

**ORDINARY MEETING OF THE
SELWYN-WAIHORA ZONE COMMITTEE
TO BE HELD IN THE LARGE EXECUTIVE
MEETING ROOM
ON TUESDAY 02 FEBRUARY 2016
AT 1.00 PM**

Assemble for 12.30pm start for Lunch

"If there is magic on this planet, it is contained in water..."

Loran Eisely, US Author

**MINUTES OF THE 56th MEETING OF THE SELWYN-WAIHORA ZONE COMMITTEE HELD
IN THE LARGE EXECUTIVE MEETING ROOM, ROLLESTON OFFICES,
2 NORMAN KIRK DRIVE, ROLLESTON, ON
TUESDAY 3 NOVEMBER 2015 COMMENCING AT 1 PM**

PRESENT

Allen Lim (Chair), Charles Crofts, Stewart Miller, John Sunckell, George Tikao (Te Rūnanga o Onuku), Ron Pellow, Hayley Moynihan, Maree Goldring, Councillor Pat McEvedy (Selwyn District Council), Bill Lambie, Terrianna Smith (Te Tuamutu Runanga) and Commissioner Tom Lambie (Canterbury Regional Council Representative)

IN ATTENDANCE (for part or all of meeting)

Ian Whitehouse (Zone Facilitator ECan), Katherine Glasgow (ECan), Jodi Rees (ECan), Tami Woods (ECan), Ken Taylor (ECan), Lisa Scott (ECan), Maureen Whalen (ECan), Brett Painter (ECan), Phil Roberts (ECan), John Benn (DOC), Mayor Coe (Selwyn District Council), Melanie Burns (ECan), Jason Holland (ECan), Devon Christensen (ECan), Angus McIntosh (University of Canterbury), Michaela Rees (SW Zone Manager ECan), Mr Butt (Canterbury Botanical Society, Wai Ora Landscapes) and Ms K Anderson (Council Secretary)

Mr Crofts opened the meeting with a Karakia.

APOLOGIES

Apologies were received from Councillor Tim Scandrett, Riki Nicholas, Te Whe Phillips, and Clare Williams were accepted by the meeting. Apologies were received from Councillor McEvedy and Commissioner Lambie for lateness.

Moved: Mrs Smith/**Seconded:** Mr Tikao

‘That the Committee accept apologies for absence from Councillor Tim Scandrett, Riki Nicholas, Te Whe Phillips, and Clare Williams. Apologies were received from Councillor McEvedy and Commissioner Tom Lambie for lateness.’

CARRIED

IDENTIFICATION OF URGENT GENERAL BUSINESS

Nil.

CONFIRMATION OF MINUTES

1. **Minutes of the 55th Meeting of the Selwyn Waihora Zone Committee (Water Management) held on Tuesday 6 October 2015.**

Amendments:

Page 8 Replace 'manged' with 'managed' and in the same paragraph replace 'are' with 'area'.

Moved: Mr Miller/**Seconded:** Mr Lambie

'That the minutes of the 55th meeting of the Selwyn Waihora Zone Committee (Water Management) held on Tuesday 6 October 2015 be confirmed as amended.'

CARRIED

MATTERS ARISING FROM MINUTES

Mr Crofts sought clarification around the issues involving freedom campers. He wished for the minutes to record that he does not support them. Members discussed the matter in detail. It was noted that there are ongoing discussions with Council around this matter. Mayor Coe reported that there are often a large number of freedom campers at Coes Ford due to an app that designates the area as available for freedom camping.

Mr Whitehouse indicated that he will schedule an update for the March 2016 meeting. The Chair requested the Mayor of Selwyn District Council keep an eye on the issue.

Mrs Smith indicated concern around the Purata Farms consent application. She noted that this application has been around for some months and it was concerning that it was being brought to the committee late in the day. Members discussed some of the finer points of concern of the application. Ms Woods (ECan) indicated that a further update can be provided at a later date.

Mr Crofts asked for an update regarding point 3 on page 3 of the minutes. Mr Whitehouse indicated that staff are not present so an update cannot be provided at this time.

REPORT TO AND FROM REGIONAL COMMITTEE MEETING.

Mr Pellow advised meeting that his reports can be taken as read. Members sought clarity around various aspects of his reports.

MEETINGS ATTENDED

1. Mr Pellow advised members that he attended the ECan Regional Committee meeting on 13 October and the CPW Stage 2 Update meeting also held on 13 October 2015. He also reported that he attended the joint presentation at NZIAHS (NZ Institute Agriculture and Horticultural Science) on Sustainable Farming systems for the Future on 21 October 2015.
2. Mr Lambie reported that he attended the joint Ashburton/Selwyn Waihora meeting at Rakaia and the 3 Waters strategy meeting.
3. Mr Miller reported that he attended the joint Ashburton/Selwyn Waihora meeting at Rakaia
4. Mrs Goldring reported that she attended the joint Ashburton/Selwyn Waihora meeting at Rakaia

5. Mr Lim reported that he attended the joint Ashburton/Selwyn Waihora meeting at Rakaia and the Zone Committee Chairs Forum on the 30th.

Mr Pellow provided an update that he received from an attendee of the joint Ashburton/Selwyn Waihora meeting held at Rakaia.

6. Mr Sunckell advised that he made a presentation to ECan's senior leadership group and team leaders covering ECan's alignment to the community through its interactions and the Zone Committee's expectations on 21 October 2015. He also attended the joint Ashburton/Selwyn Waihora meeting at Rakaia. He also attended the Teamutu open day. He also noted that he is an apology for the December meeting.

FIELD TRIP – DECEMBER

Mr Whitehouse reminded members of December's field trip to Central Plains Water. He asked for any topics to be covered at the field trip to be forwarded to him before the trip.

2016 MEETING DATES AND VENUES

Mr Whitehouse referred members to the proposed meeting schedule for next year. Reference was made to the March 2016 meeting to be held at Flock Hill. He sought members' interest in travelling to Flock Hill and asked that comments be forwarded to him.

DRAFT LETTER TO ENVIRONMENT CANTERBURY

Mr Whitehouse referred members to the draft letter to Environment Canterbury regarding new members having an understanding of the discussions around the zone solutions package. He sought member's opinions on the content of the letter.

Members discussed their views around the content of this letter. The Chair noted that this matter was raised at the Zone Committees Chairs' Forum last week. It was discussed if a manual could be created including meeting and media protocols. Mrs Smith suggested a work programme for some future proofing around committee members leaving, retention of knowledge and adding in the phrase 'ECan staff movements' in paragraph three at the end of...increasingly resides with Environment Canterbury staff...'

Moved: Mr Pellow/**Seconded:** Mr Sunckell

'That the Zone Committee include the following amendment to the letter to Christina Robb:

Add 'ECan staff movements' after ...the knowledge increasingly resides with Environment Canterbury staff...'

CARRIED

GENERAL PUBLIC CONTRIBUTION

Nil.

1. **REPORT ON JOINT FIELD TRIP AND MEETING ASHBURTON ZONE ON RAKAIA RIVER**

Mr Sunckell provided an update earlier in the meeting.

Mrs Goldring saw difficulty in seeing how the project was water based and fitted in with Immediate Steps.

2. **VERBAL UPDATE ON VARIATION 1 APPEALS, IMPLEMENTATION AND CONSENTS**

Ms T Woods (ECan) spoke to the meeting. She provided a verbal summary of the Variation 1 appeals. She indicated that an agreement has been reached and outlined the process that will follow. The matter still requires sign off from all parties and the presiding Judge. She reported that she expects the process to take another month.

Councillor McEvedy arrived at 1:48pm

Ms Woods summarised the Selwyn Waihora Sub-Regional implementation process to the meeting. She made reference to the goals, pathways and the visions of how the meeting perceived them.

Ms Rees (ECan) also provided a broad overview of what the Zone team will be looking to do in the next steps. They will be working on the aligned work programme and that will commence from 1 July 2016. She indicated that in order to do that, the 5 year outcomes will need to be looked at early next year and from that, they will work on the aligned work programme. She indicated this is the next step in terms of implementation.

Ms Woods made reference to where they plan to go from here. Mention was made to two pathways being farming at significantly better than good management practice (GMP) and manage catchment recognising its cultural importance to Ngai Tahu.

She also made reference to Zone committee 5year outcomes with specific mention of the current outcomes of Outcome 3 that Selwyn Waihora Zone farmers are operating at Good Management Practice (GMP) levels or better and Outcome 8 being good understanding of impacts of solutions package.

Ms Woods then provided a summary of the draft Variation 1 actions from recently held primary sector meetings. Members sought clarity around rules.

Ms Woods sought clarity from members regarding the next steps which include a plan implementation working group to progress actions and confirm responsibilities. These responsibilities include Zone Committee representatives, Primary Sector, Zone delivery team and other key ECan staff, TRONT, runanga and rural professionals.

Members provided their opinions, questioning roles of ECan staff in comparison to zone committee members.

Ms Rees indicated that she views implementation as being that the Zone Committee is leading the charge on the outcomes and priorities. She noted that once that has occurred they will drive the process for the Zone Committee. However, she indicated that they need the Zone Committee's support in relation to this matter.

Ms Woods provided a lengthy view around next steps to the meeting. She asked who would like to be involved in the working group. The Chair asked if that could wait and Ms Woods is to follow up to ascertain interest from members during the next month. Mrs Smith indicated interest.

Ms Woods made reference to next steps 2 which she indicated is ECan staff working with Runanga and TRONT to clarify actions required when implementing Variation 1 to ensure catchment is managed recognising its cultural importance.

Commissioner T Lambie arrived at 2:15pm

3. UPDATE ON TARGETED STREAM AUGMENTATION IN SELWYN WAIHORA ZONE

Dr Painter (ECan) provided an update to the meeting regarding targeted stream augmentation in the Selwyn Waihora zone. He specifically provided background to the targeted stream augmentation (TSA) trial at Boggy Creek. He indicated that they wanted to see where the flow of water went. The trial involved abstracting groundwater from a bore and discharging the abstracted water into two tributaries of Boggy Creek. He noted that the water did as they expected it would. He outlined the process involved throughout the trial including monitoring using spot flow gauging measurements at four sites both upstream and downstream of the discharge points.

Dr Painter advised the meeting that the purpose of the trial was to increase flow in Boggy Creek during periods of low flow in the stream following the drier summer months.

He then made reference to the Upper Irwell System TSA from Rakaia River stock water. He indicated that there has been a loss of fish habitat in the catchment. They are looking at natural water stretches that could give the experiment some potential for managed areas of fish. Reference was made to an assessment in May 2014 noting that the water does not flow all the way down from the upper catchment. The main stream is often dry so they would like to track the water and for the lower Irwell streams to be managed better.

He referred to the LIDAR up near the recharge point and monitoring bores to track where the water goes and its natural flow. Dr Painter noted that they have consents in for approval and the bores are in place.

3a UPDATED NITRATE RISK MAP FOR SELWYN WAIHORA ZONE

Ms Whalen (ECan) spoke to the meeting summarising the nitrate risk map. She provided a background regarding the ECan – CPH joint community and health programme covering drinking water from private wells and also work with midwives.

She outlined the high risk zone noting the areas covered included selected shallow private wells and provided a graph that plotted the maximum nitrate concentrations.

She indicated that the last update was between 2012 to 2015. The data was readdressed in 2015 and she noted 2 new high risk zones have been discovered in Ashburton and Greendale in Selwyn.

She referred members to the Greendale high risk zone map in the agenda noting the areas of concerns include.

- The risk maps are only for nitrate risk to pregnant women and bottle fed babies
- A tool for risk communication
- Not for public water supplies

Members noted that there is no clear trend on the maps. She noted that these maps are overall maps but note that there is a risk of nitrates in the drinking water of private wells in the Greendale area. Mention was also made that they will be providing ongoing updates and will complete reviews periodically. She noted again that is a risk communication tool.

Members also noted the Press article about nitrate levels and raised concerns about how the data is presented.

4. UPDATE ON WATERWAY REHABILITATION EXPERIMENTS AND OTHER RESEARCH IN THE ZONE

Mr McIntosh (University of Canterbury) provided an update to members. He provided an overview of CAREX and their current focus. He noted that the focus was specifically on the following:

- Whole catchment approach and starting at the top
- Improving riparian management
- Excessive weeds (aquatic macrophytes)
- High nutrients (nitrogen, phosphorus)
- Reducing high in-stream sediment
- Improving in-stream habitat

He summarised the application of tools at different spatial scales include 9 waterways with a range of tools applied at varying spatial scales. It was noted that the measurement is event based, monthly, seasonally and annually. He outlined the tools used on different scales.

He noted that the feedback so far is that 50% of stakeholders find that faced to face communication is the most effective way to get information out there.

Mr Tikao left the meeting at 3:01pm

Riparian Management

He reported that they are starting at the top and working to fix leaky plumbing. He showed members slides of before, during and after of a stream that had bank rebattering to stop bank collapse and riparian planting with local eco sourced native plants. It was reported that one year after the remedial work there was no leaky plumbing. Mr McIntosh also provided other examples of what is considered leaky plumbing and suggested solutions to remedy same.

Weeds

He summarised the process of weeds and their effect in terms of the prolific growth during summer, which causes a reduction in flow and sediment deposition. This in turn leads to drainage function being lost and will require management to restore drainage.

He made reference to macrophyte control trials noting the 8 treatments which included control, herbicide spray, shade cloth, disturbance, flower and seed removal, hand weeding, weed mat and sediment control. He referred to various slides involving shade and weed mats in their trials.

Sediment

He summarised the sediment traps and in stream habitat and explained the sand wand for removing sediment. Mention was made of tile drains noting that they are considered a source of sediment. He provided an example of sediment traps based at Millbrook at Rangiora. He noted that they are still accumulating data. He provided slides of the work undertaken at Millbrook showing the use of a sand wand.

Nutrients

He referred to a study of is nitrate a problem for stream communities. Members sought clarity around the possible use of sheep grazing as a control for macrophyte cover.

Break for afternoon tea at 3.35pm

Meeting resumed at 3.48pm

He noted that the tile drains are a nitrate source. He advised the meeting that they have been scaling up bioreactors and in stream additions at Hinds Lowcliffe near Ashburton. An example of a bioreactor was provided to the meeting. Members questioned how long

the materials would last for. He indicated that the expectation is in the region of 10-12 years.

He believes the way to achieve nitrate loss is to use organic matter. He referred to ecosystem scale leaf additions by using leaf packs through a concept trial.

He provided a graph of whole stream denitrification showing the impact of leaf packs against a control. A further graph was referred to noting that the denitrification in the Cam River showed a constant leaf input and complete canopy cover, the annual N removal increases by 4 times.

The Chair suggested that he cease his presentation due to time constraints and attend at a further meeting.

5. REPORT ON DAIRY EFFLUENT COMPLIANCE IN SELWYN WAIHORA ZONE

Ms Burns (ECan) provided a report on dairy effluent compliance in the Selwyn Waihora zone.

She provided a summary of Canterbury cow numbers noting that Canterbury is double the number of cows in relation to the rest of New Zealand. Mention was made that there are 1149 farms in the Canterbury area. She reported that there are various monitoring methods and it has become much more than assessing compliance with consent conditions. It is now an essential part of implementing the Canterbury Water Management Strategy.

Ms Burns summarised the previous methodology of monitoring and noted that now they prioritise monitoring based on a set of risk criteria. 976 out of 1149 dairy farms were monitored across the region. She noted that 64% of farms were compliant. She reported that tall farms that were significantly non-compliant or had enforcement action had follow up site inspections to help them to become compliant. She noted there were 170 follow up site inspections to 138 farms with 58% compliant and 34% improved. Some farms required more than one site visit to help them to become compliant.

Members' questions if noncompliance was paperwork based. Ms Burns noted that the mainly non-compliant farms had environmental matters to rectify.

In terms of complaints and enforcement, there were 260 dairy farm related complaints were received through the pollution hotline. 60 were directly related to discharge of effluent to land or to water. Stock in waterways was 122 and odour was 78 complaints. She noted that there was an increase in abatement notices compared with previous years.

In terms of Selwyn Waihora zone results, there were 218 out of 219 of dairy farms were monitored. There were 149 compliant farms and 52 minor non-compliant farms. She noted that the rate of compliance has increased.

