

# **CHRISTCHURCH WEST MELTON WATER MANAGEMENT ZONE COMMITTEE**

## **AGENDA**

**THURSDAY 28 JUNE 2012**

**AT 6PM**

**COMMITTEE ROOM 1, CIVIC OFFICES, 53 HEREFORD STREET**

**Committee:** Ian Fox, Community Representative (Chairperson)  
Councillor Sally Buck, Christchurch City Council  
Deidre Francis, Community Representative (Deputy Chairperson)  
Jon Harding, Community Representative  
Councillor Debra Hasson, Selwyn District Council  
Arapata Reuben, Tūāhuriri Rūnanga  
Yvette Couch-Lewis, Rāpaki Rūnanga  
Hugh Thorpe, Community Representative  
Robert Wynn-Williams, Community Representative  
Ann Winstanley, Community Representative  
Commissioner Rex Williams, Environment Canterbury

**Principal Adviser**  
Peter Kingsbury  
Tel: 027 599 4615  
**Christchurch City Council**

**Zone Facilitator**  
Matthew Ross  
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10. **WORK PROGRAMME TO PRODUCE THE ZONE IMPLEMENTATION PROGRAMME (ZIP)**

**1. APOLOGIES**

**2. CONFIRMATION OF MINUTES – 31 MAY 2012**

The minutes of the Committee meeting held on 31 May 2012 are attached.

The Committee is asked to approve these minutes as a true and accurate record of the meeting.

**3. DEPUTATIONS BY APPOINTMENT**

**4. IDENTIFICATION OF URGENT ITEMS**

**5. IDENTIFICATION OF ANY GENERAL PUBLIC CONTRIBUTIONS**

**CHRISTCHURCH WEST MELTON WATER MANAGEMENT ZONE COMMITTEE  
WEDNESDAY 31 MAY 2012**

**A meeting of the Christchurch West Melton Water Management Zone Committee was held in Committee Room 1, Civic Offices, 53 Hereford Street on Thursday 31 May 2012 at 5.45pm**

**PRESENT:** Ian Fox, Community Representative (Chairperson)  
Deidre Francis, Community Representative  
Councillor Debra Hasson, Selwyn District Council  
Arapata Reuben, Tūāhuriri Rūnanga  
Hugh Thorpe, Community Representative  
Robert Wynn-Williams, Community Representative

**APOLOGIES:** Apologies for absences were received and accepted from Councillor Sally Buck, Commissioner Rex Williams, Jon Harding and Ann Winstanley.  
  
An apology for lateness was received and accepted from Arapata Reuben.

At 5pm, the meeting lapsed by reason of failure of a quorum. Present were Ian Fox (Chairperson), Hugh Thorpe, and Robert Wynn-Williams. At the discretion of the Chairperson, under Standing Order 3.5.2, the meeting was adjourned until 5.45pm to dispose of the business remaining when a quorum would be present.

**1. CONFIRMATION OF MINUTES – 26 APRIL 2012**

It was **decided** that the minutes be approved as a true and accurate record of the meeting, subject to the following amendments:

Present/Apologies:

- To reflect that Deidre Francis was not present at the 26 April meeting and was an apology only.

Clause 7:

- The Committee received a presentation from Tammy **Woods**, Principal Planning Adviser on the Draft Land and Water Regional Plan.
- It was requested that staff provide the Committee with a timeline for Environment Canterbury consultation, and to include an explanation of what the different terms used within the consultation timeline mean, **and** how the Committee can have input into this.

The following points were raised under this item of business:

- The Committee had requested a written update on flood risk but this had not been received. Matthew Ross (ECan) is to supply this information.
- The Christchurch City Council is aiming to provide to ECan in June a stormwater plan which will include the Styx River.
- A question was raised regarding the Highfield area and the City Plan and the difference between esplanade strips and reserves. Christchurch City Council staff were requested to respond to this.
- A question was raised for ECan about the definition between drains and rivers. Matthew Ross (ECan) responded that ECan planners still have this on their list of issues to address and will respond when they are in a position to.
- Clarification regarding the ground water drainage map presented at the last meeting regarding the Halswell/Hornby boundary was requested. It was confirmed this would not change the boundary of this Committee.

**2. DEPUTATIONS BY APPOINTMENT**

Nil.

28. 06.2012

31 MAY 2012

**3. IDENTIFICATION OF URGENT ITEMS**

The Committee was advised that Committee member Herena Stone, Rāpaki Rūnanga representative, had resigned from the Committee.

**4. IDENTIFICATION OF ANY GENERAL PUBLIC CONTRIBUTIONS**

Nil.

**5. APPOINTMENT OF PERMANENT CHAIRPERSON AND DEPUTY CHAIRPERSON**

The Committee considered a report seeking a permanent appointment to positions of the Chairperson and Deputy Chairperson, following the Committee's temporary appointments in February 2012.

Nominations were called for the position of Chairperson.

Ian Fox was nominated by Hugh Thorpe, seconded by Robert Wynn-Williams.

On a show of hands, Ian Fox was declared **elected** as Chairperson.

Nominations were called for the position of Deputy Chairperson.

Deidre Francis was nominated by Ian Fox, seconded by Robert Wynn-Williams.

On a show of hands, Deidre Francis was declared **elected** as Deputy Chairperson.

**7. REGIONAL COMMITTEE UPDATE**

Hugh Thorpe moved, seconded by Deidre Francis, that the report be accepted.

Matthew Ross (ECan) clarified that paragraph 5 in the report refers to a staff process and not a formal feedback process.

The Committee requested clarification on the overlap of the Christchurch West Melton Water Management Zone Committee (CWMZC) and the Regional Committee. Matthew Ross (ECan) provided the following information:

- both committees have clear geographical boundaries which overlap
- the Regional Committee decided to look at issues of regional significance so as to not double up on details covered by zone committees
- the Regional Committee will seek advice from the CWMZC as to any items identified in the zone which may be of regional interest

The meeting concluded at 6.07pm.

**CONFIRMED THIS 28TH DAY OF JUNE 2011**

**IAN FOX  
CHAIRPERSON**

28. 06. 2012

**6. REGIONAL COMMITTEE UPDATE**

**6.10PM**

The Committee will receive a verbal update from the Chairperson on the Regional Committee.

28. 06. 2012

7. DRAFT PRIORITY OUTCOMES

6.15PM

The Committee will receive a paper on the draft priority outcomes (refer **attached**).

<b>AGENDA ITEM NO:</b>	<b>SUBJECT MATTER:</b> Draft Priority Outcomes
<b>REPORT:</b> Christchurch West Melton Zone Committee	<b>DATE OF MEETING:</b> 28 June 2012
<b>REPORT BY:</b> Matthew Ross, Facilitator	

### **PURPOSE**

This agenda item is for the Zone Committee to discuss and agree initial draft Priority Outcomes for the Zone.

### **BACKGROUND**

The Zone Committee (ZC) was established in November 2011 and is a joint committee of Christchurch City Council, Selwyn District Council, and Environment Canterbury. The Zone Committee is tasked with producing a Zone Implementation Programme (ZIP) that will give effect to the Canterbury Water Management Strategy (CWMS) in the Christchurch West Melton Zone.

The ZC has held 7 public meetings to date with presentations on, and discussion of, a range of cross-cutting and specific water management topics. In addition, the ZC has undertaken 3 field-trips to further investigate and consider water management issues in the zone.

The ZC is now starting the process of drafting the ZIP. The draft ZIP is anticipated to be available for public consultation in September/October 2012, with the final version presented to the councils in November/December 2012.

The first step in drafting the ZIP is for the ZC to identify Priority Outcomes for the Zone. The ZC held an informal workshop on 31 May to identify key topic areas and possible draft Priority Outcomes. Specific recommendations for individual actions will be developed in subsequent meetings.

The Zone Committee Facilitator has prepared a discussion paper for the ZC informed by the 31<sup>st</sup> May workshop, discussions at previous meetings and fieldtrips.

The discussion paper does not represent the agreed position of the ZC.

