



LOWER WAITAKI - SOUTH COASTAL CANTERBURY ZONE COMMITTEE

A MEETING of the LOWER WAITAKI SOUTH COASTAL CANTERBURY ZONE COMMITTEE will be held as follows:

- Date: Wednesday 18 October 2017
- Time: 1.00pm
- Venue: Waimate Event Centre, Paul Street, Waimate

COMMITTEE MEMBERSHIP

Kate White (Chair)	Suzanne Eddington
Andrew Feierabend	Mark Giles (Deputy Chair)
Sandra Hampstead-Tipene	Andrew Hayes
Jeremy Holding	Mark Kingsbury
Miriam Morton	Bruce Murphy
Brent Packman	Elizabeth Rollinson
Ranui Ryan	Peter Scott

Lower Waitaki Zone Committee Meeting Wednesday 18 October, 1.00pm Waimate Event Centre AGENDA

Time	Agenda Item	Торіс	Presenter	Page
1pm	1	Karakia and welcome; Standing Items: Apologies, Declarations of Interest, Confirmation of Minutes , Correspondence , Regional Committee update, Facilitator update		3 6
1.15pm	2	Plan Change 3 (verbal)	Councillor Peter Skelton	
1.30pm	3	IMS Project for Decision	Kennedy Lange	7
2.00pm	4	Good Management Practices for setback strips on cropping farms	Colin Hurst and Abie Horrocks	14
2.30pm	5	Water Quality 101- What's it all about?	Shirley Hayward	
2.50pm	6	Swimming grades for 2017/18 and Waihao River Faecal Source Tracking Results		24
3.05pm		Afternoon Tea		
3.20pm	7	Zone Delivery Verbal Update	Zone Manager Chris Eccleston	
3.30pm	8	2017 Annual Report- Key achievements		26
3.45pm	9	General Business/General Public		
4.00pm		Close		

LOWER WAITAKI SOUTH COASTAL CANTERBURY ZONE COMMITTEE

MINUTES OF A LOWER WAITAKI SOUTH COASTAL CANTERBURY ZONE COMMITTEE MEETING HELD IN THE WAIMATE EVENT CENTRE, WAIMATE ON WEDNESDAY 20 SEPTEMBER 2017, AT 1.15PM

PRESENT	Chair Kate White (Community); Mark Giles (Deputy Chair), Suzanne Eddington (Waihao Runanga), Andrew Feierabend (Meridian Energy), Sandra Hampstead-Tipene (Arowhenua Runanga), Andrew Hayes (Community), Mark Kingsbury (Community), Cr Miriam Morton (Waimate District Council), Bruce Murphy (Community), Brent Packman (Community), Liz Rollinson (Community), Ranui Ryan (Moeraki Runanga) and Cr Peter Scott (Environment Canterbury)
APOLOGIES	Peter Ramsden
IN ATTENDANCE	Nic Newman (Zone Facilitator – ECan) Olivia Smith (Acting Minute Secretary/Zone Facilitator)

The Chair welcomed members to the meeting and thanked and made a presentation to Nic Newman, being his last meeting with the Lower Waitaki Zone Committee. Committee members, along with members of the public, acknowledged Nic's outstanding facilitation skills and the enormous contribution that he has made to the Lower Waitaki community.

APOLOGIES

No apologies were received.

DECLARATION OF INTERESTS

There were no additional interests registered.

CONFIRMATION OF MINUTES

RESOLVED

LWSC17/19 Moved Sandra Hampstead Seconded Cr Miriam Morton "That the minutes of the Lower Waitaki Zone Committee meeting held on 19 July 2017are adopted as a true and correct record." MOTION CARRIED

RESOLVED LWSC17/20

> Moved Andrew Hayes Seconded Sandra Hampstead "That the minutes of the Joint Upper and Lower Waitaki Zone Committee meeting held on 18 August 2017 are adopted as a true and correct record." MOTION CARRIED

CORRESPONDENCE

There was no correspondence received or sent.

REGIONAL COMMITTEE UPDATE

No update provided.

FACILITATOR UPDATE

Nic Newman informed the committee that the Iwi Management Plan will be shared with the committee at a future meeting. He also advised that the Zone Committee Refresh process is underway and applications are now open.

HUNTER DOWNS

Stacy Scott updated the committee on Hunter Downs Irrigation Scheme (HDI). Stacey provided a handout on TLI monitoring in Wainono Lagoon requesting the Zone Committee support more frequent TLI monitoring.

When asked for a progress update on HDI, Stacey explained that they have reduced the size of the proposed scheme to 12,000 hectares. 700 hectares of this irrigation is expected to be in the Wainono catchment.

Stacey explained that the scheme is working toward financial close and are awaiting the result of the upcoming election. It was thought that outcome of the election may potentially influence funding from Crown Irrigation Investments Limited.

There was much discussion on the augmentation of Wainono lagoon. It was agreed that a wider discussion needs to take place which includes the location, volume and funding of augmentation. It was agreed that the conversation needs to include the community, Rūnanga, Ngai Tahu, Department of Conversation, Zone Committee, Councils, MGI and HDI. There was some frustration that this conversation had not occurred earlier.

ZONE DELIVERY

Zone Manager, Chris Eccleston updated the committee on:

- Implementation Prioritisation. The Chair said it was helpful and Chris explained that the next step is prioritising projects for implementation
- Verbal Update on Activities.
 - Chris informed the committee of a GMP cropping project led by Foundation of Arable Research.
 - o Work to support the Hakataramea Sustainability Collective.
 - A meeting with Liz Soal took place which included a discussion about ways to improve environmental reporting in the district.
- Annual Compliance Report it was noted that there has been a significant increase in the number of complaints received for stock in waterways. It was explained that this may simply be a result of increased awareness of the issue.

ENVIRONMENT CANTERBURY LONG TERM PLAN

Facilitator Nic Newman sought feedback from the committee on Environment Canterbury's Long Term Plan. The following feedback was received:

New Freshwater Management Solutions

- Resource supporting catchment GMP
- Integrated monitoring network

Step Change in Biodiversity

- More on the ground education and support
- Biodiversity corridor approach

GENERAL BUSINESS / GENERAL PUBLIC

The Chair explained that there are four streams on South Bank of the Waitaki River that currently have mining rights on them. These rights are due to expire and a group has been formed to work with ECan on replacement consents. Three of the four streams have no

minimum flows and ecological work is required to determine appropriate a flow regime for each of these streams. A representative of the group approached the Chair requesting that the Zone Committee request Environment Canterbury to support the group with the required study.

