectivity space is being prepared for community/school planting.<br>• Working with LINZ (who have also provided funding) to manage the Clarence /Waiau Toa work programme. |
| **Hurunui Waiau** | **Waiau/Uwha River**<br><br>**SCAR**<br><br>**Community group engagement** | • Strengthening partnerships through supporting and combining initiatives with the Hurunui District Landcare Group to assist landowners to improve water quality.<br>• $60k has been allocated for Fonterra Catchment programme for fencing/stock exclusion on three farms adjacent to Waiau/Uwha.<br>• Third year of poplar planting is completed; farms maps and land reversion targets on track. One year remaining of contract with MPI.<br>• $60k in funding has been allocated to community weed control projects undertaken by Jed River and Waipara River Care groups. |
| **Waimakariri** | **Arohatia te Awa (Cherish the River) project** | • $60k Fonterra Catchment Program has been allocated across four farms in the lower Ashley for fencing, native planting and willow control to reduce run off.<br>• Additional $40k funding has been allocated to plant maintenance along Silverstream loop.<br>• Watercress promotion on the Cam River upstream of Bramleys Road. Waimakariri District Council, rūnanga and Environment Canterbury are working together to create access points, weed control and information panels.<br>• $10k provided to the Saltwater Creek working group for weed control and fencing. |
| **Christchurch-West Melton** | **Working with community/ catchment groups** | • Working with the Water &Wildlife Trust on a long-term partnership for Otukaikino catchment.<br>• Supporting multi-year Avoca valley restoration project.<br>• Working with industry, community and councils to co-design the Nor-West Christchurch Dust project co-design. |
| **Banks Peninsula** | **Kaitiakitanga projects** | • Kaitiakitanga projects with Ōnuku rūnanga on Kekewai and Takapuneke progressing well. |
| **Selwyn-Waihora** | **Kaitiakitanga projects** | • Kaitiakitanga projects with Taumutu rūnanga on Muriwai/Coopers Lagoon progressing well. |

| CWMS Committee | Focus of the Zone Work Programme | Highlights of practical work underway |
|---|---|---|
| **Ashburton** | **Ashburton Lakes/Ō Tū Wharekai**<br><br>**May/June Floods**<br><br>**Hekeao/Hinds River and Drains**<br><br>**Ashburton / Hakatere River** | • Further hui focused on Good Management Practices, working with landowners have been held regarding the Ō Tū Wharekai project.<br>• The May/June floods created significant additional work for Environment Canterbury, alongside ADC, rural stakeholder and advocacy groups across stopbank protection, flood recovery and land management, community resilience and welfare.<br>• Community catchment groups in the Hinds catchment are forming and working together under a collective model. Conversations are being held with a range of agencies regarding opportunities to initiate riparian planting, biodiversity and water quality initiatives.<br>• Further implementation of the Ashburton / Hakatere Rivermouth Strategy commenced September, including work to repair damage to infrastructure caused by the winter floods. |
| **Orari-Temuka-Opihi-Pareora** | **Salt Water Creek**<br><br>**Biodiversity projects** | • Working with Timaru District Council to monitor industries that have an impact on Saltwater Creek.<br>• Priority actions identified to support Te Ahitrakahi Stream project – an area of significant cultural values.<br>• Assessing water quality and Giant Kokopu protection requirements at Horseshoe Lagoon.<br>• Remediation works taking place at the inaka spawning area in the Lower Seadown Drain. |
| **Upper Waitaki** | **Ahuriri Catch Collectives**<br><br>**Biosecurity**<br>**Compliance monitoring** | • Focus on supporting Ahuriri Catchment Collectives work programme to improve understanding of stream health and additional work required to mitigate impacts of land use.<br>• Ongoing weed control in the Upper Ōhau.<br>• Compliance, monitoring and enforcement programme finalised for the Upper Waitaki/Mackenzie Basin area in line with the Regional Initiatives. |
| **Lower Waitaki** | **Waihao Wainono Community Catchment project**<br><br>**Wainono Lagoon**<br><br>**Upper Hakataramea Bio Security measures**<br><br>**Supporting biodiversity values on private land** | • Waihao Wainono Community Catchment Group leading a biodiversity, access and amenity project at McCulloch's Bridge and the Black Hole.<br>• Continuing to work with farmers in catchment to reduce sediment, nutrient leaching, undertaking weed control and supporting GMP on the margins of the lagoon.<br>• Threatened plants, flax and sedgelands on the Wainono gravel bar and wetlands areas have responded positively to weed control of lupins, broom and willows.<br>• Macrophyte restoration continues to show signs of long-term establishment. Developing a project to monitor macrophyte restoration.<br>• Advice and support provided to landowners through farm consents and farm environment plans to protect grey scrub and significant wetlands. |

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Jim Palmer, Independent Chair, Greater Christchurch Partnership

## Greater Christchurch Partnership - update

## Purpose

1. The purpose of this briefing is to update the Canterbury Mayoral Forum on the current priorities and work programme of the Greater Christchurch Partnership (GCP), including:

    a. Greater Christchurch 2050

    b. the Greater Christchurch Urban Growth Partnership

    c. the Greater Christchurch Spatial Plan.

2. This paper will be supported by a presentation by the GCP Independent Chair, Jim Palmer, at the meeting, which will provide more detail on each of the projects and identify the alignment and intersection with the Canterbury Mayoral Forum's work programme.

## Recommendation

**That the Canterbury Mayoral Forum:**

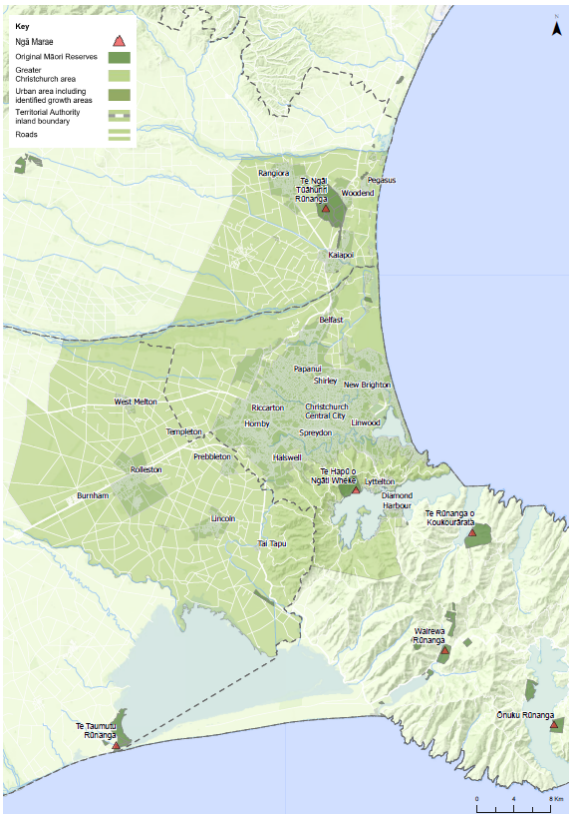
**1. note the contents of the paper, and the briefing provided by the GCP Independent Chair.**

## Background – purpose & priorities

3. The Greater Christchurch Partnership is a partnership of the three territorial authorities of Greater Christchurch (Christchurch City, Selwyn and Waimakariri), the regional council – Environment Canterbury, mana whenua, Canterbury District Health Board (CDHB) and central government (represented currently by Waka Kotahi).

4. The partnership has been in existence since 2007 and is focused on integrated urban and transport planning in the context of the four well-beings.

5. It recognises the interconnected communities and economy, and the shared natural and infrastructure resource across the urban area of Greater Christchurch.




6. The Partnership is governed by a committee made up of three representatives of the four Councils and mana whenua, a CDHB governance representative and a non-voting Waka Kotahi representative. This Committee is supported by a Chief Executive Advisory Group, a Senior Managers Group, and Planning and Transport Manager Groups.

7. In mid-2020 the GCP Committee agreed four priorities to guide its work programme over the remainder of the triennium:

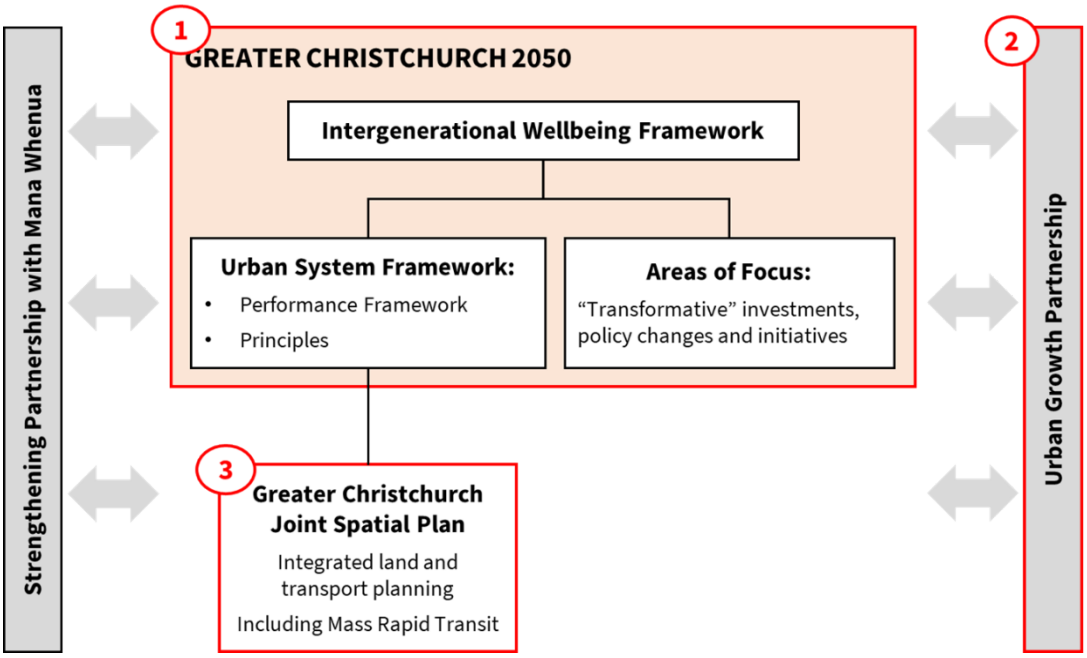
    a. **Develop Greater Christchurch 2050** – setting a vision and plan for Greater Christchurch to achieve intergenerational wellbeing that also responds to climate change, and moving towards a zero carbon economy, noting the opportunity to reset that responding to COVID-19 provides.

    b. **Focusing on our partnership with Central Government,** alignment with Central Government's Urban Growth Agenda, key policies driving investment, and advocacy on behalf of Greater Christchurch.

    c. **Strengthening the partnership with Mana Whenua and Iwi** to ensure priorities and expectations are tangibly integrated into strategy and delivery.

    d. **Maintaining our focus towards a sustainable urban form** which aligns land-use and transport and enables an integrated and efficient public transport system.