## DISCUSSION

### Developing Priority Outcomes and Recommendations

The Canterbury Water Management Strategy is written at a regional level. Not all of the target areas in the strategy will be equally relevant or urgent in each zone. The ZIP provides a local perspective on the strategy i.e. what needs to happen in the zone to implement the strategy in the local context.

An “Outcome” is something that you want to achieve in the future. E.g. Matthew Ross has more money.

A “Priority Outcome” is something that you want to achieve in the future that is urgent (needs to be achieved in the next 3 years) or extremely important in a longer time frame. A priority outcome is often cross cutting.

E.g. Priority Outcome: Matthew Ross has lots of money and is even more benevolent towards colleagues so that they are happier.

A “Recommendation” is an action that needs to be taken to achieve your desired future. Each recommendation will need to include:

- what actions needs to be taken
- who you want to do it
- when you want it to be completed.

E.g. Ian Fox will buy a lotto ticket for Matthew Ross tomorrow.

The action can relate to the way that a particular tool or mechanism is used. There can be more than one recommendation for each priority outcome. It is up to the person/organisation you are making the recommendation to whether they take your advice and undertake the action.

Recommendations form an integrated approach to water management targets. Different types of recommendations include

1. Direction for agency operations – e.g. Prioritise catchment X for weed clearing
2. Regulations/statutory tools - e.g. set a minimum low flow for stream X
3. Partnerships – direct agencies to establish or strengthen partnerships
4. Funding streams – advise on distribution of funding
5. Showing leadership by identifying priority catchments or communities
6. Identify key objectives - e.g. a particular stream will support fresh water mussels
7. Identify any gaps that need to be filled, and how they can be filled. (e.g. processes, or ecosystems)

Recommendations do not involve the Zone Committee in technical or operational work, or day to day project management.



## Structuring the ZIP – Principles, Issues, Outcomes

There are no right or wrong ways to structure the ZIP.

Some priority outcomes can be more readily grouped together. To help explain what we are trying to achieve, a group of priority outcomes can be labelled as a “Priority Issue.”

Similarly, some priority outcomes are so cross-cutting or overarching that they will be delivered by different combinations or numerous recommendations. This does not however mean that they are more important than, or hierarchical to other priority outcomes. To help explain what we are trying to achieve, these cross-cutting or overarching priority outcomes can be labelled as “Key Principles.”

One possible ZIP structure is as follows:

- Introductory content
  - Key Principle A
    - Priority Outcomes
  - Key Principle B
    - Priority Outcomes
  - Priority Issue X
    - Priority Outcome X1
      - Recommendations ...
    - Priority Outcome X2
      - Recommendations ...
  - Priority Issue Y
    - Priority Outcome Y1
      - Recommendations ...
    - Priority Outcome Y2
      - Recommendations ...

**Possible outline draft ZIP?**

- Bullet points are in no particular order of priority or importance
- Content has been drafted by the Facilitator for discussion purposes only based on Zone Committee discussions and workshops to date

Key Principles?

<u>Key Principles?</u>	<u>Priority Outcomes?</u>
Better integration and collaboration	<ul style="list-style-type: none"> <li>• Kaitiakitanga infuses all water management decisions in the zone</li> <li>• The way we manage and use water enhances cultural, social, economic, and environmental well-being in the zone</li> <li>• We have a joined up and collaborative approach to managing water issues in the zone:                             <ul style="list-style-type: none"> <li>○ From mountains (source) to the sea / “<i>Ki uta ki tai</i>”</li> <li>○ Across and between rural and urban areas</li> <li>○ Across and between Central Government, Regional Council, Territorial Authorities and with Tangata Whenua</li> <li>○ Involving local community groups in implementation</li> </ul> </li> </ul>
Earthquake Recovery helps to implement the CWMS	<ul style="list-style-type: none"> <li>• “Earthquake Recovery” helps to implement the Canterbury Water Management Strategy in the zone by taking an integrated approach to water management, so that                             <ul style="list-style-type: none"> <li>○ We tackle and address the water related impacts of earthquakes and;</li> <li>○ We take opportunities created by the earthquakes do things differently</li> </ul> </li> </ul>
Local people are involved in improving water management	<ul style="list-style-type: none"> <li>• Local people have ownership and pride in the way water is managed in the zone</li> </ul>

Possible Priority Issues and Priority Outcomes?

Priority Issue?	Priority Outcomes?
Managing flooding and the effects of flood management	<i>Section will be further informed by presentations at July meeting</i>
Enhancing recreational opportunities and facilities	<ul style="list-style-type: none"> <li>• Riparian strips are more people friendly</li> <li>• People have more opportunities to use watercraft</li> <li>• There is a large multiple-use park along the Avon in a corridor from the central business district to the estuary</li> <li>• There is an Olympic standard flat-water course</li> <li>• There is an Olympic standard white-water course</li> <li>• Water quality in the Avon-Heathcote Estuary/Ihutai is safe for contact recreation</li> <li>• Wāhi Taonga in the zone are recognised and valued by all</li> </ul>
Improving surface water quality and safeguarding surface water quantity	<ul style="list-style-type: none"> <li>• Environmental flows in rivers and streams are maintained and protected</li> <li>• Stormwater is treated at source and not discharged directly in to waterways from all new developments and subdivisions</li> <li>• Existing stormwater infrastructure is improved so that the direct discharged of stormwater in to waterways is minimised</li> <li>• New buildings are designed and constructed so that they do not have an adverse impact on waterways</li> <li>• Water quality in the Avon-Heathcote Estuary/Ihutai is improved so that it is safe for mahinga kai/food gathering</li> <li>• Water quality in the Styx and Ōtukaikino is improved so that it is safe for mahinga kai/food gathering</li> <li>• Water quality in the urban waterways is improved</li> <li>• Water quality in all natural wetlands is improved so that it is safe for mahinga kai/food gathering</li> <li>• Water quality and quantity in the Waimakariri is protected and maintained at current levels</li> <li>• Water quality in rural areas is maintained by good land use practices</li> </ul>

	<ul style="list-style-type: none"> <li>• Local communities are empowered to help improve water quality in their local waterways</li> <li>• Proactive pollution prevention campaigns in areas with poor water quality to help industry to minimise impact</li> </ul>
<p>Ensuring healthy ecosystems, and healthy native and valued introduced biodiversity</p>	<p><i>This section will be focus of further discussion in a separate agenda item.</i></p> <ul style="list-style-type: none"> <li>• The ecological health of lowland streams is improved (WQ, nutrient, sediment, in-stream features)</li> <li>• The relatively healthy ecosystems of the Styx and Ōtukaikino catchments are safeguarded and improved</li> <li>• Urban streams have healthy ecosystems</li> <li>• Canada Geese are eradicated from the Avon-Heathcote Estuary/Ihutai</li> <li>• Predators are actively controlled in “red zone” areas to protect bird life along the rivers, streams, and estuary</li> <li>• New buildings and subdivisions are set back from rivers, streams, and creeks</li> <li>• Rivers are teeming with fish that are safe to eat</li> <li>• Sites of significance to Tangata Whenua are restored to pre-European condition</li> <li>• A Dryland Native Park is established</li> <li>• Each catchment has a coherent and continuous riparian corridor with new plantings fitting in to a plan</li> </ul>
<p>Safeguarding groundwater quality and quantity</p>	<ul style="list-style-type: none"> <li>• The quality and quantity of our groundwater resources are safeguarded and enhanced where necessary for multiple uses</li> <li>• Aquifer recharge from the Waimakariri is maintained</li> <li>• Groundwater resources in the aquifers are actively managed and allocated to safeguard:             <ul style="list-style-type: none"> <li>○ Environmental flows at spring heads</li> <li>○ Supply to the Christchurch City reticulated system</li> </ul> </li> <li>• Aquifers that supply drinking water continue to provide an un-treated potable water source</li> </ul>

	<ul style="list-style-type: none"> <li>• Land use over un-confined aquifers is managed to protect groundwater quality</li> <li>• Industry continues to have access to high quality non-treated water</li> </ul>
Making efficient use of water and managing demand	<ul style="list-style-type: none"> <li>• Irrigation demand in the zone is optimised (including agricultural uses, parks, sports fields, golf courses)</li> <li>• Efficient domestic use of water is encouraged and incentivised</li> </ul>

**Questions for the Zone Committee**

The Zone Committee will discuss and agree draft Priority Outcomes, draft Priority Issues, and draft Key Principles in a workshop.