> RESOLVED LWSC17/21

Moved Kate White Seconded Mark Giles "The Lower Waitaki Zone Committee ask ECan to support a study into the flows and potential allocation of the river on the South Bank of the Waitaki affected by mining rights. We ask that this is done in conjunction with the mining rights farmers and with some urgency in order to provide clarity with regard to application for water to the Kurow Duntroon Irrigation Scheme." MOTION CARRIED

The meeting closed at 2.45pm for afternoon tea, with the Committee then taking a field trip to the Black Hole on the Waihao River

K White <u>Chairperson</u> 29 September 2017



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Kate White Chair, Lower Waitaki Zone Committee

Dear Kate,

Re: Hunter Downs memorandum re Wainono monitoring

At the Lower Waitaki Zone Committee meeting of September 20, 2017 you received a memorandum from Stacey Scott of Hunter Downs querying the frequency of water quality monitoring in Wainono Lagoon.

We can assure you that the water quality monitoring to be used for TLI calculations will be carried out monthly. In addition to the mid-lake sampling we will be continuing the near shore sampling at the same time in order to establish if there is a stable relationship between the two.

Unfortunately Ms Scott has confused two reasons for travelling to the centre of Wainono. Every third time we sample water quality mid-lake (i.e. quarterly) the continuous monitoring station will be serviced. It appears that Ms Scott has confused this servicing trip with the monitoring and thought we would were only sampling quarterly.

In the memorandum Ms Scott also queries the provision of TLI data by ECan. We will contact Ms Scott to clarify what she means by this as we are very open to providing data to all of the community. However we do note that TLI is an annual rather than monthly calculation and therefore if Hunter Downs truly want monthly TLI then we are not able to provide it.

Environment Canterbury has invested heavily in the monitoring of Wainono and we strive to provide the best data. If you would like somebody from the Science Group to come and explain the different monitoring in and around Wainono then we would be very happy to do so.

Yours sincerely

Tim Davie Chief Scientist

nr 1

Helen Shaw Surface Water Science Manager

cc. Olivia Smith, acting Lower Waitaki Zone Committee facilitator

AGENDA ITEM NO	SUBJECT MATTER
3	Lower Waitaki Zone Committee Immediate Steps Fund – Biodiversity Project Funding approval
REPORT BY	DATE OF MEETING
Kennedy Lange, Biodiversity Officer	18 October 2017

Immediate Steps Programme

The Lower Waitaki Zone committee initiated a programme of scoping and identifying biodiversity projects that will contribute to meeting the required outcomes for the Canterbury Water Management Strategy (CWMS) for the Lower Waitaki Zone. The availability of this Immediate Steps Funding had been promoted by the Zone Committee and also through local community groups and publicity produced by Environment Canterbury.

Immediate Steps Project for Approval

The attached project is presented for Zone Committee approval. Of the current Immediate Steps budget for Lower Waitaki South Coastal Canterbury Zone, \$432,621 remains to be allocated.

Action Sought

Approve funding for attached Immediate Steps Project

Limestone Wetland Protection, Duntroon

Project Details	
Supporting Organisation/ Community Group	QEII National Trust
Project CWMS Zone	Lower Waitaki
Project Location	Duntroon
Nature of Project	Protection
Habitat Type	Valley floor wetland and limestone escarpment habitats
Project Aim	Protect and enhance wetland and limestone escarpment biodiversity through fencing, legal protection and weed control. This project also provides significant publicity and interpretation opportunities.
Project Outcomes	Protection of Carex dominated wetland and limestone escarpment plant communities including threatened flora and fauna.
Works to be undertaken	Area to be fenced (ha): 13.00 Length of protective fencing (m): 830.00 Weed control area (ha): 3.00 Fencing, weed control, legal protection and formalised public access.

Funding Requested		
From ECAN	From Other Sources	Estimated Total (Applicant)
\$13,000	\$10,000	\$22,429

Material / Resource	Туре	Fund	Units	Unit Type	Cost Per Unit	Total Costs
Fence construction and materials	Permanent 7 wire or boundary mesh	Environment Canterbury Immediate Steps	1000.0 0	Metre	\$10.00	\$10,000
Fence construction and materials	Permanent 7 wire or sheep mesh	Third Party Contributor	830.00	Metre	\$5.00	\$4150
Other	Legal protection	Third Party Contributor	1.00	Other	\$4279.0 0	\$4279
Weed control	Willows and sycamore	Environment Canterbury Immediate Steps	2.00	Hectare	\$1500.0 0	\$3000
Weed control	Willow and sycamore	Third Party Contributor	1.00	Hectare	\$1000.0 0	\$1000
					Total	\$22,429

Eco	logical Assessment
Fund	lamental Project Criteria
1. Re	flects the Canterbury Biodiversity Strategy's Guiding Principles
Y	Focuses on protecting and maintaining what remains
	Focuses on restoring what has been lost
2. Cc	ontributes to the Canterbury Biodiversity Strategy's Goals (1-6)
Y	Protects or maintains the health of significant habitats and ecosystems
Y	Restores the natural character of degraded indigenous habitats and ecosystems
Y	Increases the integration and sustainable use of indigenous species in modified environments (e.g. farm, urban, lifestyle blocks).
Y	Enhances the public's awareness, understanding and support of biodiversity
Y	Encourages, celebrates and supports action by landowners and communities to protect, maintain and restore biodiversity
	Improves the range and quality of knowledge and information about Canterbury's biodiversity for its sustainable management
3. Pr	oject Viability
Y	Project is feasible, cost-effective and an efficient use of funds.
Y	Project will realistically achieve outcomes/gains it is aiming to.
Y	Project is sustainable (e.g. any ongoing or future management requirements are identified and affordable).
Y	No other potential costs (e.g. consent costs) that may make the project less viable and/or affordable
4. La	ndowner Support
Y	Project has landowner support
5. Ec	o-sourced Plants
	Eco-sourced plants being used
	Not applicable
6. Is	some or all of the work required under the Regional Pest Management Strategy?
	RPMS
7. ls	some or all of the work required under a District/Regional Council Plan?
	District/Regional Council Plan
8. Pr	oportion of cost
100	Protection
0	Restoration
0	Creation
0	Monitoring

Existing Ecological Values				
Criteria	Score (0-3)	Comments		
Representativeness	3	Wetland is representative of what would have been a common plant community on high fertility limestone valley floors. Highly diverse and in good condition.		
Rarity or Distinctiveness	3	Freshwater crayfish (at Risk-Declining) is found in the open water area and a nationally critical aquatic herb <i>Trigloclin palustris</i> , (marsh arrow grass) which is its newly discovered southern limit in March 2015. Site also has rare limestone endemic, Geranium "Manahune"		
Diversity and Pattern	2	Diverse remnants but separated by developed pasture areas		
Ecological Context	2	Interrupted linkages with other habitats and between site values.		
Project Protects a Threatened Environment	3	Protects critically unrepresented LENZ classification		
Project Protects a Wetland or Coastal Dunes	3	Diverse wetland remnant		
Project Protects Naturally Rare or Distinctive Habitat	3	Limestone escarpment		
Project Protects Rare or Threatened Species	3	<i>Trigloclin palustris</i> (Marsh arrow grass), koura, Geranium "Manahune"		
Sub-total	22	Very high value site.		