8. The GCP Committee's priorities are being delivered primarily through three key projects as illustrated in the diagram below:




## Project 1: Greater Christchurch 2050

*Objective*

9. The Greater Christchurch 2050 (GC2050) project was established in June 2020 to *"set a vision and plan for Greater Christchurch to achieve intergenerational wellbeing that also responds to climate change, and moving towards a zero-carbon economy, noting the opportunity to reset that responding to COVID-19 provides."* Its components include:

    a. a strategic framework articulating our collective aspirations for wellbeing and guiding Partner agencies' decisions, strategy and policy development, and investments; and

    b. a plan which includes a set of transformational moves (investments, policy, and actions) within a clear roadmap to deliver transformational impact and provide confidence in the Greater Christchurch Partners' commitment to delivering on the aspirations and policy direction set out in the strategic framework.

10. The GC2050 project objectives are to deliver:

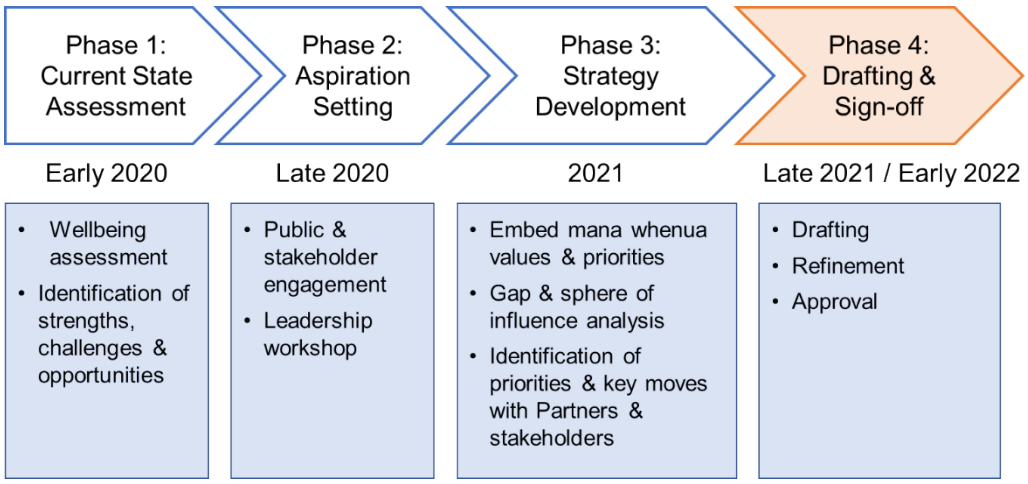
    a. a clear and agreed aspiration and positioning of Greater Christchurch

    b. drive and focus of Partnership investment and commitment to deliver shared outcomes

    c. provide a basis for partnership between local and central government

    d. engender private sector confidence and stimulate investment.

11. The development of the strategy has occurred across four phases:




*Progress report*

12. Following a wellbeing assessment, in late 2020 we undertook community engagement, stakeholder workshops, targeted youth engagement, and a leadership workshop. Community engagement identified communities' aspirations, priorities and concerns regarding the future wellbeing of Greater Christchurch residents, with over 3,000 people responding to an online survey. Given the intergenerational focus of this work, there was also separate engagement designed specifically to target youth, with 383 young people participating in workshops and two youth summits.

13. Stakeholder workshops in November 2020 built on the community engagement to more tightly characterise aspirations for 2050 and how these could be measured. Workshops were also held with the Urban Development Institute of New Zealand, Christchurch Multicultural Committee, Disability Advisory Group, and Non-Government Organisations (NGOs) via One Voice Te Reo Kotahi.

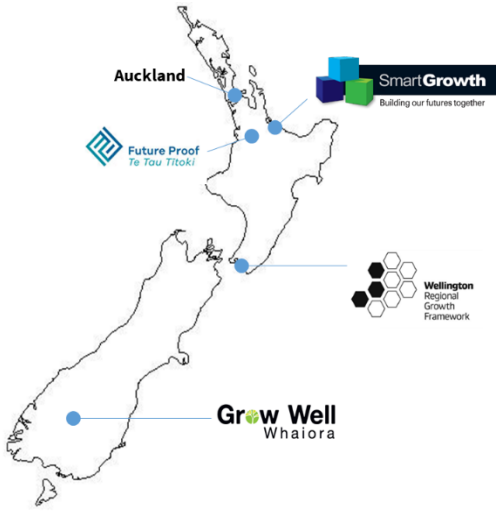
14. Finally, the Leadership Workshop in December 2020 brought together over 65 leaders from across local government, education, business, community, mana whenua and youth. The focus of the workshop was on identifying what collective effort was required to achieve these aspirations.

15. Key themes from the community engagement and stakeholder workshops are included as Attachment A. Further summaries of the feedback received are publicly available on the Greater Christchurch Partnership website.

16. The information gleaned from the engagement has been used to develop a draft Greater Christchurch 2050 strategy document which is currently in draft and will be presented to the GCP Committee in December 2021.

17. Details of the values, vision and priorities of the strategy will be provided to the Canterbury Mayoral Forum via the presentation.

## Project 2: Urban Growth Partnership




*Objective*

18. The GCP has been working to secure an Urban Growth Partnership. Urban Growth Partnerships have been established under the Urban Growth Agenda as forums for central government, local government, and mana whenua to work together on the strategic direction for New Zealand's high growth urban areas.

19. These partnerships support the delivery of the Government's Urban Growth Agenda, the objective of which is to improve housing affordability, underpinned by affordable urban land, supported by wider objectives – to:

    a. improve choices about the location and type of housing

    b. improve access to employment, education, and services

    c. assist emission reductions and build climate resilience

    d. enable quality-built environments, while avoiding unnecessary sprawl.

*Progress report*

20. The Greater Christchurch Urban Growth Partnership will have the following priorities, which are consistent with the Urban Growth Agenda, but reflect the strong focus in Greater Christchurch on addressing issues of climate resilience and sustainability:

    a. create a well-functioning and sustainable urban environment

    b. in achieving this, priority will be given to:

        i. decarbonising the transport system

        ii. increasing resilience to natural hazards and the effects of climate change

        iii. accelerating the provision of quality, affordable housing

        iv. improving access to employment, education, and services.

21. The Greater Christchurch Urban Growth Partnership will involve two Ministers joining the GCP Committee on a quarterly basis. The Greater Christchurch Urban Growth Partnership will have a clear joint work programme, the first project of which is the Greater Christchurch Spatial Plan. The GCP Committee will continue to meet monthly to work collaboratively on local issues.


22. The Urban Growth Partnership Memorandum of Agreement has been approved by all GCP partners and is awaiting Cabinet's formal consideration.

## Project 3: Greater Christchurch Spatial Plan

*Objective*

23. In May and June 2021, the GCP Committee and Partner Councils agreed to the establishment of the Greater Christchurch Spatial Plan project. The Greater Christchurch Spatial Plan (GC Spatial Plan) is one of the first implementation projects of GC2050, and the first project to be delivered through the Urban Growth Partnership.

24. The objectives of the GC Spatial Plan are to:

    a. determine the most effective and appropriate spatial framework for Greater Christchurch to give effect to the strategic direction set through GC2050, and therefore contribute to the vision and outcomes sought for Greater Christchurch (including the expectations and priorities of hapū and iwi in Greater Christchurch)

    b. align with the Government's Urban Growth Agenda objectives and provide the basis for a joint work programme that would be delivered through an UGP for Greater Christchurch

    c. satisfy the requirements of the National Policy Statement on Urban Development for partner councils to jointly prepare a Future Development Strategy for Greater Christchurch

    d. provide the basis for any regional spatial planning that may need to be undertaken at the Canterbury level in the future by taking account the Resource Management Review Panel's recommendations for regional spatial strategies

    e. develop a shared, evidence based spatial view of the future of Greater Christchurch that better integrates land use and infrastructure, provides certainty about the future to guide and stimulate investment, and enables councils to undertake more detailed planning at the local level.

25. The broad phases of work to deliver the GC Spatial Plan is included as Attachment B. The intention is to have a preferred urban form by mid-2022 (pre local government elections) and then, subject to Resource Management Act reform, to have a spatial plan agreed by mid-2023. Public engagement is planned for early 2022.

*Progress report*

26. Work has commenced to develop the evidence base, strategic framework, and initial urban form concepts for the GC Spatial Plan, ahead of public engagement in the first half of 2022.

