ORARI-TEMUKA-OPIHI-PAREORA WATER ZONE MANAGEMENT COMMITTEE

on

Monday 1 May 2017

1pm

Council Chamber
Timaru District Council
2 King George Place
Timaru

ORARI-OPIHI-PAREORA WATER ZONE MANAGEMENT COMMITTEE

Notice is hereby given that an Orari-Temuka-Opihi-Pareora Water Zone Management Committee meeting will be held on Monday 1 May 2017 at 1pm, in the Council Chamber, Timaru District Council, 2 King George Place, Timaru.

Committee Members:

John Talbot (Chairman), David Anderson, Kylee Galbraith, John Henry, Mandy Home, Ivon Hurst, Richard Lyon, Hamish McFarlane, Anne Munro, James Pearse, Lan Pham, Ad Sintenie and Mark Webb

ORARI-TEMUKA-OPIHI-PAREORA WATER ZONE MANAGEMENT COMMITTEE

1 MAY 2017

1		**Apologies**
2		**Register of Interest**
3		**Community Forum**
4	**1**	**Confirmation of Minutes**
5		**Facilitator Update**
6	**6**	**Correspondence** • **Forest and Bird** • **Fish and Game NZ**
7	**10**	**Zone Delivery Update**
8	**13**	**Community Engagement Update: Dates for Healthy Catchments Project Public Workshops**
9	**14**	**Phormidium: Summary of Drivers of Blooms Relevant to Zone Committee Deliberations on a Solutions Package**
10	**verbal**	**Rock Art Protection Issues and Options**
11	**18**	**Land use activities in the Upper Orari River High Naturalness Zone**
12	**verbal**	**Saltwater Creek Update**
13	**verbal**	**Waitarakao Update**
14		**Close**

ORARI-TEMUKA-OPIHI-PAREORA WATER ZONE MANAGEMENT COMMITTEE

FOR THE MEETING OF 1 MAY 2017

Report for Agenda Item No 4

Prepared by Joanne Brownie
Secretary

Confirmation of Minutes – Committee Meeting 3 April 2016

Minutes of the April Committee meeting.

Recommendation

That the minutes of the Committee meeting held on 3 April 2016, be confirmed as a true and correct record.

ORARI-TEMUKA-OPIHI-PAREORA ZONE WATER MANAGEMENT COMMITTEE

MINUTES OF AN ORARI-TEMUKA-OPIHI-PAREORA ZONE WATER MANAGEMENT COMMITTEE MEETING HELD IN THE COUNCIL CHAMBER, MACKENZIE DISTRICT COUNCIL, MAIN STREET, FAIRLIE, ON MONDAY 3 APRIL 2017 AT 1.30PM

PRESENT John Talbot (Chairperson), Clr David Anderson, Kylee Galbraith, Mandy Home, Ivon Hurst, Clr Anne Munro, James Pearse, Ad Sintenie and Mark Webb

APOLOGIES Hamish McFarlane, Clr Lan Pham and Clr Richard Lyon

IN ATTENDANCE Clr Tom Lambie, Clr Peter Scott (until 3.20pm), Suzanne Eddington (Waihao Marae), Nic Newman (Facilitator), Dan Clark (Senior Hydrology Scientist and Technical Lead), Raymond Ford (Principal Planner), Alexia Foster-Bohm (ECan), Craig Davison (ECan), Peter Constantine (Principal Planning Officer) (Lyn Carmichael (Senior Planner and Community Lead), Graeme Clarke (Ecology Scientist), Shirley Hayward (Senior Water Quality Scientist), Kate Doran (ECan), Tania Harris (ECan), Julia Crossman (Opuha Water Ltd), John Benn (Department of Conservation), Rhys Taylor (Community Engagement Coordinator), Jan Finlayson (until 2pm) Helen Tatham (media).

1 KARAKIA

The meeting began with a karakia from Suzanne Eddington.

2 REGISTER OF INTERESTS

There were no additional interests advised.

3 CONFIRMATION OF MINUTES – COMMITTEE MEETING 6 MARCH 2017

Proposed Kylee Galbraith
Seconded Clr Anne Munro

"That the minutes of the Committee meeting held on 6 March 2017 be confirmed as a true and correct record."

MOTION CARRIED

4 COMMUNITY FORUM

Jan Finlayson addressed the meeting on the ability of tussocks to increase the water yield and regulate flow in a catchment, and also regulate flow, noting a number of studies have been done on this issue.

Bruce Allan and John Benn indicated they also wished to speak on this topic and would defer their comments until the Tussock Cover and Water Yield report in the agenda is considered.

5 FACILITATOR UPDATE

The Facilitator gave a brief verbal update.

6 REGIONAL COMMITTEE UPDATE

The Chairman advised that there has not been a full Regional Committee meeting since the last OTOP meeting. While there have been some subcommittee meetings he was unavailable to attend. A more detailed report will be provided at the next meeting.

