

## ASHBURTON WATER MANAGEMENT ZONE COMMITTEE AGENDA

A **Meeting** of the Ashburton Water Management Zone Committee will be held as follows:

**DATE:** Tuesday 24 May 2022

**TIME:** 1:00 pm

**VENUE:** **Council Chamber** (*MS Teams option available*)

**MEETING CALLED BY:** Hamish Riach, Chief Executive, Ashburton District Council  
Stefanie Rixecker, Chief Executive, Environment Canterbury

**ATTENDEES:** Chris Allen  
Adi Avnit  
Clare Buchanan  
Angela Cushnie  
Genevieve de Spa  
Bill Thomas  
Sidinei Teixeira  
James Meager (Te Runanga o Arowhenua)  
Arapata Reuben (Te Ngai Tuahuriri Runanga)  
Les Wanhalla (Te Taumutu Runanga)  
Brad Waldon-Gibbons (Tangata Whenua Facilitator)  
Councillor Stuart Wilson (Ashburton District Council)  
Councillor Ian Mackenzie (Environment Canterbury)  
Mayor Neil Brown (Ashburton District Council)

**Zone Facilitator**

Dave Moore

Tel: 027 604 3908

[dave.moore@ecan.govt.nz](mailto:dave.moore@ecan.govt.nz)

**Environment Canterbury**

**Committee Advisor**

Carol McAtamney

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**Ashburton District Council**

**Tangata Whenua Facilitator**

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**Environment Canterbury**



## Register of Interests

Representative's Name and Interest	
Chris Allen	Farm owner of sheep, beef, lambs, crop Water resource consents to take water from tributary of Ashburton River and shallow wells National board member Federated Farmers of New Zealand with responsibility for RMA, water and biodiversity Member of Ashburton River Liaison Group
Adi Avnit	Mid Canterbury Community Vehicle Trust - Treasurer
Clare Buchanan	Head of Environment & Innovation at Align Farm Align Farms holds an irrigation resource consent to take water from shallow wells hydraulically linked to the Ashburton river Align Farms holds MHV water and Fonterra Shares Align Farms suffered significant flood damage on their support block
Neil Brown	Mayor Acton Irrigation Limited - Director Irrigo Centre Limited - Director Acton Farmers Irrigation Co-operative Limited - Director Browns Farm Limited – Director and Shareholder
Angela Cushnie	Owner of Country Copy, a communication and promotion business based in Mid Canterbury Kanuka Mid Canterbury Regeneration Trust - Trustee Hinds Reserve Board Committee member Community Catchment Groups
Genevieve de Spa	Owner of Kakariki Camps focusing on 'Head, Hands, Heart' approach to biodiversity education Contractor and member of Staveley Campsite Committee (Previous recipient of Immediate Steps Funding) Rakaia Environmental Enhancement Trust
Ian MacKenzie	Environment Canterbury Councillor
James Meager	[Details will be included with next Agenda]
Arapata Reuben	Trustee – Tuhono Trust Trustee – Mana Waitaha Charitable Trust Member - National Kiwi Recovery Group Rūnanga Rep – Christchurch – West Melton Water Zone Committee
Bill Thomas	Farm owner of Longbeach Estate Ltd (sheep, beef, lambs, arable, dairy) Member of Eiffelton Irrigation Scheme Hekeao/Hinds Water Enhancement Trust – Settler Director of Longbeach Estate & Longbeach Dairies
Sidinei Teixeira	Chemistry Teacher at Christ's College Master student at Lincoln University Studying Masters in Water Resource Management Intern at MHV Water (groundwater scientist) Past Head of Science at Mt Hutt College Passionate about use of natural resources sustainability
Les Wanhalla	Returning good health and mauri O Te Waihora/Lake Ellesmere Kaitiakitanga, Whakapapa Rugby league, life member, honorary south Kiwi Trustee – Central Plains Water for Selwyn District Council
Stuart Wilson	Ashburton District Councillor A son who is a Director of Mayfield Hinds Irrigation Co and Chair of RDR

## **Confirmation of Minutes**

## **Unconfirmed Minutes**

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Minutes of the 22 March meeting to be circulated on Monday 23 May.

## Ashburton Zone Committee Meeting

24 May 2022 at 1:00pm

Council Chamber, 137 Havelock Street, Ashburton

	Time	Agenda item Title	Who	Paper/Verbal
	1:00 pm	Karakia Standing items Apologies Correspondence:	Chair	Verbal
1	1:20	Constructed wetland update	Dave Moore for Mel Brooks	<ul style="list-style-type: none"> <li>• Hekeao Community Wetland AZC May 22</li> </ul>
2	1:30	Funding items for formal Recommendation	Dave Moore	<ul style="list-style-type: none"> <li>• Funding recommendations 24 May 2022</li> <li>• MCCC Science Update 14 Apr 2022</li> <li>• Funding Request for removal of trees at Wakanui hāpua May 2022</li> </ul>
3	1:50	Te Rākau Kōhanga project update	Sefeti (Sef) Erasito	<ul style="list-style-type: none"> <li>• Te Rakau Kohanga Project Update 24 May 2022</li> </ul>
4	2:20	Mt Harding Creek study	Rhys Taylor	<ul style="list-style-type: none"> <li>• Mt Harding - AZC 24 May 2022</li> <li>• Mt Harding Creek Report May 2022</li> </ul>
5	2:45	Committee updates	Dave Moore	<ul style="list-style-type: none"> <li>• Ashburton Zone Committee Update 24 May 2022</li> </ul>
6	3:00	Close Zone Committee meeting Karakia	Chair	Verbal

<b>HUI/MEETING:</b> Ashburton Zone Committee	
<b>AGENDA ITEM NO:</b>	<b>KAUPAPA/SUBJECT:</b> Hekeao Community Wetland
<b>KAITUHI/AUTHOR:</b> Melanie Brooks	<b>WĀ/MEETING DATE:</b> 24 May 2022

## Purpose

To provide an update on the Hekeao Community Wetland project

## Background

At the 22<sup>nd</sup> February 2022 Zone Committee meeting, following a presentation by Mel Brooks regarding the development of a wetland project, the Ashburton Zone Committee approved funding of \$10,000 towards the purchase of nitrogen sensors for the Hekeao Community Wetland construction.

In the presentation to the Zone Committee we discussed the location of the community wetland off O’Shaunessy’s Drain. A site was proposed adjacent to the drain on an undeveloped site off Poplar Road. There are a number of benefits to the site, the drain has a reasonable flow, nitrate levels are similar to many other drains in the catchment, it isn’t known to have gone dry and it flows into the Hekeao Hinds River, i.e. the water quality could be treated before it enters the awa.

The Zone Committee was supportive of the development of a wetland given the benefits to the community and the focus on the Hekeao Hinds River.

As we have been progressing through due diligence prior to confirming the purchase of the O’Shaunessy’s Drain site we have paused because of a few concerns and we don’t want to progress unless we are 100% comfortable with the site. We’ve had a number of issues finding parcels of land and some feedback suggests farmers are less likely to take out blocks of productive land or are they more likely to put a ‘buffer’ along the drain length. Additionally, due to composition of the site it would also be cost prohibitive to build the originally planned design, and so the changes could compromise the outcomes of our study, accordingly we are investigating other sites to compare and contrast the benefits to the community.

## Other site options

There are two main sites we are now considering, one is on Montgomery Drain – the Drain enters the Hekeao Hinds River from the South side, slightly closer to the coast than O’Shaunessy’s Drain. The landowners are considering a 10m boundary to the drain and we are investigating how we could run a parallel treatment wetland along the drain.

We believe the benefit of this site is high, and it mirrors the same qualities as O’Shaunessy’s Drain, i.e. into the Hekeao Hinds River, flow consistency, and nitrate levels.

There is also another site approximately 2km from Montgomery’s Drain which does not have a drain through it, however, has very shallow groundwater which peaks high in nitrate after heavy rainfall events as a result of its location in the catchment, but typically runs above 10 ppm of NO<sub>3</sub>-N.

We are considering a de-nitrification wall on this site, complemented by a downstream wetland. This could be a cost effective treatment option, especially where it can be grazed on top of the bio reactor.

Both of these alternate sites have engaged landowners and are located with the ability for public access, especially the de-nitrification wall (although there may not be much to see other than the downstream wetland). We are engaging with other community groups in the area who are supportive of our approach and slight pivot.

For clarity we remain committed to the establishment of the Hekeao Community Wetland and are talking with landowners about a network of wetlands, which has garnered good levels of initial support.

The contribution from the Ashburton Zone Committee was towards the sensors for the Hekeao Community Wetland, and whilst it didn't explicitly mention O'Shaunessy's Drain in the funding approval, we wanted to be transparent with the Zone Committee as we will be progressing the due diligence for the Montgomery Drain site and will use the sensor there.

We will install the sensor on Montgomery Drain to give us an understanding of the current nitrate level at real time, and also provide details on the impacts of the set back fencing in the short to medium term. If we do not build a wetland at the Montgomery Drain site, we commit to relocate the sensor, at MHV cost, to the alternate Hekeao Community Wetland site that gets established.

The information from the sensor at Montgomery Drain will also give good baseline data for the site which is not currently available, other than some initial testing carried out by MHV last week.

## **Summary**

We would like to acknowledge the support of the Ashburton Zone Committee for the Hekeao Hinds Community Wetlands for initial contributing towards the cost of the water quality monitoring equipment.

Whilst we appreciate this is a slight pivot to the initial proposal we are meeting the terms of the agreement which was to support construction of the Hekeao Community Wetland, we hope that it gives you confidence that when we are working through a due diligence process, we will not proceed if we are not assured we will achieve the outcomes we desire and best outcomes for the community.

Melanie Brooks

<b>HUI/MEETING:</b> Ashburton Zone Committee	
<b>AGENDA ITEM NO:</b>	<b>KAUPAPA/SUBJECT:</b> Funding Recommendations
<b>KAITUHI/AUTHOR:</b> Dave Moore, Zone Facilitator	<b>WĀ/MEETING DATE:</b> 24 May 2022

## Purpose

For the Committee to recommend the remaining 2021/22 financial year Action Plan budget allocation.

## Report

### 1. Current Action Plan budget status

\$40,000 of the \$50,000 Action Plan budget is now committed for the 2021/22 financial year.

The Zone Committee discussed requests for funding from Mid Canterbury Catchment Collective and Wakanui Working Group at a workshop on 3 May and agreed to the following funding, pending formal recommendation at the 24 May Ashburton Zone Committee meeting.

- \$6,000 for Mid Canterbury Catchment Collective, and
- \$4,000 for Wakanui Working Group.

Recommending funding of these two projects will fully commit the AP budget for this financial year.

The two funding requests are attached.