Potential Ecological Values (in 10-15 years' time – based on likely change)				
Criteria	Score (0-3)	Comments		
Potential Representativeness	3	Project will maintain existing values		
Potential Ecological Context	2	Project will maintain existing values		
Potential Diversity and Pattern	2	Project will maintain existing values		
Sub-total	7			

Other Criteria (non ecological or cultural)				
Criteria	Score (0-3)	Comments		
Legally Protected	3	QEII Covenant		
Educational or Partnership Value	3	High public use site with opportunities to partner with community recreational/ interpretation/ information development. On Alps to Ocean bike trail.		

Immediate Steps Criteria				
Criteria	Score (L, M, H)			
Meets ZIP Recommendation 1.7, Recreation and amenity for Waitaki catchment	Н			
Meets ZIP Recommendations 4.1,4.4,4.5,4.8,4.12(5), particularly 4.12 (5) Immediate Steps Programme funding for Waitaki Valley wetlands.	Н			



Figure 1. Project Map

Overall Assessment Scores			
Criteria	Score	Comments	
Ecological Assessment Score (Existing and Potential) /39	35	This site has very high biodiversity, cultural and public use values. The project will protect a critically under-protected land environment and a critically endangered plant species.	
Cultural	High	Archaeological sites, rock drawings within covenant, koura in wetland stream.	
Other Criteria Overall Rating	High	High public use, visible investment	
Immediate Steps Rating	High	Meets ZIP Priorities and recommendations	



Figure 2. Panorama of wetland area



Figure 3. Marsh arrow grass, Threat Status: Nationally Critical

AGENDA ITEM NO	SUBJECT MATTER
4	Good Management Practices for Setback Strips on Cropping Farms
REPORT BY	DATE OF MEETING
Olivia Smith (Facilitator)	18 October 2017

Purpose

To inform the zone committee of a project proposal for establishing good management practices for setback strips on cropping farms.

Background

Cultivating land disturbs soil and in the event of rain or irrigation sediment and phosphorous can runoff and enter waterways. Planting setbacks alongside waterways is a common mitigation to reduce this risk. A planted setback can filter run-off water, reduce sediment loads and stabilise stream banks to reduce the risk of erosion.

The effectiveness of setback widths for intercepting and mitigating overland has not been well quantified for cultivated land. To help address this data gap, a project group involving members of the Foundation Arable Research (FAR), farmers and Agri-magic have worked together to develop a project proposal (attached).

The project will compare the effectiveness of a range of setback widths, species and cultivation practices. It will include a set of regional trials on both flat and sloping land and trial various setback species.

The project outcomes will include:

- Improved understanding amongst farmers of setback strip functionality and purpose
- Evidence on setback strip effectiveness which could support the development of setback rules
- The development of a Good Management Practice Guide which can be used by farmers, consultants and councils
- Recommendations for suitable species to plant in setback strips
- An ongoing opportunity to promote GMP on cropping farms to reduce erosion and sediment losses

FAR have recently applied to the Sustainable Farming Fund for funding for the proposed project. The result of the application is not yet known.

Colin Hurst (a cropping farmer on the project team) and Abie Horrocks (Environmental Research Manager at FAR) will attend the Zone Committee meeting and present an overview of the project.

Recommendation

The Zone Committee:

- Receive the report and presentation
- Support the project proposal

Attachment

Project Proposal

Project Title

Good Management Practices for Setback Strips on Cropping Farms

Brief Description

This project will determine how setbacks can most effectively be used on cultivated land with varying slopes to mitigate sediment and phosphorus loss to waterways.

Applicant Group Name

FAR

Effective Setbacks Initiative

Project Summary

Setbacks from waterways are an accepted mitigation for sediment control on cultivated ground but the effectiveness of their width has not been well quantified. Regional rules reflect this uncertainty and often stipulate a fixed setback width. A flexible approach would deliver better outcomes for the farm and environment because the biggest environmental losses might come from a small proportion of the farm.

This project will provide data to inform farmers and regional council policy advisers about effective setback management. Regional trials will test setback widths on different slopes to quantify effectiveness in filtering run-off water. A good management guide for setback development and management on cropping ground will be developed. This will include links to management practices to reduce soil movement during the rotation.

An important consideration is setback species. Options with potential to offset some lost productivity associated with the establishment of setbacks will be considered.

Problem or Opportunity

In any one year an arable farmer might cultivate land and grow grains, seeds, vegetables and forages, harvest these crops or graze them with a variety of stock classes. During these activities there is soil disturbance and any run-off during rain or irrigation may carry sediments and phosphorus into waterways. This direct loss of soil and nutrients during runoff events is an environmental risk for water quality and an economic loss to the farm.

A common mitigation measure to filter run-off water and reduce sediment loads is to plant setbacks areas alongside waterways. These act as a buffer between the water body and the cultivated ground, reducing environmental risk by intercepting and filtering surface runoff during irrigation or rainfall episodes. They also help stabilize stream banks reducing the risk of erosion and the direct loss of soil into the water.

Many Regional Council Land and Water Plans have rules around setback widths and cultivation on slopes which are designed to reduce the chance of sediments entering waterways. The problem is that there is no consistent approach for setback widths and the regional rules vary greatly. This is because there is little proven information about the effectiveness of the width of these setbacks to reduce sediment and phosphorus losses to waterways. It is a complex problem which must consider interactions between weather, slope, soil type, cultivation management, setback plant species and their on-going management. One width will not fit all situations, nor be acceptable to all interested parties.

Setbacks are designed to trap sediments and nutrients, particularly phosphorus. At some point it is likely that the sediments and phosphorus trapped in the setback will reach saturation and reduce the efficacy of the strip. The setback will require ongoing management to preserve its filtering ability. The choice of setback species will become important for the long term life of the strip and those with a dual purpose; filtering run-off water and having a harvest potential for either forage or grain, will provide sustainable benefits for the farm.