7 NCHECK

Peter Constantine presented the report by Tami Woods on NCheck, an alternative method (to Overseer) of determining nitrogen loss below the root zone. It was emphasised that NCheck has been approved for the Selwyn Waihora catchment only although OTOP could consider requesting that NCheck be approved for use in the OTOP zone if the Committee felt it appropriate. However once Plan Change 5 becomes operative, and the portal becomes live, a nutrient loss calculator will be available within the portal. While NCheck is not a substitute for Overseer, it would give a land user an understanding of where they may sit. It was pointed out that NCheck predetermines that the property is operating under Good Management Practice.

8 MANAGEMENT OF PLANTATION FORESTS IN FLOW SENSITIVE CATCHMENTS IN THE OTOP ZONE

Raymond Ford and Dan Clark spoke to the report providing a brief overview of the management of plantation forests in flow sensitive catchments in the OTOP zone including the effects of plantation forests on water yield and the policies and rules in the LWRP that regulate new forestry in flow sensitive catchments.

The report recommended that the existing controls in the Land and Water Regional Plan are adequate but the Committee expressed some concern with the current provisions and requested more information in order that the Committee can gain a greater understanding of the issue before forming a view as to the controls needed. For example, the Committee would like to know what links the areas on the map? What is the rationale? What are the District Plan provisions? Further detail is sought on what the District Plan provisions are for Waimate, Mackenzie and Timaru District Councils, noting that there should be alignment through the zone. These issues will be investigated and reported back to the Committee.

The Committee supported work being undertaken to assess whether the Orari Catchment is a flow sensitive catchment.

Proposed Ivon Hurst
Seconded Mandy Home

a "That further work be undertaken in the Orari Catchment to establish whether it is a flow sensitive catchment.
b That if the Orari is determined to be a flow sensitive catchment, the Land and Water Regional Plan be amended to include the Orari Catchment.
c That further information be sought on current regulations and District Plan provisions in the Mackenzie, Waimate and Timaru District Plans in regard to forestry plantations and how these rules are expected to produce the results.
d That the list of issues raised in the workshop (including the basis for classifying a catchment as flow sensitive, current plan provisions, and other matters) be investigated and reported back to the Committee."

MOTION CARRIED

9 TUSSOCK COVER AND WATER YIELD IN THE UPPER OTOP CATCHMENTS

The Committee considered a report by Dan Clark on tussock cover and water yield in the Upper OTOP Catchments. Tussocks intercept more water and provide higher water yield, and lower evapotranspiration than pasture. ECan has investigated what risks there are in the OTOP catchments in relation to land use change associated with converting from tussocks to pasture.

Bruce Allan and John Benn expressed their concerns about the current rules around the protection of tussock.

While the report recommended that the current level of protection for tussock cover in the District Plans is adequate, the Committee was not sufficiently convinced that this is the case, and asked for further information to increase Committee members' understanding of the issue, based on the factors raised in the workshop. The Committee agreed that it is important to have alignment between the sub-regional plan and the local authority District Plans.

Proposed Mark Webb
Seconded David Anderson

"That the Committee requests further information as follows –

- Links between change in tussock cover and catchment yield
- Factors driving loss of tussock cover
- District Plan/Regional Plan provisions
- Other tools available for District and Regional Plans
- Other related matters."

MOTION CARRIED

10 COMAR PRESENTATION

Committee member Mandy Home gave a presentation on the programme for assessing cultural requirements of whanau in the area, highlighting sites of importance, the significance of our rivers to the community, and requesting minimum flows for each river.

The Committee asked how the study will fit with the Healthy Catchments Project. Dan Clark explained that ECan is working on what current minimum flows look like and how they compare with the cultural recommendations from the runanga, as well as flows for the Orari and Pareora, and ecological minimum flows. This will be worked into the Healthy Catchments Project and a report will be presented to the Committee.

11 FEEDBACK FROM COMMUNITY ENGAGEMENT

The Committee considered the report on the community workshops held in March. Alexia FosterBohm further updated the Committee on feedback from the workshops. In response to a query as to the timeframe for the Healthy Catchments Project, the meeting was advised that potentially the September deadline may now be extended to the end of the year. The timeline will be reviewed and a revised timeline will be reported to the Committee.

12 SALTWATER CREEK

Rhys Taylor advised that as a result of the OTOP decision at the March meeting, a working group is being established to investigate the Saltwater Creek issues, with the first meeting being held this month. Feedback and recommendations will be reported to the Committee.

13 OTOP 2016 ANNUAL REPORT

The Annual Report for the Orari-Temuka-Opihi-Pareora Water Zone Management Committee was tabled. The report will be presented to the local authorities by the OTOP Chairman.

Proposed Mark Webb
Seconded Clr Anne Munro

"That the 2016 Annual Report for the Orari-Temuka-Opihi-Pareora Water Zone Management Committee be adopted."

MOTION CARRIED

The meeting closed at 4.30pm with a karakia.

_____
Chairperson

ROYAL FOREST AND BIRD PROTECTION SOCIETY
of NEW ZEALAND INC.