### Budget Summary.

Recipient	Project	Amount
MHV Water	Hekeao Community Wetland Contribution to Sensors (Funding completed)	\$10,000
Mid Canterbury Catchment Collective Incorporated	Coordination, strategy, marketing and administration (Funding completed)	\$30,000
Wakanui Working Group	Purchase of plants– ZC agreed to underwrite \$2,000. <b>Deferred till next financial year</b>	0
<b>Proposed</b> Ashburton District Council for Wakanui Working Group <b>(Appendix A)</b>	Clearance of 26 pine trees in preparation for future planting of natives. Total cost \$11,700 ACD contribution \$7,700 Zone Committee AP fund contribution \$4,000	\$4,000
<b>Proposed</b> Mid Canterbury Catchment Collective Incorporated <b>(Appendix B)</b>	Develop a project that will co-ordinate a significant resource of historical and current catchment information across the Ashburton Zone. This grant will be utilised to: 1. Scope a project suitable for a masters student who will help collate the information available (\$3,500)	\$6,000



	2. Obtain professional advice as to the best method of information capture and subsequent retrieval, most suited for the Mid Canterbury Catchment Collective Science Update (\$2,500)	
Remaining Budget		\$0

*All figures exclude GST*

### **Recommendation**

**That** the Zone Committee:

1. Receives the applications from the Wakanui Working Group and Mid Canterbury Catchment Collective.
2. Formally recommends the remaining Action Plan funding for the 2021/22 financial year.

## Appendix A

16 May 2022

Bill Thomas  
Chair, Ashburton Water Zone Committee  
c/o Dave Moore, Zone Facilitator  
Email: dave.moore@ecan.govt.nz

Dear Bill

### **Funding Request for removal of pest pine trees at Wakanui hāpua**

Thank you for the opportunity to request funding assistance for the removal of 26 pine trees at Wakanui/Whakanui hāpua.

Whakanui Beach and hāpua has significant scientific value and provides a unique example of rare coastal vegetation and biodiversity including 26 species of native plants, some classified as 'threatened – at risk', 52 insect species and many bird species. The biodiversity found here and at nearby Five Star Beef, is more diverse than any other place on the plains of Ashburton

Whakanui is also an historic and important mahinga kai site for manawhenua and is a highly significant archaeological site with many Māori artefacts, including moa bones and pounamu tools.

Community interest in Wakanui is high and the Wakanui School has become an important part of restoration efforts. The general public use the area for fishing, beach walking, gathering gemstones such as agate, and just spending time away from town.

In 2016, the Ashburton District Council contracted a professional landscape expert to develop a landscape management plan for the Wakanui Beach. The plan detailed the processes for removal of exotic weed species, enhancing the reserve approach and outline for new planting at the site. New plantings have been done annually from 2018 – 2020. The project cost per annum varies, between \$5,000 to \$25,000. The funding covers weed control, new planting and removal of exotic pine trees within the reserve. Work has been delayed due to limited funding over the years.

Clearing the introduced pine trees enables planting of species that will grow on the drier parts of the reserve, such as Kanuka and Kowhai. It also affords the opportunity to remove other weeds, such as ivy, and clear areas through which a walking track may be established in the future.

## Cost

The project cost for removal of 26 pines, 5-10 m from rear boundary fence with farmland, is \$11,770 excluding GST (see the attached quote). Ashburton District Council is contributing \$7,770 and requests the remaining \$4,000 from the Ashburton Zone Committee's Action Plan fund.

Ashburton District Council contribution	\$7,770
Requested Ashburton Zone Committee's Action Plan Fund contribution	<b><u>\$4,000</u></b>
Total cost of Removal of 26 pine trees	\$11,770

## Goals

We note that the goals of this project align with the following Zone Committee goals:

### Ashburton Zone Committee Action Plan

We will focus on several waterbodies:

- Ōtūwharekai/Ashburton Lakes,
- Hakatere/Ashburton River and its tributaries
- (including Carters Creek and **Wakanui hāpua**) and
- Hekeao/Hinds catchment

We will work towards enhancing biodiversity & mahinga kai values

We will work towards improving ecosystem health and meeting biodiversity targets

- Engaging with councils, rūnanga, catchment groups and schools to support further restoration activities which positively impact the biodiversity and mahinga kai values of the **Wakanui hāpua** area.

### CWMS 2025 Targets

- All coastal lagoons, hāpua and estuaries show improvement in key ecosystem health indicators compared to 2010.
- Health of lowland streams, rivers and lakes in Canterbury show improving habitat and an increase in fishing opportunities.

Ngā mihi

Gen de spa

## **Appendix B**

### **DAVE MOORE ZONE FACILITATOR – MID CANTERBURY ZONE COMMITTEE**

Dear Bill and Dave

Re: Mid Canterbury Catchment Collective Science Update

#### **Summary**

We wish to apply for a grant for the Ashburton Zone Committee for \$6,000 to further develop a project that will co-ordinate a significant resource of historical and current catchment information between the Rangitata and Rakaia Rivers, from the Main Divide to the sea.

This grant will be utilised to:

1. Scope a project suitable for a masters student who will help collate the information available (\$3,500)
2. Obtain professional advice as to the best method of information capture and subsequent retrieval, most suited for the Mid Canterbury Catchment Collective Science Update (\$2,500)

#### **Background**

On 18 March 2022 the MCCC hosted 15 scientists and industry experts at a workshop with the objectives :

1. What water quality, quantity, soil and biodiversity information do you have available in the Mid Canterbury catchment?
2. How and when would you wish for that information to be made available?

#### **Outcomes from the Workshop**

1. Unanimous support from the 15 speakers that they would contribute information they hold in the catchment. (Information is the analysis of the data generated into a useable format)
2. After some initial reluctance to share information less than 13 months old, it was agreed that the information would be available within 12 months of gathering the raw data. (Concern was expressed about earlier release of this information that trends and further actions may not have been thoroughly reviewed)

3. Support for the Mid Canterbury Catchment Collective to co-ordinate and provide the platform for the information to be loaded onto and retrieved by interested parties.

The preference was that this information be stored and access on Geospatial and subject area basis.

### **Mid Canterbury Catchment Collective Response**

1. Website – to display real time monitoring and illustrate trends over time.

Our research to date has unearthed 5 different approaches from purchasing into existing webmap templates (Know your Catchment dashboard, Canterbury maps etc) or utilising existing programs that will hold information that will utilise “shape files” that allow the information to be pulled into other formats. (QGIS, ArcGIS – central portals)

Early enquiries have indicated:

A website will cost \$8-12,000 to develop plus \$500-\$1000/month for maintenance

A geospatial site will cost \$15-50,000 to develop plus maintenance and storage of \$2,500/month

2. Waterways Centre for Fresh Water Management

The University of Canterbury and Lincoln have expressed an interest to utilise the Mid Canterbury Science Update as being a suitable project for a masters student.

Early discussions indicate we have 2 potential supervisors (University staff) for such a project. On completion of our scope for the project the Universities would advertise for a student and assist with seeking project funding.

Should you require any additional information please do not hesitate to contact the MCCC Chairman, Duncan Barr, or the writer.

Yours sincerely

Phillip Everest – Facilitator for MCCC Science Update.

14 April 2022

<b>HUI/MEETING:</b> Ashburton Zone Committee	
<b>AGENDA ITEM NO:</b>	<b>KAUPAPA/SUBJECT:</b> Te Rākau Kōhanga project
<b>KAITUHI/AUTHOR:</b> Dave Moore, Zone Facilitator	<b>WĀ/MEETING DATE:</b> 24 May 2022

### **Purpose**

Sefeti Erasito (Project Manager) will present an overview of the Te Rākau Kōhanga project.

### **Recommendation**

The Zone Committee receive the update and provide feedback.

### **Background**

Central Government's Jobs for Nature funding has provided \$2.7 million for the Te Rākau Kōhanga project. The project is creating a plant nursery at Arowhenua Marae near Temuka that will provide employment, and training and qualifications in growing native plants. The nursery will grow about 180,000 eco-sourced native plants over three years.

The plants will help restore Mid-and-South-Canterbury's waterways, starting with the Rangitata River, which has significant cultural and conservation values.

The nursery will be a sustainable business that will continue once the funding period ends, which means more jobs and strong support for regional environmental projects.

<b>HUI/MEETING:</b> Ashburton Canterbury Zone Committee	
<b>AGENDA ITEM NO:</b>	<b>KAUPAPA/SUBJECT:</b> Mt Harding Creek study
<b>KAITUHI/AUTHOR:</b> Donna Field & Rhys Taylor	<b>WĀ/MEETING DATE:</b> 24 May 2022

### **Purpose**

To update the Zone Committee on the Mt Harding Creek catchment study, presenting the study report, from field work conducted in 2021.

### **Recommendation**

That the Ashburton Water Management Zone Committee receives this report and provides feedback on how the report and recommendations be used to help maintain water flows in the catchment, enhance natural habitats and engage landowners and local residents' further interest.

### **Report**

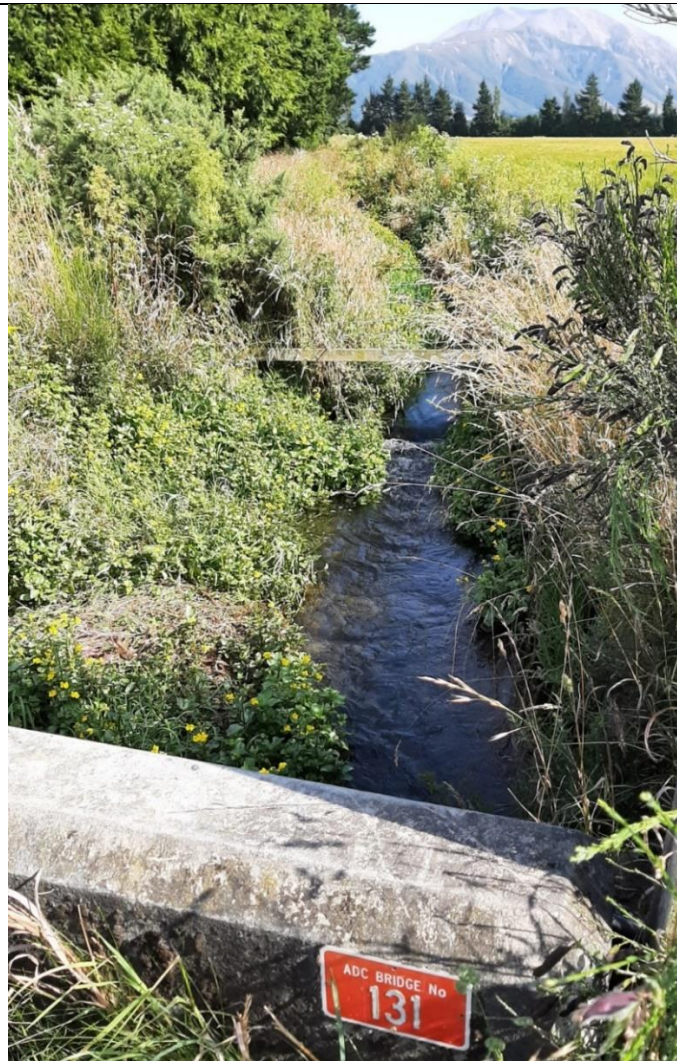
(attached as PDF)

Final draft, 18 May 2022. Initial circulation to Ashburton Water Zone Committee.