FAR's strategy for research development is built on feedback from farmers in the regional arable research groups. A recent top concern expressed from a number of regions has been around the issue of setback width rules. Cropping farmers accept the necessity of setbacks to reduce contamination from run off; they want them wide enough to be effective but are concerned about the permanent economic loss of productive cropping ground when setbacks are established.

This project will address their concerns by focusing on:

- I. Setback width: Farmers question the regulated setback widths, their mandatory location and broad brush approach knowing there is a dearth of scientific evidence about the effectiveness of the strip for intercepting sediments in runoff water. Whilst they may support the use of setbacks in specific locations they are reluctant to establish strips that are wider than they need be or ineffective when dealing with site specific runoff characteristics/activities. The wider the strip or its inappropriate location, the bigger the loss of cropping area. This has a direct and permanent impact on the farm income, efficient management, farm sustainability and biosecurity risk levels.
- II. Ongoing maintenance: Farmers are concerned about the ongoing cost of maintaining the strip. With rules preventing stock access to water, grazing is not an easy option, which leaves the environmentally risky and expensive choices for setback management of repeated herbicide applications and mowing or neglect with further potential for biosecurity threats.

Cropping farmers are more likely to positively adopt regional setback distances once they see the numbers to support the effectiveness of the widths being enforced and they know that the research has been specifically focused on cropping systems. It is important that the regional rules have the flexibility to enable farmers to design effective setback systems to match the physical characteristics of their farms.

Cropping farmers, regional council planners and policy developers and industry consultants will benefit from this work. In particular, the results will be relevant for the development of effective farm environment plans by consultants and farmers. The recommendations from the project will provide an important reference tool for Regional Councils to support farmers.

This project will also be an opportunity to advocate good management practices to control sediment at its original source. In-paddock good management practices are key and are the starting point from which sediment losses should be managed. For example, it is known that reduced tillage practices such as strip tillage and direct drilling and the use of strategic grazing and careful management of critical source areas can reduce losses of sediment and phosphorous in surface run-off by 80-90%.

Project Deliverables

This project will address the problem of there being a lack of data around setback widths and their application to protect waterways. It will compare the effectiveness of a range of setback widths, species and cultivation practices for intercepting and mitigating overland flow on flat and sloping ground.

The deliverables will be:

The development of in-field sediment trapping protocols and equipment to measure sediment volume and sediment and phosphorus concentrations in run-off water.

A set of regional field trials to measure the effectiveness of setback widths and applications on flat and sloping land with a number of setback species.

A critical analysis of the agronomic potential of perennial wheat as a setback plant. Perennial wheat is used in other parts of the world for erosion-control. Its benefits include the provision of constant ground cover and harvestable grain as an offset to the loss of productivity associated with the setback.

A good management guide for setback development, application and management on cropping ground. This will include:

- 1. Establishment of the setback system: Effective widths to optimize the economic and environmental benefits for the farm, including considerations for intermittent streams and overland flow pathways in extreme events.
- 2. Management of the setback or sediment loss buffer area: Annual maintenance of the setback plants to maintain efficacy. Phosphate saturation within the buffers needs to be controlled through some sort of harvesting each year of the setback vegetation.
- 3. Links to management practices to reduce soil and sediment movement during the rotation processes.

Innovation

The project will engender new thinking about setback design. Current rules with set widths are ineffective because they do not consider the physiographic characteristics of the land or the effectiveness of the species. For example, five metre strips in an area where there are no run-off pathways are too wide whereas they might be too narrow and ineffective at the lowest point of an ephemeral stream. Arable cropping is often on flat ground. Effective setback width for flat ground setbacks has not been well quantified.

The use of perennial wheat is an important innovative consideration as there is the potential to offset some of the productivity losses associated with setbacks. Whilst early efforts in developing interest in perennial wheat were not aimed at reducing erosion, a more recent focus has been on the soil conservation benefits associated with perennial crops such as perennial wheat. Once harvested, the crop residue and living root structure remains in the soil and regrows in the spring to produce another harvestable crop. It is estimated that perennial wheat would need to be replanted once every 3 to 5 years to maintain optimum yields and plant health.

Project Outcomes

- This project will foster improved understanding about setback functionality and purpose to enable farmers to make informed and supported decisions about setback widths and management. The potential for generating revenue from the setback zone will also be explored.
- The regional councils will benefit from this project from the proven evidence to support their setback rules however, this will only be applicable in those regions where rules are still being developed or plan changes are underway. There will also be benefits for their regional plans because farmers are more likely to adopt regional setback rules if they are confident there is data to back them up.
- The good management practice guide will be an important on line reference for consultants and Regional Councils. Regional Councils will be able to direct farmers to links to the recommendations from this project to support them through the process of establishing and managing setbacks.
- The findings will be relevant for the development of farm environment plans by consultants, farmers and the industry. One of the ways the project will complement the farm environment plan development process will be by promoting the decision process for developing effective setbacks based on the biophysical characteristics of the farm. For example, it may be effective to have wider setbacks at a critical source point. Making the mitigations for sediment losses fit the farm's characteristics will be demonstrated and advocated throughout the project.
- The project will provide recommendations for suitable setback species including perennial wheat.
- This project will determine if perennial wheat can be grown in New Zealand, how yields compare to annual wheat yields under New Zealand growing conditions and quantify its effectiveness as a setback planting option. Improved agronomic and environmental knowledge for perennial wheat may have other spin off benefits. For example, perennial wheat may be a viable option to consider as crop for sloping ground with the advantage of a reduction in cultivation.
- An important outcome of the project will be the ongoing opportunity to promote good management practices for cultivation to reduce surface erosion and sediment losses.

Risks and Mitigation

- The design and functionality of sediment collection units will be field tested, however there is a risk that they may reach capacity and overflow during storm events, with a resulting loss of data. This risk will be mitigated by keeping a watch on weather forecasts and sampling prior to heavy rain events to minimise the risk of overflow during extreme weather conditions.
- Many variables will impact on the effectiveness of setbacks, these include hydrology, vegetation, slope, soil type and width. There is a risk that the project won't be able to quantify all variables. This will be mitigated by focusing on what research suggests are the main drivers for sediment loss (slope, buffer width and species).