SC Branch
46 Selwyn St
Maori Hill
Timaru 7910

26.03.17

The Chairperson
OTOP Zone Committee
C/- John Talbot
23 Grieg St
Pleasant Point 7903

Dear John

Re Healthy Catchments
Regarding the Orai-Temuka Orari Pareora Zone Committee's consideration of developing strategies for *Healthy Catchments* within the Zone's territory - there are at least two main issues of concern for the Branch which we would like to bring to your attention for priority consideration.

1, is the development of the local foothill country by the removal of the existing native vegetation cover, tussock grasslands in particular, and replacing the environmental beneficial vegetation with non-native species of mainly exotic grasses.

The existing indigenous vegetation plays an important role in controlling water run off so harvesting water for from rainfall, low clouds and mists. Thus providing a more consistent flow of water supplies to downstream waters bodies - streams, rivers, lakes and wetlands. Scientific research, by Dr Alan Mark, of Otago University, supports this contention that retaining indigenous vegetation cover on foothill country contributes markedly towards increased water yields. And also towards maintaining healthy catchments which is the objective of the present Zone committee consideration.

Examples of such hill country developments has occurred recently, where there has been some considerable conversion of indigenous vegetation to exotic pastures, on the higher slopes along the south side of lower Rangitata River Gorge. Also of concern is the need to apply a high input of fertilizers to produce grass growth - some of which will probably eventually run off the site down into streams and nearby rivers. And recently there was a newspaper report of a hill country development in the upper Fairlie Basin. Where a large area of tussock grasslands is intended to be converted to exotic pastures. Which could also have adverse impacts for both water run off and water quality.

We question if such hill country developments are compliant with the rules and policies of ECan's own water and soil regional plans. And we feel that such hill country developments may also be contrary to what the *Healthy Catchments* exercise

seeks to achieve by your Zone Committee..

And the first objective of the Canterbury Water Management Strategy, *Immediate Steps* aims, is for the protection of biodiversity values. Hill country indigenous vegetation also contributes to biodiversity in other ways as well. Such as providing habitats for many indigenous native species including lizards, butterflies, birdlife and a whole range of invertebrates. Indigenous vegetation, on hill country also contributes to other values as well, such as forming part of the overall often distinctive landscapes for which we are well known for here in South Canterbury.

So, we ask that there be much greater controls on the conversion of the hill country indigenous vegetation to retain their water controlling abilities. Along with the many other environmental values that such special vegetation provides including maintaining or enhancing water quality. Retaining such Hill country indigenous vegetation must be part of the *Healthy Catchments* strategy and we ask for that to be done.

2. Riverbeds, in the past have provided important habitats for many indigenous species including a variety of native wildlife. Such as the black billed gull which used to nest in their hundreds, if not thousands, on the beds of the lower Opihi River near Arowhenua. And the Orari River bed also provided for important nesting areas when and where the weeds did not prevent this. Especially for the endangered black fronted tern and other such species. Once there were large areas of open areas of riverbed stones for their nesting habitats. More recently, the beds of many of our local rivers have become covered in tall weeds, such as broom and lupins, making these areas entirely unsuitable for black billed gulls, terns, dotterels and other native species to nest there. The decline in habitats for local native wildlife is a serious matter as some of our native birdlife is declining to such an extent that they are now considered to be a threatened species. Also reduced river and flood flows appeared to have contributed to the present degraded state of local riverbeds which are now largely infested with woody weeds. And have now become unsuitable for nesting and breeding sites for native birdlife.

So, ask that the Zone committee, as part of its *Healthy Catchments* strategy maintain areas of the local riverbeds, free of undesirable weeds, so that some open riverbed habitats are available for river bed nesting birds, including the black billed gulls and black fronted terns. Provision of such suitable nesting habitats, on the beds of river, is important for biodiversity and we trust this matter will be given a high level of consideration and action by the Zone committee.

Yours sincerely

Fraser Ross
Field Officer
SC Branch - Royal Forest and Bird Protection Soc. of NZ Inc.

3 April 2017

Orari Temuka Opihi Pareora Zone Committee
Attn: John Talbot, Chair

Dear John and the OTOP Zone Committee

Fish & Game is supportive of the Zone Committee's responsibilities to work with the community to develop actions and procedures to meet the targets set out in the Canterbury Water Management Strategy. Fish & Game takes great interest in water quality and quantity in our region as this greatly impacts on our ability to manage the sports fish and game resource in the interest of hunters and anglers.

Recently, Fish & Game has seen a rising number of consent applications related to changes in irrigation infrastructure, farming types and the construction of on-farm water storage dams. More efficient irrigation is being employed; however, there has not been any direction concerning the return of that saved water, or a proportion of the saved water, to the environment. Conversely, the savings in water is being applied to greater land areas with the environment getting nothing. Storage dams are also becoming more common; however, on many rivers there is not a separate allocation band for water to be taken to storage at higher flows. We see this as being an important part of a flow regime.