# Exploring Mt Harding Creek catchment.

During summer 2020 – 2021, Environment Canterbury biodiversity and land management specialists explored the complex stream catchment of Mt Harding Creek, also known simply as Harding Creek. The purpose of the stream walks by Donna Field, Rhys Taylor and colleagues was to establish the catchment's surface-water sources and better understand biological and human values and influences throughout its length. We also scope its future contribution to biodiversity and landscape.

This waterway runs from origins below McLennans Bush and AwaAwa Reserve, known by some in the upper reach as *'Washpen Creek'*, arriving from the north at Methven via Mt Harding farm, passing a recent subdivision named *'Thyme Stream'*, and named *'Mt Harding Creek'* from there southward. Its route is mostly east of SH77, then under that Methven-Ashburton highway and south west to join the North Branch of the Ashburton River. It has been modified over the years: by junctions into and from artificial stock water channels, insertion of step weirs to hold back water and reduce erosion, straightening its course around paddock edges and narrowing of its banks.

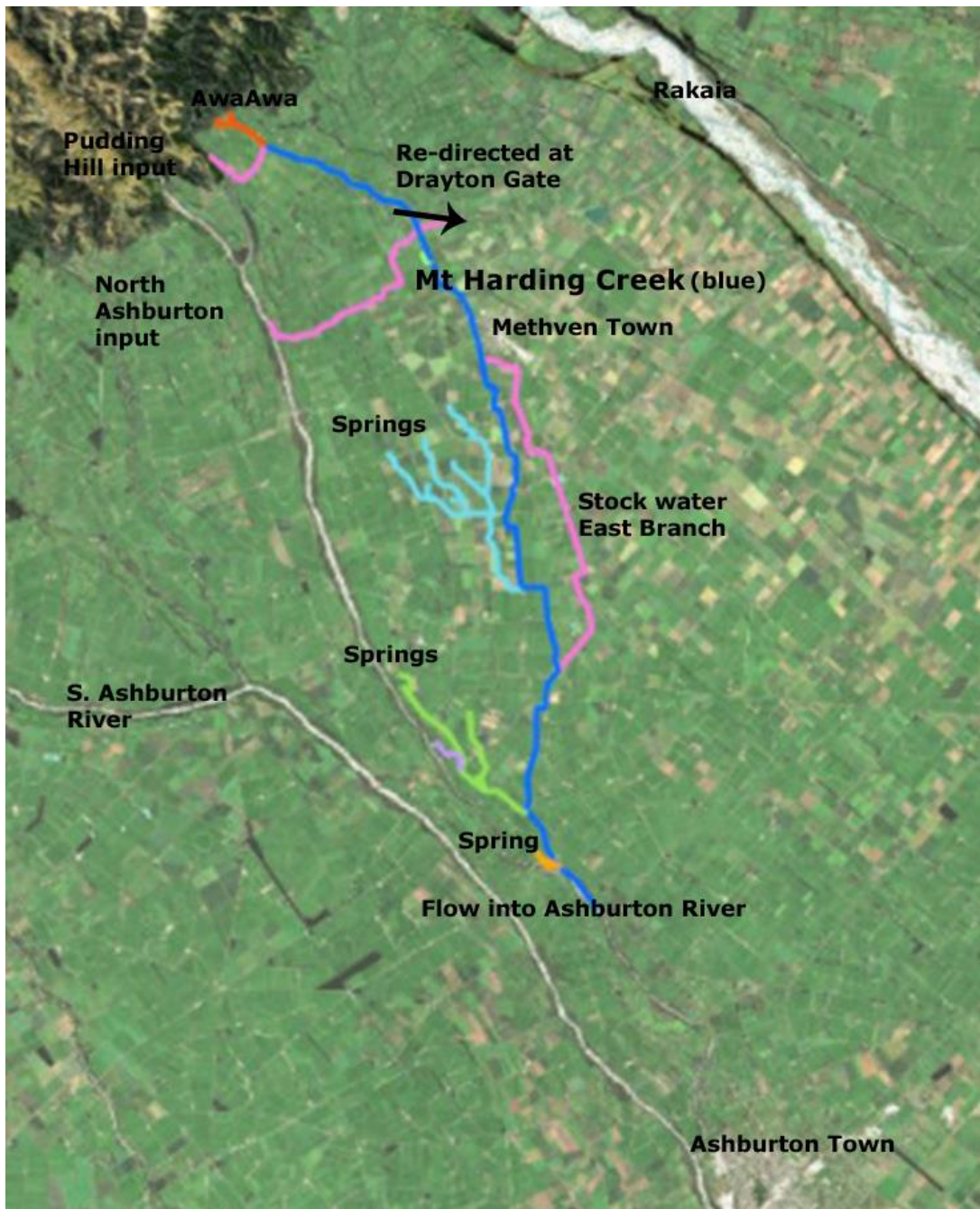




**Report contents.**

- p3. Location map
- p4. Stock water inputs
- p5. Methven
- p7. Spring fed flows
- p9. An invisible catchment?
- p10. Creek life and water quality
- p18. Farm impacts
- p21. NZ native plants – enhancement potential
- p23. River Rating
- p25. Conclusions
- p26. **Recommendations**
- p27. Appendix 1 – Flood recovery
- p.29. Appendix 2. - Drop structures in Mt Harding Creek, below Methven

Map below shows the Creek and its tributaries, plus stock water connections in/out.



**Map key:** orange for headwater from AwaAwa reserve, darker blue for MtHarding Creek, pale blue for intermittent springs from West, green for spring fed tributary which feeds the lower reach, pink for Pudding Hill and Methven auxiliary stockwater schemes (ADC).

## Stock water inputs & outputs

One of our goals was to locate and visit the varied water sources, in a complex system.

Mt Harding Creek flow has been augmented in several places by stock water channelled from larger rivers, firstly the Pudding Hill Stream, then from the North Ashburton River. This flow augmentation was originally to improve its reliability for use in stock water distribution. The local farmland is now mostly served by piped and pressurised irrigation schemes. Land uses have changed and sheep numbers reduced. Ashburton District Council supply stock water and maintain the gates above and close to Methven, whilst Environment Canterbury river engineers care for the Mt Harding Stream structures from Forrest Drive, Methven, through south to its flow back into the Ashburton River.

We met many of the rural (and some urban) landowners; discussed waterway flow controls with staff from Ashburton District Council (ADC). There is significant flow augmentation channelled into this watercourse from Pudding Hill Stream and North Ashburton River, without which Mt Harding flow below Methven might cease in low rainfall and low spring-flow summers. We also began contact with local irrigation company Ashburton Lyndhurst Irrigation Ltd (ALIL) whose shareholder farmers farm nearly 32,000 Ha.

We were told that the times when the waterway runs dry, however, are mostly when interventions are made by ADC to manage rain-driven flood flows in the stock water routes.



caption on next page -

Above left, Stock water intake point from Pudding Hill Stream, at Hart Road, is managed by Ashburton District Council staff. It is an historic feature.

Above right. Drayton Gate. North Ashburton water arrives several metres West of here and largely replaces the flow from the north.

At Drayton Gate (pictured below), North Ashburton stock water channel arrives from the west. The Mt Harding flow previously augmented with Pudding Hill Stream water, arrives from the north and is sent eastwards into the stock water race joined by Ashburton water, whilst surplus from incoming North Ashburton stock water flows south at this gate into the Mt.Harding Creek channel. Effectively this is a water-substitution, disconnecting the lower from the upper reach. Biologically this disconnection was confirmed by E-DNA sampling, with trout present in the flow from North Ashburton but not in the flow from the north.

## Mt Harding Creek. 5



Aerial view of Drayton Gate. The Methven Auxiliary flow from North Ashburton River arrives from the West (left of photo) and is sent both East and south, substituting for water arriving from the north. See also a pair of photos in the section on eDNA water sampling, further below.

## Methven and Springfield

Methven's town location will have been influenced by the presence of Mt Harding stream and local springs in an otherwise dry-surface landscape. Local English language place names such as Three Springs, and Spring Lynne, probably relate to tributaries of the Creek.

The south west spring-fed tributary, closer to Ashburton River, is yet to be walked, but will be covered in 2022.

North of Methven, a section of Mt Harding Creek arriving from the North is being referred to locally by the subdivision name 'Thyme Stream'.

Mt Harding Creek. 6



Rocks added to the stream bed at 'Thyme Stream', subdivision on Mt Harding Creek north west of Methven, beside new houses. Silt is settling from the slowed water behind these barriers.

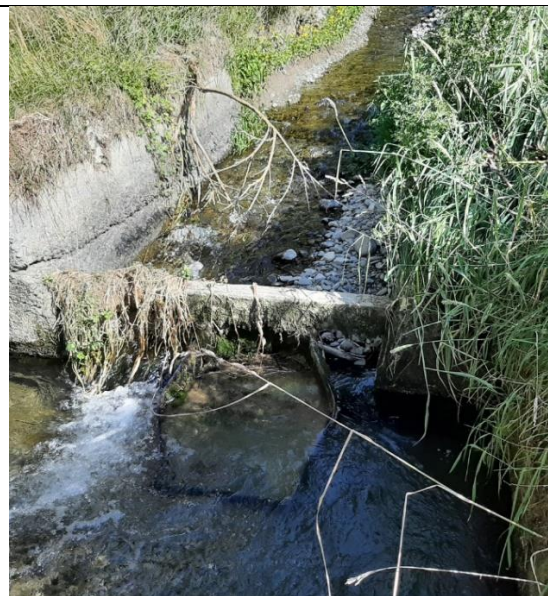


An Ashburton District Council-maintained stock water flow control point at the Creek's northern entry to Methven, flow arriving from the left. (photographed in December 2020). The flow East beside Forest Drive (receding vertically in this photo view) feeds to another stock water branch, and the flow to the right, passing under the road, continues over a concrete weir ledge as Mt.Harding Creek.

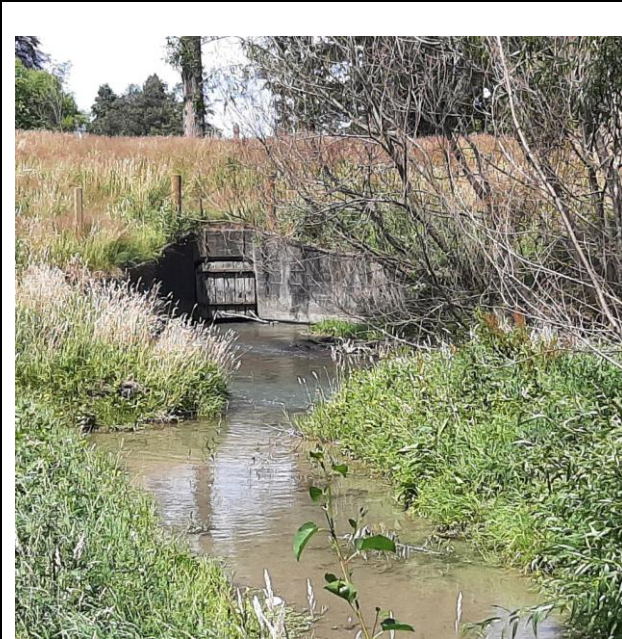
Previous river engineering interventions below Methven, probably built by Environment Canterbury's predecessor, the South Canterbury Catchment Board, included building small weirs and flow control points to maintain water depth and resist bed erosion. These drops represent barriers to small fish passage – we have appended a 2008 catalogue of these structures and photographed several during our walks. Examples are shown below.