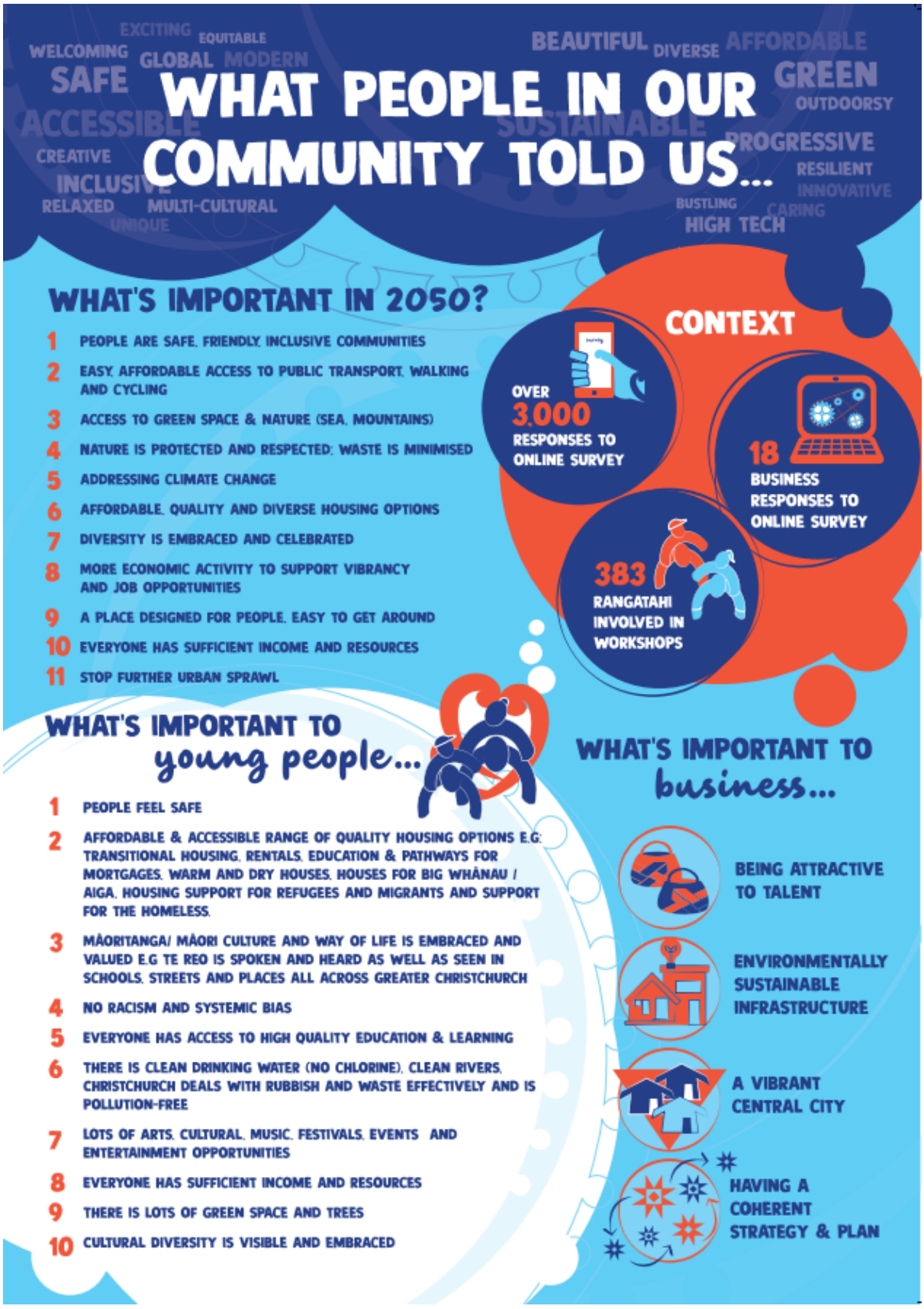
27. The GC Spatial Plan is taking a long-term view to ensure appropriate consideration is given to 'future-proofing' the urban form with the resulting implications for transport and infrastructure planning in the context of climate change (both adaptation and mitigation) and population growth.

28. The GC Spatial Plan will also explicitly recognise Greater Christchurch's contribution to, and interdependence with the wider region and South Island. In this context we will engage regularly with the CMF as we develop the spatial plan.

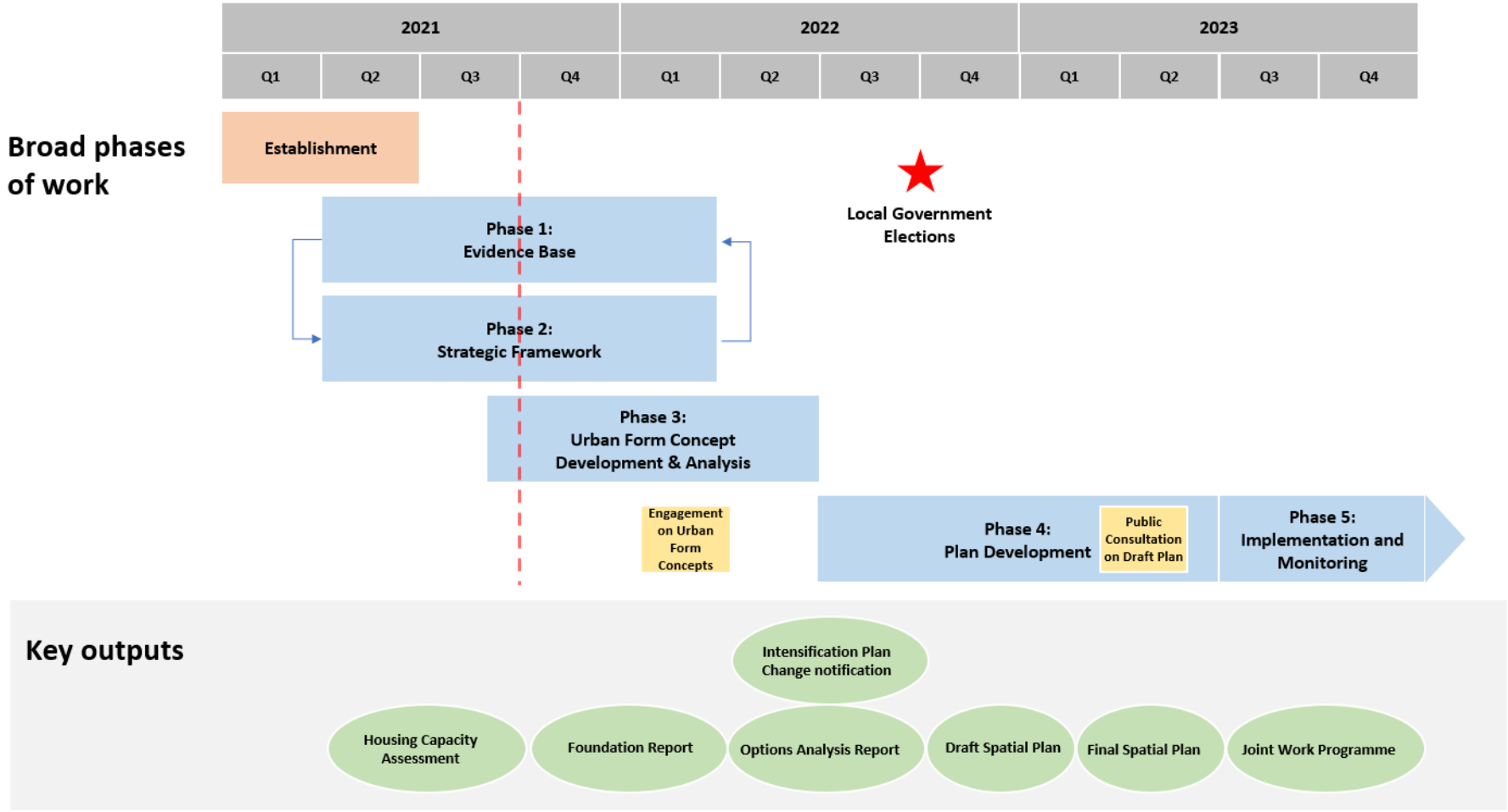
## Attachments

- Attachment A – Greater Christchurch 2050: What people in our community told us
- Attachment B – Broad phases of work to deliver a spatial plan for Greater Christchurch

**Attachment A – Greater Christchurch 2050: What people in our community told us**



**Attachment B – Broad phases of work to deliver a spatial plan for Greater Christchurch**



# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** David Ward, Chair Canterbury Policy Forum

## Resource Management reform update

## Purpose

1. The purpose of this paper is to provide an update on progress with the Government's resource management reform process.

## Recommendation

**That the Canterbury Mayoral Forum:**

1. **notes the update provided on the progress on the Government's resource management reform process.**

## Background

2. The Government is proposing three bills to replace the Resource Management Act 1991. An exposure draft of the first Bill, the Natural and Built Environments, was released for public consultation earlier this year, and the Canterbury Mayoral Forum (CMF) lodged a submission.

## Inquiry on the Natural and Built Environments Bill: Parliamentary Paper

3. Mayor Sam Broughton, supported by Hamish Riach (Chair Chief Executives Forum) and David Falconer (Chair Canterbury Planning Managers Group) spoke to the Parliament's Environment Committee on 2 September in support of the CMF submission on the Inquiry on the Natural and Built Environments Bill: Parliamentary Paper.

4. The Environment Committee has released its report, following the hearing process. Recommendations reflect the majority view of the committee, but the report also sets out minority views of parties.

5. The Government is expected to respond to the Select Committee's report on 16 February.

6. The full bill is expected to be introduced into Parliament early 2022, with the opportunity to comment and lodge submissions in mid-2022. The Bill is expected to pass into law in 2023.

7. The Strategic Planning Bill and the Climate Adaptation Bill at this stage are expected to be introduced into Parliament in 2022 and 2023.