Fish & Game has been consulted with on a few consents related to the Opuha Catchment. Fish & Game has found the consents associated with the Opihi River Regional Plan and the planning framework associated with it to be confusing and difficult to understand. For example, water can be affiliated or non-affiliated and is associated with different blocks in relation to flow and months of the year. It is our understanding that some of the consent holders also find their consents difficult to manage and comply with given the complexity of the Plan and the changing nature of consents and irrigation infrastructure over time.

In order to meet targets under the CWMS, Fish & Game anticipates that the OTOP Zone Committee will be addressing river flow regimes within its region. Can you please confirm that this is the case? Also, given the delay in the presentations of the last two modelling scenarios, can you please advise when the Committee will address flow regimes?

Statutory managers of freshwater sports fish, game birds and their habitats

Central South Island Region
32 Richard Pearse Drive, PO Box 150, Temuka 7948, New Zealand. Telephone (03) 615 8400 Facsimile (03) 615 8401
www.fishandgame.org.nz

Fish & Game is happy to provide any further information on this topic when the time is appropriate.

Regards

Angela Christensen

Resource Officer

ORARI-TEMUKA-OPIHI-PAREORA WATER ZONE MANAGEMENT COMMITTEE

FOR THE MEETING OF 1 MAY 2017

Report for Agenda Item No 7

Prepared by Michael Hide
Zone Manager

Zone Delivery Update

Purpose
To update the Committee on the work of the Zone team in the first quarter of 2017.

Action Required
Receive the update.

Update – Core Workstreams

1. **Communications:** We have had a number of media stories on initiatives in the catchment including the inanga spawning habitat work at Waitarakao, the work on drinking water supply zones and coverage of the catchment group field days.

   Campaigns are also underway in relation to the need for landuse consents and a winter feed GMP campaign. Further details of these campaigns are below.

   A communications advisor has recently been appointed to the Timaru Office and it is hoped that this will support the development of a more thorough communications plan in the near future.

2. **Compliance Monitoring**

   - **Dairy Effluent:** Monitoring has progressed well this season as we have changed the approach to focus on higher risk properties. The monitoring is largely complete with the exception of a number of our higher risk famrs that will receive a second visit in the coming weeks.

     Compliance rates have generally been good, however there have been 5 infringement fines issued for 3 separate incidents.

   - **Water use:** The majority of the water use data is now provided to ECan on a daily basis. This is alerting us to situations of over use or taking on restriction earlier and allowing intervention with consent holders. There have been a small number of incidents identified this season and the data is becoming more reliable. Due to the nature of this irrigation season, not of the issues identified have been significant.

   - **Targeted whole farm assessments**: Following on from the committees request to focus on key areas in the catchment we have undertaken a project to look at farms in areas near the Mataitai, Temuka River and it's tributaries and around drinking water supply zones.

These visits were undertaken with a Resource Management Officer and a Land Management Advisor and involved both a compliance aspect and a Good Management Practice component. The feedback from these visits has been positive, although one of the visits did result in enforcement action being taken.

- **Odour:** While not water related the team has been involved in a number of rural and industrial odour issues in recent months.

3. **Immediate Steps:** The funding allocation for the current year is now largely allocated. There is ongoing work monitoring the implementation of existing projects and assessing projects for the next financial year. This will allow the committee to make a decision on a range of projects at the start of the year.

   There is also a weed control project on the Waihi River that ECan is looking to fund in the current financial year. While this piece of work would be unlikely to qualify for IMS funding, it will provide a good starting point for a number of surrounding landowners to undertake works that may qualify for IMS funding.

4. **GMP / FEP Extension**
   - Irrigation field day held in February with Landcare Trust with good attendance.
   - Wintering GMP campaign under development for South Canterbury area.
   - A number of Beef and Lamb FEP workshops have been held across the region, supported by ECan.
   - 1:1 full farm audits completed for 13 farms.
   - Workshop held in Geraldine for farmers and residents in Drinking Water Supply Zones.
   - Farming to limits campaign to be rolled out in the coming months. (Focusing land use consent requirements).

Update – Other Workstreams

1. **Kakahu Catchment:** Investigations are continuing into methods to address sediment and phosphorus loss in the catchment. The initial focus is on undertaking a pilot farm audit to assist in identification of issues and optimum sites for intervention and on the obtaining a global consent to authorise the installation of sediement traps. The catchment group have also been involved in these discussions.

2. **Ashwick Flat:** Preliminary work underway to identify farmers and area at risk but staff currently focused on other priorities.

3. **Community Drinking Water Protection Zones:**
   - Direct mail contact made to all residents that are located in CPZs.
   - Workshop held in Geraldine to discuss issues that landowners need to be aware of when they are in a CPZ.
   - 1:1 full farm audits targeted to dairy farms in CPZs.
   - Still some farms remaining to be visited.

4. **Biodiversity Corridor:** The Waihi project mentioned above may provide a suitable site for this to occur, but this has not been progressed to date.

5. **Washdyke Lagoon / Waitarakao:** The working group is continuing to make progress on the following issues:
    - Improving understanding of the lagoon hydraulics and the implications of coastal erosion and sea level rise on the Seadown Drain.
    - Understanding the water quality issues that exist in the lagoon.
    - Working with industry to reduce stormwater risks.
    - Potential development of catchment mitigations. (i.e. sediment traps and wetland).