Example above of small in-stream step weir (photo 2 Feb 2021). There are many weir steps of around this size: see list in Appendix 2.



Remains of a larger concrete structure near Drayton Road. (26 January 2021).



Entry to siphon for Mt Harding Creek under the Rangitata Diversion Race, north of Methven near original Mt Harding homestead.



Steeper weir within the Creek on J McKay's farm near SH77 represents a fish passage barrier (16 Feb 2021)

## Spring fed flows, but intermittently

Apart from the larger braided rivers of the Ashburton, Rangitata and Rakaia, and foothills-fed Hinds, surface flows are relatively rare in mid-Canterbury because, under porous soils, much of the local water flow is in underground gravels. This local catchment area includes intermittently flowing springs, which are dependent on the height of the groundwater table. After being dry in summer 2020-2021 and several previous years they flowed in winter and spring 2021. Farmland with intermittent spring sources feeding this catchment from the north west above the SH77 include 94 Legerwood Rd, 228 Reynolds Rd and 340 Reynolds Rd. See map above.

From these multiple sources, surface water flows across the farms of 227 Reynolds Rd, 2507/2347 Methven Highway, 2727 Methven Highway, 2378 Methven Highway, 2510 Methven Highway and 2714 Methven Highway. Some, perhaps the majority of, years the swales and watercourses on their farms, including some ditches beside and culverts under the Methven Highway, are dry.

Mt Harding Creek. 8



5 July 2021 flow across 2507/2347 Methven Highway paddocks when ground water level rose after winter rainfall (view west). Herons seen visiting.



(above) Same farm, looking east. These natural flows are western tributaries of Mt Harding Creek.



Above left: Spring-fed flow running across 2378 Methven Highway paddocks, June 2021. Above right: roadside view of spring-fed flow across 228 Reynolds Rd paddocks, June 2021. Both were contributing to Mt Harding Creek volume downstream.

## An ‘invisible’ catchment?

None of the road bridges name the Creek or its tributaries when they cross, which also contributes to its local invisibility and low public awareness of the catchment. We found that the extent of this catchment and its water connections is not widely known beyond the farming community, and that in Methven it has even been renamed as ‘Thyme Stream’ at a new subdivision, along a walkway area recently planted by volunteers, supported by the Lions Club. Our Methven Historical Society contact found it ‘perplexing’ that Mt Harding Creek has been renamed, in this section close to the town, as it hides the previous name

Community involvement in riparian planting of Carex and shrubs near Methven, led by the Lions Club, has been welcome. Large numbers of volunteers, of all ages, took part in 2021 (photo at right).



‘Thyme Stream’ landscaping of Creek at new subdivision. Work has included addition of rocks to the stream channel where the resulting flat water behind rock piles acts as a silt trap.



A public planting event in 2021 at the Creek-side walkway , organised by Methven Lions Club, attracted a large attendance to ‘Thyme Stream,’ and soon ran out of plants.

## Creek life and water quality

Observations of creek life and water quality were made on the stream walk. Much of the waterway has a pebble base which provides habitat for invertebrates and smaller fish species such as bullies. Much of the waterway has a pebble base. On the day of water sampling, suspended silt was being brought in, particularly from the North Ashburton River stockwater. Overall the water quality is quite good, as indicated by the presence of cased and free-living caddis fly larvae, varied plant life and occasional small fish. Eel sightings have been reported by several landowners and historically the waterway supported koura (freshwater crayfish). Trout spawning redds and adult fish have been seen occasionally, including within Methven. In Spring 2021 we undertook water quality tests (using Hills Lab) and identified several fish and insect species using traces of DNA (a service of Wilderlab in Wellington).





Mt Harding Creek crossing a Methven garden. Previous sightings of koura and trout here – but not recently. Silt levels in this water have risen, recently brought by North Ashburton water.



Caddis fly larvae under a stone on bed of upper Mt Harding Creek – indicators of reasonable water quality. No Dobson fly larvae or mayfly larvae seen, however, (which would have indicated higher water quality).



Cased caddis larvae on a stone lifted from Mt Harding Creek, on McKay's farm.



One of the creek locations where Carex has naturally established. Good set-back depth from McKay's arable-farmed land.

Water quality investigation was carried out in a 24 hour period at 5 sites along the Creek route in November 2021. Water quality may have been influenced by high turbidity in the North Ashburton intake, following the erosion during May/June 2021 floods (see Figure 2 below).

Water quality was assessed for clarity, nutrients, and faecal indicator bacteria. This data gives a 'snapshot' representation of how the water quality varied between the sites, on this day.

Mt Harding Creek. 11

Table 1: Mt Harding Creek Water Quality Monitoring Sites

Site Name	Description
(1) Washpen Creek	Upper tributary stream flows out of Awa Awa Rata Reserve/McLennans Bush, and through a dairy farm. This dairy farm site is located above where stock water is added (sourced from Pudding Hill Stream).
(2) Above Drayton Gate	Mt Harding Creek just above diversion Eastwards to stock water race. Flow at this site is already supplemented by water sourced from Pudding Hill Stream. Water looks clear.
(3) Below Drayton Gate	Mt Harding Creek water is diverted down the stock water race at the Drayton Gate, and the sample is of stock water sourced from the North Ashburton River, discharged here into Mt Harding Creek channel. Water looks turbid.
(4) Below Dolma Gate	Mt Harding Creek has flowed through Methven with various diversions for stockwater. Flow here is a mix of Mt Harding Creek flow, stockwater and the addition of intermittent nearby spring flows, mostly from the West.
(5) Aikens Rd	This dairy farm site is located upstream of the confluence with the North Branch of the Ashburton River and downstream of further spring water additions from a Western tributary.

Mt Harding Creek. 12



Figure 1: Map of Mt Harding Creek Water Quality Sampling Sites

The 5 samples were analysed by Hill Laboratories. Details of the analysed parameters are provided in table 2

Table 2: A description of water quality parameters analysed for Mt Harding Creek sites

Parameter	Description
Turbidity	A measure of water clarity. Many fish species need clear (low turbidity) water to be able to find food.
Total Ammoniacal Nitrogen	A dissolved form of nitrogen available for uptake by plants and algae, and may be toxic at higher concentrations.
Nitrate-Nitrate-Nitrogen	Nitrite and Nitrate-Nitrogen are dissolved forms of nitrogen available for uptake by plants and algae, and may be toxic at higher concentrations
Dissolved Reactive Phosphorus	A dissolved form of phosphorus available for uptake by plants and algae. Algal 'blooms' could potentially result from high levels of P and N
<i>Escherichia coli</i> ( <i>E.coli</i> )	A faecal indicator bacteria which indicates recent faecal contamination when present at elevated concentrations. Sources can include farm and wild animals, humans and birds.

### Turbidity

Turbidity was measured to indicate changes in water clarity seen and photographed through the catchment. Low concentrations of turbidity were observed at the upper two sites of Washpen Creek and Mt Harding Creek Above Drayton Gate. Turbidity increased for Mt Harding Creek with the inclusion of stock water sourced from the North Branch of the Ashburton River at the Drayton Gate. The North Branch was dirty for a long period of time due to a slip in the foothills during the May/June 2021 floods. Mt Harding Creek continued to have elevated turbidity concentrations downstream of this discharge at sites below Drayton Gate and Dolma Gate. Further downstream at Aikens Road, turbidity concentrations showed a decrease. Suspended sediment had likely settled out from the North Branch source by this site, and the Creek bed was again pebbly. There was also flow dilution from additional flow from spring sources to the West with low turbidity concentrations.

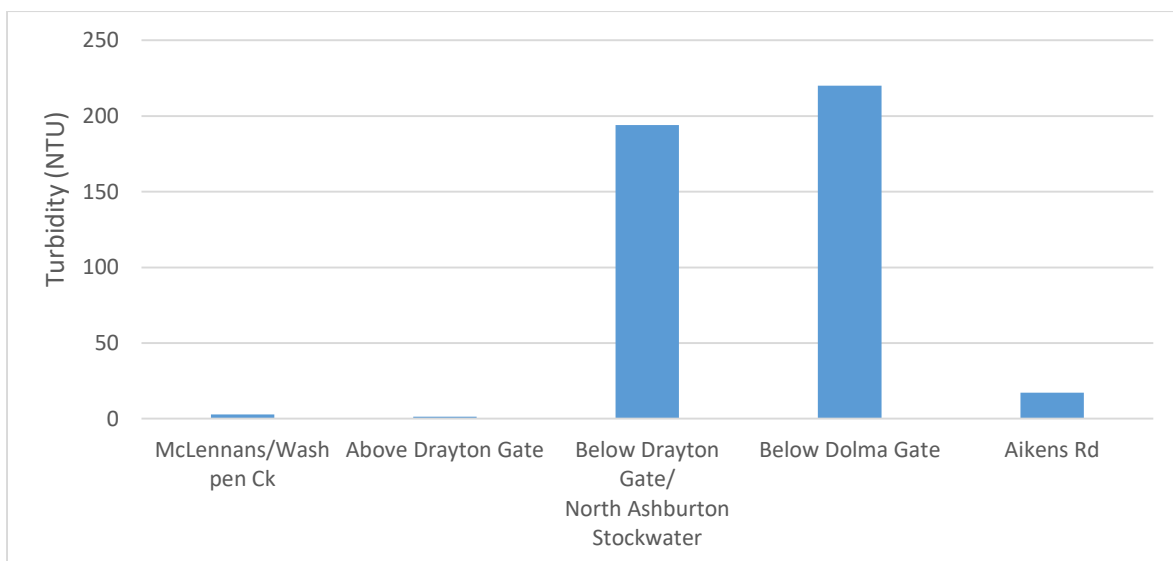


Figure 2: Turbidity concentrations for Mt Harding Creek

## Nitrogen

Total ammoniacal-nitrogen was below detection threshold for Washpen Creek, and at the lower two Mt Harding Creek sites below the Dolma Gate and at Aikens Road. By comparison, the two sites above and below the Drayton Gate had elevated ammoniacal-nitrogen concentrations. Stock were observed close to the unfenced stock race channel on this sampling date and may have been a localised source of ammoniacal-nitrogen via urination.