## Key recommendations of the Select Committee

8. The Select Committee made the following key recommendations in their report:
    - the concept of Te Oranga o te Taiao be included in the purpose of the Natural and Built Environments Bill
    - the purpose be amended to reflect environmental limits have priority; better recognise dual goals of protecting the natural environment and enabling development and better recognise the built environment
    - the bill include further direction on how the principles of Te Tiriti o Waitangi are to be given effect to, including, but not limited to, local government's role in the Treaty partnership
    - the bill clarify that limits could only be set for the purposes of protecting the ecological integrity of the natural environment, and/or human health
    - the purpose of the National Planning Framework be expanded to include direction on integrated management on matters of national significance; matters where national or sub-national consistency is desirable; and resolution of conflicts
    - further work be undertaken on planning committees, including representation, how they how they work and make decisions, and the role of the secretariat
    - the development of a capability strategy to support transition to the new system; where appropriate, carry over relevant definitions already defined under the Resource Management Act; provide funding and support for shift to digital tools, including more resourcing to enable iwi, hapū and Māori groups to build capacity.

## Alignment with Mayoral Forum submission

9. The Mayoral Forum's submission had seven key themes:
    - role of local democracy
    - recognising Te Tiriti o Waitangi
    - focus on the natural environment
    - lack of clear priorities
    - transitional arrangements
    - ambiguity
    - resourcing.

10. It appears that the Mayoral Forum's submission is reflected in some of the key recommendations in the Select Committee report. However the extent to which the matters raised in the Mayoral Forum's submission have been addressed will not be known until the further work recommended in Select Committee report, including on

environmental limits, the built environment, the principles of Te Tiriti o Waitangi, the National Planning Framework representation/ decision-making, and transitional arrangements, is undertaken.

11. There will also be significantly more detail available following the Government's response in February 2022 and the subsequent introduction of the full bill into Parliament.

### Resource management reform government engagement

12. The Ministry for the Environment is currently doing targeted engagement on the decision-making roles in the resource management system. The CMF hui was held yesterday.

13. Along with this engagement there is the Ministry for the Environment local government steering group, which includes Mayor Sam Broughton and Dr Stefanie Rixecker from Environment Canterbury, to provide input on all aspects of the reform process.

## Canterbury representation on national working and advisory groups

14. As a result of concerns about lack of representation from Canterbury on resource management reform national working groups, it was agreed to send letters to Department of Internal Affairs, the Ministry for the Environment, Local Government New Zealand and Taituarā to reiterate the importance of ensuring there are Canterbury voices in national-level committees and working groups.

15. The CMF letter noted that our councils have significant knowledge and experience at both executive management and operational levels and are well versed at working collaboratively for the good of our communities. It went on to state that while we understand the difficulties in setting up representative groups for them to ensure that the largest region – one that is not unfamiliar with adapting quickly to change and work with others in a spirit of community and collaboration – is effectively represented when national-level groups are established.

16. Responses have been received from the Ministry for the Environment and Taituarā which are provided at attachment 1.

17. The Ministry for the Environment noted the Mayoral Forum's concerns and advised that it had been working with Local Government New Zealand, the Department of Internal Affairs and Taituarā on establishing a long-term partnership with local government, working on legislative design, and transitioning to and implementing the new resource management system.

18. The letter stated that the Ministry's first step in this process was to establish a national level steering group made up of elected members and council chief executives to provide input to the Ministry for the Environment, other reform ministries and ministers as

appropriate on all aspects of the reform programme. As noted in paragraph 14 Mayor Sam Broughton and Dr Stefanie Rixecker are members of this group.

19. Taituarā's response focused on the current Canterbury representation on its committees and reference groups, noting that one of its five committees is chaired by the chief executive of Timaru District Council (and previously two other committees were chaired by chief executives from Selwyn and Waimakariri respectively), and one of its reference groups is chaired by David Ward. In addition, the response noted that Taituarā helped establish the 3 Waters Reform Steering Group, of which two Canterbury chief executives are members.

20. The response also advised that Taituarā had recently called for nominations for its new reference group system. While some Canterbury members enquired about some of the groups, no one from Canterbury applied. Taituarā stated it found this "extremely disappointing" and is very keen to see a higher level of Canterbury members participating in its work.

21. Taituarā also noted that it was working its way through the nominations for the reference groups, and if it is unable to fill places it will call for further nominations, which may elicit more interest from Canterbury members.

22. In light of the response from Taituarā that no applications were received from Canterbury for the new reference group system, the Chief Executives are considering what can be done to encourage and support more Canterbury representation on the member committees and reference groups.

## Next steps

23. There will be further opportunities to prepare submissions on the full Natural and Built Environment Bill, Spatial Planning Bill and Climate Adaptation Bill, which are expected to be introduced into parliament in 2022 and 2023.

24. The Chief Executives Forum has approved the appointment of a consultant to assist with preparation of regional submissions on the NBA, SPA and CAA bills.

## Attachments

- Ministry for the Environment and Taituarā responses to Mayoral Forum letters

# Attachment 1 – responses from Taituarā and MfE to CMF letter re representation

Kia ora Maree,

Please thank Mayor Sam Broughton for his letter of 23 August. I have investigated the matters raised in it.

I have assumed that the working groups and advisory committees you ae referring to in the case of Taituarā are our Member Committees and Reference Groups.

We have five Committees (previously Working Parties) and one of the five is Chaired by Bede Carran, Chief Executive of Timaru District Council. Previously we had five Working Parties and two of the five were Chaired by David Ward, Chief Executive of Selwyn District Council and Jim Palmer, former Chief Executive of Waimakariri District Council.

Under our new system David Ward now chairs a Reference Group.

Last year we were part of the establishment of the 3Waters Reform Steering Group – there are eight Chief Executives on this group, two from Canterbury – Hamish Riach and Dawn Baxendale.

As we worked to implement our new Reference Group system, five weeks ago we called for nominations from our membership. This call was broadcast on our Discussion Groups – namely Finance, Assets, Risk, Policy, Strategy and Lawyers. It was also promulgated in our Membership newsletter. Despite a couple of Members from Canterbury enquring about the work of the Reference Groups, **NO** applications were received from any Member working for any Canterbury Council. We find this situation extremely disappointing. As you have pointed out in your letter, Canterbury is New Zealand's largest region by land area, spanning the territory of 10 local authorities and 10 Ngāi Tahu papatipu rūnanga, as well as a regional council. It includes New Zealand's second-largest city, Christchurch, and a diverse range of urban and rural communities from the Kaikōura district in the north to the Waitaki River catchment in the south.

We are currently working our way through the large number of applications we did get from other regions around the country. If we are unable to fill all the spots we have available we will again call for nominations. Perhaps this time around we will encounter some interest from Canterbury in assisting us with our work. We understand that the region has had more than its fair share of challenges over the last decade, but like you, we would like to see a higher level of Canterbury members participate in our work.

Ngā mihi nui
**Karen Thomas** CMInstD
Chief Executive

Taituarā - Local Government Professionals Aotearoa
**DDI** 04 978 1282 **M** 022 609 1544 **E** karen.thomas@taituara.org.nz **W** **www.taituara.org.nz**

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Ministry for the Environment
Manatū Mō Te Taiao

CORD-36

Sam Broughton
Mayor, Selwyn District
Chair Canterbury Mayoral Forum
secretariat@canterburymayors.org.nz

Tēnā koe Sam

**Canterbury representation on working groups and advisory committees**

Many thanks for your letter raising concerns about Canterbury's representation on national-level working groups and advisory committees including with the resource management reforms (RM Reform).

A long-term partnership with local government is integral to the success of the RM reforms and achieving the on-the-ground outcomes we all desire. Early in the reform programme, the Department of Internal Affairs (DIA) supported us by establishing a Local Government Chief Executives Forum (LG CE Forum) which has been an invaluable source of local government advice, especially as we developed the Natural and Built Environments Act exposure draft. As you know, Jim Harland, Chief Executive of Waimakariri District Council, joined for the last few meetings and has made a valuable contribution.

Now that the exposure draft is in the Select Committee process, the RM Reform team is working on the detailed design of the system. There is an opportunity to engage more widely and deeply with local government experts to ensure that the new system has been tested and designed with the input of those who will be critical to its future operation.

As you know, David Parker, the Minister for the Environment, wrote to all mayors, chairs and council chief executives on 24 June expressing a willingness to establish a long-term partnership with local government, working on legislative design, transitioning to and implementing the new system. My officials have been working closely with Local Government New Zealand, Taituarā and DIA on how best to make this can happen.

The first step I am taking is to establish a national level steering group made up of elected members and council chief executives. The group will provide input to the Ministry for the Environment, other reform ministries and ministers as appropriate on all aspects of the reform programme. We are seeking perspectives from a diverse range of councils, locations and communities. Based on the advice of LGNZ and Taituarā, I will shortly be approaching individuals to appoint to this group. This will include representatives from Canterbury.

The steering group will provide us with advice on, and will be supplemented by, other engagement. In addition, I am happy to meet with the Mayoral forum and take your guidance on the timing of when we might do this. I am happy to do so via zoom whilst we are in this COVID lockdown should you wish to do so.

Ministry for the Environment
Manatū Mō Te Taiao

We are committed to working with all councils and regions as we transition to and implement this major reform programme and we are looking forward to working with the Canterbury region.

Ngā mihi,

Vicky Robertson
**Secretary for the Environment**
**Ministry for the Environment | Manatū Mō Te Taiao**

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Craig Rowley, FFIP and Digital Connectivity lead mayor; Graham Smith, Canterbury Story lead mayor

## CREDS update

## Purpose

1. This paper provides an update on CREDS activities including progress on phase two of the Digital Connectivity – Mobile Blackspots project and a resolution for the Canterbury Story website.

## Recommendation

**That the Canterbury Mayoral Forum:**

**1. note the updates on CREDS projects.**

## Background

2. The CREDS programme comprised a number of projects funded by the Provincial Growth Fund.

3. This paper provides an update on the second phase of the Digital Connectivity – Mobile Blackspots project, the Food and Fibre Innovation Programme (FFIP), and the Canterbury Story project.

## Digital Connectivity – Mobile Blackspots

4. The Mobile Blackspots project was funded under the CREDS Digital Connectivity programme and mapped mobile blackspots on Canterbury state highways. The first phase identified the ten most significant blackspots and advocacy was undertaken with the Minister for Digital Economy and Communication, Crown Infrastructure Partners, and telecommunication companies.