6. **Ohapi Creek:** Rhys is currently undertaking research work in the catchment to identify how previous work programmes have changed farmer behaviours and perceptions. This work will be used to inform future approaches.

7. **Urban waterway enhancement:** Some investigations have been undertaken to look at an enhancement project for Taitarakihi Creek in Timaru. This work is currently on hold due to other work priorities.

8. **Catchment Groups:** Catchment groups continue to operate and discussions are underway to confirm the future direction once Landcare Trust complete their project in July. There will be an increased expectation that the groups are self supporting; one group has decided they will not continue and there may be some that combine.

9. **New Zone Manager:** Chris Eccleston will join Environment Canterbury on 1 May 2017 and will take over the Zone Manager Role for the Upper and Lower Waitaki Zones.

ORARI-TEMUKA-OPIHI-PAREORA ZONE WATER MANAGEMENT COMMITTEE

FOR THE MEETING OF 1 MAY 2017

Report for Agenda Item No 8

Prepared by Alexia Foster-Bohm

Community Engagement Update: Dates for Healthy Catchments Project Public Workshops

---

Purpose of Report
To set out the dates for the Healthy Catchments Project Scenario 2 and 3 public workshops.

Action Required
For the Zone Committee to attend, help lead discussions, and hear community feedback at the public workshops

Background
Dates have now been set for the Scenario 2 (in-zone gains) and 3 (new water) public workshops. The dates, times and venues are as follows:

Tuesday	23 May	Waihi Lodge Care Centre, 16 Shaw Street, Geraldine
Wednesday	24 May	Fairlie Golf Club, 34 Talbot Road, Fairlie
Monday	29 May	The Grosvenor, 26 Cains Tce, Timaru.

All workshops 7-9pm

Details regarding the workshops will be advertised over the coming weeks.

A reminder of the structure of Scenarios 2 and 3 will be presented at the meeting.

ORARI-TEMUKA-OPIHI-PAREORA ZONE WATER MANAGEMENT COMMITTEE

FOR THE MEETING OF 1 MAY 2017

Report for Agenda Item No 9

Prepared by Shirley Hayward
Senior Water Quality Scientist

Phormidium: Summary of Drivers of Blooms Relevant to Zone Committee Deliberations on a Solutions Package

---

Action: Zone Committee considers options to address Phormidium blooms, for inclusion in a draft solution package for community feedback.

Summary of issue: Phormidium blooms are a significant issue in Canterbury rivers, particularly in catchments such as the Opihi and Pareora. The development of Phormidium blooms and associated risk of cyanotoxins affects several outcomes sought by the OTOP zone committee. These include outcomes for recreational, cultural and human health values.

The aim of this paper is to ensure the zone committee are able to make informed decision about the current state of knowledge of drivers and management options of Phormidium blooms, in the context of developing a draft solutions package for the OTOP zone.

Options for guiding principles to use when considering flow regimes and the management of nutrients:

a. Manage flows to maximise control on Phormidium blooms where possible (e.g., flushing flows from the Opuha Dam (for Opuha/Opihi Rivers), consider risks of high flow takes for storage in other catchments)
b. Target activities that increase the risk of fine sediment inputs
c. Constrain increases in nitrogen in low N environments, where other conditions are favourable for Phormidium blooms
d. Status Quo. No change to current situation but encourage further, locally relevant, research.

Background:
The increased occurrence of potentially toxic Phormidium blooms over the past decade has had a profound impact on the community's recreational use of rivers in the OTOP zone. In the summer of 2016/17, of the 11 popular swimming sites that are monitored weekly for *E. coli*, only 1 site was graded unsuitable for swimming based on *E. coli* risks. However, five of those sites required warning notifications because of Phormidium blooms, along with another five sites monitored for Phormidium only. The Phormidium blooms not only create issues for recreational water users, but also cause concern for mahinga kai gathering and drinking water supplies.

During February/March 2017, an additional survey of upstream reaches in the Opihi catchment was undertaken to determine the spatial extent of Phormidium blooms. This survey found extensive blooms (>50%) along the Opihi River above the Opuha confluence to the Opihi Gorge Road, and moderate blooms (>20%) as far up as

Kimbell (Seddons Road). Consequently, a generalised warning for the entire length of the Opihi River was notified by Community and Public Health.