Key questions to consider in preparing for the meeting are as follows:

- Are there Priority Outcomes that are missing?
- Are there Priority Outcomes that you are particularly uncomfortable with? How could they be improved?
- Are there Priority Outcomes that you particularly support? How could these be strengthened?
- Are there Priority Outcomes that conflict? How could this be resolved?
- Are you comfortable with the Priority Issues? How could they be improved?
- Are you comfortable with the Key Principles? How could they be strengthened?

8. **BIODIVERSITY PRIORITY OUTCOMES AND OUR APPROACH TO IMMEDIATE STEPS 7.45PM**

The Committee will receive a paper on biodiversity priority outcomes and the approach to immediate steps funding (refer **attachments 1 and 2**).

<b>AGENDA ITEM NO:</b>	<b>SUBJECT MATTER:</b> Biodiversity and Immediate Steps
<b>REPORT:</b> Christchurch West Melton Zone Committee	<b>DATE OF MEETING:</b> 28 June 2012
<b>REPORT BY:</b> Matthew Ross, Facilitator	

## PURPOSE

This agenda item is for the Zone Committee to discuss and agree:

- 1) Draft Priority Outcomes relating to biodiversity
- 2) Draft approach for Immediate Steps funding in the Zone

## BACKGROUND

### Priority outcomes for biodiversity

In February 2012 the Zone Committee agreed to set up a "Task and Finish Group" to develop the following for consideration by the full committee:

- 1) Draft Priority Outcomes relating to biodiversity
- 2) A proposed approach for Immediate Steps funding in the Zone

The Task and Finish Group met in April/May 2012 and requested additional information be provided to enable further discussion. The Task and Finish Group developed a table to structure discussions. This table has been completed by support staff and is included in the discussion.

### Immediate Steps

Having identified Priority Outcomes, the Zone Committee will develop specific recommendations on the approach for Immediate Steps funding in the Zone.

The Immediate Steps (IS) Programme was developed by Environment Canterbury in response to public opinion on the declining state of our regions biodiversity resource, and the desire to achieve some immediate biodiversity gains prior to the implementation of new planning measures that will adequately address this decline.

We will need to decide:

- 1) How we want to align/target this funding to deliver our biodiversity priority outcomes, for example;
  - a. Align funding to a different priority each year
  - b. Align funding to a single or multiple priorities for the whole funding period
- 2) In principle, how we want to deal with applications already received, for example;
  - a. Support all projects received to date where they have merit
  - b. Only support projects received to date that align with our priorities
  - c. Start over and reopen submissions

## Biodiversity of the Christchurch West Melton zone.

The table below is a compilation of the biodiversity values that have been identified in the Christchurch West Melton zone by staff from Environment Canterbury, Department of Conservation, and Christchurch City Council. The list is not exhaustive, and only threatened species made it into the table. Appendix one lists further species present in the zone but not threatened. It should also be noted that not all evidence is available in report format, for example we know the Avon Heathcote estuary was larger than it is now and that many areas of wetland have been drained, there is no one specific report covering this however. There are very likely biodiversity values that have been missed out too.

	<b>CWMS Targets (ecosystems &amp; biodiversity).</b>	<b>Is there evidence of decline? (Y/N)</b>	<b>What is causing decline? (Evidence for decline? Do we have baseline data?)</b>	<b>What needs to be protected?</b>	<b>What needs to be targeted to correct decline?</b>	<b>Ranking/rating of importance/urgency<sub>1</sub></b>	<b>Are there priority areas? If so where and why?</b>
<b>ECOSYSTEMS and HABITATS</b>	<b>Springs</b>	Y Reduction or loss of spring flows, leading to reduced baseflow in streams (e.g., Kaputone headwaters, Avon headwaters)	Land use change, urban development and stock access, ground water quality (Nitrogen in particular), in horticultural areas Urban development, groundwater levels, groundwater abstraction, earthquakes. ECan and CCC water level and flow records for rivers. Springs monitoring by Styx Living Laboratory.	Source (area of spring emergence) and existing vegetation Protect spring flow volume.	Whole D/S stream/river corridor. Restore in stream habitat. Protect groundwater catchment Need to understand the causes of decline, avoid/mitigate further declines, augment flows in streams.	Protect/restore source then aim to move down catchment (improve in stream physical habitat not just planting). Look at ways to improve GW quality-maybe outside of this zone High importance for Christchurch because rivers and streams are largely spring-fed.	Outakikino and Styx as in best condition OR Avon headwaters as in worst condition. Springs in areas of relatively high ecological value, such as Styx catchment and Cashmere Stream. Areas where land use change is occurring.



## Biodiversity of the Christchurch West Melton zone.

	<b>Wetlands</b>	Y	Land use change, draining of wetland areas, invasion of weeds, stock access Can use WONI data sets which indicate reduction in extent and location of wetlands Decline of low nutrient systems (fens) Evidence from population counts (plants). Pest plant invasion	Remnant wetlands All fen ecosystems (rare in Canterbury) Functioning wetlands.	Weed and pest control, Protection of remaining areas. Fen remnants (all in Christchurch City)	Few wetlands remaining, protection and restoration of remaining areas. Lack of recognition of these last fen remnants	Sanctuary wetland (SB of Waimakariri), Te Rauakaaka wetland/Brook and Lagoon (SB Waimakariri). Other wetland areas on SB Waimakariri Styx Mill Basin (invasion by grey willow), Groynes (ongoing decline), Travis wetland (changed water regime) .
	<b>Port Hills Streams</b>	Yes	E.coli, possibly use invertebrate data for wider decline	Erosion, land use, stormwater flows.	Erosion prone land in Port Hills stream catchments	Permanently flowing streams, Cashmere stream.	Tributaries of Cashmere Stream (because Cashmere Stream has relatively high ecological values to protect from

## Biodiversity of the Christchurch West Melton zone.

							decline)
	<b>Urban Streams</b>	Yes	Combination of fine sediment accumulation, stormwater discharges (heavy metals, fine sediment), loss of habitat (instream and riparian), poor water quality (notable N). Taylor <i>et al</i> 2012, Taylor <i>et al</i> 2002, invertebrates monitoring could provide a baseline (McMurtrie & Greenwood, 2008; McMurtrie, 2009; James, 2010,2011)	Protect sites of known high biodiversity value.	Improve water quality, improve instream habitat, space for riparian planting, improve upstream-downstream connectivity		Protect known high values sites. Enhance reaches that provide connectivity to areas of existing high ecological values
	<b>Lowland Streams</b>	Yes	Land use change, loss of in stream habitat, poor water quality, stock access, lack of riparian vegetation, channel realignment.	Best of what is left.	Prioritisation of high quality sites and protection and restoration.	Restoration of lowland streams will ensure protection and restoration of species.	?
	<b>Inland dunes</b>	N (all					

## Biodiversity of the Christchurch West Melton zone.

		completely modified)					
	<b>Dryland vegetation</b>	Y very little remaining Y for McLeans Island savannah grasslands.	Land use change: vegetation clearance, cultivation, irrigation, grazing. Lack of habitat rejuvenation through stopbanking. Excessive grazing by stock and rabbits/hares. Competition from introduced plant species. Non-recognition of values. Many CCC reports on McLeans Island area	Remnant populations need protection and action to encourage regeneration of vegetation and rebalancing of ecosystem All remaining systems as now extremely rare	Remnant mature populations of dryland species Appropriate management regimes need to be found, especially in the absence of ecological drivers. Many native plant species are failing to regenerate naturally. Planting required to maintain and enhance populations. Native trees, shrubs, tussocks need protection from stock and other browsers. Managed grazing will be required to maintain some low-statured native plant communities.	Few dryland areas remaining  Last remnants of a once extensive vegetation on the plains. Threatened species including Olearia adenocarpa, Muehlenbeckia ephedroides. Locally rare plant species present include porcupine shrub, prostrate kowhai, native broom, mat daisies, speargrass, silver tussock, fescue tussock, kanuka.	Kowhai Sanctuary (SB Waimak/Thompsons RD), Other remnant populations in West Melton Area on farmland. CCC owned land near McLeans Is. Remnant areas on the south bank of Waimakariri R. Conservation areas on Ecan lease land and Lower Waimakariri Regional Park
	<b>Groundwater, aquifers</b>	N-ten year trends indicate no decline See Scott et al 2012					