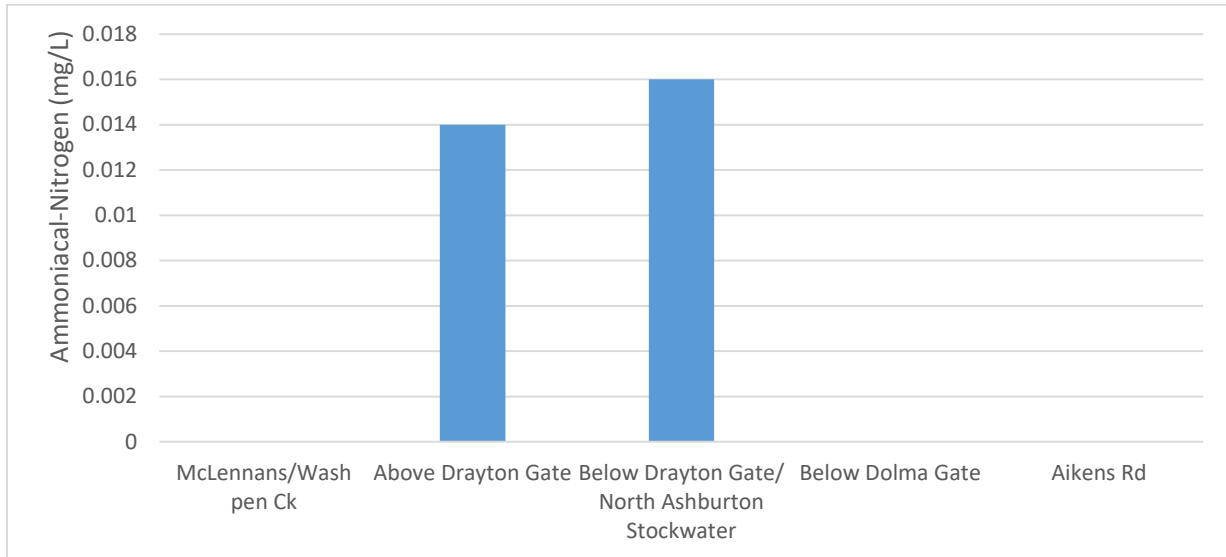


Figure 3: Total ammoniacal-nitrogen concentrations for Mt Harding Creek

## Nitrate-Nitrite-Nitrogen (NNN)

Nitrogen (measured as NNN) varies throughout the catchment and likely responds to the dominant source of flow at a site. The upper site called “Washpen Creek” flows out of Awa Awa Rata Reserve/MacLennans Bush, before flowing through a small farm/lifestyle block and a dairy farm where there is some groundwater drain interception. It is potentially influenced by septic tanks in the Reserve and nearby dwellings (Future testing of Ecoli bacteria sources could shed light on this), as well as nutrient leaching from livestock pastures. NNN concentrations more than double between the Washpen Creek site and the next site above Drayton Gate. At Drayton Gate, the NNN concentrations drop to low levels as the sampled water flow switches to the stock water sourced from the North Branch of the Ashburton River. NNN concentrations remain low at the Dolma Gate site, before increasing downstream at the Aikens Road dairy farm site. Between Dolma Gate and Aikens Road there are several intermittently flowing spring-fed streams that flow into Mt Harding Creek that would influence NNN concentrations. NNN concentrations are generally higher in spring-fed streams due to the source of flow coming from groundwater influenced by nitrate leaching over extensive farmed areas.

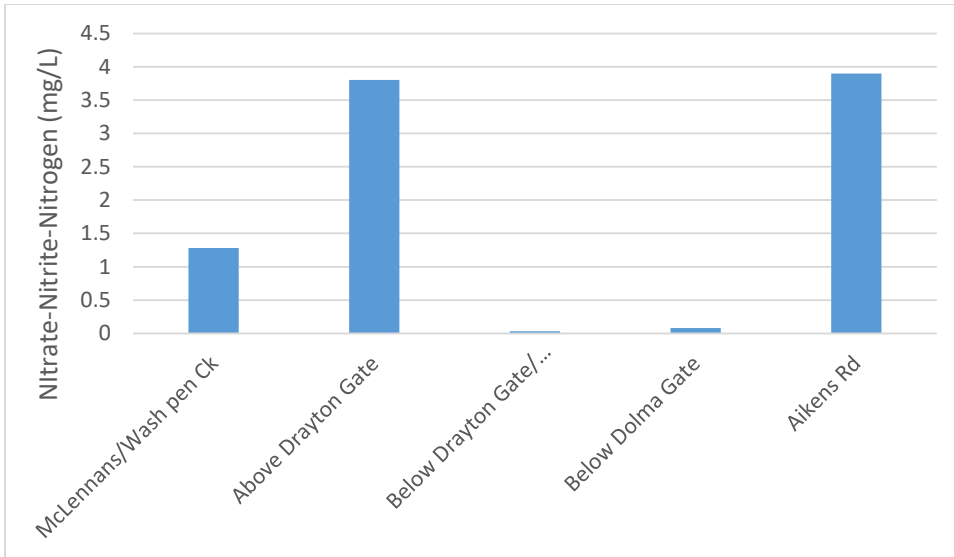


Figure four: NNN concentrations for Mt Harding Creek

**Phosphorus**

Dissolved reactive phosphorus (DRP) concentrations were below the level of detection for Washpen Creek, the point above Drayton Gate and Below Dolma Gate. Additionally, the DRP concentrations observed for Below Drayton Gate and at Aikens Road were at low levels. This suggests that relatively little urban pollution such as soluble detergent residues containing phosphates from Methven is reaching the Creek, though there may be some urban storm water road surface wash input (which typically containing chemicals such as hydrocarbons and zinc: but this was not lab tested). Animal manure, fertilisers and human sewage are also significant sources of phosphorus. Some urban streams near Timaru, for example, show much higher levels of DRP than found here.

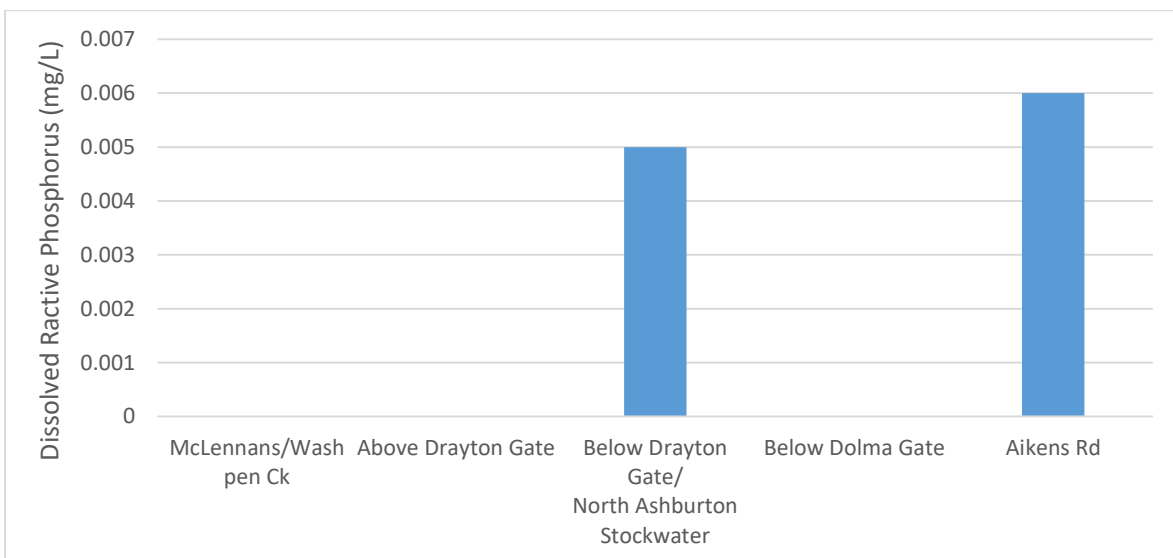


Figure 5: DRP concentrations for Mt Harding Creek

**Bacteria as contamination indicator**

*Escherichia coli* (*E.coli*) bacteria concentrations were elevated right throughout the catchment. The national bottom line for *E.coli* concentrations is for a 95<sup>th</sup> percentile to not exceed 540 MPN/100mL. The 5 sites for

Mt Harding Creek exceeded 1000 MPN/100mL. Concentrations were greatest for Washpen Creek and the site below Dolma Gate, both of which had adjacent livestock. These concentrations likely reflected faecal sources located nearby these sites on the day of, and immediately prior to sampling. Potential sources include but are not limited to stock access or surface water/sub-surface drain run-off from land where stock have been grazing (e.g. tile drains), and/or leaking septic tanks releasing human DNA and observed waterfowl such as ducks, pukeko and swans.

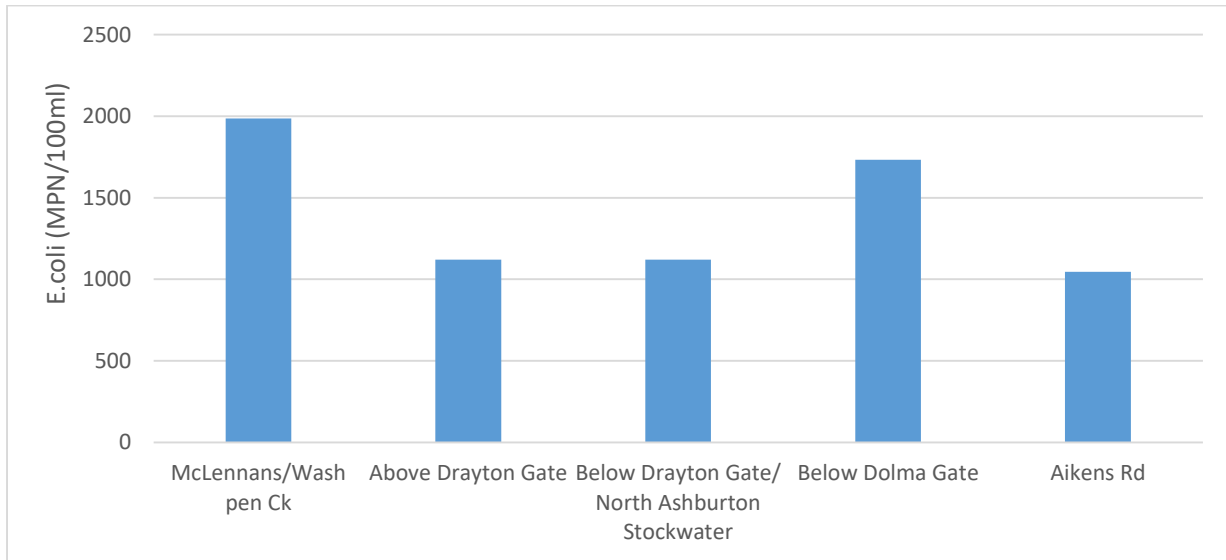


Figure 6: E.coli concentrations for Mt Harding Creek

### Evidence of animal life from eDNA traces

Filtered samples of water-transported animal DNA were collected overnight from the Creek at each point, for analysis by Wilderlab in Wellington, which gives an indication of animal life on or near to the water.

eDNA monitoring identified that the Washpen Creek sample was dominated by DNA from native Galaxiid species, and identified Canterbury Galaxiids specifically. (See figure 7 below) This was the only site where Brown Trout DNA was not observed. Brown Trout predate on smaller fish such as galaxiids and the absence of Brown Trout is possibly linked to detected presence of galaxiids at this site. Sites below Washpen Creek were dominated by DNA from Brown Trout and Bullies. The Aikens Rd site showed the most diversity with traces of DNA from upland bullies, brown trout, long-fin and short fin eels, chinook salmon and Torrentfish. This site is located near the confluence of the North Branch of the Ashburton River where there may be recruitment of fish upstream from this river and there is also a fish hatchery on one of the nearby spring-fed tributaries. Faecal matter was detected from farm livestock, humans and birds.