Causes of significant noncompliance was not limited to the following but included

- Ponding storage overflow
- Undiluted dairy effluent volume exceeded discharged outside the area or outside buffer zone distances
- Storage pond not meeting requirements

She reported that monitoring officers noted a number of good on farm practices including

- Adequate storage
- Effluent was only applied when conditions were favourable
- High risk areas were mapped and avoided
- Sensitive areas were identified and buffer distances maintained
- Farmers interested in technology to enable them to manage farms better

Joint initiatives

She explained that the Canterbury Dairy Environment Group includes representatives from DairyNZ, Federated Farmers, Synlait, Fonterra, South Island Dairying Development Centre, Primary ITO, Westland Milk Products, Oceanic and Environment Canterbury. She reported that they have implement initiatives aimed at improving awareness of effluent management and compliance with resource consent requirements.

2015-2016 season

They will continue with their targeted monitoring programme for the season. And they will also continue to support industry initiatives to educate and help dairy farmers to distribute effluent appropriately and work closing with dairy industry to address individual cases.

Members asked how many staff go to site for inspections. She reported that there are 2.5 full time in Selwyn Waihora. Members asked if they see the risk decreasing over time. She indicated that hopefully as farmers upgrade systems and get better management systems in place there will be a decline of risk.

6. PROTECTING DRYLAND BIODIVERSITY REMNANTS SWARF (SELWYN WAIHORA ACTIVE RESOTRATION FORUM)

Mr Butt (Canterbury Botanical Society, Wai Ora Landscapes) spoke to his powerpoint presentation entitled *remnant vegetation of roadsides*. He referred to a question that he would like the Zone Committee to take leadership on a dryland reserve.

He indicated that the work he undertakes is ecological restoration. He referred to a section of Leaches Road referring to plants on the roadside. Mention was made of a plant

that they found at Te Pirata on the north bank of the Rakaia River. The aim of the group is that it is not too late to save some of the biodiversity in the region.

He referred to kauri on the plains and noted that it protected in Northland but being destroyed for pasture in this area. He advised members that the site is 3/4kms from the centre of the Canterbury Plains.

Members questioned if the land had a grazing lease and if it was currently maintained. Mr Butt advised in the negative. He then summarised the plants on site.

Reference was made to the threatened plant (tree daisy) onsite noting that rabbits like the plant. He also noted there are 3 other at risk plants at site. He indicated that the area is not perfect as it has weeds, pines, broom, gorse and some exotic grasses.

They do not want to shut off access to vehicles. He noted that there is a wet area. Currently the land is owned and administered by LINZ. They propose to send a letter to the Minister of Conservation to speak to the Minister of Lands to transfer the land to conservation status.

He referred to a botanical society site visit to implement fencing stop the rabbits from eating the at risk plants. He made reference that the land will need to be surveyed and have a management plan as well as weed work being required. He noted that the group is looking for support and leadership from the Zone Committee.

Members asked who else they are approaching. He indicated that they have approached DOC but their focus is on braided rivers. He noted that DOC have written to LINZ.

Moved: Mrs Smith/**Seconded:** Mr Sunckell

‘That the Zone Committee provides a letter that supports the Canterbury Botanical Society’s request to the Minister of Conservation that ownership of the dryland block at Te Pirata be transferred from LINZ to DOC.’

CARRIED

Members requested a report to consider their options on involvement and the biodiversity of the area. Commissioner Lambie suggested that the Zone Committee could write to the Commissioners at ECan.

Moved: Councillor McEvedy/**Seconded:** Mrs Goldring

‘That the Zone Committee request a report from ECan staff to consider the biodiversity options and how this matter fits into the work programme.’

CARRIED

Moved: Mrs Goldring/**Seconded:** Mr Sunckell

‘That the Zone Committee writes a letter to the Commissioners requesting their support.’

CARRIED

7. **PROPOSED PLAN CHANGE 5 TO LAND AND WATER REGIONAL PLAN (NUTRIENT MANAGEMENT INCLUDING MGM)**

Ms Christensen (ECan) spoke to the presentation entitled Proposed Plan Change 5. It is a plan change that covers part a new region wide nutrient rules that will eventually apply to the coloured nutrient zones and part b Waitaki sub-regional section.

PC5 has been delayed and it will be notified for public submission in late 2015 or early 2016. She indicated that they are considering if PC5 rules will take legal effect when the plan change is notified or when the plan is operative. Mention was made that if when the PC5 is operative they need to consider if the rule will take legal effect after PC5 decision is released and all appeals are resolved.

How will PC5 affect the Selwyn Waihora zone?

From notification PC5 policies reinforce the adoption of Good Management Practice and Farm Environmental Plan requirements. PC5 rules will not affect areas covered by Variation 1. She indicated that the developed new region wide rules to integrate the outputs of the Matrix of Good Management project, address issues with Overseer version changes and to better manage risks to water quality.

Reference was made to the Matrix of Good Management (MGM) noting that it is a collaborative process involving regional councils, Ngai Tahu, technical experts, industry groups and stakeholders with the purpose of industry to agree on what GMP looks like on farm and estimate GMP loss rates.

She indicated that the GMP requirements will be integrated into PC5 through GMP practices and GMP loss rates.

Mention was made that PC5 will address Overseer version changes through existing LWRP rules and PC5 rules consisting on permitted activities and consented activities.

She advised the meeting that PC5 will affect the Selwyn Waihora zone from notification of PC5 policies reinforcing adoption of Good Management Practice and FEP requirements.

She summarised the nitrogen loss limits in the new rules noting that under the PC5 rules that all zones will be <10ha or 20 ha winter grazing and 50 ha irrigation.

It was noted to members that there will be some change to FEP's around consented activities and there will be updated and audited risk areas and how GMP will be implemented.

The management plan is also defined as 'FEP light' which will cover permitted activities and outline how GMP's are implemented on farm but are not audited.

Ms Christensen summarised the Farm portal to the meeting. She also provided a summary as to how PC5 will better manage risks to water quality through both permitted activities and consented activities. The meeting were advised that Variation 1 will prevail over PC5 rules.

She noted that there are new maps in PC5 have been introduced to manage phosphorus in FEP's and takes a different approach to Variation 1 requirements.

In summary, she confirmed that the region wide PC5 will eventually replace the existing LWRP region wide rules but the date that PC5 becomes operative is not yet confirmed. Once PC5 has legal effect, the rule will eventually apply to the Selwyn Waihora Zone in the areas not covered by Variation 1. In areas covered by Variation 1, PC5 will help to reinforce GMP through FEP's and Good Management Practice Nitrogen loss rate numbers.

Members sort clarity around good management practice in relation to their FEP's and consents.

Councillor McEvedy left the meeting at 5:23pm

GENERAL

Mr Pellow raised the impact of land value raised by Colliers at the September meeting. He noted that he has received advice that some farms are struggling to sell due to requirements needed on farm.

Mr Miller spoke to the meeting regarding his time on the committee. He thanked the Secretary for her work with taking minutes. The Chair acknowledged Mr Miller's

contribution to the Zone Committee. Members also acknowledged Mr Miller's contribution to the committee and various processes over the years.

Mr Crofts closed the meeting with a Karakia.

The Chair thanked all in attendance and the meeting closed at 5:35pm.

DATED this day of 2015

CHAIR

UNCONFIRMED

REGIONAL COMMITTEE MEETING 15 December 2015

Agenda Item	Update from Selwyn-Waihora Zone Committee
Regional Committee	Meeting 15 December 2015
By	Ron Pellow [S-W ZC representative]
Actions sought	Note

The Selwyn-Waihora Zone Committee has met twice (November and December) since the last report to the Regional Committee [13th October].

Key aspects of these meetings and related activities include:

1. **Variation 1 rules can now be treated as operative.**
 - a. The appeals to the High Court on Variation 1 (Selwyn Te Waihora sub-regional section) have been resolved through mediation (notified to Zone Committee members 3rd December). The High Court has accepted the changes to Variation 1 and the appellants (Ellesmere Sustainable Agriculture Society, Federated Farmers and Forest and Bird) have signed the settlement of the appeals.
 - b. This means that the rules, inclusive of the changes made through the High Court settlement, can be treated as operative.
 - c. **The key changes are:**
 - i. Farmers in the Phosphorus Sediment Risk Area and Cultural Landscape Values Management Area can leach up to 15kgN/ha/yr. Farmers in these areas still need a controlled-activity land use consent.
 - ii. The wording has been tightened to make it clear that the further reductions in N losses by 2022 apply to farmers in irrigation schemes (i.e. CPW) and that the catchment N farming limit includes the N lost from CPW.
 - d. **What next:**
 - i. There is a process to go through to make the Selwyn Te Waihora plan change formally operative. It is expected the Regional Council (Environment Canterbury Commissioners) will agree in February 2016 to notify the operative Selwyn Te Waihora plan change.
 - ii. Community briefings and other communication on the Selwyn Te Waihora plan are likely to occur in February 2016.
2. The November ZC meeting featured research updates on local stream augmentation, nitrate risk maps for private drinking water and waterway rehabilitation. The increased flow in the initial trial at Boggy Creek resulted in a decrease in water quality fluctuations and an increase in habitat for aquatic species.
3. The committee also received a report from Environment Canterbury on the areas with high nitrate risks in the zone and how this may impact on private water supplies. An update of the 2013 report "Risk maps of nitrate in Canterbury groundwater" was released in June 2015 by Environment Canterbury and Canterbury Public Health to provide information about the risk of nitrate contaminations in groundwater used for drinking. High readings portrayed in the map are the highest concentration at any point historically and not a reflection of the most recent nutrient concentrations. Members discussed the mixed message this provides to the casual observer.
4. SWZC was also briefed on the Canterbury Region Dairy Report for the 2014-2015 Season. The report shows nearly 70% of farms in the Selwyn-Waihora Zone were compliant with all the conditions of their resource consents. This is a significant increase in the level of compliance compared with 2013–2014 (54%).
5. The December meeting started with an update from CPW on the Central Plains Water scheme. This was followed by a visit to the scheme, stopping at two points where the canal crosses the road / is

visible from the road, and a third stop nearer Dunsandel where the scheme is working with Selwyn District Council to provide 150 L/sec through the stock water race and into a wetland that feeds the lowland streams.

6. Stuart Miller, an inaugural member of the Selwyn Waihora Zone committee has retired and was thanked and farewelled following the December meeting.

Ron Pellow.

Selwyn-Waihora Zone Committee.

(7th December 2015)

SELWYN-WAIHORA ZONE COMMITTEE MEETING 2nd February 2016

Report back from	CWMS Regional Committee meeting 15th December 2016
To	Selwyn-Waihora Zone Committee
By	Ron Pellow [S-W ZC representative on the Regional Committee]
Actions sought	Receive for Information

The CWMS Regional Committee meet on 15th December 2015 at Lincoln Events Centre. Following is a summary of a number of points for the SW Zone committees' information.

1. Working Group Updates:**a. Bio-diversity and Eco-System Working Group**

- i. The Biodiversity and Eco-System Health Working Group has submitted information gathered by the working group in regards to the management of longfin eel in Canterbury to the MPI Fisheries Management System Review 2015.

The key themes of its submission are:

- a. A need for local and regional communities to engage at a national level with organisations such as the Ministry for Primary Industries and the Department of Conservation.
 - b. Commercial eel fishers identified key issues as habitat water quality and availability/quantity, and recruitment of eels into the fishery.
 - c. Nga Rūnanga representatives noted the need for catchment-wide approaches to longfin eel management. Representatives cited habitat availability, water quality and quantity, eel recruitment, hāpua openings and commercial fishing as key issues.
 - d. The Department of Conservation cited a need for better understanding of the location and size of longfin eel populations and habitat. Representatives noted that habitat, water quality/quantity and management practices were key issues.
 - e. A strong and creative push on communications is needed to engage and inform the public and other stakeholders of the value of longfin eel, the threats they face, and what can be done to protect them.
 - f. Consideration should be given to both short and long-term goals. Short-term goals include a potential commercial fishing restriction or ban, which was well supported amongst some parties (Rūnanga representatives, zone committee members and Fish & Game). Long-term goals include improvements to water and habitat quality/quantity.
 - g. Clear regional and local management structures are required, with clear lines of accountability. Discussions to date have highlighted the need for resources, and the ability for these to be directed quickly to where they are needed.
- ii. BEWG reviewed the current CWMS bio-diversity strategy noting upscaling is required to achieve the vision with opportunities for greater connectedness of physical biodiversity corridors and the people and agencies involved

b. Infrastructure

- i. A planned meeting with South Canterbury Mayors to update them on new infrastructure opportunities has been deferred till 2016.
- ii. Modelling based on a water balance is continuing including prospects of 'new water'. The desire is to ensure optimal environmental and economic outcomes for Canterbury are not precluded by the development of 'local' solutions.

c. Land Use and Water Quality

- i. Comparisons between the LWRP and Orange Zones were presented as an example of the changes in the proposed nutrient management plan (Plan change 5).
- ii. Regulatory changes remain only one of the tools required to achieve the land use and water quality outcomes in CWMS.

2. Financing Environmental Infrastructure and Restoration

- i. ECAN is seeking a long term approach to financing environmental infrastructure and restoration. A working group has been established to review material prepared to date and determine options for further consideration. A local example of this is the use of CPW water and a SDC water race to provide managed aquifer recharge.

3. Draft River bed Lines: ECAN has identified the need to enhance and communicate the definition of draft river bed lines. To date it has determined these for internal use. Note this a management line, not an ownership line.

4. Draft work programme – 2016: The draft work programme for the regional committee was also discussed.

Ron Pellow

25 January 2016

AGENDA ITEM NO: 2	SUBJECT MATTER: IMMEDIATE STEPS PROJECTS
REPORT TO: SELWYN-WAIHORA ZONE COMMITTEE	DATE OF MEETING: 2 February 2016
PREPARED BY: JODI REES SENIOR BIODIVERSITY OFFICER	ACTION: FOR APPROVAL

APPLICATION FOR FUNDING

Selwyn-Waihora Zone Committee has \$500,000 to spend over a period of 5 years. The committee to date has funded 29 projects and allocated \$437,232 of its Immediate Steps budget. Allowing for the region-wide 'catch up year' (2015-2016), the remaining \$62,768 is to be allocated by June 2016. Funding is likely to continue after June 2016 with a new budget.

The Biodiversity Officer would like the Zone Committee to consider two Lake Lyndon biodiversity project applications for Immediate Steps funding.

Lake Lyndon Fence

Lake Lyndon is the closest freshwater mountain lake to Christchurch, and the first that people encounter once they travel over Porters Pass into the Upper Waimakariri basin. It is directly adjacent to State Highway 73 and being only 80km from Christchurch city, is a popular stop off for people travelling west.

The lake is home to a small population of the nationally vulnerable southern crested grebe (*Podiceps cristatus australis*). For the past two summers the grebes have unsuccessfully attempted to nest at the lake. There are also good numbers of other water birds, such as banded dotterels that are known to nest along the lake shore.

The lake is surrounded by gravel and stone beaches. One of its special and distinctive features is its diverse turfland plant community that occurs in areas that are exposed when the lake water level lowers. This community has a number of plants which are threatened such as *Pseudognaphalium ephemerum* (nationally critical), *Myosotis brevis* (nationally endangered), and *Isolepis basilaris* (nationally vulnerable). There are also a number of specialist turf plant species occurring in the turfland, including *Rumex flexuosus*, *Leptinella maniototo*, *Galium perpusillum*, *Epilobium komarovianum*, *Lobelia perpusilla*, *Parahebe canescens*, *Galium aff perpusillum*, *Pilularia novae-zealandiae*, and *Stackhousia minima*, (Cromarty & Scott 1995; Johnson & Rogers 2003).

Over the past 5-10 years the recreational use of the lake has steadily increased. This has been largely due to its easy access and closeness to Christchurch and the greater Canterbury population that are using the lake for boating, fishing, day visits and overnight camping. Lake edge turflands are particularly sensitive to disturbance and increased vehicle use of the lake edge is causing substantial damage to this delicate ecosystem.

Currently there is little formal management of the lake, the shoreline area and its biodiversity. Hence, visitors drive, park and recreate wherever they wish, with no thought as to the area's threatened biodiversity. The Department of Conservation has identified it as an area 'recommended for protection', principally because of use by southern crested grebes and the unique turfland plant community (Cromarty & Scott 1995; Johnson & Rogers 2003).

Moreover, natural lake margins are classified as naturally rare ecosystems (Williams et al. 2007) which are identified as a national priority for protection (MfE 2007).