5. Advocacy has resulted in communication with Crown Infrastructure Partners (CIP), the Rural Connectivity Group, Spark, Vodafone and 2Degrees on upcoming work on Canterbury's mobile network. Several of the ten priority mobile blackspots are on CIP's work programme for at least partial resolution.

6. Both Spark and CIP supported further work in this space, noting that it is valuable to have Canterbury's priorities for coverage detailed in this way. CIP has advised in a letter to the Mayoral Forum dated 8 November (attachment 1) that they are supportive

of this work, and recommended engaging with the Ministry of Business, Innovation & Employment (MBIE)'s Communications Policy team, which is currently considering a long-term connectivity infrastructure strategy which may inform future funding in this space. The secretariat is working to engage with this team.

7. In August the Mayoral Forum agreed to proceed with a second phase of this project to map other roads of interest, including major roads which are not state highways and smaller local roads and road networks. Beca is engaged to deliver this work, using the same methodology as the first phase.

8. Councils identified roads of interest for their district and committed staff to drive these roads. Councils who participated were Ashburton, Christchurch, Hurunui, Kaikōura, Selwyn, Waimakariri and Environment Canterbury.

9. Drive testing for this phase has now completed, with council staff having driven more than 50 roads or local areas across the region. Testing has been done across all three mobile networks, so areas of poor coverage of a single network can be identified.

10. Analysis is now underway, with a stakeholder workshop to review findings being held on 23 November. Representatives from each council, emergency services and industry (including the New Zealand Trucking Association, Federated Farmers and others) have been invited to help determine the priority areas for advocacy.

11. The project is due to complete next month. Following completion we will provide advice to the next Mayoral Forum meeting on advocating with Ministers, CIP, MBIE and telecommunications companies for investment in the priority areas identified by the project.

## Food & Fibre Innovation Programme

12. The Food and Fibre Innovation Programme (FFIP) continues to progress well.

13. The industry ecosystem roadmap created by the University of Canterbury and now with ChristchurchNZ for design and implementation has been delayed, due to issues with data quality and Covid-19 resource constraints. The visual ecosystem map was due to be completed and promoted by 31 October 2021 but will now be completed by 1 December. An interactive directory using the roadmap data will then be developed in conjunction with Callaghan Innovation and KiwiNet and this will be completed by 30 June 2022.

14. Two pipelines with FoodSouth and Te Ohaka respectively, supporting new food businesses into operation, are established and continue to mentor selected businesses. Ongoing funding for these has been secured from Callaghan Innovation.

15. Work by Leftfield on land-use transformation is nearing completion. This work explores land-use transformation opportunities for vegetables, berry fruit and high value grains. Reports on these and next steps will be brought to the next meeting.

16. ChristchurchNZ continues to support and grow key clusters that have been identified. The two clusters being focused on currently are agri-biotech, and food and beverage. ChristchurchNZ is continuing to facilitate meetings and is currently exploring how a shared equipment facility for agri-biotech could be supported.

## Canterbury Story

17. The Canterbury Story website's purpose was reviewed earlier this year after discussions with councils demonstrated it was not being used as intended, with a small number of users not justifying the ongoing hosting and maintenance costs of the site. A number of councils provided feedback, noting that they don't have sufficient resource to maintain the site, as was intended at the time of launch, and that they have their own channels for business and talent attraction.

18. Options for the site were explored as part of the review, including maintaining the site in its current state, repurposing the site for a different intent and audience, and closing the site. Concerns were noted by chief executives around continuing to spend ratepayer money to repurpose or maintain a site that is underutilised.

19. On 2 August the Chief Executives Forum agreed that the contents of the Canterbury Story be moved to another repository and the site closed. ChristchurchNZ has agreed to explore options to host the assets produced for this site in an alternate publicly available location. On 20 August the Mayoral Forum requested an update on these hosting arrangements be provided to today's meeting.

20. Following work with ChristchurchNZ, we can confirm that ChristchurchNZ will migrate content from the Canterbury Story website to the Christchurch Story website[1]. Users will be able to easily search by district for local content. This work is underway now and expected to complete by the end of November.

## Next steps

21. The secretariat will continue to support progress on the Mobile Blackspots project and Food and Fibre Innovation Programme.

## Attachments

- Attachment 1: Letter from Crown Infrastructure Partners dated 8 November

[1] https://toolkit.christchurchnz.com/

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info@crowninfrastructure.govt.nz
www.crowninfrastructure.govt.nz

8 November 2021

Sam Broughton, Chair
Canterbury Mayoral Forum

By email c/- secretariat@canterburymayors.org.nz

Your worship,

**Re: Mobile blackspot mapping**

Thank you for your email of 25 August outlining the Canterbury Mayoral Forum's plans for work on mapping mobile blackspots on local roads in Canterbury, and please accept my apologies for the delayed response.

Crown Infrastructure Partners (**CIP**) supports the Forum's proposed second phase of mobile blackspot mapping, and we note that that this work is important as the Mobile Black Spots Fund only provides mobile coverage to black spots on state highways and certain tourist sites. Having a wider picture of mobile coverage could be useful for advocating further policy and decision making at the Government level.

We note that, as an implementation agency, CIP is limited to funding the deployment of infrastructure and working within current Government policy mandates. Policy and funding decisions are made by Ministers on the advice of officials in the Ministry of Business, Innovation & Employment's Communications Policy team. If policy mandates and funding are extended, then CIP would likely be responsible for implementing any additional mobile coverage as a result.

CIP recommends that the Forum engage with these officials regarding any potential future funding rounds - I am aware that officials are currently considering a long-term connectivity infrastructure strategy. We are happy to provide an introduction if that would be helpful.

CIP is also happy to provide information to the Forum that we hold on current mobile coverage and coverage planned on non-state highway roads that you have identified as important for mobile coverage.

Finally, CIP will continue to keep the Forum informed as we roll out infrastructure in Canterbury and would appreciate continued updates on the Forum's work on connectivity and mobile blackspots.

Thank you again for your continued engagement.

Yours sincerely

Nick Manning
GM Government and Industry Affairs
**Crown Infrastructure Partners**

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Dan Gordon, Chair Climate Change Steering Group

## Climate Change Steering Group update

## Purpose

1. This paper provides an update on the October Climate Change Steering Group meeting.

## Recommendation

**That the Canterbury Mayoral Forum:**

**1. note the update in the report.**

## Background

2. In October, the Climate Change Steering Group held its quarterly meeting and hosted a workshop for the regional climate change councillor group.

## Climate Change Steering Group meeting

### Climate Change Risk Assessment

3. The Steering Group's October meeting focused on reviewing the risk assessment's draft technical report.

4. This matter is covered earlier in this agenda.

### Consultation document on an emissions reduction plan

5. The Ministry for the Environment released for consultation a discussion document on the matters that could be included in an emissions reduction plan for New Zealand.

6. The Steering Group agreed a regional submission on this consultation would be valuable. Drafting was led by the Climate Change Working Group. A final draft is currently being circulated for Mayoral Forum review and will be finalised ahead of submissions closing on 24 November.

## Climate change regional councillor group

7. The Climate Change Steering Group hosted the second twice-yearly regional workshop with councillors on 1 October.

8. The guest speaker was Dr Trevor Stuthridge, Research Director, AgResearch Limited, who discussed with the group how climate change science is supporting the agricultural sector to move to a lower-emissions future.

9. The group then updated each other on progress with climate change initiatives at each council, and concluded with an update from Environment Canterbury on regional initiatives.

10. Planning is under way for the next workshop, to be held in February/March 2022.

## Next meeting

11. The Steering Group will meet again in early 2022. This meeting will largely be focused on considering advice on the next steps for the risk assessment project.

# Canterbury Mayoral Forum

**Date:** 19 November 2021

**Presented by:** Hamish Riach, Chair, Chief Executives Forum

## Chief Executives Forum report

## Purpose

1. This paper reports on the work of regional forums since August 2021 and implementation of the three-year work programme.

## Recommendation

**That the Canterbury Mayoral Forum:**

**1. receive the quarterly report from the Chief Executives Forum and note updates to the three-year work programme.**

## Regional forums activity since August 2021

2. Since the Mayoral Forum's last regular quarterly meeting on 20 August 2021, the Chief Executives Forum met in person on 8 November 2021.

3. The Corporate and Operations Forums met on 13 September and the Policy Forum met on 24 September 2021.

### Chief Executives Forum

***Key matters discussed***

4. At the meeting on 2 November 2021, the Chief Executives Forum:

- received a written update from the Regional Public Service Commissioner Ben Clark for Canterbury on regional public sector priorities. A copy of Ben's report is appended as attachment 1
- considered the Climate Change Risk Assessment technical report and agreed to provide it to today's Mayoral Forum meeting for endorsement.
- agreed to appoint a contractor to support the Mayoral Forum's engagement with the resource management reform process
- received and considered the report of the short-term working party on flexible working
- confirmed a regional submission would be developed for the Mayoral Forum on the Ministry of Business, Innovation and Employment's discussion paper *Economic*

*regulation and consumer protection for three waters services in New Zealand*, led by the Policy Forum.

5. Chief executives also discussed reassessing the Forum's strategic approach to ensure it is fit for purpose. It agreed to hold a session in January, prior to the next planned meeting, to consider and review its strategy and priorities going forward.

6. Members agreed to confirm the current chairs of the Chief Executives, Operations, Corporate and Policy Forums to continue in these roles for the next 12 months.

***Other agenda items***

7. The agenda for the meeting also covered the following matters:
    - an update on the first meeting of the Mayoral Forum's Economic Development Group on 5 November
    - an update on the Regional Transport Committee's forward work programme
    - updates on recent Operations, Corporate and Policy Forum meetings
    - an update on the regional forums budget
    - an update on the CWMS strategy
    - Ashburton's reports on the economic and social impacts of the Essential Freshwater package
    - an update on health and safety responsibilities with regard to COVID-19 vaccinations
    - an update on the Review into the Future for Local Government
    - an update on the Three Waters reform programme.