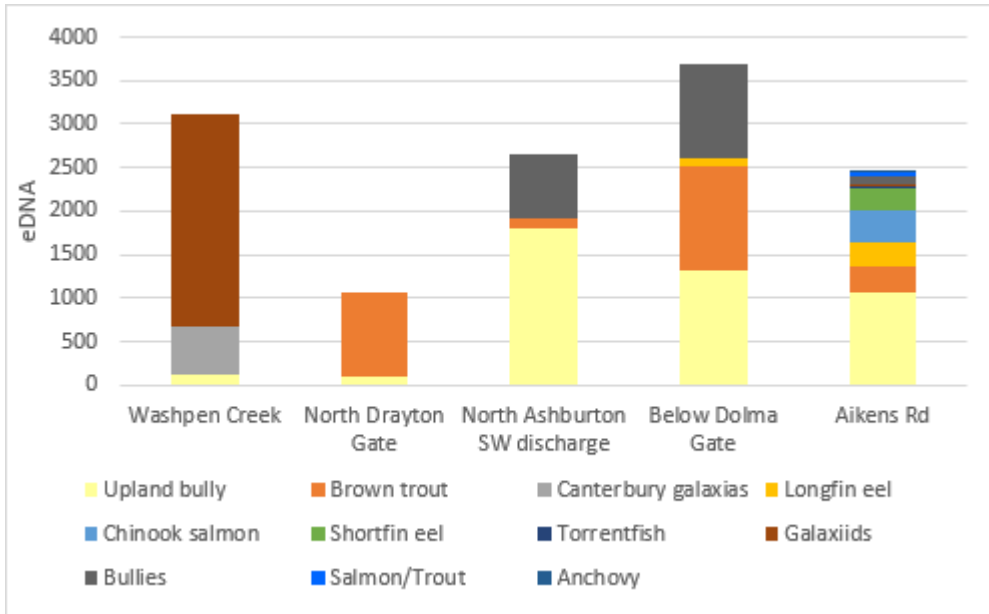


Figure 7: evidence of fish present upstream of each eDNA sampling site.



Tethered blue bag is a Wilderlab E-DNA collector in the (clear) water arriving from north of Drayton gate, fed by the Washpen and Pudding Hill water. At Drayton Gate this water is swept eastwards into a stock water flow and lost to Mt Harding Creek. The 'Creek' water south of here thus changes biologically and chemically.



Blue bag here, installed on the same day only 10 metres south of the one shown at the left. It is in the larger volume of (then silt-laden) water arriving from North Ashburton River sourced stock water race, at the west. This water is sent south at the Drayton gate, into the former Mt Harding creek channel, replacing a clear flow arriving from north.



**Potential sources of water contamination**

A small proportion of farms are likely to be contributing ‘hot spot’ water pollution through their farming practices, as observed on both dairy and arable farms. From experience elsewhere, this could be mitigated by larger setbacks from the waterway and planting within the setback areas with wetland species (e.g. Carex sedges, toi-toi, flaxes) in hollows at the paddock Creek-side margins. In at least one case adjacent dairy paddock sub-surface drainage was being piped direct to the creek without any opportunity to intercept/filter out nitrates, phosphates and silt (see photo at left, below).



Picture above left: *Novaflo*-type plastic drain pipe installed to drain dairy paddock sub-soil direct to Washpen Creek (in upper Mt Harding catchment, where our water testing showed high levels of nitrates and detectable phosphates).



Above right: shingle bed in the Mt Harding Creek below Methven on an arable farm, with adequate set back to cultivated land. Summer weed growth in the waterway includes Monkey Musk (yellow flower seen here) as an indicator of available nutrients plus inadequate shade. Trees on the North bank could potentially provide extra shade here.

**Farm impacts: Creek re-routing, fencing, stock crossings, rubbish and land management**

We observed that the current NZ Topo map published routes of Mt Harding stream are no longer accurate. The advent of piped irrigation supplies and pivot irrigators has led to multiple relocations of Creek sections onto straight paddock boundaries with right-angle corners where previously it had meandered through those paddocks. We did not investigate if or how many of these past relocations had been consented, nor the dates of changes. We focused instead on the quality of the resulting semi-natural waterway, whilst noting for our map which sections were straight-line relocations along paddock boundaries and which were the generally curving original courses.

On most farms, the Creek had been fenced, although on some paddocks the fences were very close to the water’s edge. We also saw evidence on arable farms of herbicide sprays used reaching down the bank to the

water, killing vegetation on the slope (photo below right illustrates this). Vegetation roots would have had value in utilising soluble nutrients before they reach the water and in stabilising the soil slope from erosion.

Several blocks of winter feed kale were planted very close to the waterway with only 1metre distance into the water, from a single hot wire fence. This offers inadequate creek protection from wash-off of silt, E-coli and excess nutrients. A wider set back protected from grazing provides a buffer strip of vegetation, able to gather surface silt and manure flows after heavy rain, to utilise nutrients and stabilise slopes: all of which protect water quality. This is now recognised in the farming industry as Good Management Practice (GMP).

	
<p>Livestock paddock fence posts about 1metre from the water's edge, supporting a single hot wire. This offers insufficient protection to the waterway from silt and effluent. A three-metre minimum setback and two hot wires would perform better.</p>	<p>Above: weed killer sprayed-out creek bank on an arable &amp; sheep farm fence line, fenced at the break of slope, too close to the water. Weed control is a priority issue in seed crop production, leading to extensive herbicide use on field edge strips.</p>

Arable farms growing seed crops are sensitive to weed incursions because weeds reduce the crop purity and hence value; but an unintended side-effect of killing ground cover is exposed silt washing into the waterway from bare slopes and there is also likely spray drift damage to stream life if the chemicals used are toxic to freshwater algae, insects or fish.

The quality of crossing over the creek for travelling irrigators was variable for the Mt Harding Creek Catchment. On two dairy farms, centre pivot irrigators are crossing either Mt Harding Creek or its spring-fed tributary without bridges to support their wheels, which creates muddy ruts sloping in from both sides, running surface pollution directly from the paddock into the waterway. There were also good examples seen, such as concrete bridges aligned for passage of irrigator wheels, installed above the creek.



Pivot irrigator wheel crossing a spring-fed tributary of the creek, on a dairy farm. This provides a stormwater path for silt to enter the waterway.



Pivot irrigator wheel track from another dairy farm, crossing Mt Harding Creek. (The insulated fence wires dip down when wheels pass over, at that point.)

Several dryland areas, grazed non-intensively by sheep, have no fence protection of the waterway from the livestock (as permitted for sheep, under current Regional rules). These had good stream bed shingle quality and visible insect life, with no pugging but some bare soil patches close by, which might generate silt.

We came across one example of cattle grazing within a fenced-off stop bank. However, the landowner has subsequently planted that area with natives and now satisfactorily excludes stock.

Also, we noted one example of an unfenced stock water race in which cattle were seen wading as we arrived to set up our water sampling. We were not surprised to find higher Phosphorus (DRP) and detectable E-coli levels in that sample, from below Drayton Gate.



An example of 'good practice' stream stock-bridging on a dairy farm, where fencing prevents stock access to Mt Harding Creek and the bridge approaches are either level or sloping away from the water, and its concrete track edges are raised (bunded) to help manage animal manure and urine.

Rubbish such as agricultural plastic sacks and containers in the waterway were infrequent, and most noticeable where the waterway ran adjacent to farmyards, where we also noticed some demolition ‘hard fill’ piles standing on the banks.

We encourage landowners to clean up their sections of the creek and expect that it would not take them long. We are aware of at least three dis-used timber and iron bridges which could potentially be dismantled before they collapse into the creek and cause blockage. Some boundary fences across the creek are similarly ‘informal’ and likely to collect flood debris.



Informal bridge example over the creek



Ad-hoc fencing example at a farm boundary Creek crossing.

Two gravel pit locations close to the creek, although not directly surface-water-connected, were observed in 2020-21 being used for occasional plastic, animal waste and hard-fill waste disposal. Groundwater could potentially be polluted, so photos were shown to the farmers concerned and sites were cleared up in response. We shall discuss future management approaches with these landowners, explaining what is required of them under Regional rules and as industry good management practice, to protect groundwater.

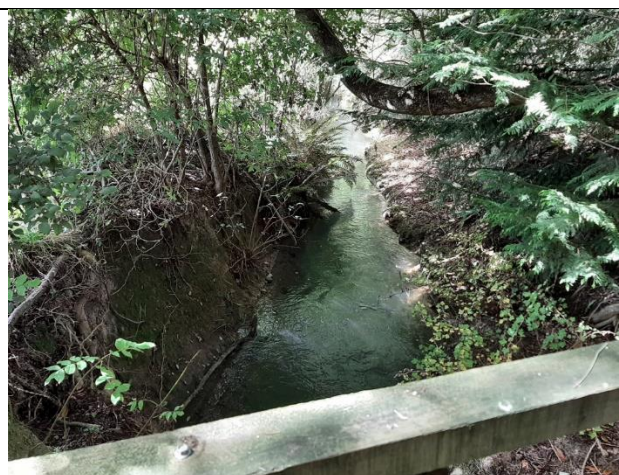
## NZ native plants – enhancement potential

We visited several locations with previous riparian planting and found most of these were well maintained, shading out unwanted weeds as the plants matured. These examples help to confirm suitable native species for the soils and climate of the catchment; and show how fast these plants establish.



This planting on G. Lilley's farmland, within the catchment, which received grant support from Environment Canterbury, featured on an open day with additional plantings added in October 2021.

In one location, we noted when visiting that urgent weed control would help establish riparian native plants to compete with planted exotic trees, such as Ash, which are now seeding.



A shaded section of the Creek within an arable farm, with a mix of natives and exotics on both banks. (viewed from private footbridge)

(above left) Taller trees for wind shelter and natives on the water edge, as an attractive example of riparian planting on a dairy farm alongside the re-routed Mt. Harding Creek. In contrast, the road verge, sprayed with a broad-spectrum weedkiller, offers little habitat value.

Ten locations were found with potential for riparian planting which would assist the waterway: by providing shade to reduce spread of waterway weeds such as monkey musk, helping to cool water temperatures to assist invertebrates and fish, and provide interesting landscape features. Where height is not limited by pivot irrigators, summer tree shade could also be useful for weed suppression and to benefit livestock in adjacent paddocks. Thanks to some sponsorship from Fonterra and the final year of 'Immediate Steps' budget allocated by the Ashburton Water Zone Committee; grant aid has been offered to meet part costs of riparian planting at some of these sites in 2021-2022. Landowner contributions and commitment to continuing maintenance are part of the agreements. Donna Field is the ECan Ashburton team contact for this, and at March 2022 reported that seven landowners have been recipients of the joint Fonterra / ECan funding for riparian planting projects, with approximately 11 km of the stream planted out in total.

Methven walkway (a Methven Lions project) is the largest public area to receive money. This was used for riparian planting along Mt Harding Stream, also known there as Thyme Stream.