References

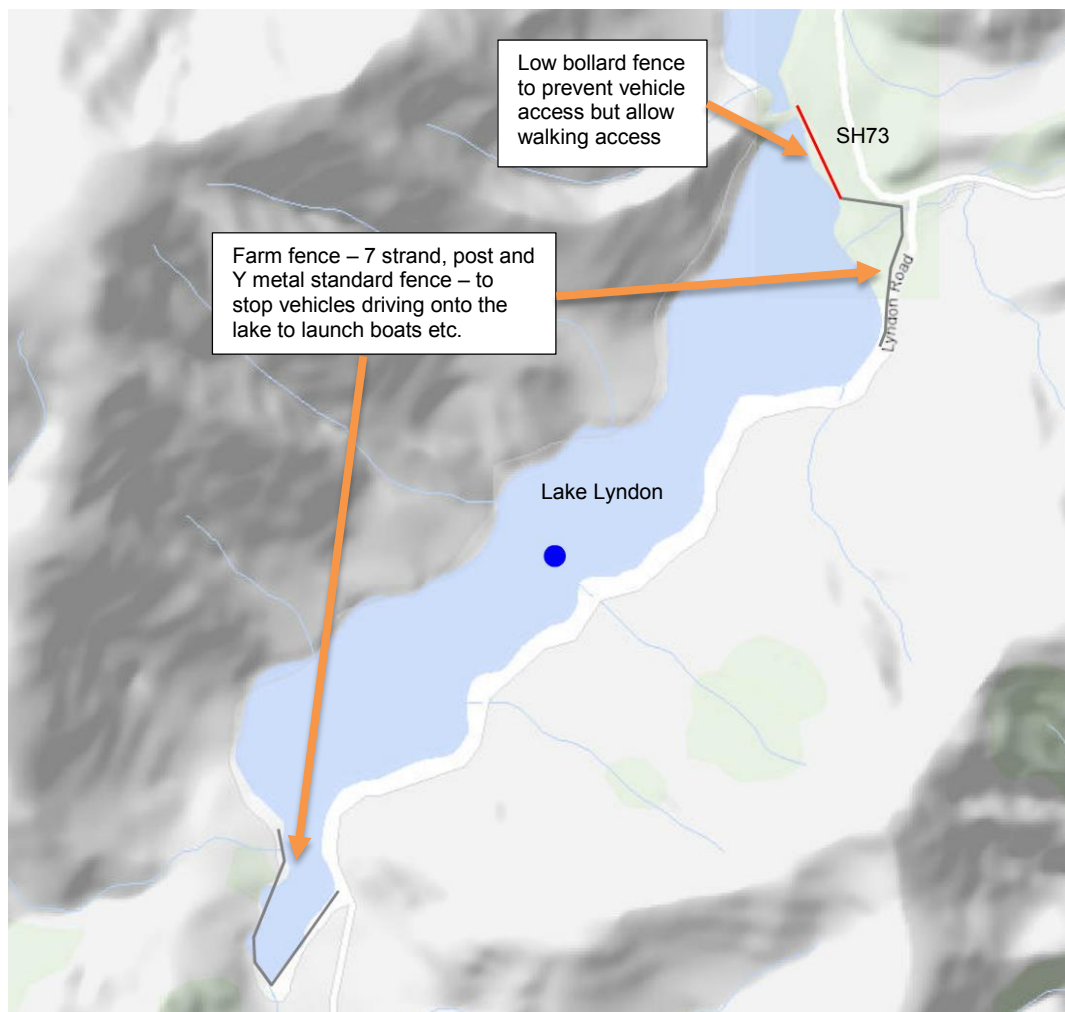
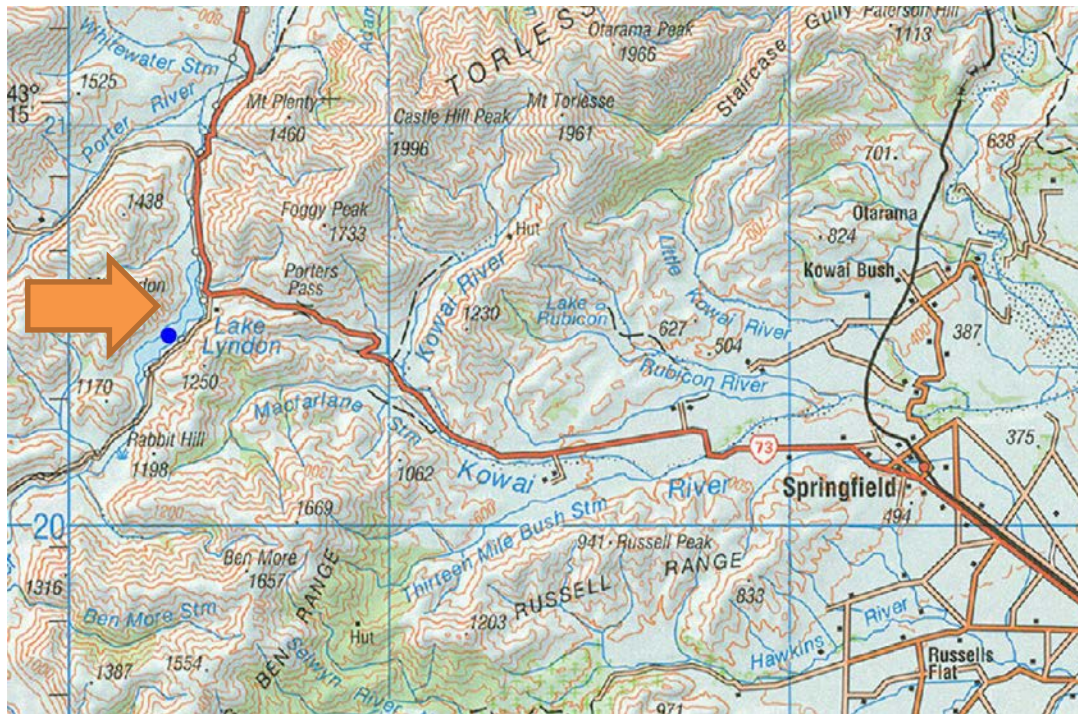
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Williams, P. A., Wiser, S., Clarkson, B., Stanley, M.C. 2007. New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology*, 31(2): 119–128.

Project location:



Proposed activities:

- Install approx. 840 m of fence (281m of low wire cable fence and 559 m of farm fence) to stop vehicle access to the northern end of the lake.
- Install approx. 760 m of fence to stop vehicle access to the southern end of the lake.
- Install DOC style interpretation boards at both ends of the lake describing why the area has been fenced and the uniqueness of the plants and birds.
- Install signage to the nearest boat launching spot.

Ecological values:

- Ecological score 37/39
- Lake Lyndon listed as DOC wetland of representative importance
- Lake margin is a 'naturally uncommon ecosystem'
- Southern crested grebe (nationally vulnerable) use the lake. Banded dotterel (nationally vulnerable) are known to nest along the shore edge.
- The turfland plant community has a number of plants that are threatened: *Pseudognaphalium ephemerum* (kettlehole cudweed - nationally critical), *Myosotis brevis* (no common name - nationally vulnerable), *Isolepis basilaris* (pygmy clubrush - nationally vulnerable)

5-year delivery outcomes for the zone:

Milestone 1: Support at least two projects per year in each of the priority ecosystem types (wetlands, hill country catchments and braided rivers).

The Selwyn-Waihora Zone Implementation Programme also identified protection of significant high country wetlands as a target area.

ZIP 5.8: Wetland Management – Public Land. Manage wetlands on public land according to best practice.

This project will help to protect and restore a high ecological value wetland.

Funds requested:

From Immediate Steps Fund	Other contributions	Estimated Project Total
\$26,856.35	\$13,428.00	\$40,284.35

To maintain the one third contribution from a third party for Immediate Steps funding, the 'other contributions' for this project will come from Environment Canterbury's Canterbury Biodiversity Strategy Fund, and in-kind project management by the Department of Conservation and the Waimakariri Environment and Recreation Trust.

Recommendation

That the zone committee support funding this priority high ecological value project.

Lake Lyndon Kettle-hole

The Lake Lyndon kettle-hole is situated adjacent to the main Lake Lyndon lake on land owned by LINZ and leased to Brooksdale Station. Kettle-holes are distinctive wetlands that occur in closed depressions that typically lack a surface outlet. The lake Lyndon kettle-hole is one of many that were formed during the Waimakariri glaciations of the late Pleistocene period (Blackwater advance) (Gage 1958). It contains excellent turf communities around its margins. It includes several nationally rare and uncommon plant species, such as *Pseudognaphalium ephemerum* (nationally critical), *Myosotis brevis* (nationally endangered), *pygmy rush (Isolepis basilaris)* (nationally vulnerable), *Parahebe canescens* (declining), *Euchiton paludosus* (naturally uncommon), *Epilobium angustum* (naturally uncommon), *Lobelia ionantha* (declining), *Montia angustifolia* (naturally uncommon) (de Lange et al 2012).

Kettle-holes are classified as naturally rare ecosystems (Williams et al 2007). Naturally rare ecosystems are those that comprised less than 5% of New Zealand's land area prior to human arrival. With human arrival, however, many naturally rare ecosystems have been reduced further in area and have become threatened. Holdaway (2012) classifies kettle-holes as nationally endangered ecosystems. The protection of naturally rare ecosystems is one of the Government's national priorities for the protection of indigenous biodiversity on private land (MfE 2007)

In recent years the Lyndon kettle-hole has come under severe threat from exotic weeds which are rapidly spreading and smothering native turf communities. Weed species of most concern include the grasses marsh foxtail (*Alopecurus geniculatus*, *A. aequalis*) and creeping bent (*Agrostis stolonifera*). These exotic grasses survive water inundation and have been spreading rapidly across the kettle-hole over the last 5 years. It is likely that these weeds were introduced by cattle which were being fed out in the kettle-hole. The resultant disturbance and increased nutrients from cattle is also likely to have facilitated the rapid spread of these weedy grasses. Better awareness has reduced cattle incursions but these are still occurring, for example when members of the public cut the fences surrounding Lake Lyndon to gain access to the lake.

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- Williams, P. A.; Wiser, S.; Clarkson, B.; Stanley, M.C. 2007. New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology*, 31(2): 119–128.

Project location:



Proposed activities:

- Install 1000m of stockproof fence to prevent accidental stock incursion
- Control weeds, monitor, and do plant restoration work as becomes necessary or appropriate.

Ecological values:

- Ecological score 35/39
- Kettle-holes are classified as naturally rare ecosystems; nationally endangered ecosystem
- Several nationally rare and uncommon plant species, such as *Pseudognaphalium ephemerum* (nationally critical), *Myosotis brevis* (nationally endangered), pygmy rush *Isolepis basilaris* (nationally vulnerable), *Parahebe canescens* (declining), *Euchiton paludosus* (naturally uncommon), *Epilobium angustum* (naturally uncommon), *Lobelia ionantha* (declining), *Montia angustifolia* (naturally uncommon)

5-year delivery outcomes for the zone:

Milestone 1: Support at least two projects per year in each of the priority ecosystem types (wetlands, hill country catchments and braided rivers).

The Selwyn-Waihora Zone Implementation Programme also identified protection of significant high country wetlands as a target area.

ZIP 5.8: Wetland Management – Public Land. Manage wetlands on public land according to best practice.

This project will help to protect and restore a high ecological value wetland.

Funds requested:

From Immediate Steps Fund	Other contributions	Estimated Project Total
\$23,333.00	\$11,667.00	\$35,000.00

To maintain the one third contribution from a third party for Immediate Steps funding, the 'other contributions' for this project will come from the Canterbury Biodiversity Strategy, in-kind project management, assistance with fencing, and monitoring by the Waimakariri Environment and Recreation Trust, Department of Conservation, and Lincoln University Students.

Recommendation

That the zone committee support funding this priority high ecological value project.

AGENDA ITEM NO: 3	SUBJECT MATTER: Appointment of officers and to Working Groups
REPORT BY: Ian Whitehouse, Environment Canterbury	
DATE OF MEETING: 2 February 2016	

Action required

- Elect Chair, Deputy Chair and representative on Regional Committee.
- Appoint alternate for Maree Goldring on Rakaia Catchment Environmental Enhancement Society.
- Confirm membership of Biodiversity Working Group;
- Establish the following working groups:
 - Plan Change 1 Implementation Working Group
 - 5-year Delivery Outcomes Working Group.

Appointment of Officers

Officers of the zone committee are elected by the committee for a 12-month term. It is time to appoint officers for the next 12 months.

The positions are currently held by: chair (Allen Lim), deputy chair (Charles Croft) and Regional Committee representative (Ron Pellow).

At the meeting the zone committee will elect members to these three positions.

Rakaia Catchment Environmental Enhancement Society

The Selwyn Waihora zone committee has a representative on TrustPower's Rakaia Catchment Environmental Enhancement Society. This Society allocates the TrustPower environmental enhancement fund established as part of TrustPower's operation of Lake Coleridge under changes to the Rakaia River Water Conservation Order.

The zone committee appointed Maree Goldring as their representative on the Rakaia Catchment Environmental Enhancement Society. The committee also appointed Sue Cumberworth as an "alternate" for Maree. Sue is no longer on the zone committee.

At the meeting the zone committee will appoint an alternate (to Maree) on the Rakaia Catchment Environmental Enhancement Society.

Working Groups

Over the last five years the committee has had a range of Working Groups. In 2015 only the Biodiversity Working Group met. It is proposed to form two new Working Groups, as below.

Biodiversity Working Group

The key task for this working group is to work with the Biodiversity Officer to recommend proposals for Immediate Steps funding. It also is a forum for the Biodiversity Officer to discuss any biodiversity issues in the zone.

Maree Goldring and Allen Lim are on the working group. Donald Couch was on the working group as was Te Whe Phillips. Tom Lambie has agreed to be on the Working Group.

At the meeting the zone committee will confirm membership of the Biodiversity Working Group – Maree, Allen, Tom and any other committee members who wish to contribute.

PC1 Implementation Working Group

Implementing the now operative Plan Change 1 (Selwyn Te Waihora section) of Land and Water Regional Plan is a key task for the first half of 2016. Tami Woods, Environment Canterbury, is leading this process and is working with primary sector organisations and rūnanga. Two workshops have been held to date and these have involved some of the zone committee (Allen Lim, John Sunckell, Ron Pellow, Terrianna Smith and Pat McEvedy). The key role of zone committee members in this process is to ensure that the implementation of PC1 delivers what the zone committee wanted in its Solutions Package (i.e. ZIP Addendum).

It is recommended the committee members involved to date in the PC1 implementation workshops, plus any others of the committee who wish to be involved, become the PC1 Implementation Working Group. They would participate in further workshops and provide a forum for Tami to discuss PC1 implementation. It is expected the Working Group would finish its work by about August.

At the meeting the zone committee forms a PC1 Implementation Working Group comprising the committee members who have been involved to date in PC1 Implementation Workshops and any other committee member who wishes to participate.

5-year Delivery Outcomes Working Group

The CWMS is now about delivering ZIPs, not writing them. Environment Canterbury's restructuring to create Zone Teams and appoint Zone Managers reflects this emphasis on delivering what Zone Committees want to see happen in their zone. As part of this most zone committees have agreed 5-year Delivery Outcomes and Milestones for their zone. These form the basis for the Zone Team's work programme. The committee agreed the initial 5-year Outcomes and Milestones in late 2014. The Outcomes and Milestones are to be reviewed annually.

Environment Canterbury staff, working with people from other organisations, have revised the 5-year Delivery Outcomes and Milestones for Selwyn Waihora zone. These are in draft as attached to the Zone Facilitator's report at the end of this agenda.

The Zone Facilitator and Zone Manager want to work with a group of committee members within the next few weeks to finalise the outcomes and milestones. These would then be recommended to the whole committee at its meeting on 01 March. The Working Group would undertake this process again early in 2017.

At the meeting the zone committee forms a 5-year Delivery Outcomes Working Group and this Group meets within the next few weeks to finalise the 5-year Delivery Outcomes and Milestones.

AGENDA ITEM NO: 4	SUBJECT MATTER: Selwyn Waihora Plan Change (PC1)
REPORT BY: Tami Woods, Environment Canterbury	
DATE OF MEETING: 2 February 2016	

Action required

1. Confirm meeting dates in February for communication of the now operative Selwyn Waihora Plan (PC1) to the Canterbury Land and Water Regional Plan in:
 - Southbridge;
 - Lincoln
 - Darfield; and
 - Coalgate.
2. Confirm a meeting in early March with original 'Focus Group' participants on the operative Selwyn Waihora Plan; and
3. Confirm dates for 'Selwyn Waihora Plan Change Implementation Working Group' (Plan Change Implementation Working Group) meetings.

Selwyn Waihora Plan Change (PC1) Operative from 1 February 2016

The Selwyn Waihora Plan Change (PC1) to the Canterbury Land and Water Regional Plan became operative on 1 February 2016.

The final operative Plan Change includes the Orders from the High Court that reflect the outcomes from the mediated settlement between the parties that appealed the Plan Change decision.