- These variables may also confound the experimental results. This will be mitigated by careful paddock selection and some preliminary mapping of the paddock to identify run-off pathways.
- There is a risk that the project duration is too short to measure the effectiveness of the planted setback over time. Important questions to consider are; does the sediment accumulate in a way that results in a functional bund developing or does it reach a critical point where it is no longer effective at reducing sediment loss to the adjacent water ways. This will be mitigated by measuring trends over time and if required further funding (or internal funding) could be considered to maintain a subset of the sites over a longer period.
- Perennial wheat may prove to be incompatible with other crops in the cropping rotation and may not have a suitable end use. Other species may be more appropriate and if this becomes apparent will be included in the project.

Contribution to Sustainability

The project will contribute to the sector's environmental, economic and social sustainability by focusing on practical mitigations to improve freshwater quality for the community.

The development of the Good Management Guide for Setback Development and Management will enable farmers to design effective setback systems to reduce environmental losses associated with sediment movement. The work will also complement existing good management practices for cultivation.

This information will be a key focus for workshops and extension events. The project will provide data to support discussions with farmers and regional authorities around compliance rules. Quantification of the amount of soil being lost, either big or small losses, and the impact on receiving waterways is important for meaningful engagement with the farmers and the councils. Knowing where you stand can boost motivation and enthusiasm for mitigation efforts to keep productive soils on the farm.

Community of Interest

- All farmers that cultivate (arable, pastoral, vegetable, forage). This will include direct involvement through the steering group and hosting trials and demonstrations on their properties. The dissemination of project findings via extension material and field days will involve the wider arable community. Including trials in different regions will ensure results are relevant.
- Policy advisers and Regional Councils through co-funding of the project and involvement in the workshops and steering group.
- Industry consultants who prepare farm environment plans. It is important that there is
 proven information supporting the development of mitigations to reduce sediment
 movement.
- The urban community. Opportunities will be taken to ensure the urban community is made aware of the efforts being made to reduce sediment loss to water ways.
 Farmer efforts to improve on paddock good management practices and setback/riparian management will be show cased.

 Catchment groups, zone committees and local Rūnanga are part of the community of interest due to the common interest of wanting to see reduced sediment load to improve ecosystem health and better support recreational use and food gathering/mahinga kai. Relationships with local Rūnanga will be developed as part of this project.

Knowledge Sharing and Extension

The key findings from the project will be delivered to end users and interested parties through the agricultural press, e-newsletters, factsheets, publications (printed and electronic) and ultimately via the publication of good management practice guide for setbacks.

The Good Management Guide for Setback Development and Management will be an important on line reference material for consultants and Regional Councils. Regional Councils will be able to direct farmers to links to the recommendations from this project to support them through the process of establishing and managing setbacks.

Consultants preparing farm environment plans will be involved in the project team and will have access to the project finding via field days, publications and website access to the good management practice guide for setbacks.

Results will be presented at industry conferences and FAR Arable Environmental Fact sheets will be produced as the project progresses.

Field days will be held after winter in each region in the second and third years of the project.

Adoption will be driven by a close association with key sector stakeholders from the community of interest who will be engaged in the project and its governance through project group meetings where results are reviewed and key decisions are made.

After the completion of the project key findings will be published in a FAR Focus. The content of this will also include findings from other relevant projects relating to sediment control and riparian/setback management.

Related Work

This project will build on previous work as well as compliment current work:

- 1. The new flux meter network programme of work developed from MPI SFF investment in 2014 in the "Rootzone Reality" project has an objective for soil quality monitoring and assessing the risk of soil/sediment movement on cropping farms.
- 2. The SFF project 'Good management practices for winter dairy grazing on arable cropping land' identified the risk factors with regard to P sediment and a risk management guide for intensive winter grazing on arable farms was generated.

These projects are important because they are focused on management practices to reduce sediment movement at the source. The first line of defense for improved water quality is to prevent the soil from moving in the first place. Effective setbacks and riparian zones are the second line of defense.

3. Relevant guidelines advocating good management practices for sediment control include the Waikato Regional Council and sector Guide 'Practices to improve water quality on cropping land'. Similarly, Environment Canterbury's Industry Agreed Good Management Practices are relevant to this work.

- 4. This project complements the current SFF project 'Don't muddy the waters' with additional information on effective setback widths.
- 5. Designing and developing robust methodology capable of capturing sediment runoff is a necessary objective the Flux meter project. Sediment methodology assessments are being carried out by ESR and Massey University. Selected methods will be tested and assessed so that the most resilient and accurate method will be ready to put into practice should this project go ahead.
- 6. Related work around perennial wheat is being carried out at the Washington State University where the use of perennial wheat as an alternative cropping system strategy is being developed to gain the erosion-control benefits. In Australia the profitability that might be expected from perennial wheat was investigated using whole-farm economic analysis in an Australian dryland farming system. This analysis found that perennial wheat used for the dual purposes of grain and forage production could be developed as a profitable option for mixed crop/livestock producers.
- 7. A project being submitted by Dairy NZ for consideration by SFF called 'Productive Riparian Buffers' is complementary to this project. Our proposal's point of difference is the focus on effective setback designs for reducing sediment movement from cultivated land. The research findings from their project will add information about a wider range of plant species options that may be suitable. Both projects will enhance the rural community's understanding of how riparian/setback margins are being efficiently managed. A consistent cross-sector approach is important. Additionally, a Dairy NZ and GroundTruth led SFF project underway to look at the attenuation of key contaminants from dairy farm laneways. The outcomes of the project will be complementary as they will be used to develop guidelines for laneway placement next to waterways.
- 8. Another new SFF application currently being submitted 'Reducing Sediment Loss from Winter Crops' will evaluate a range of catch crop species and establishment techniques to reduces sediment losses during winter grazing of forage cropping programmes. The focus of their proposal is mitigating the sediment movement associated with grazing and complements our work by providing a suite of options for keeping sediments out of waterways.

Methodological Rationale and Design

Sediment capturing units will be tested outside of this project so that the most resilient and accurate method will be ready to install at trial sites. One of the methods to test will be gutter collection method installed at the receiving end of the width treatments. The gutters will be tested to see if they accommodate periodic sampling to determine the total amount of soil that moves past the setback widths.

A turbidity water attachment collection devise will be installed for each treatment partition to measure water movement correlated with each treatment.

Six trial sites will be set up in three regions. These will include flat slopes in the Selwyn Te Waihora Phosphorus sediment zone, moderate slopes in South Canterbury and steep slopes in Waikato.

In the first year four sites will be established in the two South Island regions as proof of concept of methods. It is anticipated that any required adjustments will be detected in the first four months of establishment. If required modifications will be made.