Yellow Flag Iris control also benefited from the funding, with the area sprayed from Methven township to Springfield Road East with 2 more repeats of control work to be done.

## River Rating

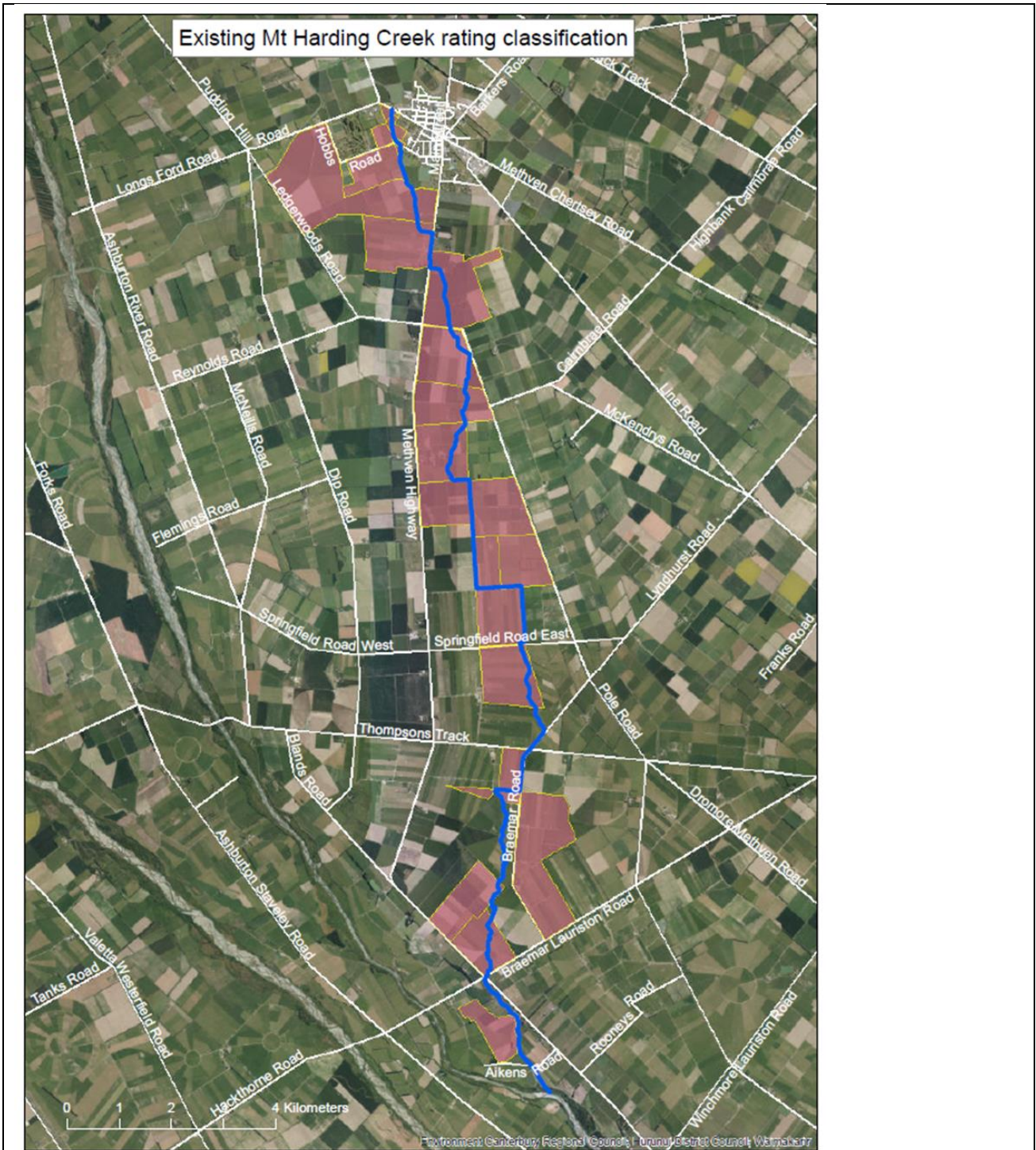
Twenty seven ratepayers along Mt Harding Creek (eight of which are small blocks of under 10 Ha) are currently charged for river engineering services by Environment Canterbury. Income is applied to management of the waterway to maintain its flow capacity, particularly relevant in heavy rain and resulting flood conditions.

Maintenance expenditure by ECan was at least \$777 in the most recent year (further data awaited), \$10,323 the year before and \$15,966 the year before that. The ten-year average is \$5,500/year. At present \$10,000 is budgeted this year to allow for flood responses but \$4,100 next year and subsequent years, plus an inflation adjustment. There is a balance of funds in reserve, so rates levied may be lower than spend a for a few years. (Matt Surman, ECan, pers com)

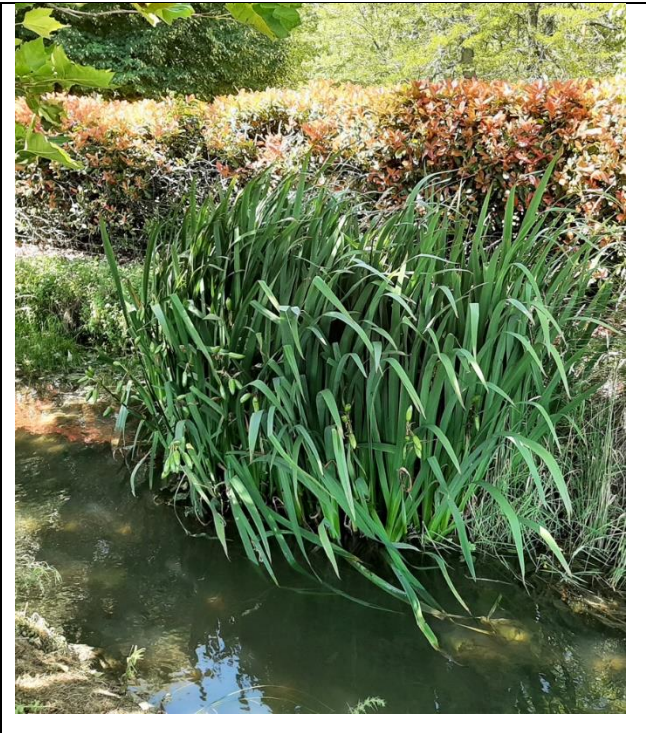


Typical River Engineering works are:

- Re-battering of bank slopes
- Mechanical creek clearing, widening
- Creek weed spraying and removal
- Invasive tree removal, e.g. willows
- Drop (mini-weir) structure repairs with associated bank works

We have been discussing future work programme priorities with ECan River Engineers, to try to better integrate actions which are focussed on protecting drainage flows with those which may promote endemic biodiversity and habitat enhancement. An area where interests coincide is the need to remove some willows where flow is obstructed and also remove Yellow Flag Iris, an invasive exotic weed with stream bed rhizomes which tends clog waterways. We have observed this weed at locations in and below Methven, not yet in large volumes but with potential to become a major problem, and have already recommended its urgent removal, which work has begun (see photos on page 25).



The Environment Canterbury River Rating District south of Methven. Pink areas are River Rated land titles. Note that some land further south and west on this Creek is separately rated in the Ashburton River Rating District. See appendix for a listing of in-stream structures within the Rating District.

	 
<p>Yellow Flag iris (<i>Iris pseudacorus</i>) pictured within the creek, on the roadside at Methven. It's an invasive weed, to be removed. It spreads downstream by floating seeds and broken pieces of rhizome.</p>	<p>Further clumps of iris have spread downstream of Methven. Physical removal is made difficult by need to extract all the rhizomes. Targeted poisoning is proposed. (Flower pictured, to aid ID.)</p>

Ashburton District Council has a targeted rate for farm stock-water use. ADC controls the flow regime of Mt Harding Creek, with ability to redirect flow into and from this waterway to other channels as part of a stock water network. We have had initial discussion with ADC staff to express interest in how ecological flows may be affected by current proposals to close stock water races 'now little used by the farmers'. If Pudding Hill Creek intake and/or Methven Auxilliary Intake are closed by ADC, it will affect the water volume available in Mt Harding Creek in its upper and mid sections respectively. We recognise that spring flows from the West are also major contributors to total flow in wet years, whilst absent in drought years.

## In Conclusion

Overall, we found landowners to be interested in the health of Mt Harding Creek and its tributaries, and willing to consider how they could enhance it through their management practices. Rural owners were pleased to have a living waterway on their farm and most considered it an asset, especially when they had seen fish and birds of interest. Some farmers told us they were ready to close unused stock water races and that they would like to see that water redirected to more-natural waterways.

One of the most interesting possibilities is adjusting the Ashburton District-Council-managed 'gates' which are junctions between Mt Harding Creek and stock water-ways, to provide continuous flow to the Creek pathway throughout the year. This would increase the ability to support fish life and build its biological complexity.

There is scope for and a shortlist of potential sites for riparian enhancements. *Financial support is acknowledged for some on-farm projects in 2022 from Fonterra's Sustainable Catchments Fund, and from the Ashburton Water Zone Committee.*



## Authors' recommendations on Mt Harding Creek:

*We look forward to discussing these with Ashburton Water Zone Committee, Ashburton District Council, irrigation companies, farming industry bodies, ECan river engineers and the farmers whom we visited.*

- 1. Explore potential for maintaining continuous annual flow** in this catchment by adjusting the structure and operation of several gates currently managed by Ashburton District Council which affect this catchment. Seek agreement between ECan and ADC to operate this network for its role in supporting ecological flows in a continuous year-round natural water habitat as well as any remaining stock water needs. Investigate feasibility of culverting to re-direct flows at Drayton Gate so that the already combined Mt Harding and Pudding Hill auxiliary flow is sent southwards on its original course, instead of being replaced by a stock water flow from North Ashburton River (Methven Auxilliary) which arrives at this Gate from the west. When the Ashburton District Council investigates proposed intake closures, ECan would be able to contribute to discussion of ecological impacts on flows and habitats along the original Mt Harding stream course.
- 2. Remove Yellow flag Iris** and willows wherever they are invading the creek bed. Encourage all affected landowners, in collaboration with the River Engineers' work programme, to act on this. Gather and disseminate information on appropriate herbicide for this purpose. (it may be metsulfuron-methyl. ECan colleagues are working through the EPA required Risk Assessment.)
- 3. Through further correspondence and visits, identify with farmers the 'hot spots' of likely stream pollution within farms** which could be mitigated by adjustments to increase fence setbacks and potentially by small riparian planting additions, without much loss of total grazing or crop area. These would be excellent projects to include in farm environment plans/sustainable dairying plans and where such plans are required by the Regional Council would become subject to audit checks as part of the 'consent to farm' process (applicable on irrigated farms and those with large areas of winter grazing). Any wetlands within the catchment will need stock exclusion, noting that Ministry for the Environment is increasing protection for the last remaining wetlands (Canterbury has lost about 95% of wetland area). These are accepted Good Management Practices, as promoted by farming industry bodies such as Dairy NZ, Beef+Lamb, Foundation for Arable Research, and Irrigation NZ. For further information on GMP see: <https://www.ecan.govt.nz/your-region/farmers-hub/gmp/> and <https://www.ecan.govt.nz/your-region/your-environment/water/canterbury-good-management-practice-story/>
- 4. Identify, with several interested farmers, suitable locations for fence-protected riparian planting,** eligible for future grant assistance as funds allow. Subsequent two years' maintenance would be a landowner responsibility, with an inspection visit made by ECan and potential educational field trip visit(s) by catchment or farm study groups. Land Management and Biodiversity officers at the ECan Ashburton office will lead on this follow up.
- 5. At one farm location, provide woody-weed control assistance into an extension of that planting undertaken by the farmer,** so that the native plants gain greater chance of survival in competition with exotic trees. Subsequent maintenance would be the farmer's responsibility.
- 6. Encourage erection of small durable signs** naming 'Mt Harding Creek' or 'Spring tributary of Mt Harding Creek' at points where these linked waterways are bridged by public roads, to help build awareness and interest in care of the waterway. There may be scope to engage help from community organisations in this.
- 7. Encourage removal of unused farm bridges and weir structures,** before they collapse.
- 8. There may also be scope to improve fish passage** at some existing small weirs.