### Three-year work programme

8. Updates to the three-year work programme are highlighted in the attached document.

## Attachments

- Attachment 1: Update report from the Regional Public Service Commissioner
- Attachment 2: Three-year work programme

# Regional Public Service Commissioner Update:

## CE Forum 08/11/2021

## Purpose

1. This paper provides an update on the Regional Public Service Leadership framework and the Regional Public Service priorities work programme.

## Regional Leadership Framework

2. On 12 July 2021, cabinet agreed to:
   - an expanded scope for the Regional Public Service Leads (now designated as Regional Public Service Commissioners (RPSCs) to recognise the broader role) to include both economic and environment, in addition to the social and skills sectors
   - a wider mandate for the RPSCs to not only convene, but also resolve and as/where necessary escalate issues to CEs for decisions/resolution

3. In addition, Peter Hughes, as Public Service Commissioner has designated the Secretary for Social Development, Debbie Power as system leader for regional public services. The system leader role is a new role that was established through the Public Service Act reforms, and this is the first time it has been used.

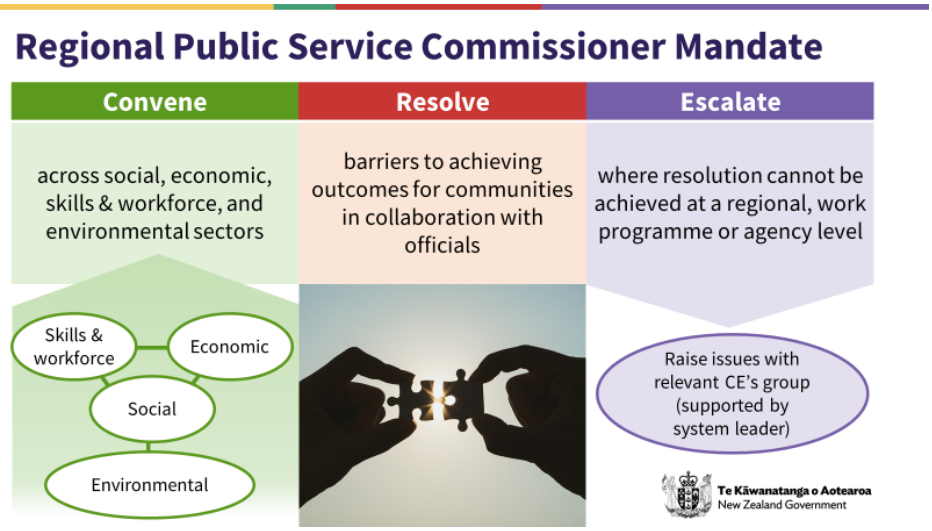
4. Supporting Debbie in this is a group of six CEs (including Debbie) who broadly cover the sectors. This group includes:
   - Debbie Power, Chief Executive of MSD, and Secretary for Social Development, SWB representative and System Leader for regional alignment
   - Iona Holsted, Chief Executive of MoE and Secretary for Education
   - Carolyn Tremain, Chief Executive of MBIE, and EET representative
   - Vicky Robertson, Chief Executive of MfE and Secretary for the Environment (representing natural resource sector)
   - Paul James, Chief Executive for the Department of Internal Affairs (representing local government sector)
   - Dave Samuels, Chief Executive of the Ministry of Māori Development and Secretary for Māori Development

5. The most recent paper setting out these decisions is now available online here:Cabinet-Paper-Joined-up-Government-in-the-Regions-repor-back-Strengthening-a-regional-system-leadersship-framework-for-the-public-service.pdf (http://publicservice.govt.nz)

6. The framework does not alter existing decision rights that sit with Ministers and government agencies. Individual agencies remain responsible for their core work programmes and delivery of portfolio areas. Instead, RPSCs work with agencies to build a strong connection between regional and national offices, and respective decision makers to support better decisions that meet the needs of communities.

7. How the framework is delivered, and over what period, will differ across regions, as each region's context, relationships between leaders and groups, and current public service presence differs.

8. As highlighted below, this widened mandate helps RPSCs improve the consistency of communication between partners across these sectors and generate engagement and coordinated action.




## Interface between Regional Public Service Commissioners and Regional Economic Development (RED) Senior Officials

9. RED Senior Officials (REDSO) will continue to coordinate and lead all-of-government regional economic development activity and will continue to connect in and align with RPSCs on relevant issues.

10. With RPSCs being regionally based and REDSOs national office-based, this should enable strong connection between regional and national offices, and respective decision makers.

11. Ben Clark (RPSC), has and will continue to meet with Paul Stocks (REDSO), and Senior Advisors to be across priorities that are linked and will be supported across roles. For example, social equity issues/skills development and training clearly overlap with economic development priorities being developed by the Canterbury Mayoral Forum alongside Kānoa.

12. Although early days, other examples of interface:
    - where initiatives cannot be funded via the Regional Strategic Partnership Fund (RSPF), other options can be explored based on existing relationships and agency alignment
    - Kānoa priorities will inform the RPSC focus from a skills and labour market perspective, as will the Regional Skills Leadership Group (RSLG)

## Regional priorities for Canterbury

13. To date, our approach has been to build consensus around existing social and economic wellbeing concerns toward broad priority focus areas. From there, we have worked to define the problem and then identify specific 'intervention points', where we believe a joined-up approach will have most benefit.

14. The extended mandate, as noted above will provide further opportunities to support agency alignment around intersecting social, economic, skills and workforce, and environmental issues and opportunities.

15. The work of the RSLG will be critical to informing the workforce priority, but this also overlaps with other priorities and will support those. Lifting workforce capability as a practical means of driving equity, in turn incentivises investment based on solid foundations.

16. Continuing engagement across agencies, NGOs, Iwi, and partners are shaping not only priorities, but enablers to support more effective joined up government, such as workforce connectivity, and alignment of funding and commissioning.

17. A common theme in the development of these priorities is that we want to shift how the public service delivers supports to better reflect what's important for whānau, rather than what's important for individual agencies.

18. Two key enablers to integrating our service delivery are:

    1) improving our maturity in how we collectively commission services from NGOs to reduce the compliance burden on these providers so that they can focus on making a difference to whānau oranga

    2) strengthening relationships across the front-line workforce, especially those involved in working with tamariki, so that our response to whānau reflects the complexity of people's lives. We all agree that needs don't arise in isolation and that working with individuals in their context will help them to become independent and self-determining.

19. Top of mind is that although the priorities are referred to as Public Service priorities, they aim to resonate with local government and iwi and reflect, where possible, broad issues of commonality across our strategy/planning documents.

20. It is noted that COVID priorities and restrictions have interrupted some momentum with the priority refinement.

21. On 6 October 2021 an update on development of Regional Public Service Priorities was submitted to Hon Chris Hipkins, Minister for Public Service.

## Regional Priorities

22. The four initial priorities collectively identified in Canterbury are:

**All tamariki and rangatahi in Canterbury reach their full potential**

23. 'Workforce Connectivity' will look at how the system can be more tamariki-centric and whanau-focused in delivering services and supports to address the underlying causes of disadvantage.

24. This will set the foundation for the agreed priorities:
    - Intervening early to address the needs of tamariki and rangatahi, and their whānau
    - Tamariki and rangatahi are engaged and learning

25. The first workshop on 'Workforce Connectivity' is planned for November.

**Workforce Development – transitioning Canterbury to become a more highly productive and sustainable economy**

26. With a particular focus on Māori, Pasifika, youth and women, this priority will seek to:
    - Increase pathways to support people into employment
    - Match labour force to job opportunities and address sector gaps (including dairy, aged-care, fishing, nursing, seasonal work, and infrastructure jobs)

27. *Note*: The Regional Skills Leadership Group supported by MBIE is supporting this priority area and its plans will be a critical reference point when progressing the Workforce Development priority.

**Addressing housing concerns**

28. The broad priority is supporting whānau to be able to access affordable housing with secure tenure and streamlining agencies roles and responsibilities when working with community groups in trying to support whanau to maintain their tenancies.

29. Our initial focus will be to strengthen the collective response to support the cohorts of people with such complex issues where existing housing services alone cannot meet their needs. This is needed if we are to stem the cycle of disadvantage and prevent future more costly interventions being required later.

**Supporting Mental Wellbeing: Improving access to health care for people with moderate mental health needs**

30. There is agreement across agencies that supporting mental wellbeing should be a focus within the priorities – how this looks is still being refined, while considering insights from literature, health professionals, NGOs, and sector agencies.

31. It is noted that people's health needs, whether physical, mental, or spiritual, are key factors in their ability to fulfil their potential and achieve independence for themselves and their family.

32. RPSC spent several weeks in July and August 2021 seconded to CDHB conducting fieldwork enquiry to support this priority, asking the question "How can government agencies in the region operate in a more integrated way to enhance health and wellbeing outcomes in the community?"

33. Feedback and recommendations from this fieldwork will be discussed Canterbury Regional Leads and key stakeholders.

## Key next steps and timelines

34. Reiteration of the priorities will occur over time as needed, based on updated insights reports, action plans, strategies, and the extended Regional Leadership Framework. In line with work to address the priorities, any reiterations will also need to be collaborative.

35. RPSC will continue to engage with key stakeholders, as we seek to introduce and embed the expanded Regional Leadership framework in our region. This includes strengthening engagement across the economic and environmental sectors.

36. In November (Covid permitting), DCEs from different agencies will meet with RPSCs to discuss key regional issues and opportunities to work together.

37. A report to cabinet in June 2022 will focus on actions underneath the priorities, as well as alignment with economic and environmental sectors. It will also report on an approach to monitoring and evaluation.