## Biodiversity of the Christchurch West Melton zone.

	<b>River mouths &amp; lagoons</b>	Yes. Substantially reduced from past extent. Ongoing decline from sedimentation, pollution, effects of introduced species,	Land use change, urban development, , draining of wetland areas, invasion of weeds, stock access, predation by introduced mammals, human disturbance. Combination of fine sediment accumulation, stormwater discharges (heavy metals, fine sediment), loss of habitat (instream and riparian), poor water quality (notable N). Taylor <i>et al</i> 2012, Taylor <i>et al</i> 2002,	Native vegetation and aquatic/bird species and habitat. Water quality, habitat quality	Weed and pest control, Protection of remaining areas.	Nationally significant wetland habitat (O'Donnell, 2000).	Brooklands Lagoon
	<b>Estuary</b>	Yes. <b>Physically:</b> Substantially reduced from past extent. Ongoing decline	Land use change, urban development, , draining of wetland areas, invasion of weeds, stock	Native vegetation and aquatic/bird species and habitat Water quality, habitat	Weed and pest control, Protection of remaining areas.	Internationally significant wetland habitat (O'Donnell, 2000)	

**Biodiversity of the Christchurch West Melton zone.**

		<p>from sedimentation, pollution, effects of introduced species,</p>	<p>access, predation by introduced mammals, human disturbance. Combination of fine sediment accumulation, stormwater discharges (heavy metals, fine sediment), loss of habitat (instream and riparian), poor water quality (notable N). Taylor <i>et al</i> 2012, Taylor <i>et al</i> 2002,</p> <p>ECan has biological and water quality monitoring programmes underway for 2 years. Large changes (sewerage ocean outfall and earthquakes) and short data set make interpretation impossible at</p>	<p>quality.</p>			
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## Biodiversity of the Christchurch West Melton zone.

			present but provides useful baseline.				
	<b>Lower Waimakariri River and bed habitats (Torrent fish, braided river birds, native vegetation)</b>	Yes-see species specific notes	Weeds and pest species, human disturbance, gravel extraction, flow variability and quantity, water quality, river engineering	Natural character,	Pest and weed management, disturbance by in river engineering and disturbance		
<b>SPECIES</b>		<b>Is there evidence of decline? (Y/N)</b>	<b>What is causing decline? (Evidence for decline? Do we have baseline data?)</b>	<b>What needs to be protected?</b>	<b>What needs to be targeted to correct decline?</b>	<b>Ranking/rating of importance/urgency<sub>1</sub></b>	<b>Are there priority areas? If so where and why?</b>
	<b>Bluegill bully <i>Gobiomorphus hubbsi</i></b>	Y –nationally, but locally limited data. One population (no 2 Drain) suffered reduction in habitat area as a result of earthquakes.	<b>For No 2 drain pop.</b> Reduction in flow velocity and liquefaction sand reduced area of suitable habitat (James 2012)  <b>Generally:</b> Loss of suitable habitat (channel realignment, siltation, poor	Existing populations in	<b>For no 2 drain:</b> Repair of earthquake damage and reinstatement of the habitat.  <b>Generally:</b> Restoration of habitat for known populations and prevent habitat degradation.	<b>Declining ref:</b> Allibone et al. (2010)	No 2 Drain population

## Biodiversity of the Christchurch West Melton zone.

			water quality etc).				
	<b>Longfin eel</b> <i>Anguilla dieffenbachi</i>	Y	<b>Locally:</b> localised kills because of unauthorised discharges (e.g. Curletts Drain, Addington Stream) <b>Generally:</b> Lack of suitable habitat, poor water quality, reduced river flows out of this zone affect the wider populations.	All waterways.	Water quality, habitat quality, unauthorised discharges.	<b>Declining ref:</b> Allibone et al. (2010)	Industrial catchments, water quality, pollution prevention.
	<b>Lamprey</b> <i>Geotria australis</i>	Y- nationally Locally-unknown	Probably habitat loss due to poor water quality, sedimentation of spawning areas, and general urbanisation.	Uncertain, but protection of typical habitats would benefit	Ammocoete (sandy to muddy stream and river margins) and spawning (cobble, forested rivers and streams) habitat in streams and rivers in zone.	<b>Declining ref:</b> Allibone et al. (2010). Noted as being data poor.	?
	<b>Inanga</b> <i>Galaxias maculatus</i>	Y	Loss of habitat for spawning and adult. NZFFD has records			<b>Declining ref:</b> Allibone et al. (2010)	
	<b>Inanga spawning</b>	Y	Earthquake damage, invasive plants, fine	Known spawning areas.	Availability of suitable habitat and control of invasive	Inanga are recorded as Declining in DoC 2009 Conservation	Avon, Heathcote and Styx. See

## Biodiversity of the Christchurch West Melton zone.

			sediment. Taylor & Blair 2012.		plants.	status assessment (Allibone <i>et al</i> 2010)	recommendations in Taylor & Blair 2012.
	<b>redfin bully</b> <i>Gobiomorphus huttoni</i>	Y-nationally, Locally little information, but not very common in Canterbury. Only 1 record in NZFFD in Waimakariri River	Possibly habitat degradation due to poor water quality, sediment, flow.	Probably naturally uncommon in zone		<b>Declining</b> ref: Allibone et al. (2010)	Probably naturally uncommon in zone
	<b>Torrentfish</b> <i>Cheimarrichthys fosteri</i>	Y- nationally Locally- lack of data but probably	Main habitat in zone is Waimakariri; Habitat loss due to disturbance (gravel extraction and human disturbance)	Riffle habitat in lower Waimakariri river	Disturbance of riffles	<b>Declining</b> ref: Allibone et al. (2010)	
	<b>Canterbury mudfish</b> <i>Neochanna burrowsius</i>	Y-nationally Very few known populations in zone, and no population in land to radiate from. Likely naturally uncommon in	Destruction of habitats			<b>Nationally critical</b> ref: Allibone et al. (2010)	Likely naturally uncommon in zone



## Biodiversity of the Christchurch West Melton zone.

		zone					
	<b>Crayfish</b> <i>Paranephrops zealandicus</i>	Possible decline, but lack of information, and few locations	Habitat loss due to urbanisation, sedimentation and poor water quality.	Known sites	Potential reintroduction to suitable sites?		Halswell catchment, Cashmere Stream – see EOS Ecology <i>et al</i> 2005 for locations in South West Christchurch.
	<b>Fresh water mussels</b> <i>Hyridella menziesii</i>	Possible decline, but lack of information and few locations	Habitat loss, water quality issues?	Known sites	Potential reintroduction to suitable sites?		Cashmere Stream - see Burdon & McMurtrie 2006
	<b>Trout spawning</b>	Yes	Sand, silt and poor water quality (N toxicity)	Existing and potential spawning reaches	Fine sediment inputs (main source stormwater)	RMA requirements	Known spawning sites – Avon, Wairarapa, Waimairi, see Taylor <i>et al</i> 2012.
	<b>Olearia aolenocarpa</b>	Y	Lack of recruitment and regeneration	All remaining plants of this Nationally Critical Threatened Species	Research into how to get the populations to recover ecological and population functioning	Nationally Critical Threat Status	McLeans Island and nearby areas as this is all that exists.
<b>Birds</b>	<b>Birds – generally</b>	Some decline and some	Predators/human interference/river	Braided River bird species	Plant/animal pest control, suitable	Most braided river bird species	Waimakariri River.