Different setback widths will be compared to a bare ground treatment, in a randomised block design layout. The final details of treatments will be finalised by the project team and a biometrician. It is likely that there will be 2 species treatments (cocksfoot and perennial wheat), 4 width treatments (including a bare ground treatment) and 3 reps per trial site. Sites with different cultivation methods (direct drill and conventional cultivation) will be chosen.

In the second year an additional two sites will be set up in the North Island.

Once established these trials will continue for the duration of the project to capture data and management information as the setback plantings establish. This will enable assessments to be carried out as the planted setback zones change over time. For example, an experimental question will be to determine if sediment accumulates in a way that results in a functional bund developing or if the setback reaches a critical point where it is no longer a functional filter.

In the first year of the project perennial wheat will be planted at FAR's demonstration site; Kowhai Farm, to determine its agronomic attributes. In the second year, if viable, perennial wheat will be included as a treatment at the trial sites using a small plot drill.

Soil (basic soil test which included total P), plant (plant tissue total N and P) and sediment (total P) analyses will be carried out each spring.

Bare ground plots will be kept free of weeds with herbicides. Management of setback treatments will vary depending on farmer preference and project team discussion.

Sediment sampling will be on-going and the total amount of soil that accumulates in the catchment device will be recorded (as a dry weight of soil) from each treatment. It is anticipated that sampling will be every 4-5 weeks in summer and every 2-3 weeks in winter (or after significant rainfall events). Automated rain gauges will be installed at each site.

Width and species effectiveness will be determined based on sediment capture compared to fallow for each of the treatments.

Options for measuring stream water turbidity will be explored as new measuring tools are currently being developed. For example, a solar powered five probed unit measuring water temperature, turbidity (murkiness), dissolved oxygen, conductivity and PH levels is currently being beta tested.

The third and final year will be focused final trial evaluations, extension and publishing the recommendations in the good management practice guide for setbacks.

Farmers and Steering Committee Member/Co-funders

Project team:

Chairperson- Colin Hurst (cropping farmer) Potatoes NZ- Nick Pyke FAR- Abie Horrocks and Di Mathers (North and South Island Environmental research managers). Anna Heslop (communication). Carey Barnett (cropping farmer and member of Ellesmere Sustainable Agriculture Incorporated).

Charlotte Glass- Agrimagic (Charlotte Glass is the director and founder of Agri Magic Ltd who support farmers through new regulatory processes).

Ashley Biggs – cropping farmer in Fairlie. Have emailed but need to follow up with a phone call.

Chris Eccleston-Zone Manager Environment Canterbury.

AGENDA ITEM NO	SUBJECT MATTER
6	Swimming grades for 2017/18 and Waihao
	River Faecal Source Tracking Results
REPORT BY	
Shirley Hayward and Jarred Arthur	
DATE OF MEETING	
18 October 2017	

Purpose

To update the committee on the swimming grades for 2017/18 season and the Faecal Source Tracking (FST) results for the Waihao Black Hole site.

Action Required

The committee receive the update.

Background

In 2016 an investigation was set up to look at potential reasons for the 'Very Poor' suitability for recreation grade (SFRG) at the Waihao River at Black Hole. A report to the LWSCCS Zone Committee's June 2017 meeting summarised the finding from the *E. coli* study, but was not able to provide the FST results as they were not available. This paper provides the findings from the FST sampling and provides the proposed SFRGs for the zone for 2017/18.

Waihao River Black Hole FST Results

Faecal Source Tracking is a technique that uses multiple tools to assess the animal sources of faecal contamination in water as indicated by *E. coli* concentrations. ESR provides this specialist service, and advises on the most appropriate tools for each bathing site tested. At popular swimming sites, the primary FST tools used are Faecal Sterol and PCR marker analyses. Sterols are lipids that have important biological functions in plants and animals. Faecal sterols are found mainly in animal faeces, and the sterol "fingerprint" (ratio of different sterols) can be quite distinctive between species. PCR (Polymerase Chain Reaction) is a technique for detecting DNA sequences of microbial organisms that are host specific. Both of these techniques can distinguish between human, avian, ruminant and some other faecal sources, although there is variable sensitivity and overlap in results, sometimes making it difficult to clearly distinguish sources.

Over the 2016/17 summer, samples were collected weekly for FST analysis and sent to the ESR laboratory. Only samples where high *E. coli* concentrations were found (>300 E. coli/100 ml) during stable flow conditions were suitable for FST analysis. For the Black Hole site, this meant only 3 samples were analysed. Table 1 summarises the results of the FST analyses.

Date sampled	<i>E. coli</i> concentration (n/100 ml)	Faecal source determination
8 December 2016	548	Ruminant source (10-50%), avian
13 February 2017	387	Avian source + weak evidence of human source
1 March 2017	387	Avian source

Table 1: Results of faecal source tracking of the Waihao River at Black Hole

The results indicate that faecal sources were mainly either ruminant (e.g., sheep, cattle, deer) and/or avian (birds). There was a weak indication of human source on one occasion, but this is not conclusive evidence of human faecal contamination.

The *E. coli* study of upstream tributaries indicated that faecal inputs in the vicinity of Black Hole (downstream of Waihao Forks) were the main influence on poor *E. coli* results. This is consistent with FST results indicating avian sources, and our own observations at times of birds congregating in the area. These results also indicate that ongoing work with local landowners in managing grazing animals and critical source areas will contribute to improvements in water quality of Waihao River.

Swimming Grades for 2017/18 for Lower Waitaki and SCCS Zone.

Following analysis of last summer's contact recreational monitoring data, along with a risk assessment of each sites susceptibility to faecal contamination (following national protocols), the following SFRGs have been recommended for the 2017/18 season (Table 2). While the Waihao River at Black Hole remains graded as unsuitable for swimming ('Poor'), the Don's Hole site's grading has improved from 'Poor' to 'Fair' (with information/signage of risks after rainfall).

Otaio River at Gorge	Good
Waihao River at Bradshaws Bridge	Good (with information/signage of risks after rainfall)
Waihao River at Gum Tree Flat Road (Dons Hole)	Fair (with information/signage of risks after rainfall)
Waihao River at Black Hole	Poor
Lake Aviemore at Waitangi	Fair
Lake Aviemore at Te Akatarawa Camp	Good
Hakataramea River at SH82	Good

Table 2: Recommended grades for 2017/18

Reference

Arthur, J. Bolton-Richie, L. Barbour, S. 2017: Canterbury water quality monitoring for contact recreation. Annual summary report for 2016/17. Environment Canterbury technical report R17/xx (Draft).