Three changes were made:

- The farming activity 2017 rule (15.5.9) was amended so those with nitrogen losses less than 15kgN/ha/yr were not restricted to their Nitrogen Baseline should they needed to apply for a resource consent (i.e. if within Cultural Landscape/Values Management Area or the Phosphorus and Sediment Risk Area).
- Clarification to the Tables containing the nitrogen load limits that:
 - The catchment nitrogen load limit included the Central Plains Water (CPW) load for new irrigated land; and
 - That the CPW nitrogen load limit was for land not irrigated prior to January 2015 and existing irrigated land was to be managed as per the farming activity rules.
- Change to the Policy with the 2022 nitrogen reductions for those over 15KgN/ha/yr - clarifying the percentage reductions beyond Good Management Practice were to be applied at a property level.

Communication of the operative Selwyn Waihora Plan Change (PC1)

It is proposed that four meetings in the Selwyn Waihora Catchment be held to communicate the content of operative Selwyn Waihora Plan Change. This will also be an opportunity to identify question and clarification sought to inform implementation. The meeting are proposed to occur in February, in the evening, on dates that suite Commissioner Tom Lambie and Zone Committee members.

At the start of the sub-regional limit setting process the Zone Committee engaged with 'Focus Groups'. The representatives involved in the Focus Groups helped the Zone Committee understand potential impacts of different management options and limits. Their input informed the Committee's ZIP Addendum which then in turn formed the basis for the Selwyn Waihora Plan Change. A number of Zone Committee members and others who were involved in these discussions have highlighted the need to re-engage with the Focus Group on the final Plan Change. A meeting in early March, at the Lincoln Bowling Club (original meeting location), is therefore proposed to re-engage with the original Focus Group participants, update them on the final Selwyn Waihora Plan Change and gather their thoughts on implementation opportunities and challenges.

Plan Change Implementation

Now that the Selwyn Waihora Plan Change is operative there are a number of communication, clarification matters and/or decisions that will need to be made in order to provide good clear advice to those affected by the Plan Change and ensure implementation occurs consistent with the outcomes sought in the Zone Committee solution package (ZIP Addendum).

Last year two workshops were held with primary sector staff, key farm consultants, Taumutu rūnanga staff and Zone Committee members (Allen, Ron and John). At the workshops a number of pieces of work (e.g. fact sheets, communication material, resource consent guidelines, or projects) were identified as being required. Most of these pieces of work were placed on hold until the High Court appeals were addressed.

On 22 January a further workshop was held (which Allen, Ron, Pat and John attended). An update on the High Court order was provided. Participants identified areas of work they had on the go to support farmers implementing the Plan Change. The topics of how best to communicate the Plan Change and a draft consent application form were discussed. Participants were also asked to identify priorities to the pieces of work previously identified and whether anything was missing.

Information gathered to date (and the catchment and focus groups meetings) will form the basis of a package of work required to assist with the implementation of the Plan Change.

Direction from Zone Committee members around priorities, identification of options and overview of draft communication material (facts sheets, consent forms or guidelines, etc) will be important to ensure implementation achieves the outcomes sought by the Committee.

It is proposed that the Plan Change Implementation Working Group therefore meet monthly at a time that suites working group participants to provide direction.

AGENDA ITEM NO: 5	SUBJECT MATTER: Remembering and sharing the rich discussion underpinning the committee's development of Solutions Package (ZIP Addendum): setting the catchment Nitrogen Load
REPORT BY: Ian Whitehouse, Environment Canterbury	
DATE OF MEETING: 2 February 2016	

Action required

- Zone Committee members who were involved in the development of the Selwyn Te Waihora Solutions Package (ZIP Addendum) share their memories of the rich discussion on setting the nitrogen load limit for the catchment.
- Zone Committee members who were not involved ask questions to gain a good understanding of the basis for the nitrogen load limit recommended in the Committee's Solutions Package for Selwyn Te Waihora.

Background

Eight of the current zone committee were not part of the zone committee that developed the Solutions Package for Selwyn Te Waihora. While the ZIP Addendum describes the Solutions Package it does not record the rich discussions that lead to the committee agreeing a final Solutions Package.

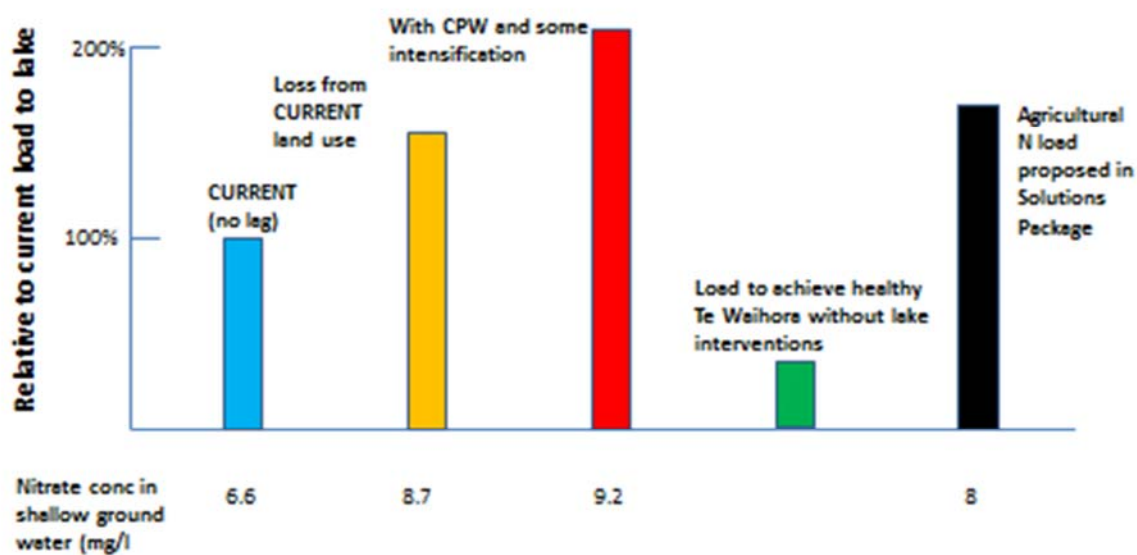
Plan Change 1 (Selwyn Te Waihora sub-region section) provides policies, rules and limits to help achieve the Committee's Solutions Package. When implementing Plan Change 1 it will be important to be aware of what the Zone Committee wanted in its Solutions Package.

To help all of the committee understand the Solutions Package there will be sessions at zone committee meetings where the zone committee members who were involved in developing the Solutions Package share their memories of the rich discussion that occurred during the development of the Solutions Package.

At this meeting the committee members will hear about the rich discussion around setting the nitrogen load limit for the catchment. This included consideration of the likely loads under different scenarios, the impact of the lag in nitrate reaching the lake, and the expectation of further reductions beyond good management practice loss rates.

The graphic on the next page indicates loads with different scenarios and may be a prompt for committee members to remember some of the rich discussion that lead to the committee agreeing on the N load limit for the catchment.

The challenge of setting N limits



Also need to reduce P load to lake by 50%

AGENDA ITEM NO: 6	SUBJECT MATTER: Selwyn Waihora Zone Committee Annual Report for the Community 2015
REPORT BY: Ian Whitehouse, Environment Canterbury	
DATE OF MEETING: 2 February 2016	

Action required

- Approve Annual Report for the Community 2015 (attached).
- Note in diaries that the Annual Report will be presented, by the Zone Committee Chair, to Councils on the following dates:
 - Environment Canterbury (Commissioners) on Thursday 25 February;
 - Selwyn District Council on Wednesday 27 April;
 - Christchurch City Council on Thursday 28 April.
- Zone Committee members attend these Council meetings to support the Chair.

Background

An Annual Report is being produced for each zone committee.

This Annual Report has three audiences:

1. Environment Canterbury Commissioners as part of meeting requirements in the Long-term Plan (see below);
2. Selwyn District Council and Christchurch City Council;
3. 3 Community (i.e. interested public)

The Annual Report for 2015 is the first report so it covers 2010 – 2015!

The Canterbury Regional Council Long Term Plan requires an annual:

- a. "Report received from each committee on its progress with implementation of its Zone Implementation Programme and the ten target areas"
- b. "[reports that] demonstrate progress on:
 - Environmental restoration
 - Improved water quality
 - Improved water use efficiency and land management
 - Infrastructure for reliable water supply".

The Zone Facilitator prepared a draft of the Annual Report for Selwyn Waihora Zone. This was provided to Allen Lim, Charles Croft, Ron Pellow, John Sunckell and Maree Goldring for early comment. Their comments have been incorporated into the Annual Report attached.

At the meeting the zone committee will approve the Annual Report (subject to any changes requested at the meeting).

The Annual Reports will be presented, by the Chair (if available), to Environment Canterbury (Commissioners), Selwyn District Council and Christchurch City Council.

These will be an opportunity for the Zone Committee to talk about their progress and raise matters with Commissioners and Councillors.

It would be good if other zone committee members could attend the Council meetings to support the Chair.

The Selwyn Waihora Zone Annual Report will be presented to the following meetings:

- Environment Canterbury (Commissioners) on Thursday 25 February;
- Selwyn District Council on Wednesday 27 April;
- Christchurch City Council on Thursday 28 April.

Other zone committees will also present reports at the meeting with Environment Canterbury Commissioners on 25 February. Christchurch West Melton zone committee will also present its report to Selwyn District Council on 27 April. Banks Peninsula and Christchurch West Melton zone committees will also present their reports to Christchurch City Council on 28 April.

Annual Report for the Community 2015

Working with the community to deliver their aspirations for freshwater

The Selwyn Waihora Zone stretches from the upper Waimakariri basin and the high country around Lake Coleridge down to Te Waihora/Lake Ellesmere. Te Waihora/Lake Ellesmere and its margins are a taonga (treasure) to Ngāi Tahu, reflecting the area's cultural significance and the concentration of mahinga kai, wāhi tapu and wāhi taonga.

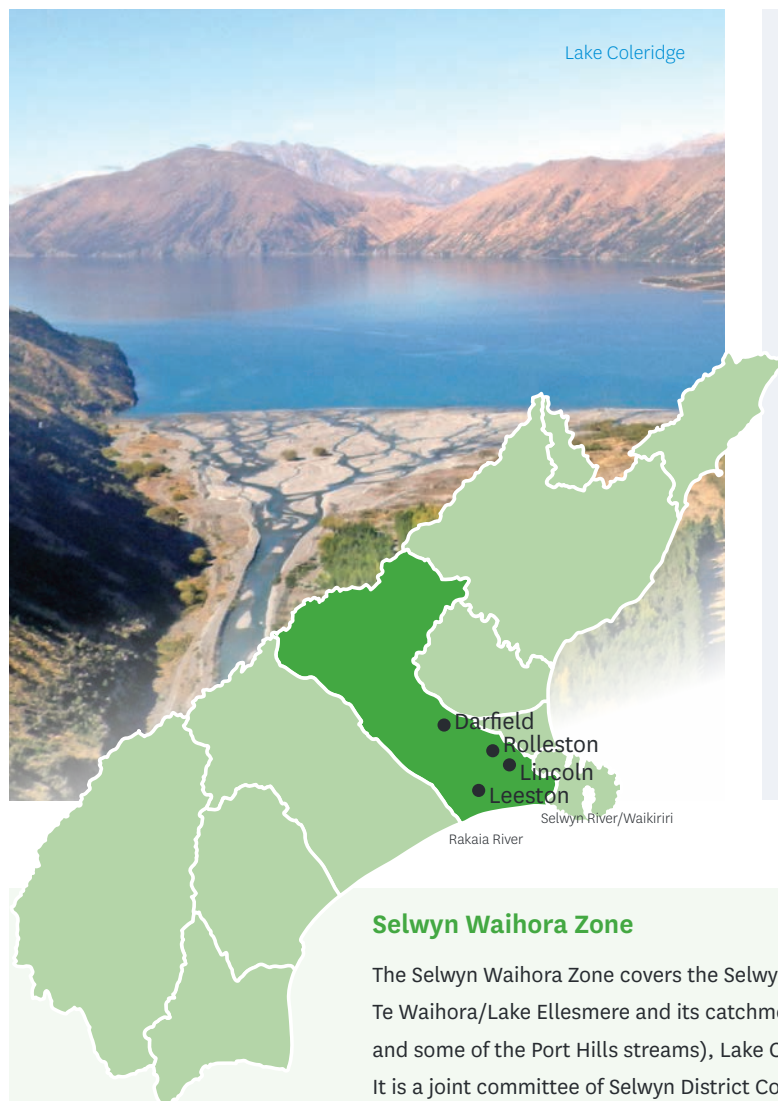
The Selwyn Waihora Zone Committee was formed in 2010 to work with the community, rūnanga and councils to develop and implement water management recommendations which deliver the vision of the CWMS.

Its first goal was to develop a Zone Implementation Programme (ZIP) to deliver environmental, economic, social and cultural outcomes. This was finalised and accepted by councils in 2011. The committee has since developed recommendations for Te Waihora/Lake Ellesmere and its catchment in its Selwyn Waihora ZIP Addendum.

These recommendations will be delivered through the Selwyn Waihora Plan Change to the Canterbury Land and Water Regional Plan, which becomes operative in February 2016.

CWMS VISION:

“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 2010-2015

The CWMS is not just about words, programmes or plans – the committee is driving on-the-ground actions to deliver sustainable benefits from water.

- Almost \$500,000 of Immediate Steps funding has been invested in local initiatives to protect and enhance the natural environment
- Whakaora Te Waihora, a joint restoration programme funded by Ministry for the Environment, Environment Canterbury and Te Rūnanga o Ngāi Tahu, commenced in 2011
- Stage 1 of the Central Plains Water (CPW) Irrigation Scheme opened in August 2015 resulting in 15,000 ha being converted from groundwater irrigation to surface water irrigation (using water from Rakaia River and Lake Coleridge)
- Farm Environment Plans have been developed for around 300 properties in the zone
- New limits, rules and policies to manage water quality and quantity in Te Waihora and its catchment have been put in place through the Selwyn Te Waihora sub-regional plan.

Selwyn Waihora Zone

The Selwyn Waihora Zone covers the Selwyn District and a small area of Christchurch City. It includes Te Waihora/Lake Ellesmere and its catchment (including Selwyn River/Waikiriri, spring-fed lowland streams, and some of the Port Hills streams), Lake Coleridge, the Rakaia River and the upper Waimakariri basin. It is a joint committee of Selwyn District Council, Christchurch City Council and Environment Canterbury. It is in the rohe of Wairewa, Rāpaki, Taumutu, Tūāhuriri, Koukourārata and Ōnuku rūnanga.

Delivering the community's goals for Te Waihora/Lake Ellesmere

The Selwyn Waihora Plan Change puts in place policies and rules required to restore the mauri of Te Waihora/Lake Ellesmere while maintaining prosperous land-based economy and thriving communities.

It will achieve this by introducing catchment limits for nitrate losses from land-use discharges, community sewage and industrial activities. It also sets limits on surface and ground water takes, and minimum flows on rivers and streams.

The Selwyn Waihora Plan Change implements zone committee recommendations to achieve the community's goals for the Te Waihora/Lake Ellesmere catchment.

Key features of the Selwyn Waihora Plan Change

- A Cultural Landscape Values Management Area recognises the significance of Te Waihora/Lake Ellesmere and its margins
- A nitrogen load limit has been set for agriculture in the catchment and for new CPW irrigation
- All farmers will be required to be operating at good management practice by 2017 and reduce nitrogen losses by 2022
- Major water storage in the upper Selwyn/Waikiriri and Waianiwanui rivers is prohibited.



Te Waihora/Lake Ellesmere 'Placeholder'



Central Plains Water is key to delivering some of the freshwater goals

Central Plains Water (CPW) key to delivering water outcomes

The implementation of the Central Plains Water (CPW) irrigation development – which will use alpine water from Rakaia and Waimakariri Rivers – is key to delivering some of the freshwater goals in the catchment.

CPW will use alpine water to replace groundwater takes which currently irrigate 30,000 ha. This replacement will significantly reduce groundwater takes in the zone, increasing flows in the lowland streams, which will improve the health of these streams and the water quality in Te Waihora/Lake Ellesmere.

CPW also includes 30,000ha of new irrigation development. This will increase nitrogen losses in the catchment. However, the amount of increase is limited through a nitrogen allocation under the Selwyn Waihora sub-regional plan.

CPW Stage 1 opened in August 2015 and supplies water from the Rakaia River (and Lake Coleridge) to 110 farms. This water replaces groundwater abstraction currently irrigating 15,000 ha. All 110 farms in Stage 1 have completed a Farm Environment Plan.