Appendix 1. Additional illustrations

Flood damage in winter 2021, and recovery progress.



Above: June 2021, soon after North Ashburton River flood break-out entered an intermittent spring-fed watercourse on H. Rooney's Farm.



Above: Same location in November 2021, where the spring water is still flowing. Banks already replanted with natives (Fonterra assisted project).



Above: June 2021, Looking downstream from right bank: flood damage to Mt Harding Creek at H Rooney's farm. The true left bank was scheduled for riparian planting (visible here, with white-wrapped baleage line beyond).



Above: Same section of creek, but looking upstream, December 2021. Native plants in place on the left bank, above re-graded shingle. Recovery from flood is under way. Fonterra assisted with project funding.



Mt Harding Creek 2021 flood across land north west of Methven, at the ADC Gate supplying Methven Auxiliary, on Forest Drive.



Post flood - spring fed flow south of Methven at SH77. Often this tributary bed is dry.

## Appendix 2.

**Historic record of drops and structure locations along Mt Harding Creek, south of Methven.**

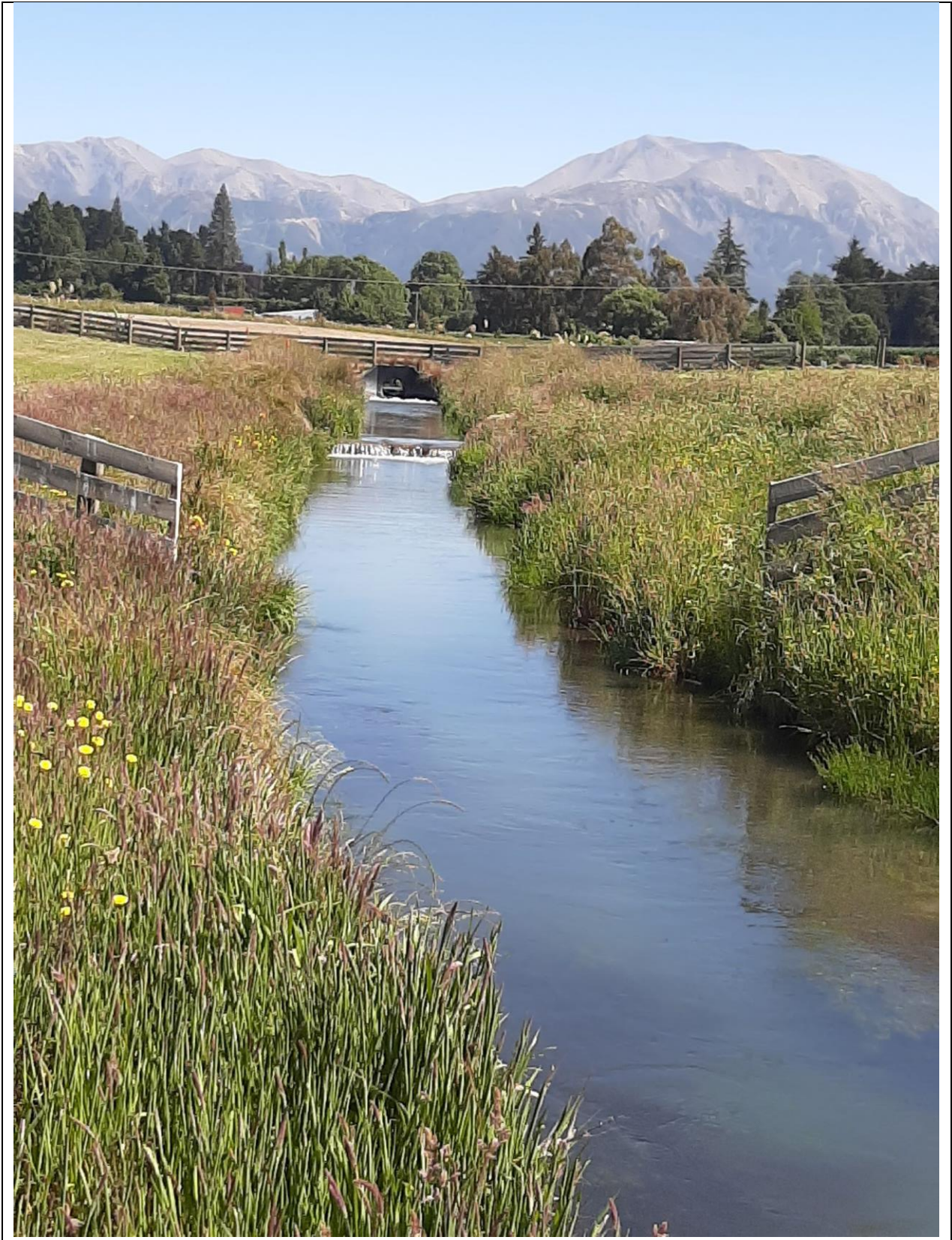
Structures inherited from South Canterbury Catchment Board.

<b>Mt Harding Creek</b>		In-stream structures below Methven and farm boundaries	
(MHC)			
sorted by grid reference			
<b>Easting</b>	<b>Northing</b>	<b>Type</b>	<b>Asset no.</b>
2399846	5730181	headwall	
2400025	5729496	headwall	
2400125	5728814	drop	MHCLD18
2400127	5728802	drop	MHCLD17
2400129	5728838	weir	
2400129	5728838	<i>boundary</i>	
2400150	5728758	drop	MHCLD16
2400165	5728740	drop	MHCLD15
2400197	5728719	drop	MHCLD14
2400224	5728687	drop	MHCLD13
2400238	5728642	drop	MHCLD12
2400258	5728575	drop	MHCLD11
2400281	5728426	drop	MHCLD7
2400283	5728348	drop	MHCLD6
2400286	5728510	drop	MHCLD10
2400290	5728463	drop	MHCLD8
2400293	5728489	drop	MHCLD9
2400302	5728241	drop	MHCLD5
2400317	5728216	culvert	
2400317	5728220	drop	MHCLD4
2400320	5728190	drop	MHCLD2
2400323	5728194	drop	MHCLD3
2400326	5728155	drop	MHCLD1
2400374	5728034	<i>boundary</i>	
2400581	5727372	drop	MHCRD1
2400581	5727400	drop	MHCRD2
2400583	5727424	drop	MHCRD3
2400591	5727465	drop	MHCRD4
2400594	5727330	<i>boundary</i>	
2400594	5727330	headwall	
2400596	5727508	drop	MHCRD5
2400602	5727536	drop	MHCRD6
2400606	5727591	drop	MHCRD7
2400625	5727731		
2400628	5727771	drop	MHCRD8
2400643	5727835	<i>boundary</i>	
2400643	5727835	drop	MHCRD9

Mt Harding Creek. 29

2400796	5727177	side drain	
2400801	5727057	bridge	
2400874	5726856	drop	MHCHD1
2400881	5726803	bridge	
2400926	5726330	bridge	
2400957	5723387	ford	
2401012	5723129	<i>boundary</i>	
2401048	5723620	culvert	
2401655	5713601	headwall	
2401986	5716939	culvert	
2401988	5715890	bridge	
2402008	5716956	drop	MHCMD2
2402052	5716950	drop	MHCMD1
2402308	5717145	bridge	
2402310	5717152	drop	MHCMD3
2402320	5717233	drop	MHCMD4
2402445	5719238	ford	
2402614	5718743	<i>boundary</i>	
2402614	5718743	<i>boundary</i>	
2402740	5718233	<i>boundary</i>	

Back cover - Mt Harding Creek (photographed north of Methven at 'Thyme Stream' subdivision)



<b>HUI/MEETING:</b> Ashburton Zone Committee	
<b>AGENDA ITEM NO:</b>	<b>KAUPAPA/SUBJECT:</b> Committee update
<b>KAITUHI/AUTHOR:</b> Dave Moore, Zone Facilitator	<b>WĀ/MEETING DATE:</b> 24 May 2022

### **Purpose**

To update the Committee on actions from the previous meeting, relevant information, and upcoming engagement opportunities.

### **Recommendation**

The Zone Committee receive the update and provide feedback.

### **Report**

#### **1. CWMS Zone Committee Refresh 2022 Timetable**

The 2022 CWMS Zone Committee Refresh process is underway.

- Expressions of interest open from Friday 29 April to Monday 23 May.
- Promotion 4 April to 28 April.
- Selection workshop (tentatively) 23 June
- Selection Panel appointments recommendations presented to Councils for approval
  - Canterbury Regional Council            28 July
  - Ashburton District Council            27 July

#### **2. 2022 Work Programme**

There will be no formal meetings in September and October due to local body elections. and the CWMS Zone Committee refresh process. Workshops and field trips will be possible during that time. We are planning a field trip to the Hekeao Hinds Enhancement Trust (Managed Aquifer Recharge and Near River Recharge sites in June.

**Draft meeting schedule for the next six months.**

Meeting Dates	28 June	26 July	23 Aug	27 Sept	25 Oct	22 Nov
<b>Theme</b>	<b>Field Trip</b> (MAR)	<b>Meeting?</b>	<b>Meeting</b> Review/refine Action Plan for 2022/23  FT?	<b>NO ZC MEETING DUE TO COUNCIL ELECTIONS</b> (23 Sept. to 27 Oct.)		<b>Meeting</b>
<b>Updates</b>		Ōtuwharekai update Ashburton Consent Reviews Hinds Drains Working Party Recommendations Zone Delivery update		Ōtuwharekai update		Ōtuwharekai update
<b>Activities and Events</b>	Wakanui Kathleen Gallagher film		Election of Chair and Deputy Chair	Planting at Wakanui?		
<b>Refresh</b> (Bill, Gen)	Selection Workshops	Councils approve appointments 28 July	New Members Start			
<b>ECan Councillor's availability</b>		ECan recess 1-17 July		<b>No</b> 23 Sept to 27 Oct LG Elections	<b>No</b> 23 Sept to 27 Oct LG Elections	