38. In addition, The Secretariats/Advisors for the Canterbury Mayoral Forum, Greater Christchurch Partnership, Regional Skills Leadership Group and Regional Public Service Commissioner will continue to meet regularly and share relevant information, including:

    1) Plans/Priority Development and associated work programmes
    2) Briefing papers
    3) Minutes
    4) Relevant planning outcomes/milestones

*October 2021*

# The Regional System Leadership Framework

## Public Service Information Brief

### Key Messages

- On 12 July 2021, Cabinet endorsed the regional system leadership framework as one way to improve the alignment and coordination of public services in the regions, how we deliver services, invest in communities, and engage with partners and communities.
- A key focus is building on what we are doing now to work better for communities.
- Many officials already work this way, resulting in strong interagency collaboration on some issues within some regions. But we're all still learning our way forward.
- The strengthened framework supports a way of working for the whole public service.
- The role of the Regional Public Service Commissioners does not change agencies' existing relationships. It continues to build on the existing relationships with other officials.
- While the public service collaborates well on many issues, we know we can always do better. There are examples of fragmentation and duplication across agencies, particularly cross sector issues that affect people and communities at the same time.
- There are many opportunities to better align how agencies invest, deliver services, and engage in the regions. This includes how agencies at national office level work.
- We know everyone involved is committed to making a difference and the Commissioners are here to help make that happen. Strong partnerships are key, and the great things achieved in the regions during lockdown is testimony to that.

### Background

This work started in June 2019 when the Government agreed to establish 11 Regional Public Service Leads, covering 15 regions. The Regional Public Service Leads were given a mandate to convene public service, initially in the social and skills sectors.

The Regional Public Service Leads built on existing structures and relationships to start forming shared public service priorities. These are one way that officials in the region can show what is most important to support community wellbeing.

## What's changing

On 25 August 2021, the Regional Public Service Leads were designated by the Public Service Commissioner as Regional Public Service Commissioners.

The scope of the Regional Public Service Commissioner role now includes the social, economic, skills and workforce, and environmental sectors.

An expanded scope is expected to:

- support a more unified and effective approach to addressing the needs of communities,
- help bring together agencies that may have important levers and perspectives relevant to the issues that matter to communities, and
- streamline engagement with central government for communities and regional leaders, including iwi, other Māori organisations, and local government.

With an expanded mandate to convene, resolve and escalate, Regional Public Service Commissioners are expected to:

- **convene**: bring together, coordinate and align central government decision-makers as it relates to regional leadership, planning, and delivery of wellbeing outcomes for communities.
- **resolve**: coordinate with officials to resolve barriers to achieving outcomes for communities. This can include working collaboratively with iwi/Māori, local government and regional stakeholders.
- **escalate**: identify and raise issues with relevant Chief Executives groups, where resolution cannot be achieved at a regional, work programme or single agency level; this will be done through the System Leader for Regional Public Services.

The strengthened framework does not alter existing decision rights that sit with Ministers and government agencies. Individual agencies remain responsible for their core work programmes and delivery of portfolio areas.

## Learning our way forward

Better alignment and coordination will enable government in the regions to contribute more effectively to delivering better wellbeing outcomes.

Over time, improved public service collaboration will enable:

- a well-connected regional and national public service that works cohesively and credibly with communities and regional leaders, including iwi, other Māori organisations, and local government, resulting in reduced engagement fatigue and more effective and sustained relationships;

- better coordination of services and processes, resulting in reduced duplication of work programmes and services; fewer gaps in service delivery and improved opportunities to maximise the benefit of public service investment in the regions, and
- shared regional public service priorities that reflect and support iwi, local government and community aspirations, enabling collective opportunities to align investment and services.

## The role of the System Leader for regional alignment

On 25 August 2021, the Public Service Commissioner designated the Secretary for Social Development as the System Leader for Regional Public Services under section 56 of the Public Service Act 2020.

The System Leader is working with relevant Chief Executives to support the success of the framework. The System Leader will be responsible to the Minister for the Public Service for the effectiveness of this coordination.

The Public Service Commissioner, in conjunction with the Public Service Leadership Team, will ensure alignment of the public service around the framework.

## Next Steps

The System Leader for Regional Public Services, along with the Public Service Commissioner and relevant Chief Executives are working through the process to implement Cabinet decisions.

Implementation planning is being led by the regions with support from Chief Executives and national office-based officials.

Officials will work collaboratively across agencies to develop a plan for delivering the strengthened regional systems leadership framework in the regions.

The Minister for Public Service, Minister for Social Development and Employment and Minister for Economic and Regional Development will report back to Cabinet on implementation progress, including against objectives, by June 2022.

Further updates will be provided through Chief Executives as implementation progresses.

You can read the Cabinet Paper on Joined up Government here

Cabinet-Paper-Joined-up-Government-in-the-Regions-repor-back-Strengthening-a-regional-system-leadersship-framework-for-the-public-service.pdf (publicservice.govt.nz)

*October 2021*

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*October 2021*

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# REGIONAL SYSTEM LEADERSHIP FRAMEWORK

Te Kāwanatanga o Aotearoa
New Zealand Government

## *Why do we need joined up government in the regions?*

- Working as a **unified public service** and **acting collaboratively** around communities' needs and strengths will help to achieve better wellbeing outcomes, including by reducing duplication in the way public service agencies engage, invest and deliver services in regions.
- It is an important part of the **Public Service reform** process. The mandate to convene and collaborate at the regional level aims to improve how the public service works in regions to improve the **wellbeing of New Zealanders**.
- Iwi and other Māori groups, and regional stakeholders (including local government, business and community groups) know the realities of their communities and hold valuable insights on what can work to improve their wellbeing. Central government agencies work better with stakeholders to **define priorities with their communities and partner** to achieve outcomes.

## CORE PRINCIPLES

**Spirit of Service**
*Putting whānau and communities at the heart of our work and our purpose*

**Partnering with Māori**
*Support the Crown in its partnership with Māori under the Treaty/Te Tiriti, and act reasonably, honourably and in good faith when engaging with iwi and other Māori groups*

**A Unified Public Service**
*Being informed, organised and bringing together our collective levers as a unified public service to support better outcomes for our communities*

## Joining up in the regions through stronger mandated leadership

### A Framework for Mandated Public Service Leadership

A senior Public Servant in each region is appointed as a Regional Public Service Commissioner (RPSC). RPSCs operate with a **mandate** to:

- **convene**: bring together, coordinate and align central government decision makers (supporting and building on existing groups) across the social, economic, skills and workforce, and environmental sectors, as it relates to regional leadership, planning and delivery of wellbeing outcomes for communities in their regions. If requested, act as a central government representative for other public service agencies (in consultation with agencies) on issues that cut across domains
- **resolve**: coordinate with officials to resolve barriers to achieving outcomes for communities. This coordination may include working collaboratively with officials and existing groups, including with iwi/Māori, local government and regional stakeholders as necessary, to resolve coordination barriers to achieving outcomes
- **escalate**: working with officials to identify barriers to achieving action/outcomes for communities and raise with the relevant Chief Executives group where resolution cannot be achieved at a regional, work programme or single agency level. As a last resort, RPSC may escalate directly to the system leader for regional alignment.

Mandate is clearly communicated by CEs through their agencies.

Fifteen regions have been defined based on Regional Council boundaries, for the purpose of establishing RPSCs.

Resourcing

Depending on regional need, RPSCs are supported by **ongoing, dedicated resource** to support the role and deliver its mandate. This will be managed by agencies deploying existing resources in a more coordinated way.

*This will enable more coordinated public service engagement with other leaders in the region*

### Improve collaboration with other regional leaders

Key stakeholders and partners in the social, economic, skills and workforce, and environmental sectors, work collectively through their preferred leadership group/s. The desired outcome is that in all regions the leadership group includes iwi, Māori, local government, and central government regional leaders.

Where there are no existing leadership arrangements in a region, the RPSC may convene a group or groups that can provide strategic oversight for the region's wellbeing priorities.

The Public Service:
- works **cohesively and credibly** with regional leaders,
- is **joined-up in its contributions** to the leadership group(s), and
- **collaborates** with the region's leaders to **reduce duplication** and **maximise the impact** of its engagement, investments and service delivery to support the region's plan and priorities.

### Strengthen contributions to broader regional plans

The region's leadership group(s) may develop and collectively own an agreed overarching plan that sets out a shared vision for regional wellbeing.

Where these plans are in place, the public service is aligned in its contribution to that plan through the RPSC, and it helps ensure alignment with national direction and strategies, including industry and sector strategies.

The plan's delivery is overseen through the region's agreed leadership group, which is connected to service delivery to communities.

## Enablers of the Framework

### Reporting and Accountability

The System Leader for regional alignment works with relevant CE group on behalf of the Public Service Leadership Team (PSLT). System Leader leads on the coordination of public service activity at a regional level through the framework and is responsible to the Minister for the Public Service for the effectiveness of this coordination.
Reporting is through System Leader to the appropriate CE group, with the option of involving PSLT.

### Monitoring and Evaluation

Monitoring and evaluation supports ongoing learning and adaptation, and ensures line of sight between local, regional and national-level outcomes-focused action.