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		increases	modification		gravel extraction processes, public awareness.	showing rapid decline.	
	<b>grey duck</b> <i>Anas superciliosa superciliosa</i>	Y	Habitat loss, hybridisation with introduced mallard	Remaining population (if any)		Nationally critical	Unlikely to be any priority areas for this species in this WMZ
	<b>white heron</b> <i>Egretta alba modesta</i>	Y	Habitat loss, predation	Existing population	Feeding and roosting areas	Nationally critical	
	<b>black stilt</b> <i>Himantopus novaezelandiae</i>	Y	Habitat loss, predation	Existing population	Feeding and roosting areas	Nationally critical	Brooklands Lagoon
	<b>Bittern</b> <i>Botaurus poiciloptilus</i>	Y	Habitat loss, predation, human disturbance	Existing population	Breeding, feeding and roosting areas	Nationally endangered	Styx River mouth, Brooklands Lagoon, Travis Swamp, Sanctuary Swamp
	<b>black-billed gull</b> <i>Larus bulleri</i>	Y	Habitat loss, predation, human disturbance	Existing population	Breeding and roosting areas	Nationally endangered	Lower Waimakariri River bed, river mouth, Brooklands Lagoon, Estuary, coast
	<b>black-fronted</b>	Y	Habitat loss,	Existing	Breeding, feeding	Nationally	Lower

## Biodiversity of the Christchurch West Melton zone.

	<b>tern</b> <i>Sterna albobriata</i>		predation, human disturbance	population	and roosting areas	endangered	Waimakariri River bed
	<b>Wrybill</b> <i>Anarhynchus frontalis</i>	Y	Habitat loss, predation, human disturbance	Existing population	Breeding, feeding and roosting areas	Nationally vulnerable	Lower Waimakariri River bed
	<b>banded dotterel</b> <i>Charadrius bicinctus bicinctus</i>	Y	Habitat loss, predation, human disturbance	Existing population	Breeding, feeding and roosting areas	Nationally vulnerable	Lower Waimakariri River bed, river mouth, Brooklands Lagoon, estuary, coast
	<b>reef heron</b> <i>Egretta sacra sacra</i>					Nationally vulnerable	
	<b>white flippered penguin</b> <i>Eudyptula minor albosignata</i>	Y	Habitat loss, human disturbance, predation, reduced food supply, fishing	Existing population	Roosting and breeding areas	Nationally vulnerable	Coast
	<b>New Zealand falcon</b> <i>Falco novaeseelandiae</i>					Nationally vulnerable	
	<b>Caspian tern</b> <i>Hydroprogne caspia</i>	Y	Habitat loss, human disturbance,	Existing population	Roosting, breeding and feeding areas	Nationally vulnerable	River mouth, Brooklands Lagoon, Estuary

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			predation.				
	<b>red-billed gull</b> <i>Larus novaehollandiae scopulinus</i>	Y	Habitat loss, human disturbance, predation.	Existing population	Roosting, breeding and feeding areas	Nationally vulnerable	River mouth, Brooklands Lagoon, Estuary
	<b>pieb shag</b> <i>Phalacrocorax varius varius</i>	Y	Habitat loss, human disturbance, predation, reduced food supply, fishing	Existing population	Roosting and breeding areas	Nationally vulnerable	Estuary, Travis Swamp, Lower Waimakariri River, river mouth, Brooklands Lagoon
	<b>New Zealand pipit</b> <i>Anthus novaeseelandiae novaeseelandiae</i>	Y	Predation, human disturbance	Existing population	Roosting, breeding and feeding areas	Declining	West Melton drylands, Brooklands Lagoon, river mouth
	<b>New Zealand pied oystercatcher</b> <i>Haematopus finschi</i>	Y	Habitat loss, human disturbance, predation	Existing population	Roosting, breeding and feeding areas	Declining	Estuary, freshwater wetlands, West Melton drylands, Lower Waimakariri River, mouth, Brooklands Lagoon
	<b>pied stilt</b> <i>Himantopus</i>	Y	Habitat loss, human	Existing population	Roosting, breeding and feeding areas	Declining	Estuary, coast, freshwater

## Biodiversity of the Christchurch West Melton zone.

	<i>himantopus leucocephalus</i>		disturbance, predation				wetlands, Brooklands Lagoon, Lower Waimakariri River, river mouth
	<b>white-fronted tern</b> <i>Sterna striata striata</i>	Y	Habitat loss, human disturbance, predation, fishing	Existing population	Roosting, breeding and feeding areas	Declining	Estuary , coast, Brooklands Lagoon, River mouth, lower river.

**Table compiled by Mary Beech (ECan) with contributions from** Zoe Dewson (CCC), Andrew Crossland (CCC), Sjaan Bowie (DoC), John Benn (DoC), Mimouk Hannan (ECan), Philip Grove (ECan)

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## Biodiversity of the Christchurch West Melton zone.

### Appendix 1

Fish species in the Avon Heathcote catchment (DOC unpublished). Threat rankings and species names from Allibone et al. (2010)

Common name	Species	Status
Canterbury mudfish	<i>Neochanna burrowsius</i>	Nationally critical
longfin eel	<i>Anguilla dieffenbachi</i>	Declining
inanga	<i>Galaxias maculatus</i>	Declining
lamprey	<i>Geotria australis</i>	Declining
redfin bully	<i>Gobiomorphus huttoni</i>	Declining
bluegilled bully	<i>Gobiomorphus hubbsi</i>	Declining
Stokell's smelt	<i>Stokellia anisodon</i>	Naturally uncommon
clingfish	<i>Trachelochismus pinnulatus</i>	Range restricted
pipefish	<i>Syngnathus blainvillianus</i>	Sparse
shortfin eel	<i>Anguilla australis</i>	Not threatened
yelloweyed mullet	<i>Aldrichetta forsteri</i>	Not threatened
upland bully	<i>Gobiomorphus breviceps</i>	Not threatened
common bully	<i>Gobiomorphus cotidianus</i>	Not threatened
giant bully	<i>Gobiomorphus gobioides</i>	Not threatened
estuarine triplefin	<i>Grahamina nigripenne</i>	Not threatened
common sole	<i>Peltorhamphus novaezeelandiae</i>	Not threatened
common smelt	<i>Retropinna retropinna</i>	Not threatened
black flounder	<i>Rhombosolea retiaria</i>	Not threatened
barracouta	<i>Thyrsites atun</i>	?
garfish	<i>Reporhamphus ihi</i>	?
globe fish	<i>Spheroides richiei</i>	?
kahawai	<i>Arripis trutta</i>	?
moki	<i>Latridopsis ciliaris</i>	?
New Zealand minnow	<i>Galaxias attenuatus</i>	?
olive rockfish	<i>Acanthoclinus fuscus</i>	?
pufferfish	<i>Uranostoma richiei</i>	?
red cod	<i>Physiculus bacchus</i>	?
red gurnard	<i>Trigla kumu</i>	?
rigg	<i>Mustelus antarcticus</i>	?
rockfish	<i>Acanthoclinus quadridactylus</i>	?
sandfish	<i>Leptoscopus angusticeps</i>	?
sand flounder	<i>Rhombosolea plebeia</i>	?
seahorse	<i>Hippocampus abdominalis</i>	?
spotted stargazer	<i>Geniagnus monopterygius</i>	?