Current state of knowledge of drivers of Phormidium blooms and implications for the OTOP zone:

- Need to consider two different phases of Phormidium growth; accrual (colonisation) phase; and mat phase (once mats are established)
- During the colonisation phase, it appears that nutrients, particularly nitrogen may play a role in promoting colonisation.
- In particular, nitrogen may play a role in promoting colonisation of Phormidium colonies in low nutrient environments (up to circa 0.1 mg/L Dissolved inorganic nitrogen (DIN)) -
    - Therefore, in parts of the OTOP zone where current DIN concentrations are low (<0.1 mg/L DIN, there is risk that Phormidium blooms may develop or increase if DIN concentrations increase – the main reaches in the OTOP zone that fall into this category are the tributaries as they emerge from the hill-fed gorges (eg Orari, Waihi, Hae Hae Te Moana, and North and South Opuha Rivers, Opihi above Fairlie, upper Te Ana a Wai).
    - In parts of the catchment which are currently saturated in DIN (with respect to promotion of Phormidium blooms), increases in DIN are unlikely to increase Phormidium blooms (eg lower Opihi, Pareora R, lower Orari).
    - There is insufficient information to determine a lower DIN threshold which limits *Phormidium* establishment.
- Phormidium does not appear to form blooms in high phosphorus environments (>0.01mg/L DRP), but there is insufficient information to determine a lower threshold for phosphorus that limits Phormidium blooms.
- Once Phormidium mats are established, nutrient concentrations in overlying waters do not appear to influence biomass, duration of bloom or toxin production. This is likely because of a combination of nitrogen fixing bacteria and trapping of fine sediments containing extractable phosphorus within the mats mean that the mats develop their own internal supply of nutrients.
- Studies have indicated that fine sediment inputs to a stream can result in increased Phormidium abundance, particularly if the sediment is enriched in extractable phosphorus.
- Stable flows are an important driver of the establishment and duration of Phormidium blooms. Once mats are established, the main means of removal is through high flow events, although as the mats mature they can slough off in low flow conditions.
- Flushing flow trials by Opuha Water Limited have shown to be effective at removing Phormidium blooms, although rapid re-establishment of Phormidium can also occur. There is also the need to consider impacts of high flow takes to storage in other catchments, although the impact of this is difficult to assess quantitatively.
- The role that temperature plays is uncertain.
- The role that other nutrients play has not been established (iron, manganese, carbon).

General References

Wood S, Atalah J, Wagenhoff A, Doehring K, Hawes E 2016. Investigating environmental drivers of Phormidium blooms. Prepared for Ministry for the Environment. Cawthron Report No.2956. Draft

Wood SA, Hawes I, McBride G, Truman P, Dietrich D 2015. Advice to inform the development of a benthic cyanobacteria attribute. Prepared for Ministry for the Environment. Cawthron Report No. 2752.

McAllister T, Wood SA, Hawes 2016. The rise of toxic benthic *Phormidium* proliferations: a review of their taxonomy, distribution, toxin content and factors regulating prevalence and increased severity. Harmful Algae. 55:282–294