## Three-year work programme 2020–22

**as at 11 November 2021**

| WHAT | TASK | PLAN FOR CANTERBURY PRIORITY | SPONSOR | LEAD | ACTION | DUE | STATUS | UPDATE |
|---|---|---|---|---|---|---|---|---|
| Canterbury Water Management Strategy | To continue providing governance oversight and strategic support to the implementation of the Canterbury Water Management Strategy (CWMS)<br><br>Renew community acceptance and commitment to the Canterbury Water Management Strategy | Sustainable environmental management of our habitats | Mayoral Forum | Jenny Hughey | Request the Regional Committee to work with CWMS partners to re-engage communities and stakeholders on actions undertaken to deliver the CWMS across the region in order to maintain and nurture commitment to the delivery of the CWMS | 30/09/2022 | On track | Updated Zone Committee terms of reference approved CMF 27 November 2020 |
| | | | | | Progress report on joint actions undertaken to deliver the CWMS across Canterbury | 1/12/2021 | On track | Work in progress with CWMS team |
| | | | | | CWMS Regional Committee reports on progess towards the 2025 and 2030 goals | 30/06/2022 | On track | Work in progress with CWMS team |
| Build capacity and influence to understand climate impacts, risks and opportunities and incorporate these into regional planning documents and community awareness. | Complete our first regional climate change risk assessment, aligned with the national climate change assessment, and identify critical gaps in our adaptation planning | Climate change mitigation and adaptation | Mayoral Forum | Climate Change Steering Group | Progress Stages 2 and 3 of the Climate Change Risk Assessment | 30/06/2021 | Delayed | Climate Change Risk Assessment (Stage 2 & 3) expected to be completed third quarter 2021<br>Agenda Item 2.1 |
| | Encourage all Canterbury local authorities to complete carbon footprint assessments, to inform action plans for reductions | | | | All Canterbury local authorities are encouraged and supported to commission council carbon footprint assessments | 31/12/2020 | Delayed | Working group went to market in December 2020 with an RFP and expected to be in a position to begin negotiations and plan the implementation of the agreed methodology for reporting on carbon emissions by February 2021. |
| CREDS 2016–2019 continuing work programmes | Canterbury Story | Shared economic prosperity | Mayoral Forum | Secretariat | | 17/12/2021 | On track | Following a review of the Canterbury Story website the chief executives agreed that this should be decommissioned. The secretariat are working with ChristchurchNZ to relocate collateral from the site.<br>Agenda item 3.6 |
| | Food, Fibre and Innovation | | | | High value manufacturing<br>Value added production | 30/06/2022 | On track | Work is underway on hosting and publishing industry roadmaps, work on developing industry clusters continues, and initiatives are underway with Ara and FoodSouth to continue to build the industry pipeline and improve productivity. Agenda item 3.6 |
| | South Island Destination Management plan | | | | | 30/10/2021 | Complete | South Island Destination Management plan completed in March 2020. The Mayoral Forum agreed in August 2021 to endorse the plan's strategic aims and to seek endorsement of these at the Zone 5 and 6 meeting in October. |
| Freshwater Package investments | Advocate with Government for the region's interests to be addressed in the investment decisions to support the Government's Freshwater Package | Sustainable environmental management of our habitats | Mayoral Forum | | Add to the agenda for the Mayoral Forum meetings with Ministers. | 30/09/2022 | On track | Essential Freshwater Steering Group established and held first meeting in March. Hon David Parker met with the Mayoral Forum on 11 October.<br>Ashburton DC has prepared both economic and social impact reports on the new Essential Freshwater regulations for the Ashburton district.<br>Agenda Item 3.2 |

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|---|---|---|---|---|---|---|---|---|
| Education Forum | Facilitate a forum of key tertiary education and training providers to enable the exchange of ideas and information and support collaboration<br>Advocate for transition of secondary students to further study and training or work | Shared economic prosperity | Mayoral Forum | Dan Gordon | Forum meets at least twice each year | 30/09/2022 | Update needed | Meeting held 1st quarter 2021, secretariat working with RSLG to refine purpose and approach |
| Skilled Workforce | Advocate with Government for education and immigration policies that deliver a skilled workforce now and into the future | Shared economic prosperity | Mayoral Forum | | Add to the agenda for the Mayoral Forum visit(s) to Wellington | 30/09/2022 | On track | A draft submission on the Productivity Commission's review of immigration settings is being developed. |
| Better freight options | Participate on the Canterbury Regional Land Transport Committee | Better freight transport options | Mayoral Forum | | Communicate to the RTC the forum's desire that the new RTLP provide a planning and investment framework that results in fewer trucks on the road | 30/06/2021 | Complete | 2021-2031 RLTP has freight targets, including 100% increase of freight on rail<br>Freight Tour was held 18 / 19 February 2021 |
| | Collaborate with South Island chairs of RLTC to drive multi-modal transport planning investment | | | | | 30/09/2022 | On track | RTC CMF members planning South Island RTC Freight Summit |
| | Advocate with Government for investment in multi-modal transport outcomes, especially moving more long-distance freight by rail | | | | Write to Ministers to advocate for Canterbury's position<br>Add to agenda for Mayoral Forum visit(s) to Wellington | 30/09/2022 | On track | Discussed Mayoral Forum 19 February 2021<br>Met with Minister Wood 27 May 2021<br>Written to Minisiter Wood to raise issues with funding for the RLTP, and in particular resilience, maintenance and timing of NLTP decisions. |
| Three Waters | Advocate a Three Waters regulatory system that utilises risk-and evidence-based interventions to ensure safe and efficient delivery of water services | Three Waters services | CEs Forum | Secretariat | Write to Ministers to advocate for Canterbury's position<br>Add to agenda for Mayoral Forum visit(s) to Wellington | 30/09/2022 | On track | Met with Minister Mahuta 12 May 2021, with LGNZ Zone 6 and Ngāi Tahu.<br>Written to Minister Mahuta requesting a pause to the reform process |
| Update Canterbury Biodiversity Strategy | Oversee the review of the Canterbury Biodiversity Strategy 2008 to ensure alignment with the NZ Biodiversity Strategy 2020 and the proposed National Policy Statement on Indigenous Biodiversity | Sustainable environmental management of our habitats | Policy Forum | | | 30/09/2022 | On track | Environment Canterbury's LTP includes the Canterbury Biodiversity Strategy review and work will commence when the Government announces the NPS IB. Canterbury Regional Biodiversity Champions Group established in Environment Canterbury.<br>Agenda item 2.2 |
| IT systems and digital services | Lead development of a 10-year plan for Canterbury councils to move to a common platform for IT systems and digital services (including valuation and rating functions) and secure cost savings through group licensing procurement, with specific concrete actions to be implemented in each year of the 10-year plan | | Corporate Forum | CIOs | Conduct a stocktake of where everyone is at | 13/12/2022 | On track | CCF agreed 16 March 2020 that CIOs will conduct a stocktake of Canterbury councils' IT platforms, applications and procurement / licensing cycles and investment intentions to inform planning to move towards a common platform by 2030. Next actions to be confirmed at Corporate Forum 13 December meeting. |
| | Develop a business case (with value proposition and a request for funding) to go to member councils to test and build consensus on a collective vision, commitment and understanding of what it might mean over time for procurement and renewal cycles | | | | | 13/12/2022 | On track | Pending outcome of collaborative procurement investigations. Report back expected at Corporate Forum meeitng 13 December 2022 |
| Procurement | Develop a proposal for a joined-up procurement system/service for Canterbury councils, including legal services provisioning<br>Develop a proposal for consideration by member councils | | Corporate Forum | CFMG | | 13/12/2021 | On track | In late 2020 Deloitte were contracted to analyse third-party expenditure by Canterbury councils, to inform collaborative procurement options. In August 2021 the CEs Forum approved funding to engage a consultant to evaluate options for collaborative procurement for Canterbury. Work is underway to initiate this contract. Report back expected at Corporate Forum meeting 13 December 2021 |

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|---|---|---|---|---|---|---|---|---|
| Implementing new Water Safety Plan format | Share advice and lessons between drinking water suppliers from implementing the new Water Safety Plan to improve compliance across the region | | Operations Forum | DWRG | | 13/12/2021 | On track | Councils are working on plans but it is a slow process as they require a lot of effort and DHB-side resources have been preoccupied by Taumata Arowai changes. At least three in Canterbury have been approved as of June 2021. There is concern about the what the status of these will be as we transition through with Taumata Arowai. |
| Resource Management Reform | Engage with central government on the resource management reforms through participation in the Local Government Forum of Chief Executives for resource management reform, reviewing and preparing submissions on new legislation, participating in Select Committte processes | | Chief Executives Forum | David Ward | Jim Harland nominated for Local Government Forum of Chief Executives for resource management reform Policy Forum (through CPMG) keep watching brief on exposure drafts of the Natural and Built Environment Act and prepare to draft a regional submission when released | 30/09/2022 | On track | CMF submission made on the Inquiry on the Natural and Built Environments Bill: Parliamentary Paper. Letter to sent to LGNZ, Taituarā, Department of Internal Affairs and Ministry for the Environment requesting Canterbury presence on national working parties and reference groups. Agenda Item 3.5 |
| | | | | Policy Forum | Policy Forum (with CCWG & CPMG) keep watching brief on drafts of Strategic Planning Act and Climate Change Adaptation Act | 30/09/2022 | On track | |
| Future for Local Government | Engage with central government on the future for local government by supporting development of a regional approach and participating in the Future for Local Government Review | | Mayoral Forum | Chief Executives Forum | Progress actions from the Future for Local Government Workshop (April 2021) and actively participate in engagement with central government's Future for Local Government Review | 1/04/2023 | On track | Initial workshop held 19 March 2021, including papatipu rūnanga chairs and central government regional directors. Follow-up meeting and workshop held 28 May, which also included chair and executive director of Local Government Review Panel. Health Reform workshop held 5 July 2021<br>Future for Local Government Review report to be discussed at Agenda Item 3.4 |

**Key to acronyms**

| | | | | | |
|---|---|---|---|---|---|
| CCWG | Climate Change Working Group | CIOs | Chief Information Officers Group | CREDS | Canterbury Regional Development Strategy |
| CEF | Chief Executives Forum | CMF | Canterbury Mayoral Forum | CWMS | Canterbury Water Management Strategy |
| CEMG | Canterbury Engineering Managers Group | COF | Canterbury Operations Forum | DWRG | Drinking Water Reference Group |
| CFMG | Canterbury Finance Managers Group | CPF | Canterbury Policy Forum | ECan | Environment Canterbury |