AGENDA ITEM NO	SUBJECT MATTER
8	2017 Annual Report
REPORT BY	DATE OF MEETING
Olivia Smith (Facilitator)	18 October 2017

Purpose

To seek Zone Committee input into the content for the 2017 Annual Report.

Background

Each year the Zone Committee completes an annual report which highlights the key achievements in the zone. The annual report forms the basis for the Chair reporting to Waitaki and Waimate District Councillors and to Environment Canterbury Councillors. The 2016 report is attached.

The Committee's Annual Report for 2017 will be signed off at the first meeting in 2018.

Recommendation

The Zone Committee identify the things that they believe should be included in the "Key achievements 2017" section of the report.

Attachment

The 2016 Annual Report.

Lower Waitaki-South Coastal Canterbury Zone Committee Annual Report 2016

Working with the community to deliver freshwater aspirations

Since 2010 the Lower Waitaki-South Coastal Canterbury Zone Committee has been working with the community, rūnanga, and councils to develop water management recommendations to deliver the vision of the Canterbury Water Management Strategy (CWMS).

Its first goal was to develop a Zone Implementation Programme (ZIP) to deliver environmental, economic, social, and cultural outcomes. This was accepted by councils in 2012 to guide their water management programmes.

Since then, the committee has led the development of three ZIP addendums, which set local water-quality limits and outlined the on-the-ground actions to achieve them.

These recommendations have informed plan changes and delivered numerous on-the-ground actions from biodiversity projects to scientific investigations.

This year, Plan Change 5 Waitaki was notified and Zone Delivery work programme developed, both of which give effect to the ZIP addendums.



CANTERBURY WATER **MANAGEMENT STRATEGY VISION:**

Canterbury Water

C To enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework.

Key achievements 2016

The CWMS enables the zone committee to drive on-the-ground actions delivering sustainable benefits from water.

- Funded more than \$400,000 of local community-driven projects to protect and enhance the natural environment
- Involved in securing national and regional funding for flagship restoration projects of Wainono Lagoon and developed a pathway to improve water quality
- Established water-quality limits to protect water quality in the Waitaki River and allow for further development
- Focused science work on filling knowledge gaps: northern streams deep groundwater, Greater Waikakahi groundwater, and surface water Interaction
- Resolved how to deal with issues in the Waitaki Catchment Water Allocation Regional Plan
- Supported communities taking their own initiatives, and hosted more than 100 community and catchment meetings and workshops to facilitate local input into water management.

The Lower Waitaki-South Coastal Canterbury Zone Committee covers the Waimate and part of the Waitaki District, including the Waitaki River and its tributaries below the Waitaki Dam, Wainono Lagoon and its tributaries including the Waihao and Hook rivers and the Makikihi and Otaio rivers.

It is a joint committee of the Waimate and Waitaki district councils, and Environment Canterbury. The zone is in the rohe

The zone boasts significant recreational, cultural and natural values. It has a network of spring-fed streams, coastal lagoons and complex groundwater flows, and includes part of the large alpine Waitaki River, home to the largest hydro-electricity generation scheme in New Zealand.

Lower Waitaki-South Coastal Canterbury Zone Committee

Science investigations fill knowledge gaps

During the year, we have secured several new science investigation projects to fill existing knowledge gaps and help us monitor how effective we are.

Understanding the deep groundwater resource

We recommended that Environment Canterbury carries out two technical investigations in our zone, as actions that came from the sub-regional limit setting processes

The first investigation, in South Coastal Canterbury, is to enable a better understanding of the long-term sustainability of deep groundwater abstractions, through increasing understanding of aquifer recharge and discharge flow time (i.e. groundwater age). The field work has now been completed and analysis of results and findings, including groundwater age, is underway.

The second investigation is in the northern fan of the Waitaki, to better understand the groundwater and surface water dynamics and nutrient pathways in the upper Waikakahi stream, Waihuna and Elephant Hill catchments. Field work for this northern streams investigation has begun and will carry on over a number of seasons



Lower Waitaki Braided River Island **Restoration Project**

The Lower Waitaki-South Coastal Canterbury Zone Committee has identified improving braided river character and habitat as a key outcome in its ZIP.

For black-fronted terns and black billed gulls, which are colonial nesters, the lack of protected breeding habitats limits their breeding success. Island habitats are ideal, with lower pressure from predators, and the zone committee is committed to developing effective and affordable methods to maintain vegetation-free islands in the Waitaki.

The project in the lower Waitaki is investigating ways of clearing weeds and keeping areas free of weeds to improve the breeding success and the habitat of braided river birds.

Colin O'Donnell, a Department of Conservation scientist, visited the created/ enhanced islands in the lower Waitaki River last December and reports that the project has created some of the most successful conservation management he's seen in years.

"Large numbers of threatened birds are nesting on the islands, including largesized colonies of black-fronted terns, two black billed gull colonies, and wrybill - which is quite significant! There are also good numbers of pied stilts and banded dotterels," he says.

Additionally, the lower Waitaki River holds the southernmost population of Canterbury mudfish, although its habitat is threatened by invading weeds. A variety of management activities are being undertaken, in collaboration with the Waitaki River Management Society and the Department of Conservation.

Good management practice

'Gumboot' approach reduces farming effects on local environment

Farmers in the Waihao and Wainono area of South Canterbury are taking a 'gumboot' approach to get the best efficiency from their irrigation and winter feed crops.

The Waihao Wainono Community Catchment Group (WWCCG) holds regular field days focusing on farming environment issues, as part of its work promoting good management on farms throughout the wider catchment. The group uses a grassroots 'gumboot' approach, providing local solutions to meet local needs and respond to local issues.

WWCCG chairman Roger Small says many farmers in the area are committed to reducing their effect on the local environment.

"They want help in gaining the knowledge to allow them to implement practices that will make the difference while maintaining productive farms. This is obvious in the Hook and Waituna catchments where around 75 per cent of farmers have farm environment plans using a locally written template developed by the Hook steering group."

The WWCCG was formed in 1999 and completed its own non-statutory plan to help improve the local rivers and lagoons with help from Environment Canterbury. Today it has a steering group and some of its members have been through a planning process to help determine nutrient management rules.