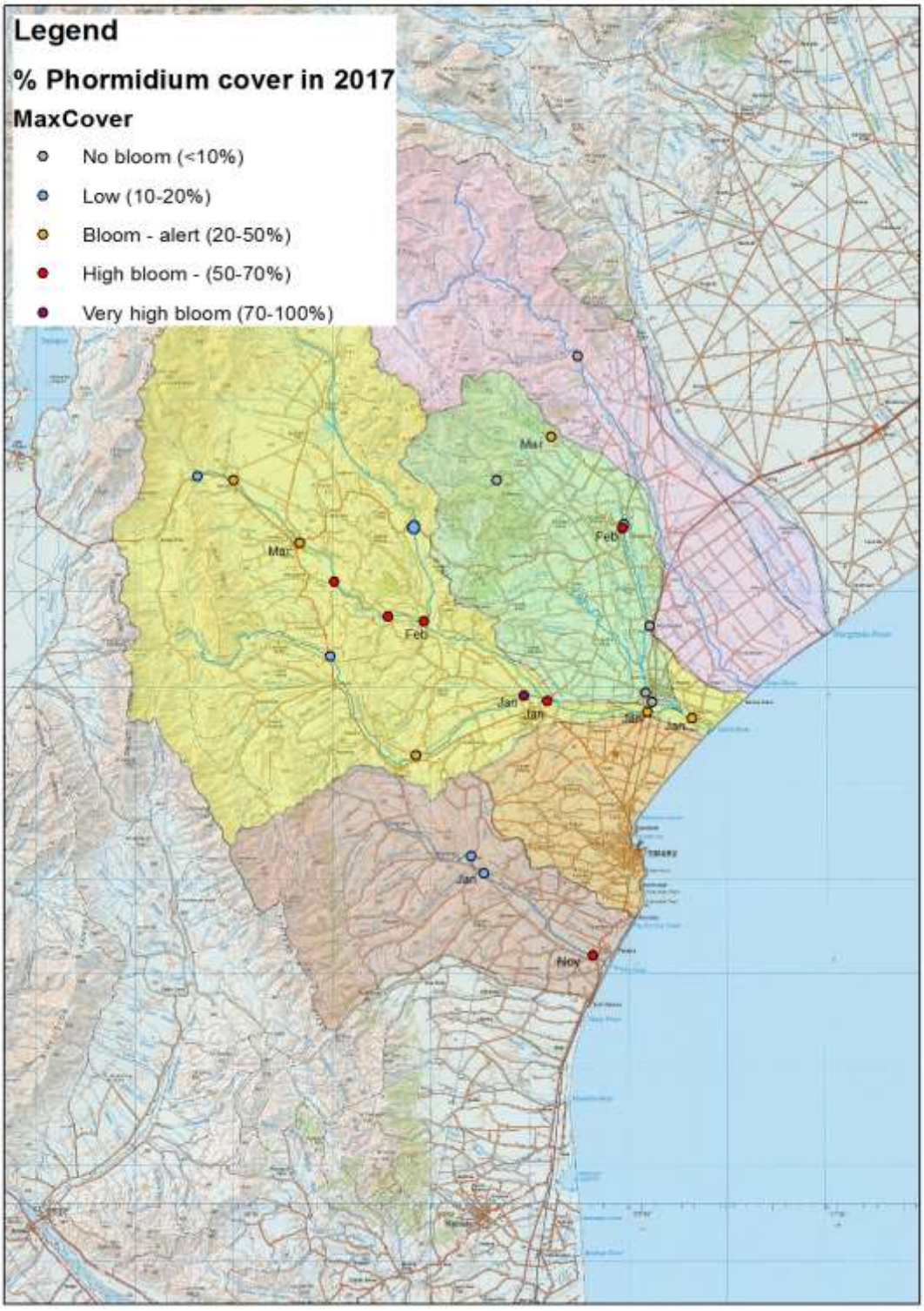

Figure 1 Extent of Phormidium cover during the 2016/17 summer. Sites which required warning notices are labelled with the month in which the first warning was notified.

ORARI-TEMUKA-OPIHI-PAREORA ZONE WATER MANAGEMENT COMMITTEE

FOR THE MEETING OF 1 MAY 2017

Report for Agenda Item No 11

Prepared by: Raymond Ford
Principal Planner

Land Use Activities in the Upper Orari River High Naturalness Zone

---

Action:

That the Zone Committee select its preferred option(s) to address the management of land use activities in the Orari River High Naturalness Zone for inclusion in a draft solution package for community feedback.

Summary
The upper reaches of the Orari River, above the mouth of the Orari Gorge, are recognised in the Land Water Regional Plan (LWRP) as a high naturalness area, and much of the area is also identified as a regionally outstanding landscape. The Zone Committee has expressed concern land use activities could potentially adversely affect this area.

Land use activities in the upper catchment are managed by the LWRP and the Timaru and Mackenzie District Plans. Because of the cross boundary issues, the area requires integrated management by Environment Canterbury and the district councils.

Options:

a) Rely on the existing regional and district plan provisions and monitor any changes to land use in the catchment;
b) Recommend the Mackenzie and Timaru district councils, as part of their respective plan reviews, consider ways of managing adverse effects of land uses on the high natural values of the Upper Orari River catchment.
c) Recommend that Environment Canterbury monitor changes in land cover in the upper Orari River catchment, including any incursions of wilding pines;
d) Recommend Land Information New Zealand engage with the Zone Committee and consider high naturalness in any future tenure review process.

Purpose

The upper reaches[1] of the Orari River Fresh Water Management Unit are identified in the LWRP as a high naturalness waterbody because of the high natural values of the landscape, the very high scenic and recreational values and water clarity[2].

The Zone Committee has expressed concern that land use activities, and the abstraction of water and discharges, could potentially jeopardise the existing high values of this area. The Committee has asked for information on the current planning

[1] From the mouth of the Orari Gorge to the headwaters.
[2] Section 2 & Section 14.8 LWRP

framework and advice on whether additional measures are required to safeguard these values.

Background

The upper Orari River catchment is still largely undeveloped. Key features of the area are:

Land use is predominantly extensive sheep & beef or sheep farming. A significant proportion of the catchment is held as leases under the Crown Pastoral Land Act 1998 (CPLA). One property (Blue Mountain) has completed the tenure review process. Part of the Four Peaks Range and smaller land parcels in the Hewson and Phantom River catchments are managed by the Department of Conservation.

1. The river and its tributaries have high water quality with low concentrations of nutrients, and reasonably diverse native fish populations, including a number of 'at risk' species, such as alpine and Canterbury galaxids (Hayward et al. 2016).
2. The river flows are largely natural, there are small abstractions in the upper catchment.
3. The area lies within the rohe of Arowhenua rūnanga. The focus of the rūnanga iwi management plan is on supporting the life-supporting capacity of all natural waterways, and protecting the sources of waterways by native vegetation[3]. In particular, natural flow regimes and fish passage are maintained, there is no burning or clearance of native vegetation and grazing of the higher slopes and peaks.
4. The Orari River is an important for a range of recreational activities, such as fishing, canoeing, swimming.

The upper catchment lies within the Mackenzie and Timaru districts. The district boundary is not aligned to catchment boundaries. It follows the Hewson River, then along the crest of the Tara Haoa Range to Blandswood and down the Orari Gorge to the confluence with Andrews Stream.

The Natural Resources Regional Plan recognised the high natural values of the upper catchment, and included the area in a schedule of high naturalness waterbodies[4]. The plan sought to protect the river's high natural values by prohibiting damming on the main stem between the confluence with the Hewson River and the mouth of the gorge, and to ensure activities have no significant effects on the flow regime and instream values. The Upper Orari River catchment was subsequently included in the OTOP section of the LWRP as a high naturalness water body.