**Biodiversity of the Christchurch West Melton zone.**

spotty	<i>Pseudolabrus celidotus</i>	?
thornfish	<i>Bovichtus variegatus</i>	?
yellow-belly flounder	<i>Rhombosolea leporina</i>	?
right-eye flounder	<i>Rhombosolea plebeia</i>	?
cockabully	<i>Triperygion nigripenne</i>	?
elephant fish	<i>Callorhynchus milii</i>	Marine fish
rudd	<i>Scardinius erythrophthalmus</i>	Introduced and naturalised
goldfish	<i>Carassius auratus</i>	Introduced and naturalised
brown trout	<i>Salmo trutta</i>	Introduced and naturalised
chinook salmon	<i>Oncorhynchus tshawytscha</i>	Introduced and naturalised
perch	<i>Perca fluviatilis</i>	Introduced and naturalised
goldfish	<i>Carassius auratus</i>	Introduced and naturalised

**Bird species in the Avon Heathcote catchment (DOC unpublished). Threat rankings and species names from Miskelly et al. (2008).**

<b>Common name</b>	<b>Species</b>	<b>Status</b>
grey duck	<i>Anas superciliosa superciliosa</i>	Nationally critical
New Zealand dotterel	<i>Charadrius obscurus</i>	Nationally critical
white heron	<i>Egretta alba modesta</i>	Nationally critical
black stilt	<i>Himantopus novaezelandiae</i>	Nationally critical
bittern	<i>Botaurus poiciloptilus</i>	Nationally endangered
black-billed gull	<i>Larus bulleri</i>	Nationally endangered
black-fronted tern	<i>Sterna albobriata</i>	Nationally endangered
wrybill	<i>Anarhynchus frontalis</i>	Nationally vulnerable
banded dotterel	<i>Charadrius bicinctus bicinctus</i>	Nationally vulnerable
reef heron	<i>Egretta sacra sacra</i>	Nationally vulnerable
white flippered penguin	<i>Eudyptula minor albosignata</i>	Nationally vulnerable
New Zealand falcon	<i>Falco novaeseelandiae</i>	Nationally vulnerable
Caspian tern	<i>Hydroprogne caspia</i>	Nationally vulnerable
red-billed gull	<i>Larus novaehollandiae scopulinus</i>	Nationally vulnerable
pieb shag	<i>Phalacrocorax varius varius</i>	Nationally vulnerable

## Biodiversity of the Christchurch West Melton zone.

New Zealand pipit	<i>Anthus novaeseelandiae novaeseelandiae</i>	Declining
New Zealand pied oystercatcher	<i>Haematopus finschi</i>	Declining
pied stilt	<i>Himantopus himantopus leucocephalus</i>	Declining
white-fronted tern	<i>Sterna striata striata</i>	Declining
variable oyster catcher	<i>Haematopus unicolor</i>	Recovering
common (northern) diving petrel	<i>Pelecanoides urinatrix urinatrix</i>	Relict
marsh crake	<i>Porzana pusilla affinis</i>	Relict
brown skua	<i>Catharacta antarctica lonnbergi</i>	Naturally uncommon
erect-crested penguin	<i>Eudyptes sclateri</i>	Naturally uncommon
black shag	<i>Phalacrocorax carbo novaehollandiae</i>	Naturally uncommon
little shag	<i>Phalacrocorax melanoleucos brevirostris</i>	Naturally uncommon
royal spoonbill	<i>Platalea regia</i>	Naturally uncommon
sanderling	<i>Calidris alba</i>	Vagrant
pectoral sandpiper	<i>Calidris melanotos</i>	Vagrant
oriental cuckoo	<i>Cuculus saturatus</i>	Vagrant
Australian hobby	<i>Falco longipennis</i>	Vagrant
gull-billed tern	<i>Gelochelidon nilotica macrotarsa</i>	Vagrant
Asiatic dowitcher	<i>Limnodromus semipalmatus</i>	Vagrant
Hudsonian godwit	<i>Limosa haemastica</i>	Vagrant
Asiatic black-tailed godwit	<i>Limosa limosa melanuroides</i>	Vagrant
American whimbrel	<i>Numenius phaeopus veriegatus</i>	Vagrant
glossy ibis	<i>Plegadis falcinellus</i>	Vagrant
hoary headed grebe	<i>Poliiocephalus poliocephalus</i>	Vagrant
Siberian tattler	<i>Tringa brevipes</i>	Vagrant
Alaskan (wandering) tattler	<i>Tringa incana</i>	Vagrant
barn owl	<i>Tyto alba delicatula</i>	Vagrant
turnstone	<i>Arenaria interpres</i>	Migrant
cattle egret	<i>Bubulcus ibis coromandus</i>	Migrant
sharp-tailed sandpiper	<i>Calidris acuminata</i>	Migrant
lesser knot	<i>Calidris canutus rogersi</i>	Migrant
red-necked stint	<i>Calidris ruficollis</i>	Migrant
white-winged black tern	<i>Chlidonias leucopterus</i>	Migrant
eastern bar-tailed godwit	<i>Limosa lapponica baueri</i>	Migrant

## Biodiversity of the Christchurch West Melton zone.

far eastern curlew	<i>Numenius madagascariensis</i>	Migrant
Asiatic whimbrel	<i>Numenius phaeopus</i>	Migrant
little tern	<i>Sternula albifrons sinensis</i>	Migrant
Arctic skua	<i>Stercorarius parasiticus</i>	Migrant
pomarine skua	<i>Stercorarius pomarinus</i>	Migrant
black-fronted dotterel	<i>Charadrius melanops</i>	Coloniser
Australian coot	<i>Fulica atra</i>	Coloniser
Australian little grebe	<i>Tachybaptus novaehollandiae</i>	Coloniser
grey teal	<i>Anas gracilis</i>	Not threatened
New Zealand shoveler	<i>Anas rhynchos</i>	Not threatened
white-faced heron	<i>Ardea novaehollandiae</i>	Not threatened
New Zealand scaup	<i>Aythya novaeseelandiae</i>	Not threatened
shining cuckoo	<i>Chrysococcyx lucidus lucidus</i>	Not threatened
swamp harrier	<i>Circus approximans</i>	Not threatened
black swan	<i>Cygnus atratus</i>	Not threatened
welcome swallow	<i>Hirundo tahitica neoxena</i>	Not threatened
Southern black-backed gull	<i>Larus dominicanus</i>	Not threatened
Australasian gannet	<i>Morus serrator</i>	Not threatened
pukeko	<i>Porphyrio melanotus</i>	Not threatened
spotted shag	<i>Stictocarbo punctatus punctatus</i>	Not threatened
paradise shelduck	<i>Tadorna variegata</i>	Not threatened
sacred kingfisher	<i>Todiramphus sanctus</i>	Not threatened
spur-winged plover	<i>Vanellus miles novaehollandiae</i>	Not threatened
mallard	<i>Anas platyrhynchos platyrhynchos</i>	Introduced
feral goose	<i>Anser anser</i>	Introduced
Canada goose	<i>Branta canadensis maxima</i>	Introduced
white (mute) swan	<i>Cygnus olor</i>	Introduced

### Aquatic invertebrate species identified in the Avon Heathcote catchment (DOC unpublished). Threat rankings not available.

Common name	Species
	<i>Abarenicola affinis</i>
	<i>Abarenicola assimilis</i>
tufted or bristle chiton	<i>Acanthochitona zelandica</i>
anemone	<i>Actinia tenebrosa</i>
	<i>Aglaophamus macroura</i>
green chiton	<i>Amaurochiton glaucus</i>
mud flat snail	<i>Amphibola crenata</i>
green chiton	<i>Amaurochiton glaucus</i>

**Biodiversity of the Christchurch West Melton zone.**

pidcock or rock borer	<i>Anchomasa similis</i>
	<i>Anisops assimilis</i>
mud flat anemone	<i>Anthopleura aureoradiata</i>
	<i>Antiporus strigosulus</i>
	<i>Aonides trifidus</i>
	<i>Armandia maculata</i>
	<i>Arrenurus</i> sp.
fragile limpet	<i>Atalacmea fragilis</i>
ribbed mussel	<i>Aulacomya ater maoriana</i>
cockle	<i>Austovenus stutchburyi</i>
	<i>Austrolestes colenonis</i>
	<i>Balanus decorus</i>
	<i>Benhamna obliquata</i>
even-handed shrimp	<i>Betaeopsis aequimanus</i>
	<i>Boccardia polybranchia</i>
lined whelk	<i>Buccinulum vittatum</i>
ghost shrimp	<i>Callianassa filholi</i>
	<i>Camaeesipho columna</i>
cancer crab	<i>Cancer novaezelandiae</i>
	<i>Capitella capitella</i>
ornate limpet	<i>Cellana ornata</i>
radiate limpet	<i>Cellana radians</i>
	<i>Chamaesipho columna</i>
cockle	<i>Chione stutchburyi</i>
snakeskin chiton	<i>Chiton pelliserpentis</i>
	<i>Chironomus zealandicus</i>
	<i>Chlorohydra viridissima</i>
spotted whelk	<i>Cominella maculosa</i>
butterfly chiton	<i>Cryptoconchus porosus</i>
	Chronomid larvae
mud flat whelk	<i>Cominella glandiformis</i>
speckled whelk	<i>Cominella lurida</i>
smooth shore crab	<i>Cyclograpsus lavauxi</i>
	<i>Cyclograpsus ovata</i>
	<i>Cypricerus sanguineus</i>
	<i>Cyprinotus incongruens</i>
	<i>Cura pingus</i>
	<i>Daphnia</i> sp.
	<i>Deleatidium</i> sp.
peanut worm	<i>Dendrostomum huttoni</i>
	<i>Diadumene neozelandica</i>
dark topshell limpet	<i>Diloma nigerrima</i>
mud flat top shell	<i>Diloma subrostrata</i>
coarse venus shell	<i>Dosina anus</i>
	<i>Dugesia</i> sp.
burrowing anemone	<i>Edwardsia leucomelos</i>