Creating a network of biodiversity in Hororata River catchment

The Hororata River is a significant tributary of the Selwyn River/Waikiriri. The catchment includes habitat of the threatened Canterbury mudfish.

Around \$154,000 of Immediate Steps funding (raised through the CWMS rate) has been invested to support the protection and enhancement of remnant native biodiversity in wetlands, springs and riparian margins to help create a biodiversity network throughout the catchment, from the hills to the lake.

11 projects have been supported with this funding.



Community planting day on the Hororata River

© Te Ara Kakariki

Progress towards achieving CWMS Targets

Ecosystem Health and Biodiversity	Rehabilitating Te Waihora/Lake Ellesmere is a key focus for the committee. To date, more than \$10 million has been funded by the MfE, Te Rūnanga o Ngāi Tahu, Fonterra, DOC, Environment Canterbury, and others.
Natural Character of Braided Rivers	Funding from the Regional Committee has helped control gorse, broom and wilding pines in the upper Rakaia catchment (above the Harper confluence).
Kaitiakitanga	The Selwyn Waihora Plan Change recognises the significance of Te Waihora/Lake Ellesmere, and establishes a Cultural Landscape Values Management Area. This further protects the lake margins, lower reaches of the Selwyn river/Waikirikiri and other streams in the catchment. However, further work is needed to increase the understanding of kaitiakitanga and mahinga kai.
Drinking Water	Selwyn District Council continues to manage risks to community drinking water supplies.
Recreational and Amenity Opportunities	All properties in the Silverstream catchment are working to reduce microbial contaminants and make Coes Ford safe for swimming. Most properties have completed Farm Environment Plans.
Water Use Efficiency	Implementation of Good Management Practices will require enhanced irrigation efficiency. The Zone Committee is also supporting the SMART irrigation public awareness campaign for urban and rural irrigators.
Irrigated Land Area	CPW Stage 1 has been completed with design and planning underway for further stages.
Energy Security and Efficiency	CPW Stage 1 reduces electricity use by replacing groundwater takes and distributes water under pressure in pipelines.
Regional and National Economies	Economic growth in the district is maintained by ensuring farm activities meet good management practices. Further irrigation within CPW will also assist economic growth flowing from rural Canterbury into the cities and towns.
Environmental Limits	The Selwyn Waihora Plan Change sets minimum flows, water abstraction and nutrient discharge limits. The first land use consent applications have been submitted as part of protecting high country sensitive lakes.



Key work programmes underway to deliver water management priorities

The zone committee's vision is to restore the mauri of Te Waihora/Lake Ellesmere while maintaining the prosperous land-based economy and thriving communities around it. It also aims to protect the natural values of the alpine rivers and of the high country.

The committee has supported work programmes by Environment Canterbury and a wide range of other organisations to deliver this vision. These focus on four areas:

1. Lake rehabilitation:

- Whakaora Te Waihora, a joint restoration programme funded by the Ministry for the Environment, Environment Canterbury and Te Rūnanga o Ngāi Tahu, has helped plant 100,000 native plants and investigated alternative lake opening options.
- The Living Water partnership between Fonterra and the Department of Conservation is supporting initiatives in the L-II/Araria to improve water quality and in-stream health. This includes support for University of Canterbury research into best-practice riparian management for drains. In addition Fonterra has invested \$1.3 million in on-farm support to improve nutrient management and in biodiversity projects.

2. Good Management Practice (GMP):

- Around 300 Farm Environment Plans completed.
- In the Silverstream catchment - a major contributor to the Coes Ford recreational site on the Selwyn River - all land owners have excluded stock from the stream and main tributaries.

3. Using "alpine" water to replace groundwater irrigation:

- Stage 1 of CPW replaces groundwater takes for about 15,000ha of irrigation.

4. Maintaining or improving biodiversity values in wetlands, the Hororata catchment, and the high country.

- 14 wetland projects, 11 projects in the Hororata catchment, and 7 projects in the high country.

There are still important local water management challenges to be met

The zone committee will continue its work with Environment Canterbury and many other organisations to deliver the community's aspirations for water management.

In particular, the committee will focus on working with primary sector organisations, rūnanga and Environment Canterbury on the implementation of the Selwyn Waihora Plan Change.

The committee will specifically look at how simple land-use consents can support land-users to develop good land management practices.

As part of this, work will continue with local rūnanga on the implementation of the Cultural Landscape Values Management Area around Te Waihora/Lake Ellesmere.

The committee is also supporting programmes to increase flows in key lowland streams through augmentation from stock water races (using CPW water) or from groundwater.



Challenges and opportunities

The zone committee's package of recommendations for the Te Waihora/Lake Ellesmere catchment includes catchment and lake interventions, as well as planning and policy tools.

Bringing all of this together and finding funding will be a significant challenge over the next ten years.

These challenges include progressing:

Lake interventions, such as:

- Improved lake-level and lake-margin management (including lake opening)
- Addressing the legacy phosphorus, from historical land use, in the lake-bed sediment
- Restoring macrophyte beds
- Enhancing and creating wetlands, both on the lake margins and floating wetlands in the lake.

Catchment interventions, such as:

- Effective riparian margins on many kilometres of lowland streams and drains
- Targeted stream augmentation to improve flows in lowland streams
- Farming at good management practice and better.

Key events for 2016

The zone committee will help launch the Selwyn Waihora Plan Change at community meetings when it becomes fully operative in February 2016.

Zone committee members reflect a diverse range of community views

Each of the Canterbury region's ten zone committees include 4-10 community members whose membership is regularly refreshed to ensure a wide-range of perspectives are reflected.

This year the committee sought new committee members and Victor Mthamo was appointed. The full list of members can be found below

Allen Lim (Chair, community member)
Charlie Crofts (Deputy chair, Koukourārata)
Bill Lambie (community member)
Hayley Moynihan (community member)
John Sunckell (community member)
Maree Goldring (community member)
Ron Pellow (community member)
Victor Mthamo (community member)
Clare Williams (Tūāhuriri)
George Tikao (Ōnuku)
Riki Nicholas (Wairewa)
Terrianna Smith (Taumutu)
Te Whe Phillips (Rāpaki)
Tom Lambie (Environment Canterbury Commissioner)
Cr Pat McEvedy (Selwyn District Council)
Cr Tim Scandrett (Christchurch City Council)



Brought to you by the Selwyn Waihora Zone Committee working with

AGENDA ITEM NO: 7	SUBJECT MATTER: Kaituna Valley
REPORT BY: Katherine Glasgow & Sian Barbour	DATE OF MEETING: 02 February 2016

Recommendation

That the zone committee receive this report & support the progression of a catchment wide erosion and sediment study in the Kaituna Valley.

PURPOSE

To provide an update on water quality monitoring and outcomes from the Kaituna Valley landowner meeting.

BACKGROUND

Over the past 12 months Environment Canterbury, local landowners & rūnanga have been undertaking water quality and cultural monitoring at 7 sites along the Kaituna Valley.

Previously there has been limited monitoring in the catchment. Some previous water quality monitoring in the area indicated there were elevated levels of E.Coli but there were differing views regarding the source of this (i.e septic tanks or stock access).

Feedback at community meetings indicated that there was a desire to get a better understanding of water quality and values in the catchment to allow informed and targeted responses.

The attached report provides a summary of the 12 months' worth of water quality monitoring.

POSSIBLE NEXT STEPS

Amongst other things, the monitoring has along with observations, and conversations with the local community, indicated an erosion and sediment issue in the catchment which is affecting water quality and a range of values.

Erosion and sediment control measures will be required in the catchment to reduce sediment inputs into the Kaituna River and eventually Te Waihora / Lake Ellesmere.

Before various funding avenues are pursued for actual works (re-battering, re-contouring, planting etc.) a sediment survey undertaken by a qualified consultant will be required in order to;

- Investigate the sources of sediment from the headwaters to the State Highway Bridge, their type and severity;
- Identify priority areas for remediation;
- Research and design methods to mitigate the effects of bank erosion, in particular a range of strategies to restore Kaituna River banks to more stable forms;
- Costings, effectiveness, maintenance, and ease of adaptation of the mitigations will also need to be highlighted;
- The survey should be done in conjunction with local landowners as anecdotal stories and learnings will be important considerations when making any recommendations.

Without an initial study of this degree it will be difficult to understand the nature and cost of work that is required to successfully control sediment inputs into the Kaituna River.

If a comprehensive study has been undertaken it will give the community and stakeholders greater leverage and certainty in going forward with obtaining funding for remediation works.

Kaituna Catchment Water Quality Monitoring

Results from monitoring October 2014 – October 2015

Summary

The Kaituna community (including local landowners and iwi) indicated a need for improved understanding of surface water quality in the Kaituna River. Arising from this, a one-year study of combined water quality and cultural monitoring was co-ordinated by Environment Canterbury. The purpose of this study was to gain a better understanding of the catchment and identify where hotspots are located in order to allow informed and targeted responses.

This short report summaries the results from one-year of monitoring and identifies key water quality issues arising from this study.

Faecal contamination is elevated for much of Kaituna River, and does not meet recreational water quality standards. Sediment deposition on the bed of the Kaituna River is evident (from visual observations). This sediment accumulation acts as a reservoir for nutrients and bacteria. Nutrient enrichment can promote excessive growths of aquatic plants (macrophytes) and algae, of which macrophytes are abundant in the lower reaches. The accumulation of sediment and excessive growth of macrophytes can have detrimental effects on the ecosystem, such as flow impediment, oxygen consumption via respiration or the breakdown of trapped and accumulated organic matter, and generally smothering of the benthic habitat.

Overall, water quality of the Kaituna River indicates that some parameters are elevated in terms of meeting relevant guidelines and objectives. Future efforts are required to ensure the water resource can be restored to a healthy aquatic state, and enjoyed for recreational and cultural purposes.

1. Introduction

Kaituna River is located in the Kaituna Valley on Banks Peninsula and is greatly characterised by the volcanic geology of the area. The catchment extends 15km through the valley from Mt Herbert (928m) down to near sea level where it flows into Te Waihora. The river flows down a steep sided valley that contains some remnant native vegetation cover, providing an area of high quality habitat for native flora and fauna/aquatic species.

Banks Peninsula streams are generally steep and are short in distance from the headwaters to the outlet. This means that these streams can experience high flows during rainfall events, causing erosion of the banks and allowing sediment to enter the stream. The steep catchment and erosion is a contributing factor to the state of water quality in the Kaituna Valley. Contaminants of concern to these areas are phosphorus, fine sediment and faecal matter. Typically these contaminants are mobile in runoff through overland flow. Dissolved phosphorus has a high affinity for particulate matter such as soils and clay, and will readily bind to these particles. Riparian planting and fencing programmes have already been carried out along the Kaituna River for aesthetics and as a preventative measure for overland flow contamination to the stream in places.

A long term water quality monitoring record exists for one site on the river (recorder) dating back to 1992. Monitoring at this site indicates that E.coli and sedimentation levels are elevated. However, more intensive monitoring was required for identification of areas in which to focus management.

This valley, although located on Banks Peninsula, is located within the Selwyn-Waihora water management zone. Management activities aim to maintain and improve the ecological values of the Kaituna Catchment, including Kaituna River, its tributaries, associated catchment activities and Te Waihora. This area is very important to Ngāi Tahu, particularly for the Koukourārata hapu of Banks Peninsula who used the Kaituna Valley as their traditional pathway to Te Waihora to gather mahinga kai.

This report aims to inform on the current state of water quality in Kaituna River. A greater understanding of this catchment will allow for effective future management of the water resource.

2. Methods

Water quality was sampled monthly at six sites along the mainstem of Kaituna River and one site on a tributary, Okana Stream (Figure 1). This was carried out in conjunction with a COMAR (Cultural Opportunity Mapping Assessment and Response) assessment. Results from the COMAR monitoring are not presented in this report.

Samples were analysed for:

- Dissolved Reactive Phosphorus (DRP)
- Total Phosphorus (TP)
- Total Suspended Solids (TSS)
- Nitrate + Nitrite Nitrogen (NNN)
- Escherichia coli (E.coli)
- Ammoniacal Nitrogen (NH₄N) from April 2015
- Total Nitrogen (TN) from June 2015

Ammoniacal nitrogen was introduced to the sample regime in April 2015 to investigate if there were any issues arising from possible leakages from outdated septic tanks. Total Nitrogen was subsequently added in June 2015.

When the concentration of these parameters were below laboratory detection limits, they were converted to a value equal to half the detection limit (i.e. $<0.08 = 0.04$). Where parameter concentrations were greater than the laboratory detection limits the results were given a value equal to the upper detection limit.

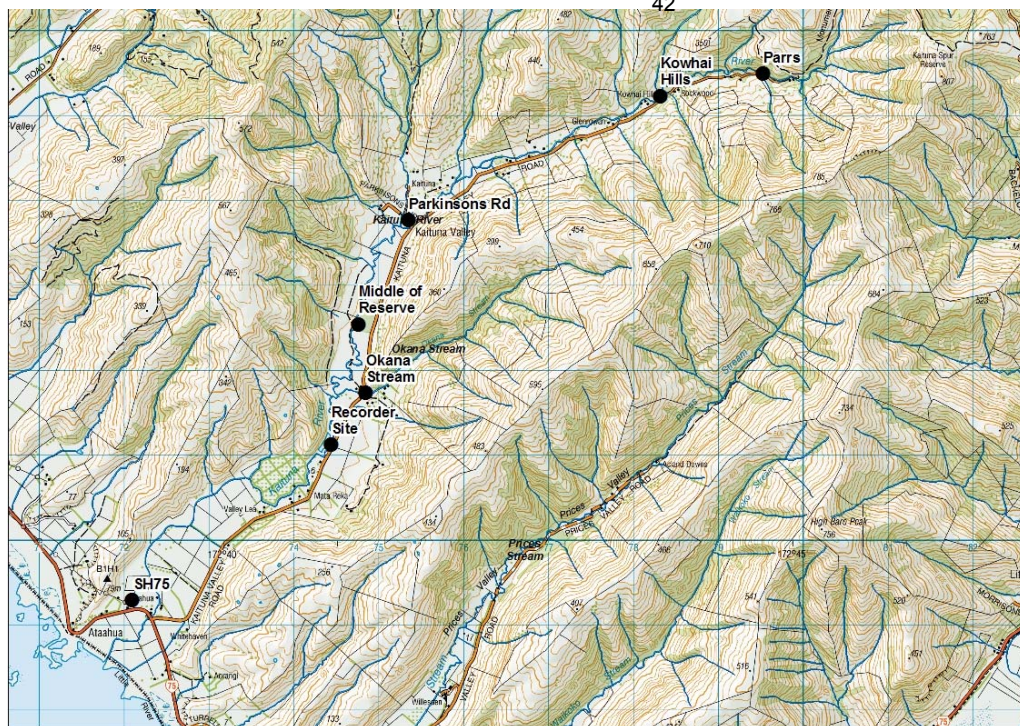


Figure 1. Map of the Kaituna catchment water quality investigation sampling sites

3. Results

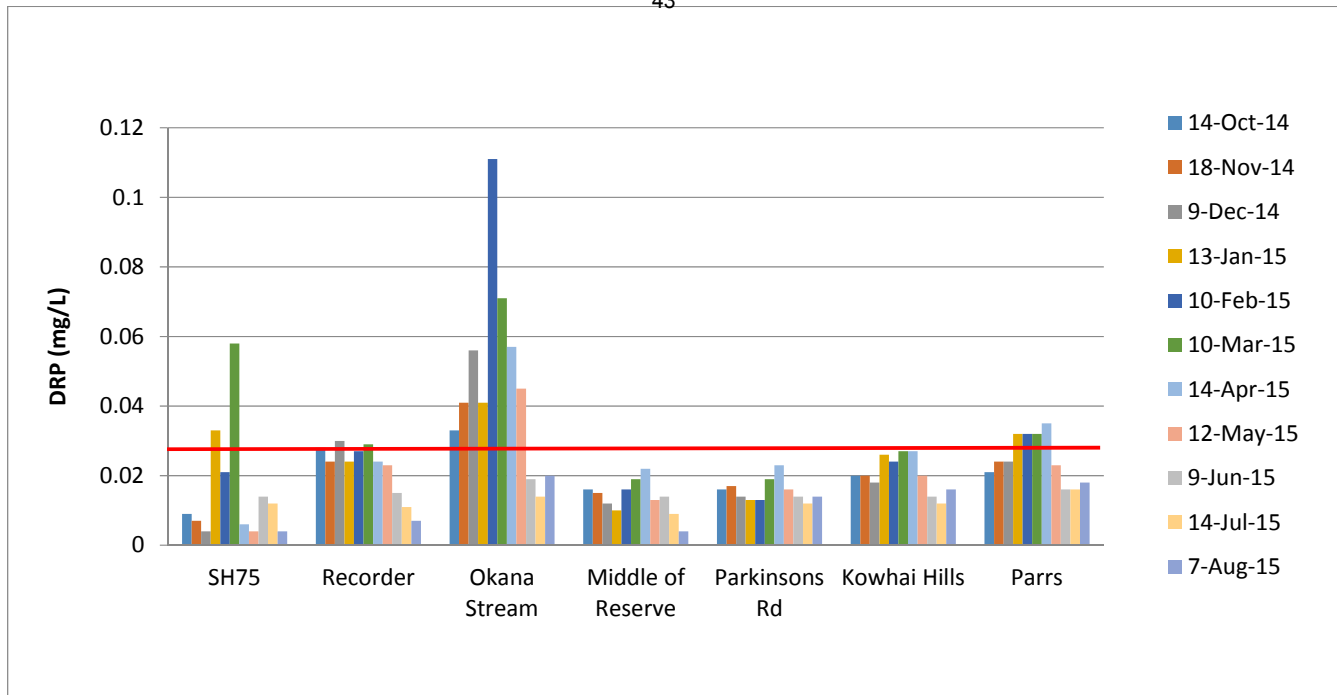
3.1 Nutrients

Nutrients (such as nitrogen and phosphorus in their dissolved form) are major controlling factors in the proliferation of algae and aquatic plant communities. At high concentrations, algae and plants can grow in such large quantities that they become a nuisance, smothering or choking waterways which can cause flooding and a reduction of instream habitats for fish and aquatic invertebrates. These excessive growths can cause large fluctuations in dissolved oxygen concentrations in the water, causing a range of detrimental effects including death in fish and invertebrate populations. Some forms of nitrogen in elevated concentrations, such as ammonia and nitrate, become toxic to aquatic life and can pose a public health risk in drinking water.