Managing land use activities in the Upper Orari River catchment

Much of the hill and high country that comprises the upper Orari River catchment and the Orari Gorge are also recognised as a regionally significant outstanding landscape and natural features[5]..

Land use activities in the Orari River High Naturalness Area are subject to a variety of controls in the regional and district plans (Figure 1):

1. The LWRP broadly controls all discharges to water, the abstraction of water, and activities in riverbeds. The plan seeks to maintain high naturalness waterbodies in a healthy state[6]. The abstraction of water is limited to the supply of human or stock drinking water and the operation of existing infrastructure. There is

[3] The Kati Huirapa Iwi Management Plan 1992
[4] Schedule WQN5, Chapter 5 Natural Resources Regional Plan 2011
[5] Appendix 4, Canterbury Regional Policy Statement
[6] Objective 3.14, LWRP

currently one surface water take consent on the Hewson River. Damming of waterways is prohibited. The burning of vegetation on land above 600m is controlled, and the planting of registered pest species in waterways is prohibited. Livestock access to water is controlled; intensively farmed livestock are excluded from rivers, and farmed cattle, deer and pigs are prohibited from access to the river 1 km upstream from the Orari Gorge bathing site.

2. The upper catchment is classified as an Orange Nutrient Allocation Zone, where water quality outcomes are at risk of not being met. Under the current rules, farms with a nitrogen loss of 20kg/ha/yr are a permitted activity. These nutrient rules will be superseded by the Plan Change 5 rules, which seek to replace the current numerical nitrogen loss thresholds with descriptive thresholds relating to irrigation and winter grazing., These rules are also unfavourable of further intensification, and utilise the following tools – Good Management Practices, The Farm Portal, Farm Environment Plans, and Farm audits. High risk farming activities would require resource consent.

3. The area is zoned "Rural" in both the Timaru and Mackenzie District Plans. These zones are designed for farming, and generally allow for land use change including over sowing and topdressing, and tracking. There are some controls on forestry.

4. The Mackenzie District Plan has controls on the clearance of tall tussock and indigenous shrub land. Timaru District has controls on the clearance of "significant" indigenous vegetation.

5. In the Timaru District Plan, the area also has an "Amenity Landscape Area" notation. This is a "second tier" landscape classification, and does not have the same restrictions on land uses as an "Outstanding Landscape Area". The Plan is currently under review, and the review will include the extent of outstanding landscapes in the District, and the associated rules. This review will use the regional landscape study as a starting point.
    - The Mackenzie District Plan does not currently have any specific landscape values identified for the upper Orari catchment. However, the Mackenzie District Plan is also currently under review, and the landscape values of the area are being re-evaluated, again using the regional landscape study as a starting point.
    - The CPLA gives pastoral lease holders "exclusive right of pasturage over the land", but not the right to the soil"[7]. Burning of vegetation[8] or activities that disturb the soil[9], such as cropping, cultivation, ploughing, topdressing, tracking, planting of trees, and oversowing, are not allowed without the written consent of the Commissioner of Crown Lands.

The Ministries for Primary Industry and Environment are currently developing national regulations (National Environmental Standard (NES) for Plantation Forestry) to manage the adverse effects of forestry activities, e.g. spread of wildings, sedimentation, impacts on cultural sites, etc. The NES is expected to be gazetted in mid-2017 and take effect late 2017 or early 2018. It is likely that the NES will limit the controls on forestry that can be applied at the district level to rules relating to areas of outstanding landscape and significant indigenous vegetation

[7] Section 4, CPLA 1998.
[8] Section 15, CPLA 1998
[9] Section 16, CPLA 1998

The potential effects of plantation forestry on water yield from the upper catchment are currently being assessed, and the results of this work will be reported to the Zone Committee at later date.

The upper Orari River catchment is potentially susceptible to wilding pine infestation. The Canterbury Wilding Conifer Programme is currently focused on managing priority areas of infestation across the region. Wilding pines will be included in the proposed Regional Pest Management Plan which is expected to be notified in June. Although the Upper Orari catchment is not identified as an infested area, it should be included in any programme to monitor early incursions of wilding pines.

Many land use activities, e.g. damming, use of water for irrigation that might pose risks to the high natural values of the Upper Orari River catchment are controlled in the current planning framework. Further land use intensification in the catchment could occur as a result of oversowing, topdressing and herbicide applications. With the Mackenzie and Timaru district plans currently undergoing their reviews, there is opportunity for the Zone Committee to recommend to both Councils that they consider the opportunities to protect the high natural values of this area, and for Environment Canterbury to monitor changes in land cover.

References

Hayward, S, Clarke, G., Dynes, K., Barnden, A. Arthur, J., Barbour, S. 2016 Orari, Temuka, Opihi, Pareora Zone: state and trends in water quality and aquatic ecology. Environment Canterbury report (draft) no. R16/63. November 2016.

Figure 1: Summary of the planning provisions