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common small barnacle	<i>Elminius modestus</i>
	<i>Ephydrella novaezealandiae</i>
	<i>Epopella plicata</i>
	<i>Eucyclops serrulatus</i>
	<i>Eulalia microphylla</i>
polychaete	<i>Eumenia</i> sp.
	<i>Exosphaeroma planulum</i>
	<i>Eylais</i> sp.
	<i>Ferrissia</i> sp.
	<i>Gammaropsis</i> sp.
	<i>Gastrosaccus australis</i>
polychaete	<i>Glycera americana</i>
	<i>Golfingia cantabriensis</i>
	<i>Guildingia obtecta</i>
	<i>Gyraulus corinna</i>
pillbox crab	<i>Halicarcinus whitei</i>
common paua	<i>Haliotis iris</i>
	<i>Haploscoloplos cylindrifer</i>
dark rock shell	<i>Haustrum haustorium</i>
	<i>Helice crassa</i>
hairy-handed crab	<i>Hemigrapsus crenulatus</i>
purple rock crab	<i>Hemigrapsus sexdentatus</i>
	<i>Hemiplax hirtipes</i>
	<i>Hemipodus simplex</i>
	<i>Herpetocypris pascheri</i>
	<i>Heteromastus filiformis</i>
spider crab	<i>Hombronina deoressa</i>
	<i>Hudsonema amabilis</i>
	<i>Hygraula nitens</i>
	<i>Hyraulus corina</i>
	<i>Hydra oligactis</i>
	<i>Hydrachna maramauensis</i>
	<i>Hydrobosis parumbripennis</i>
	<i>Hyridella menziesi</i>
variable chiton	<i>Ischnochiton maorianus</i>
anemone	<i>Isocradactis magna</i>
	<i>Isocladus armatus</i>
	<i>Junua pseudocorrugata</i>
	<i>Lepidasthenia accolus</i>
	<i>Lepidonotus polychromus</i>
	<i>Ligia novaezealandiae</i>
	<i>Limnodrilus</i> sp.?
	<i>Liodessus plicatus</i>
oyster borer or barnacle drill	<i>Lepsiella scobina</i>
brown periwinkle	<i>Littorina cincta</i>
banded periwinkle	<i>Littorina unifasciata</i>

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	<i>Lumbrineris coccinea</i>
	<i>Lumbrineris sphaerocephala</i>
	<i>Lumbriculus varuegatus</i>
large wedge shell	<i>Macomona liliana</i>
stalk-eyed mud crab	<i>Macrophthalmus hirtipes</i>
trough shells	<i>Maetra ovata</i>
large trough shell	<i>Maetra murchisoni</i>
	<i>Maetra tristis</i>
	<i>Maorichiton caelatus</i>
	<i>Manayunkia</i> sp.?
	<i>Marinula filholi</i>
dark top shell	<i>Melagraphia aethiops</i>
	<i>Melita awa</i>
	<i>Micrelenchus tenebrosus</i>
	<i>Microvelia macgregori</i>
	<i>Mischoderus</i> sp.
nesting mussel	<i>Modiolarca impacta</i>
	<i>Modiolus neozelanigus</i>
	<i>Munna neozelanica</i>
	<i>Mysidacea</i> sp.
common mussel	<i>Mytilus edulis aoteanus</i>
	<i>Mytilus edulis galloprovincialis</i>
	<i>Mytilus planulatus</i>
	<i>Myxas ampulla</i>
	<i>Neanthes cricognatha</i>
	<i>Nephtys macroura</i>
	<i>Neppia montana</i>
	<i>Nereis cricognatha</i>
	<i>Netoplana australis</i>
flatworm	<i>Neurochorema confusum</i>
polychaete	<i>Nicon aesturiensis</i>
banded periwinkle	<i>Nodilittorina antipodum</i>
brown periwinkle	<i>Nodilittorina cincta</i>
estuarine limpet	<i>Notoacmea helmsi</i>
black edged limped	<i>Notoacmea parviconoidea</i>
	<i>Notomegabalanus decorus</i>
	<i>Onchidella nigricans</i>
	<i>Orbinia papillosa</i>
	<i>Orchestia chiliensis</i>
	<i>Orchestia tenuis</i>
swimming crab	<i>Ovalipes bipustulatus</i>
common swimming crab	<i>Ovalipes catharus</i>
	<i>Oxyethira albiceps</i>
estuarine prawn	<i>Palaemon affinis</i>
pipi	<i>Paphies australis</i>
tuatua	<i>Paphies donacina</i>

## Biodiversity of the Christchurch West Melton zone.

	<i>Paracalliope fluviatilis</i>
	<i>Paracorophium excavatum</i>
	<i>Paralaeospira levinseni</i>
	<i>Paranais</i> sp.?
	<i>Paratya curvirostris</i>
	<i>Paroxyethira hendersoni</i>
encrusted limpet	<i>Patelloida corticata</i>
cushion star	<i>Patiriella regularis</i>
	<i>Pectinaria australis</i>
	<i>Perinereis nuntia</i>
	<i>Perinereis novaehollandiae</i>
green-lipped mussel	<i>Perna canaliculus</i>
half crab	<i>Petrolisthes elongatus</i>
	<i>Phaenocora</i> sp.
	<i>Phreatogammarus fragilis</i>
	<i>Physa acuta</i>
	<i>Physastra variabilis</i>
	<i>Pileolaria pocillator</i>
pea crab or mussel crab	<i>Pinnotheres novaezelandiae</i>
	<i>Piona uncata</i>
polychaete	<i>Pisione</i> sp.
	<i>Planorbis</i> sp.
	<i>Platynereis australis</i>
	<i>Polyplectropus puerilis</i>
serpulid worm	<i>Pomatceros cariniferus</i>
	<i>Potamopyrgus antipodarum</i>
	<i>Potamopyrgus estuarinus</i>
	<i>Prionospio pinnata</i>
	<i>Protolaespira lebruni</i>
	<i>Protothaca crassicosta</i>
	<i>Pseudosphaeroma campbellensis</i>
	<i>Psilochorema bidens</i>
sewerage fly	<i>Psychoda alternata</i>
	<i>Pycnocentria evecta</i>
	<i>Pycnocentroides aeris</i>
	<i>Pycnocentroides aureola</i>
sea tulip	<i>Pyura pachydermata</i>
	<i>Rhantus pulverosus</i>
crevice snail	<i>Risellopsis varia</i>
	<i>Riuditapes largillierti</i>
green-headed worm	<i>Scolecopidaes benhami</i>
	<i>Scoloplos cylindrifer</i>
shield shell or ducksbill limpet	<i>Scutus breviculus</i>
	<i>Sigara argata</i>
	<i>Simocepgalus</i> sp.
	<i>Siphonaria australis</i>