3.1.1 Phosphorus

Phosphorus sources include:

- wastewater
- animal effluent
- phosphatic fertilizers
- volcanic rock/soils.



Lake <-----< Headwaters

Figure 2. Dissolved Reactive Phosphorus concentrations in Kaituna River. Note the red line represents the regional median of 0.027mg/L for Banks Peninsula streams (Robinson & Barbour, unpublished)

Dissolved Reactive Phosphorus (DRP) is the amount of phosphorus available for uptake by aquatic plants and algae to use for growth. At most sites, there has been little variation in DRP concentrations over the one year monitoring period (Figure 2). SH75 and Okana Stream are the only sites where we see varying concentrations that are above the median value for Banks Peninsula streams. The SH75 site is close to the river outlet into Lake Ellesmere/Te Waihora therefore water quality is most likely influenced by lake water, more so when it is pushed upstream into the river during southerly/westerly winds.

Phosphorus readily attaches to soil and primarily enters waterways from over land flow or bank erosion. During the peak in February at Okana Stream, it was noted that over a hundred cattle had access to the stream. In March there was still evidence of stock access. During these two sampling periods, the water was noted to be turbid. This indicates that phosphorus-rich sediment had possibly been trampled into the stream. Due to the dry summer and subsequent low flow, it would have taken some time (or until the next significant rainfall event) for the sediment to be flushed downstream away from the sampling point.

The middle sites, Parkinsons and Middle of Reserve, exhibited a decrease in concentration due to the aquatic macrophytes and algae taking up the nutrient and converting it into plant biomass.

It is unlikely the upper reaches are influenced by artificial forms of phosphorus (fertiliser) due to the low intensity land use. Phosphorus sources are most likely from the natural concentrations in the volcanic soils.

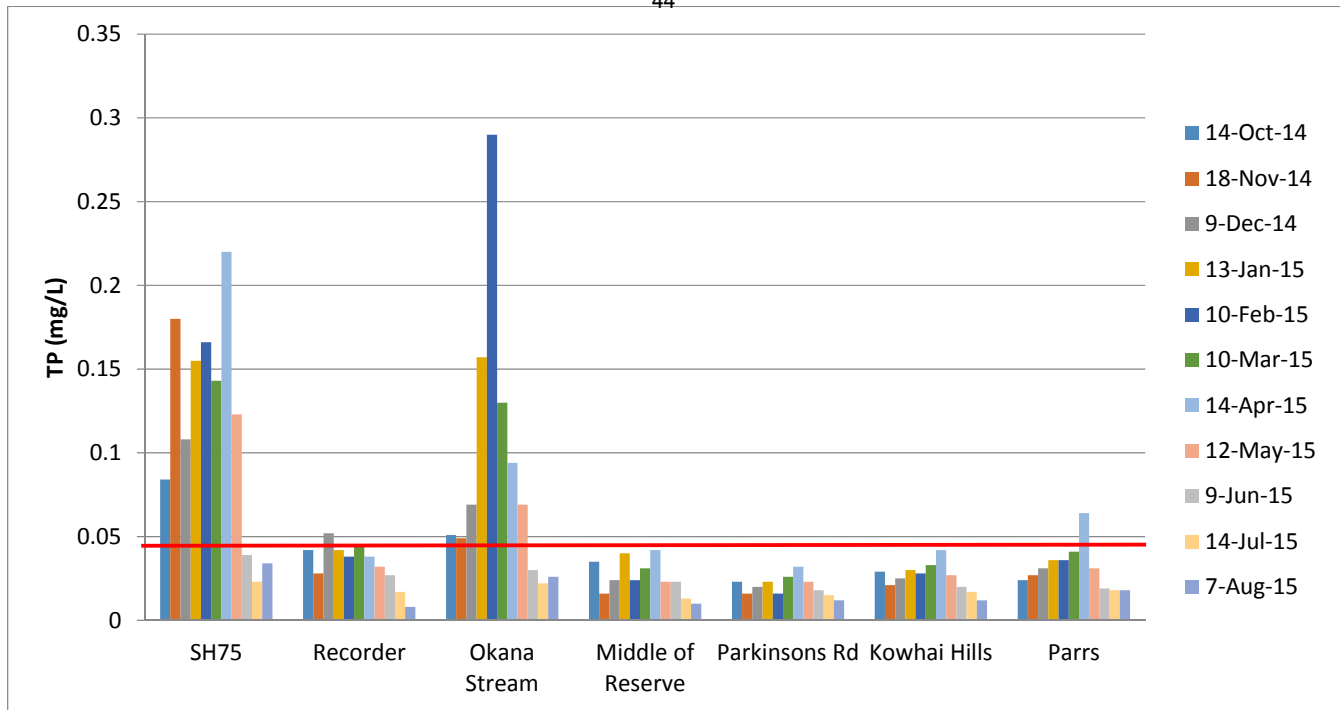


Figure 3. Total Phosphorus concentrations in Kaituna River. Note the red line represents the regional median of 0.048 mg/L for Banks Peninsula streams (Robinson & Barbour, unpublished)

Total Phosphorus (TP) is the measure of both inorganic (dissolved) and organic (insoluble minerals or biological tissue) phosphorus. Elevated concentrations occur at both the SH75 and Okana Stream sites (Figure 3).

Concentrations of TP are much more elevated at the SH75 site compared to DRP. At all of the other sites, patterns of TP are similar to DRP (the proportion of inorganic to organic nitrogen is about the same).

The greater concentrations of Total Phosphorus at SH75 compared to concentrations of DRP indicate that much of the phosphorus at this site is locked up in either biological tissue or insoluble mineral particles, and thus unavailable for uptake by macrophytes and algae. The influence of lake water at SH75 indicates that sediment and algae from the lake is present and contributing to elevated phosphorous concentrations. The green colouration of the water at this site indicates that some phosphorus could be bound up as phytoplankton originating from the lake.

Phytoplankton are free floating algae that inhabit the upper sunlit layer of the water column. When present in high enough numbers, they may cause a green discoloration to the water due to the presence of chlorophyll within their cells. This is what gives Lake Ellesmere its green tinge.

3.1.2 Nitrogen

Nitrogen sources include:

- fertiliser
- effluent disposal
- urine patches in paddocks
- the breakdown of dead plant matter (including grass or straw and instream plant matter),
- seasonal die-off of legumes (clovers, lucerne, etc.)
- animal or human faeces

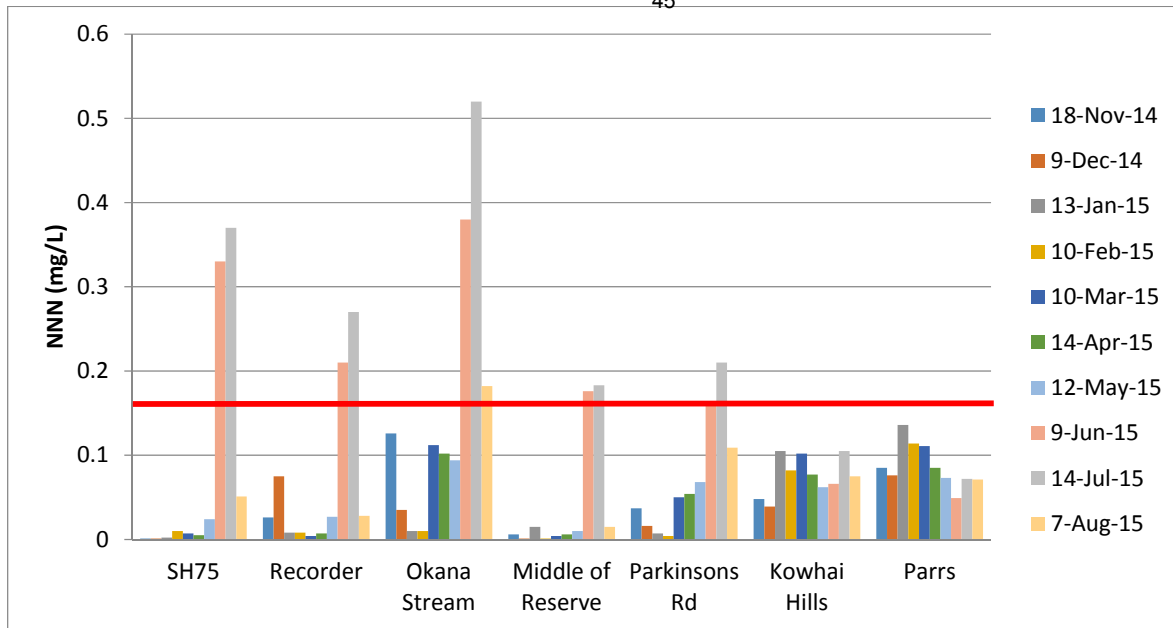


Figure 4. Nitrate-and-Nitrite Nitrogen concentrations in Kaituna River. Note the red line represents the regional median of 0.164mg/L for Banks Peninsula streams (Robinson & Barbour, unpublished)

Nitrate-and-Nitrite Nitrogen (NNN) concentrations were elevated in the upper sites compared to those downstream (Figure 4). Peaks are observed in June and July, particularly in the lower reaches.

Nitrite is an unstable form that is rapidly oxidised to nitrate in oxygenated conditions. Therefore the majority of NNN is present as nitrate. Nitrate can be toxic to aquatic species above certain concentrations (>1mg/L) (Hickey, 2013). All NNN concentrations recorded at the study sites were below this level. This suggests that nitrate toxicity is unlikely to affect biodiversity values in any of the study sites.

NNN in this catchment is contributing to soluble nutrient concentrations and thus a controlling factor of macrophyte and algae growth. This is observed in the decrease of NNN from the headwaters down to the outlet at the lake. The upper catchment is characterised by a clear and fast flowing habitat whereas in the lower reaches, macrophyte growth is more prominent. These macrophytes take up the soluble nutrients and convert NNN into plant biomass.

As mentioned previously, the SH75 site is influenced by lake water. NNN concentrations are relatively low in the lake because all the soluble nitrogen is used up by the algae (phytoplankton) and so we see very low concentrations at SH75.

Spikes of NNN occurred in both June and July for many sites. This is during the wetter months of the year, and water testing had occurred just after rainfall (Appendix 1). Plants (both on land and instream) grow slowly over winter so do not require as much nutrient uptake. This results in increased overland flow of excess nutrients from land into the waterway.

Although spikes do occur, the concentrations of nitrogen at the headwaters are not in excess and concentrations presented here sit within the regional median values for Banks Peninsula Streams.

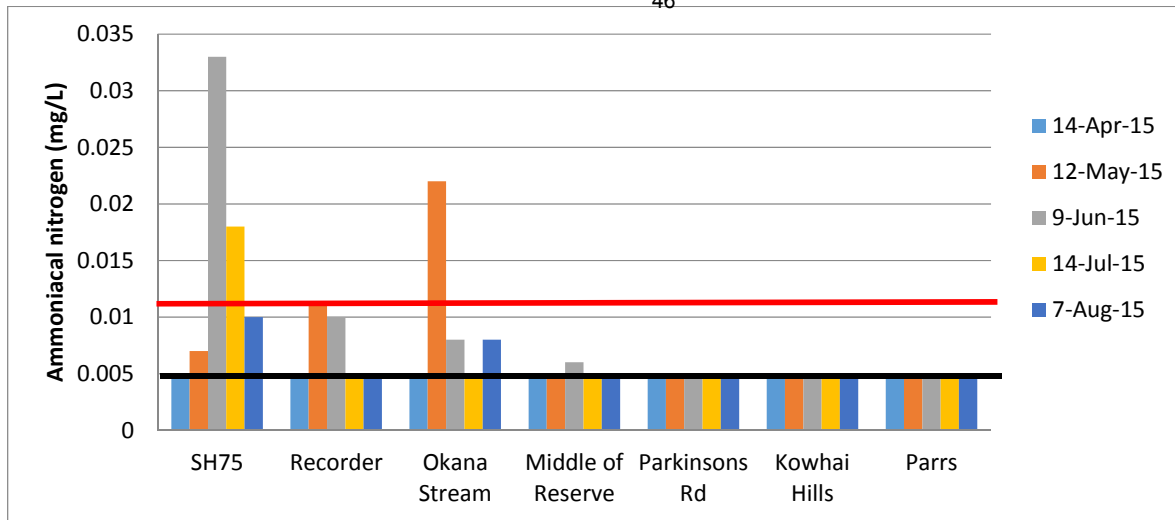


Figure 5. Ammoniacal Nitrogen concentrations in Kaituna River. Note the red line represents the regional median of 0.011 mg/L for Banks Peninsula streams: black line represents the lab detection limit (Robinson & Barbour, unpublished)

To investigate possible sources of nitrogen in the catchment, ammoniacal nitrogen was added into the sampling regime in April. There were questions raised in previous community meetings that old leaking septic tanks may have been influencing water quality in the Kaituna catchment.

Ammoniacal nitrogen ($\text{NH}_4\text{-N}$), also often called 'ammonium', covers two forms of nitrogen; ammonia (NH_3) and ammonium (NH_4). Ammoniacal nitrogen is a very important plant fertiliser but is less mobile in the soil than nitrate-nitrogen. It enters waterways primarily through point source discharges, such as raw sewage or dairy shed effluent. The concentration of ammoniacal nitrogen at the upper sites (Parkinsons, Kowhai and Parrs) rarely exceeded laboratory detection limits (Figure 5). These sites are relatively un-impacted and not subject to intensive land use. These results do not indicate any septic tank leakages, particularly in the upper catchment of Kaituna Valley.

Ammonia is toxic to aquatic life at high concentrations. These low concentrations suggest that ammonium toxicity is unlikely to affect biodiversity values in any of the study sites.

3.2 Suspended Solids

Total Suspended Solids (TSS) is a measure of the mass of particles suspended in the water column, such as eroded soil or plant matter. Suspended particles affect water clarity and under stable or reduced flow conditions can become deposited on the stream bed and smother benthic environments. Deposited sediment can smother habitats of stream invertebrate and fish, smother clean gravels essential for trout and salmon redds and native fish habitat, and act as a reservoir for bacteria and nutrients such as phosphorus and nitrogen that can be released under anoxic conditions. Excessive sedimentation allows the establishment of macrophytes beds, which then trap more sediment.

Sources of sediment include:

- bank erosion/instability
- earthworks
- vegetation/weed clearance
- cultivation
- stock trampling

This results in mobilisation of sediment from land into surface water, particularly after heavy rainfall.