Progress towards achieving CWMS Targets

Ecosystem health and biodiversity	Our major restoration project – Wainono Lagoon – is in the catchment of our coastal lagoon taonga. This project encompasses multiple scales: on-farm works, in-catchment works, and lagoon riparian works.
	We have provided more than \$400,000 of funding towards individual projects to protect and enhance biodiversity.
	Our recommendations for Plan Change 2 to the Waltaki Allocation Plan and Plan Change 3 to the Land and Water Regional Plan provide a pathway to higher flows in smaller rivers and better habitat over time using alternative sources of water to replace abstraction.
Natural character of braided rivers	A new project on the Waitaki River is looking at how to improve habitat for endangered nesting birds. This action research project will improve habitat in the Waitaki, and develop transferable techniques for other braided rivers.
Kaitiakitanga	Our committee process has enabled the expression of Kaltiakitanga through mana whenua's role in decision making and it has enabled a broader understanding of customary values associated with water.
	Our recommendations for the Waitaki Plan Change (Plan Change 3) provide for an allocation of water specifically for the purposes of mahinga kai enhancement.
Drinking water	We have set catchment load limits for nitrates for all the catchments in our zone.
Recreational and amenity opportunities	Our recommendations for Plan Change 2 to the Waitaki Allocation Plan and Plan Change 3 to the Land and Water Regional Plan provide a pathway to higher flows in smaller rivers over time using alternative sources of water to replace abstraction.
Water use efficiency	The zone committee is supporting the irrigation industry and local schemes to increase water use efficiency, as well as local community initiatives.
Irrigated land area	The Hunter Downs and Waihao Downs irrigation schemes will increase the irrigated area in the zone by approximately 27,000ha.
Energy security and efficiency	Our recommendations for changes to the Waltaki Allocation Plan provide more certainty for energy security, while also providing for other values.
Regional and national economies	Our zone will contribute to new growth in regional and national economies through the Hunter Downs and Waihao Downs irrigation schemes.
Environmental limits	We have completed our recommendations for water-quality limits for the South Coastal Canterbury and Waitaki parts of our zone, flow and allocation limits for South Coastal Canterbury, and recommendations for changes to the Waitaki Allocation Plan.

Key work programmes underway to deliver water management priorities

Subsequent to completing a ZIP, the zone committee and Environment Canterbury put together a work programme, which identified six key areas of work. Progress under each of these is detailed below.

The ecosystem health and mauri of Wainono Lagoon and its catchments have improved

 Farm surveys and catchment sediment works as part of the initial Wainono project are complete. Te Rünanga O Waihao have been successful in obtaining additional government funding, which will enable the Wainono project to be extended across more of the Wainono catchment and help develop rünanga capacity in their environmental stewardship work.

All land is managed following good management practice (GMP) and priority issues/areas are dealt with

- Priority catchments and issues have been identified
- Extension programme focused on priorities and issues
- Work underway with industry in priority catchments.

The biodiversity in the priority areas of Waltaki mouth, Waltaki riparian wetlands and northern fan spring heads, and in areas of grey scrub is protected and enhanced

- Priority areas confirmed to focus Immediate Steps biodiversity work
 Major project underway in the Waitaki River to improve habitat for endangered river birds
- · Five wetland projects funded in the Waitaki.

There is widespread community understanding of and compliance with the Waltaki sub-regional section of the Land and Water Regional Plan and Waltaki Catchment Water Allocation Regional Plan

 A decision has been released on Plan Change 3, South Coastal Canterbury and initial community meetings held to explain the decision [under appeal as of November 2016]. Decisions on Plan Change 5, Waitaki, are expected in 2017 and community meetings will be held at this time.

We have increased catchment knowledge in priority areas (science) and we understand the effectiveness of interventions (monitoring)

- Northern streams deep groundwater recharge investigation is complete and the first set of results out (see profile story on page 2)
- The creation of an integrated monitoring framework for the Waitaki is underway with a gaps analysis complete, interface established and work begun in pilot catchments
- Recommended investigations into the northern streams deep groundwater recharge, and Greater Waikakahi groundwater and surface water interaction are underway.

There is widespread ownership of catchment health by the community

 The committee is supporting community initiatives in the Waihao, Wainono and Hakataramea catchments.

Motivated community enhances Duntroon wetlands

This October, celebrations were held to recognise the extensive planting and restoration work undertaken by community organisations in the Duntroon wetlands.

The official ceremony at the wetlands entranceway celebrated the work of the Duntroon District Development Association (DDDA), the Lower Waitaki River Management Society, the zone committee and others.

Over the past year, several large-scale planting projects have seen thousands of flax, cabbage tree, toi-toi and straw-reed put in on the willow-cleared ground, as well as many track edges planted out with ribbon-woods and coprosma.

The plants have had good protection and survived well, and the community groups began to tackle the ever-encroaching watercress. Deciding not to spray it, the plan was instead to closely plant out the stream edges with carex, eventually starving the cress of sunlight.

Much of the ground provided very boggy working conditions, and after the plants were in place, the DDDA arranged for a group of periodic detention workers to install matting and protectors around them all. The project was enjoyable for the group who also learned about the wetland during their visit.

With the A20 cycleway now going through the wetland, and boardwalks throughout, the benefits back to the community are substantial and appreciated. The Duntroon project provides an excellent example of the differences that motivated and well-organised community groups can make with the support of the zone committee.



Zone committee welcomes new Wainono funding

The zone committee welcomes the announcement by Environment Minister Nick Smith that Te Rūnanga o Waihao will receive more than \$500,000 for restoration work at Wainono Lagoon.

This work contributes to the achievement of zone committee priorities and recommendations made in its Zone Implementation Programme.

The committee has been working with the community and key organisations to raise awareness of the lagoon and this funding will build on this momentum.

The Waihao Rünanga's Te Mana o Te Wai project will carry on the work of its Fresh Start for Fresh Water Project by extending the existing programme across more of the Wainono catchment.

The concept of Te Mana o Te Wai recognises how integral the health of the natural resource is to the social, cultural, economic and environmental well-being of communities.

The programme will focus on developing partnerships to enhance mahinga kai values and work around the lagoon will help address legacy environmental issues and ensure resilience.

The zone committee will work with Environment Canterbury and the Department of Conservation to provide resources and support.



Zone committee members 2016

Kate White (Community member, Chair) Brent Packman (Community member) Elizabeth Rollinson (Community member) Andrew Hayes (Community member) Mark Giles (Community member) Mark Kingsbury (Community member) Bruce Murphy (Community member) Sandra Hampstead-Tipene (Arowhenua) Suzanne Eddington (Waihao) Andrew Feierabend (Meridian Energy) Tom Lambie (Environment Canterbury Councillor) Peter Scott (Environment Canterbury Councillor) Bill Kingan/Jeremy Holding (Waitaki District Council) Peter Mellraith/Miriam Morton (Waimate District Council)

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