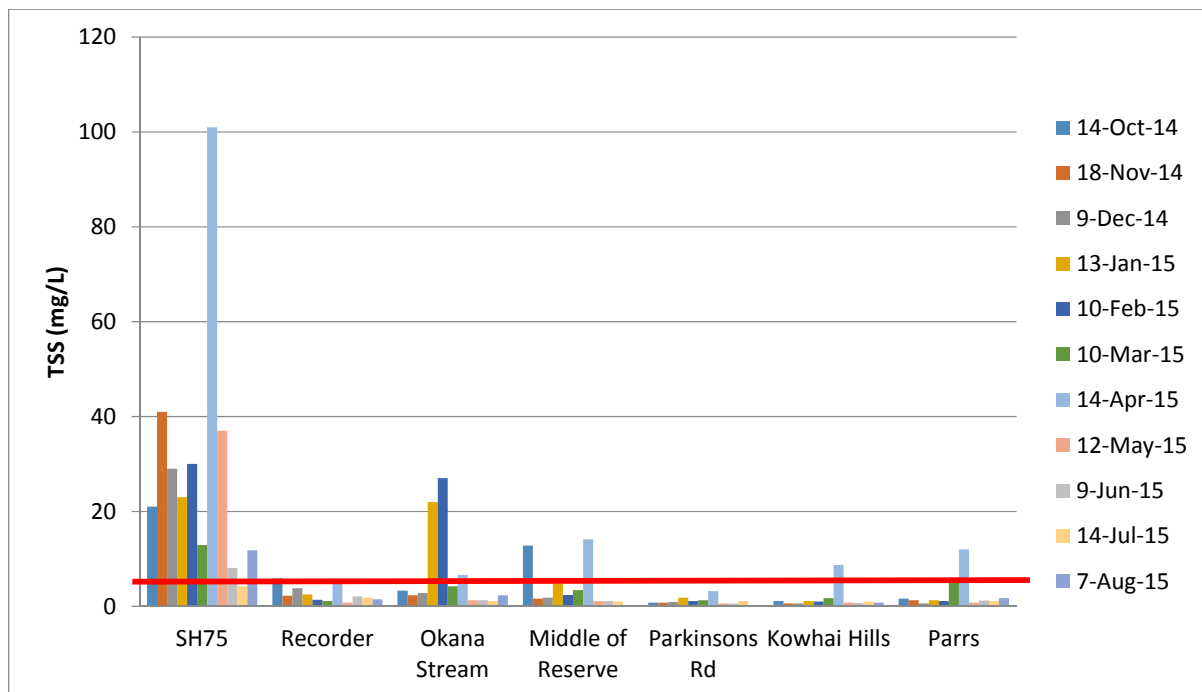


Figure 6. Total Suspended Solid concentrations in Kaituna River. Note the red line represents the regional median of 4 mg/L for Banks Peninsula streams (Robinson & Barbour, unpublished)

Elevated suspended sediments are observed at SH75. Okana Stream also had elevated concentrations in early 2015 (Figure 6). The high concentration of suspended sediment at SH75 is due to the influence of the lake water being pushed upstream. Lake Ellesmere has very high amounts of suspended sediment due to the lack of aquatic macrophytes which bind up the sediment, and to the winds which stir up the sediment from the bed of the lake, resuspending it in the water column. Hamill & Schallenberg (2013) reported that TSS was generally elevated in summer months (January- April) compared to winter months (May to August) which they attributed to the effects of resuspension of lake sediments due to stronger wind and lower water levels during summer.

The elevated concentrations in Okana Stream were most likely a result of bank erosion into the stream. It was noted on a number of sampling occasions that stock either had direct access or there was evidence of recent access. Stock trampling the banks reduces stability and so introducing sediment into the stream.

Middle of reserve site had earthworks up until May. Heavy rain during the April sampling possibly brought large loads of sediment into the stream from observed stock piles of soil on the river bank. This rainfall would have also caused sediment to be washed overland into the stream at the two upper sites.

Although there are areas of erosion along the banks of the Kaituna River, the results from this study have shown there to be low concentrations of suspended sediment in the water column. Sediment from high flows would be quickly washed downstream into the lake or settle out on the bed of the river and so not be detected in the results from monthly testing of the water column. The summer dry period and subsequent low flows resulted in most suspended sediment being deposited on the stream bed as there would have not been enough flow to flush it downstream. This is evident in visual observations of streambed sedimentation, particularly in the lower reaches. This can act as a reservoir for bacteria and nutrients that have the potential to be released into the water column under anoxic conditions or during wind driven re-suspension of bed sediment.

3.3 Faecal Contamination

The microbial quality of water is important to recreational water users and for drinking-water supplies for humans and livestock. Faecal coliforms are a group of bacteria that usually originate in the gut of warm-blooded animals (birds, mammals and humans) and are present in their faeces. The presence of faecal coliforms in water indicates recent contamination of the water with faecal material, and therefore, bacteria, viruses and other pathogenic (disease-causing) organisms may be present. *Escherichia coli* (*E. coli*) is a particular type of faecal coliform and is a more specific indicator of recent faecal contamination in freshwater.

For people the risk is highest when ingesting water, or when undertaking recreational activities that put them in direct contact with the water.

Sources of faecal contamination include:

- direct stock access to streams and along the margins
- diffuse surface water run-off containing faecal matter
- direct faecal contamination from large groups of waterfowl
- wastewater (e.g. septic tanks)
- stormwater discharges in urban areas containing animal waste

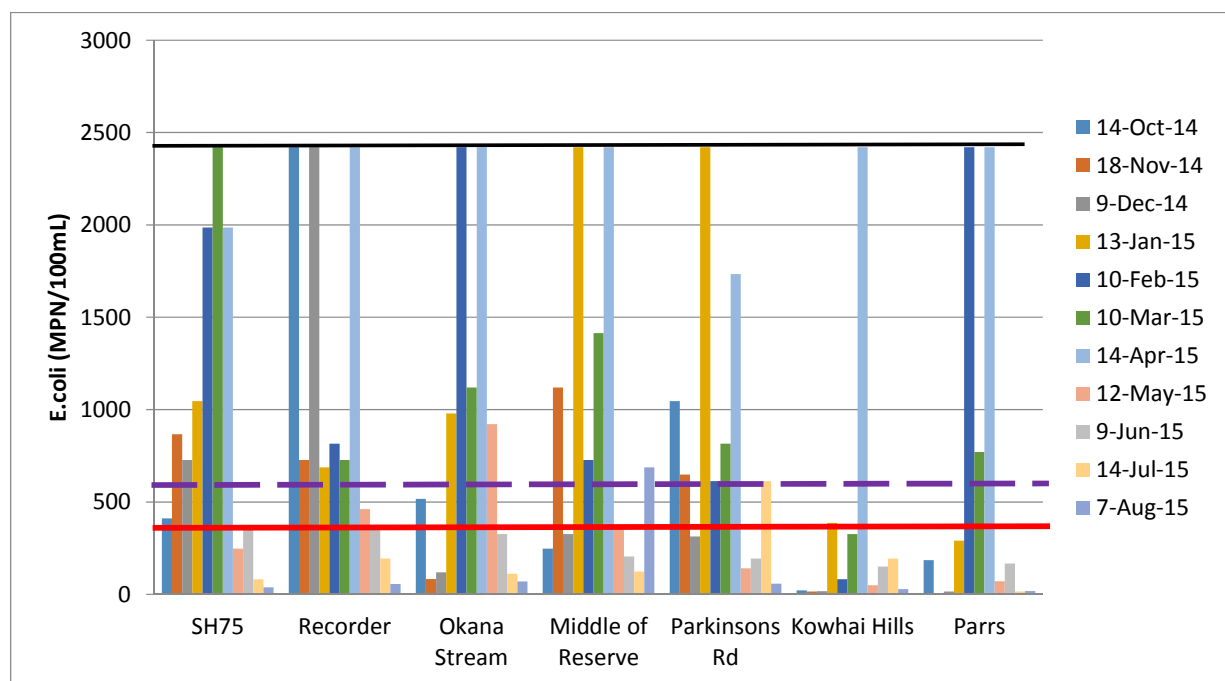


Figure 7. *E.coli* concentrations in Kaituna River. Note the red line represents the regional median of 387 MPN/100mL for Banks Peninsula streams: purple dashed line represents the guideline value of 550MPN/100mL for recreational water quality (MfE/MoH, 2003): black line represents the lab detection limit (Robinson & Barbour, unpublished)

Many of the sites have elevated *E.coli* concentrations, indicating there is a faecal contamination issue in this catchment (Figure 7). Many sites exceed the recommended guideline of 550MPN/100mL* for recreational water quality (MfE/MoH, 2003). Therefore full immersion recreational activities such as swimming can be considered a public health. As contamination is widespread throughout the river, there may be multiple sources of contamination, including livestock or waterfowl. Overland flow from paddocks can entrain faecal matter and associated bacteria, with the resulting drainage during rainfall/irrigation discharging into the stream. Sediment deposited on the stream bed can also entrain faecal matter and be re-suspended during high winds or flow events, re-introducing the bacteria into the water column.

In the upper catchment faecal contamination is generally low, however spikes do occur. These spikes indicate contamination events rather than a continuous seepage.

Summer of 2014/2015 has experienced high temperatures and little rainfall resulting in low river flows. These conditions could have exacerbated *E.coli* concentrations. Most sites exhibited a spike in April as a result of surface runoff during the rainfall event (this is mirrored in the TSS results, Figure 6).

* The MfE/MoH recreational guidelines are based on the 95%ile of a dataset, whereby only 5% of the sample results can exceed the guideline. Therefore the guidelines presented on this graph are to give an indication of possible exceedances only.

4. Conclusions/Recommendations

In conclusion, this study provides a useful baseline record of current state in the Kaituna catchment. This study could be repeated after remediation works have been completed in order to determine any positive or negative effects on water quality.

Although suspended sediment concentrations are generally low, areas of benthic sedimentation are an issue. Therefore, pathways for sediment to the stream should be restricted, and available stream flow should not be impeded to allow for the flushing of sediment from the stream and minimise nutrient release from sediment to water. Efforts to limit numerous pathways of contaminants to waterways should also focus on smaller tributaries where stock have access, even when dry.

In order to improve Kaituna River, nutrient and sediment inputs to the stream should be managed to control undesirable ecosystem effects from macrophytes and sedimentation. Additionally, faecal contamination should be mitigated in an effort to improve microbiological water quality for recreation and mahinga kai resources.

References

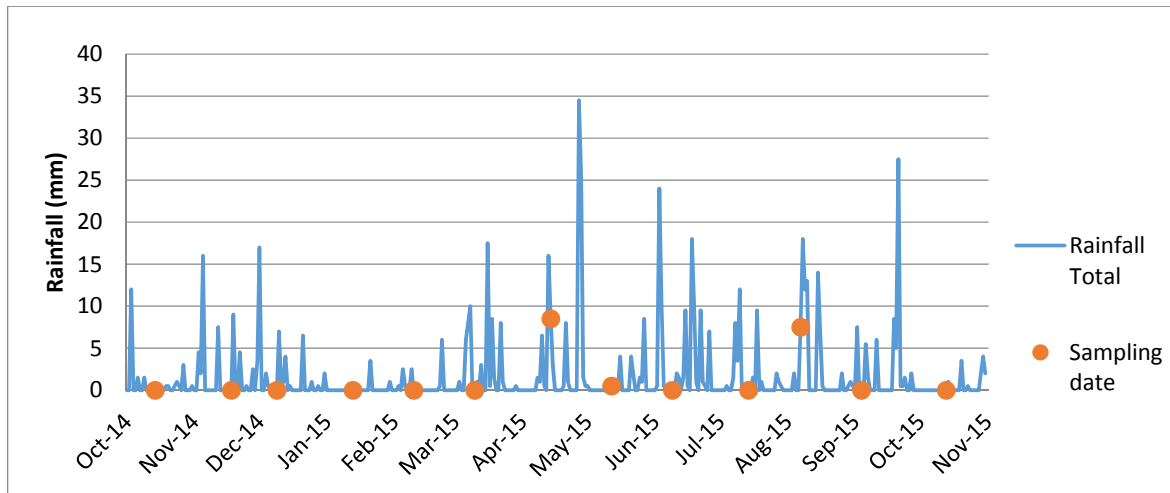
Hamill, K. & Schallenberg, M. (2013). Mechanisms that drive in-lake nutrient processing with Te Waihora/Lake Ellesmere: Inter-annual water quality variability. *River Lake Ltd report prepared for Environment Canterbury*.

Hickey, CW. (2013). Updating nitrate toxicity effects on freshwater aquatic species. *NIWA report prepared for the Ministry of Building, Innovation and Employment*.

Ministry for the Environment & Ministry of Health (MfE/MoH). (2003). Microbiological water quality guidelines for marine and freshwater recreational areas. *Ministry for the Environment, Wellington*.

Robinson & Barbour. (2016). An update of state and trends in surface water quality of Canterbury's rivers and streams. *Environment Canterbury Report unpublished*.

Appendix 1. Rainfall in Kaituna Valley at Recorder



This site is located in the lower reaches of Kaituna River and only gives a fair representation of the lower reaches. Rainfall may have been heavier at the top of the valley.

AGENDA ITEM NO: 8	SUBJECT MATTER: Zone Facilitator's Report
REPORT BY: Ian Whitehouse, Environment Canterbury	
DATE OF MEETING: 2 February 2016	

Action required

- Confirm, or otherwise, Flock Hill Lodge as the venue for 01 March 2016 zone committee meeting.
- Note the following for information:
 - Review of the Regional Pest Management Plan;
 - Drop-in day at Darfield on Wednesday 24 February;
 - Article by John Sunckell in Selwyn Times;
 - Draft 5-year Delivery Outcomes and Milestones (to be developed further and discussed at 01 March meeting).

Venue for 01 March zone meeting

Currently the venue for the 01 March zone meeting is Flock Hill Lodge (Waimakariri Basin). I sense that some committee members prefer for all zone meetings to be at Rolleston.

If the March meeting is at Flock Hill the following would be included in the agenda:

- Briefing by Professor Angus McIntosh, University of Canterbury, on recent research by the Freshwater Ecology Research Group in the upper Waimakariri Basin;
- Briefing by high country farmers on consent process for properties in high country sensitive lake zones;
- Description, on site, of proposed wilding pine control.

At the meeting the zone committee will confirm, or not, Flock Hill Lodge as the venue for the meeting.

Review of Canterbury Regional Pest Management Plan

A discussion document has been prepared outlining possible changes to pest management in Canterbury. This includes less emphasis and resourcing on existing widespread pests (such as gorse and broom), more emphasis on early incursions; increased focus on managing pests for biodiversity gains, and reduced regulation of pests within property boundaries (i.e. more responsibility on individual landowners to manage pests on their properties themselves with compliance inspections focusing on preventing pest spread to neighbouring properties).

This review is available at www.ecan.govt.nz/PestStrategy or phone 0800 324 636.

Feedback on this review is open until 28 February.

Darfield Drop-in day Wednesday 24 February

The Selwyn Waihora Zone Team is having a community drop-in day at Darfield. It is planned for these to be monthly. See attached advert. Zone Committee members would be welcome to attend and support the Zone Team.

Article in Selwyn Times

We received, at very late notice, an invitation to contribute an opinion piece to the Selwyn Times. Allen was on holiday so I forwarded the request to John who was able to prepare the attached in a few hours to meet the tight deadline!

5-year Delivery Outcomes and Milestones

I have been working with the Zone Manager (Michaela Rees) and her team to revise the 5-year Delivery Outcomes and Milestones for the zone. We have talked with Murray England about drinking water and will talk with CPW in early February. I have attached the draft Outcomes and Milestones as at 25 January. These will be worked on by staff and the Working Group (see agenda item 3) and brought to the 01 March Committee meeting.

Talk to us about your land and water management

Come along to a community drop-in day in Darfield on Wednesday 24 February to talk with the new Environment Canterbury Selwyn-Waihora Zone Team

These community drop-in days are being held fortnightly to give you a chance to discuss local land and water management issues affecting you and to ask questions about the recently operative Selwyn - Te Waihora sub-regional plan.

At this month's meeting, our consents team will be there to talk about consent processing and to offer support and advice.

We hope you can come in and get to know the team working in your area.

Selwyn-Waihora Zone drop-in day:

Date: Wednesday 24 February

Time: 1.00 – 4.30pm. No appointment necessary

Location: Selwyn-Rakaia Vet Clinic, South Terrace (opposite the bakery)

Brought to you by Environment Canterbury working with



Improving water quality – slowly but surely

Selwyn/Te
Waihora zone
committee
member
John Sunckell
responds to
criticisms
regarding
the perception nothing is
happening to improve the
water quality in the area.



Late last year and over the New Year period we have seen a number of opinion pieces and letters to the editor in the media relating to water quantity, quality and farming practice. The meme being that ECan and the Canterbury Water Management Strategy have failed and that things are only getting worse.

What is frustrating for many of us involved is the lack of recognition of what is a genuine collaborative process involving the local communities to find solutions. This collaboration has enabled zone committees to understand the views of many, understand their aspirations, their dreams and the environment that they want to be part of in the future.

This is hard work. There are no simple answers as there are always consequences to every action that often conflict with other desired outcomes.

Please do not ignore what has been the enormity of bringing all these ideas together to the point where our sub-regional chapter of the Land and Water Regional Plan is about to go operational in the next few days having worked through the legal challenges that were lodged when the plan was released.

Key actions in this plan:

Nitrogen and phosphorus loss limit on farms including those farms being irrigated under the Central Plains Water scheme.

Central Plains Water going live will have a major impact on water balance and bringing our lowland streams back to

acceptable flows.

All farms will by 2017 be required to have farm environment plan in place. About 300 of those plans are in place now with a large number being dairy farms.

All farms being at a state of 'good management practice' by 2017 and then requiring further improvement after that.

A "cultural landscape values management zone" being placed around Lake Ellesmere. While all this has been happening we have also had the Government, Ngai Tahu, Environment Canterbury and Fonterra invest \$10m in lake restoration and \$500,000 spent on further natural landscape enhancement and other works.

So to say nothing has happened is just not true, it is just beginning, the waka is coming about but it will take time, it needs time.





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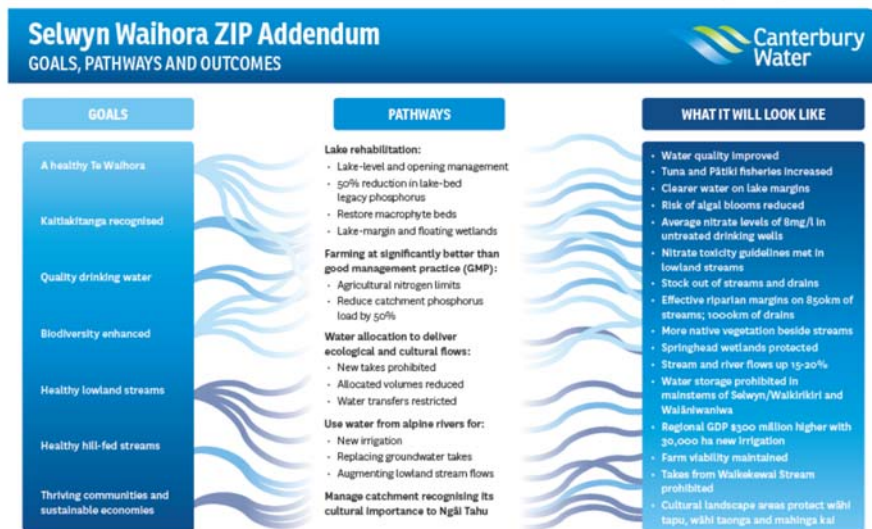


Selwyn-Waihora Zone – 5-year Delivery outcomes and milestones

(SW Zone Team draft Jan 2016 with Whit's additions)

Delivery outcomes cascade from ZIP & ZIP Addendum:

The ZIP Addendum pathways (see below) identify the key areas where action is required to deliver the Zone Committee's Solutions Package for Te Waihora and its catchment.



The delivery outcomes for the lake and its catchment can be aligned with the five pathways, however, the “Water allocation to deliver ecological and cultural flows” pathway has been achieved through Plan Change 1 and so does not need a 5-year Delivery Outcome.

The ZIP Addendum pathways only cover the Selwyn Te Waihora area, not the whole of the zone (i.e. not the high country area in the upper Waimakariri basin and Lake Coleridge – Rakaia River). Nor do the pathways cover all ZIP outcomes, in particular biodiversity, drinking water and recreation.

Combining the ZIP Addendum pathways with the ZIP outcomes and recommendations suggests the following topics for the 5-year delivery outcomes for SW Zone:

1. Lake rehabilitation;
2. Farming at GMP or better;
3. Using water from alpine rivers for new irrigation, replacing groundwater takes and for augmenting lowland stream flows;
4. Managing the catchment recognising its cultural importance to Ngāi Tahu;
5. Maintaining native biodiversity;
6. Delivering high quality community drinking water supplies;
7. Maintaining recreation opportunities.

Outcome 1: Have commenced on-the-ground lake interventions relating to reconstructing wetlands, addressing legacy Phosphorus and restoring Macrophyte beds

Milestone 1.1: Work programme identified to progress lake interventions

Action: David M to set up meeting with Ngāi Tahu regarding further input into lake interventions

Milestone 1.2: Commence a reconstructed wetland, funding dependant by July 2017

Suggested locations Ahurri or Yarrs

Lead: David Murphy

Milestone 1.3: Investigate impact of managed retreat of lake opening with sea level rise and identify priority sites for wetland construction and land retirement

(some work has been done under Te Waihora agencies group)

Lead: Tim Davies (will have budget)

Milestone 1.4: Complete further investigations on options for addressing legacy P by June 2017

(David Hamilton project)

Milestone 1.5: Complete pilot Macrophyte trial near timber yard point by Jun 2018

Lead: David and Tim

Milestone: Lake opening

Milestone: Land purchase

How will this outcome be measured?

-

Management oversight

Zone Committee Sponsor:

Zone team responsibility: Michaela Rees

Outcome 2: Farming at GMP or better, focusing on priority areas; CPW, Phosphorus sediment Risk Area (PSRA), and Cultural Landscape Values Management Area (CLVMA), on all dairy farms, in the Kaituna and Silverstream catchments, and on farms in high country sensitive lake catchments

Milestone 2.1: Comprehensive strategy to get all farmers operating at GMP or better agreed between sectors and Environment Canterbury and endorsed by Zone Committee by June 2016

- a. Project: identifying barriers
- b. Project: compliance strategy
- c. Project: consenting
- d. Project: Rural Professionals / Industry working group formed
- e. Project: Extension strategy developed with sectors **Michaela**
- f. Project: Key messages on PC1 and GMP developed and strategy for dissemination?

Action: Tami set up first planning meeting for setting strategy (include Ron Pellow, Pat Mc, Tony Dairy NZ and others)

Milestone 2.2: Agree initial two-year work programme, to deliver strategy to get all farmers operating at GMP or better, with stakeholders by December 2016 and report six monthly to zone committee on progress

Milestone: Develop and agree how beyond GMP be implemented by September 2016

Milestone 2.3: Central Plains Water Stage 1 farmers operating at GMP with 75% of the FEP audits achieving A or B grade by Jan 2018

- a. Project: FEP audits on all stage 1 properties with xx% achieving A or B grade **Sylvia**

Milestone 2.4: All properties in Phosphorus Sediment Risk Area / Cultural Landscape Values Management Area have completed FEPs and lodged land use consent applications by June 2017 in accordance with set priorities

- a. Project: set the priorities areas by March 2016 and agree initial two-year work programme by June 2016
- b. Project: 100% of dairy farms with audited FEP by June 2018 or within 12 months of their consent being granted **Katherine – led by Megan Hands DairyNZ**
- c. Project: xx% of FEPs completed and consent applications lodged for other land uses. Work with Beef & Lamb / Arable sector extension staff in doing so **Katherine**
- d. Project: Simple consenting process developed for controlled activity land use consents for properties over 10ha within PSRA / CLVMA **Tami Woods / Sam Beaumont**

Action: Tami, SW zone team to meet and finalise projects

Milestone 2.5: 100% dairy farms have FEPs audit grade of A & B by June 2018

- a. Project: 100% of dairy farms with audited FEP by June 2018 **Katherine – led by Megan Hands DairyNZ (break this down into smaller projects)**

Milestone 2.6: All farmers within Sensitive Lake Zone farming achieve GMP by June 2017 as demonstrated by FEP audit

- a. Project: All farmers have FEPs and consent applications submitted **Katherine**
- b. Project: All farms pass first FEP audit by June 2017

Milestone 2.7: Sediment and Erosion work programme for Kaituna catchment agreed by community and commenced by July 2017 (subject to external funding)

- a. Project: Erosion / sediment remediation study completed June 2016
- b. Project: Pilot sites for erosion control selected July 2017
- c. Project: Quarterly community meetings to discuss and inform results
- d. Project: Community steering group formed

Milestone 2.8: Compliance strategy to support GMP uptake in the zone endorsed by zone committee by December 2016

- a. Project: revise compliance strategy

How will this outcome be measured?

-

Management oversight

Zone Committee Sponsor:

Zone team responsibility: Katherine Glasgow

Notes for next milestone setting:

- CPW stage two GMP
- Using data from auditing to inform extension programmes or projects

Outcome 3: Water from Rakaia River and Lake Coleridge used for new irrigation, replacing groundwater takes and for augmenting lowland stream flows

Milestone 3.1: Stage 2 CPW operating by XX (get from CPW)

Milestone 3.2: Targeted Stream Augmentation improves flows in lowland streams

Project: **Get Brett painter to draft**

Milestone 3.3: Integrated CPW and Environment Canterbury monitoring programme

How will this outcome be measured?

-

Management oversight

Zone Committee Sponsor:

Zone team responsibility:

Outcome 4: Managing the catchment recognising its cultural importance to Ngai Tahu

Action: David Murphy to set up Te Rūnanga Ngai Tahu meeting with Sue Corby from Ngai Tahu/TRONT to further discussions

Milestone 4.1: All properties within defined bed of Te Waihora understand their responsibilities regarding stock exclusion

- a. Project: Proactive programme with Zone Team / Pollution Team to communicate stock exclusion requirements to all 54 landowners **Pollution Team**

*Need to think about more milestones to put under here – mahinga kai?
Project on Long Fin Eels?*

Milestone: PC1 items – Tami Woods

Action: Tami to write up milestones & projects

Potential Milestones:

Milestone: Identifying Māhanga Kai sites and the suitability of eating

Milestone: Fisheries recruitment on east side of lake – to enhance sites

Milestone: State of the Takiwa monitoring

How will this outcome be measured?

-

Management oversight

Zone Committee Sponsor:

Zone team responsibility: Tami Woods

Outcome 5: Supporting the maintenance and enhancement indigenous biodiversity in focusing on priority areas or ecosystems; Hororata catchment, high country, wetlands, springheads, braided rivers and Te Waihora

Milestone 5.1: Review biodiversity priorities areas, prepare strategy and agree initial two-year work programme to deliver biodiversity strategy within the zone (add in working with stakeholders)

Note: discussed a milestone around agreeing wetlands mapping strategy & mapping completed by XX (not required as a milestone however need to ensure a project is covered within a milestone so we can measure outcome correctly)

Milestone 5.2: How we review/measure progress on biodiversity (Action: to be finalised by Jodi)

Milestone 5.3: Restoration plans for biodiversity corridors (Hororata and Waimakariri) confirmed by June 2016 and implement x. Prioritised projects from plan outcomes by xx

Milestone 5.4: Minimum of two wetlands/springhead projects per year

Milestone 5.5: High country - see outcome 7.3

Milestone 5.6: Braided rivers. Action: to be drafted by Jodi

Milestone 5.7: Te Waihora: Action: Jodi to set up meeting with those involved to set biodiversity lake focused milestone (and projects)

Milestone 5.8: Support existing work by community groups and Environment Canterbury to reduce the extent of spread of wilding trees in upper Waimakariri catchment. Update to the zone committee every 6 months from the Environment Canterbury wilding conifer regional initiative?

Milestone 5.9: Maintain indigenous biodiversity remnants through CPW development (use CPW environment officer). They need to be identified first and Selwyn District has never completed their SNA process. Action: Jodi to set up meeting with CPW to discuss and then finalise Milestone

Milestone 5.x: Biodiversity protection and enhancement opportunities identified through the FEP process (need to reword this so that it is something we can say when we've achieved)...education and extension with FEP auditors and consultants. Action: to be updated by Jodi

Milestone 5.x: A prioritised large-scale and multi-year programme to support the active management and enhancement of effective riparian margins is developed and work started on improved management of riparian margins in priority streams, rivers and drains from January 2016.

This milestone needs to tick off the Selwyn Waihora solutions package (ZIP addendum) including:

- *Effective riparian margins on about 850 km of streams and 1000 of drains*

Measure through: Canterbury maps update; capture km of stream etc from the various stakeholders working in this space (will be IMS, TAK, WET). Action: Follow up discussion on this item

How will this outcome be measured? (Action: Jodi to populate with draft content)

- Via wetlands and lake margin biodiversity mapping

Management oversight

Zone Committee Sponsor:

Zone team responsibility: Jodi Rees

*Action: Field trip/presentation with ZC on what biodiversity is and how it is valuable on farm.
Followed by a discussion on what the Immediate Steps priorities are*

DRAFT

Outcome 6: Delivering high quality community drinking water supplies;

Action: Whit and Michaela meeting with Murray England at SDC on 20 Jan to discuss

DRAFT

Outcome 7: Maintain and where possible enhance contact recreation opportunities at key sites on Selwyn River/Waikiriri and sports fishing in high country

Milestone 7.1: Suitability for contact recreation improves at Coes Ford by 2019

- a. Project: All properties in Silverstream over 10ha have FEP and consent applications submitted as part of requirements within Phosphorus Sediment Risk Area Katherine
- b. Project: Weekly community based 6 week water quality monitoring programme commenced at 15-20 sites throughout Silverstream from Nov – Mid Dec 2016 Katherine / Kimberley Robinson
- c. Project: Extension activities and FEP actions informed by outcomes of water quality investigation Katherine
- d. Project: Silverstream landowners understand the key source / contributions from their landuse and how it influences Coes Ford by March 2017 – *Not sure how to measure this* Katherine

Milestone 7.2: Persistence of toxic algae reduced at Whitecliffs Domain on Selwyn River by 2019

- a. Project: Investigate mechanical disturbance of bed above Whitecliffs Domain as a way of reducing toxic algae

Milestone 7.3: Support through Immediate Steps funding one project per year salmon/trout spawning areas in high country (do we need to indicate number of projects?) Jodi

- a. Project: Immediate steps projects in high country related to salmon/trout spawning

How will this outcome be measured?

- Contact recreation grades at sites on Selwyn River
- Number and duration of toxic algae warnings at Whitecliffs Domain
- Number of spawning sites protected

Management oversight

Zone Committee Sponsor:

Zone team responsibility:

**PUBLIC AGENDA OF A MEETING OF THE SELWYN WAIHORA ZONE COMMITTEE TO BE
HELD IN THE LARGE EXECUTIVE MEETING ROOM, SELWYN DISTRICT COUNCIL ON
TUESDAY 2 FEBRUARY 2016 COMMENCING AT 1 PM**

TUESDAY 02 February 2016, **Selwyn District Council, Rolleston**

TIMETABLE & ORDER OF BUSINESS

Item	Time	Description	Papers	Presenter
	1.00pm	Meeting commences with karakia and formal order of business: <ul style="list-style-type: none"> • Apologies • Identification of Urgent General Business • Confirmation of Minutes – • Matters Arising from Minutes • Report to and from Regional Committee Meeting • Meetings Attended 	(Pages 1 – 13) Reports from/to Regional Committee (Pages 14 - 17)	Ron Pellow
	1.15pm	General Public Contribution	No papers	
1	1.20pm	Welcome, introduction and briefing for new committee member	No	No
2	2.00pm	Immediate Steps Biodiversity Funding – proposed projects Jodi Rees, Environment Canterbury	(Pages 18 - 24)	Jodi Rees
3	2.30pm	Appointment of Officers and to Working Groups	(Pages 25 - 27)	Committee Members
	2.50pm	REFRESHMENT BREAK		
4	3.15pm	Update on Plan Change 1 (Selwyn Te Waihora section) of Land and Water Regional Plan: communication and implementation Tami Woods, Environment Canterbury	(Pages 28 - 29)	Tami Woods
5	3.45pm	Remembering and sharing the rich discussion underpinning committee's development of Solutions Package: setting catchment N load	(Pages 30 - 31)	Committee Members
6	4.25pm	Selwyn Waihora zone Annual Report for the community 2015	(Pages 32 - 37)	Ian Whitehouse
7	4.40pm	Kaituna River – results of water quality monitoring Sian Barbour and Katherine Glasgow, Environment Canterbury	(Pages 38 - 51)	Sian Barbour and Katherine Glasgow
8	5.15pm	Facilitator's report Ian Whitehouse, Environment Canterbury	(Pages 52 -66)	Ian Whitehouse
	5.30pm	Meeting concludes		