**Biodiversity of the Christchurch West Melton zone.**

	<i>Siphonaria zeolandica</i>
	<i>Sphaerium novaezealandiae</i>
	<i>Sphaeroma quoyanum</i>
spiral worm	<i>Spirorbis</i> sp.
	<i>Spirobranchus caeruleus</i>
triangle shell	<i>Spisula aequilatera</i>
snake-skin chiton	<i>Sypharochiton pelliserpentis</i>
wedge shell	<i>Tellina liliana</i>
	<i>Tenagomysis novae-zealandiae</i>
	<i>Tenagomysis chiltoni</i>
	<i>Terebellidae</i> sp.
	<i>Tetraclitella purpurascens</i>
	<i>Thelepus plagiostoma</i>
beach flea	<i>Transorchestia chiliensis</i>
	<i>Triplectides obsoleta</i>
	<i>Tubifex</i> sp.
	<i>Tubifex tubifex</i>
	<i>Triplectides obsolete</i>
cat's eye	<i>Turbo smaragdus</i>
mud shrimp	<i>Upogebia danai</i>
	<i>Venerupis largillierti</i>
	<i>Xanthocnemis zealandica</i>
little blue mussel	<i>Xenostrobus pulex</i>
small mud snail	<i>Zeacumantus subcarinatus</i>
	<i>Zelandotipula</i> sp.
mudflat top shell	<i>Zediloma corrosa</i>

**Fish species in Brooklands Lagoon. NZFFD (23.5.12). Threat rankings and species names from Allibone et al. (2010)**

Common name	Species	Status
longfin eel	<i>Anguilla dieffenbachi</i>	Declining
torrentfish	<i>Cheimarrichthys fosteri</i>	Declining
inanga	<i>Galaxias maculatus</i>	Declining
bluegilled bully	<i>Gobiomorphus hubbsi</i>	Declining
Stokell's smelt	<i>Stokellia anisodon</i>	Naturally uncommon
shortfin eel	<i>Anguilla australis</i>	Not threatened
common bully	<i>Gobiomorphus cotidianus</i>	Not threatened
giant bully	<i>Gobiomorphus gobioides</i>	Not threatened
common smelt	<i>Retropinna retropinna</i>	Not threatened
black flounder	<i>Rhombosolea retiaria</i>	Not threatened



**Biodiversity of the Christchurch West Melton zone.**

brown trout	<i>Salmo trutta</i>	Introduced and naturalised
chinook salmon	<i>Oncorhynchus tshawytscha</i>	Introduced and naturalised

**Birds - Brooklands lagoon.** Sources: *Notornis* (1943-2012);

<b>Common name</b>	<b>Scientific name</b>	<b>Threat rankings</b>
White heron	<i>Egretta alba modesta</i>	Nationally Critical
Black stilt	<i>Himantopus novaezelandiae</i>	Nationally Critical
Bittern	<i>Botaurus poiciloptilus</i>	Nationally Endangered
Black-fronted tern	<i>Chlidonias albostratus</i>	Nationally Endangered
Black-billed gull	<i>Larus bulleri</i>	Nationally Endangered
White-flipped blue penguin	<i>Eudyptula minor albosignata</i>	Nationally Vulnerable
Reef heron	<i>Egretta sacra sacra</i>	Nationally Vulnerable
Caspian tern	<i>Hydroprogne caspia</i>	Nationally Vulnerable
Wrybill	<i>Anarhynchus frontalis</i>	Nationally Vulnerable
Pied shag	<i>Phalacrocorax varius varius</i>	Nationally Vulnerable
Banded dotterel	<i>Charadrius bicinctus bicinctus</i>	Nationally Vulnerable
Red-billed gull	<i>Larus novaehollandiae scopulinus</i>	Nationally Vulnerable
Pied stilt	<i>Himantopus himantopus leucocephalus</i>	Declining
White-fronted tern	<i>Sterna striata striata</i>	Declining
Variable oystercatcher	<i>Haematopus unicolor</i>	Recovering
Marsh crake	<i>Porzana pusilla affinis</i>	Relict
Broad-billed prion	<i>Pachyptila vittata</i>	Relict
Long tailed cuckoo	<i>Eudynamys taitensis</i>	Naturally Uncommon
Little shag	<i>Phalacrocorax melanoleucos brevirostris</i>	Naturally Uncommon
Little black shag	<i>Phalacrocorax sulcirostris</i>	Naturally Uncommon
Royal spoonbill	<i>Platalea regia</i>	Naturally Uncommon
Gull-billed tern	<i>Gelochelidon nilotica macrotarsa</i>	Vagrant
Hudsonian godwit	<i>Limosa haemastica</i>	Vagrant

## Biodiversity of the Christchurch West Melton zone.

chestnut breasted shelduck	<i>Tadorna tadornoides</i>	Vagrant
Wandering tattler	<i>Tringa incana</i>	Vagrant
Terek sandpiper	<i>Tringa terek</i>	Vagrant
Ruff	<i>Philomachus pugnax</i>	Vagrant
Turnstone	<i>Arenaria interpres</i>	Migrant
Cattle egret	<i>Bubulcus ibis coromandus</i>	Migrant
Knot	<i>Calidris canutus rogersi</i>	Migrant
Eastern bar-tailed godwit	<i>Limosa lapponica baueri</i>	Migrant
Asiatic whimbrel	<i>Numenius phaeopus variegatus</i>	Migrant
Arctic skua	<i>Stercorarius parasiticus</i>	Migrant
Pomarine skua	<i>Stercorarius pomarinus</i>	Migrant
Grey teal	<i>Anas gracilis</i>	Not Threatened
New Zealand shoveler	<i>Anas rhynchotis variegata</i>	Not Threatened
Bellbird	<i>Anthornis melanura melanura</i>	Not Threatened
White-faced heron	<i>Ardea novaehollandiae</i>	Not Threatened
Shining cuckoo	<i>Chrysococcyx lucidus lucidus</i>	Not Threatened
Swamp harrier	<i>Circus approximans</i>	Not Threatened
Grey warbler	<i>Gerygone igata</i>	Not Threatened
Southern black-backed gull	<i>Larus dominicanus dominicanus</i>	Not Threatened
Australasian gannet	<i>Morus serrator</i>	Not Threatened
Pukeko	<i>Porphyrio melanotus</i>	Not Threatened
Spotted shag	<i>Stictocarbo punctatus punctatus</i>	Not Threatened
Sacred kingfisher	<i>Todiramphus sanctus vagans</i>	Not Threatened
Mallard	<i>Anas platyrhynchos</i>	Introduced and Naturalised
Canada goose	<i>Branta canadensis</i>	Introduced and Naturalised
Capre Barren Goose	<i>Cereopsis novaehollandiae</i>	Introduced and Naturalised
Mute swan	<i>Cygnus olor</i>	Introduced and Naturalised

### References:

Crossland AC (2008). Brooklands wetland complex: An overview of the site's importance to birdlife with habitat management recommendations. Christchurch City Council. Threat rankings from Miskelly et al. (2008).

**Notornis** (1943-2012). Journal of the Ornithological Society of New Zealand.

**Southern Bird** (1993-2012). Journal of the Ornithological Society of New Zealand.

## Biodiversity of the Christchurch West Melton zone.

### Crossland (2008) abstract.

The Brooklands Lagoon wetland complex (comprising the lagoon proper, Brooklands Spit, inland saltmarsh and dune environments on the lagoon's western margin, the lower Styx ponding area, Styx river mouth marshes, Kainga Road saltmeadow, Waimakariri Rivermouth and the Kaiapoi Oxidation Ponds) comprise one of the largest coastal wetland complexes in Canterbury. Data on the birdlife inhabiting the Brooklands Lagoon area has been collated for more than 130 years since the early ornithological work of Sir Walter L. Buller, Sir Julius Von Haast and others in the 1870s. Subsequent notable studies of the area's birdlife (published and unpublished) took place in 1937-38 (Sir Robert Falla); 1947-1952 (G. Guy); 1960's (D. Dawson, E.G. Turbott and others); 1970s to present (Ornithological Society of NZ members): 1985 (D. Goodale) and 1986-present (A. Crossland). Since the 1850s some 100 species of bird have been recorded using Brooklands Lagoon and its immediate environs. This avifauna comprises 43 resident species, 23 seasonal visitors, 26 vagrants and 8 species now locally extinct. 44 bird species occur year round on the lagoon and environs with 37 species breeding locally. Many of the other species are migrants, coming from other parts of New Zealand, or as far away as the arctic regions of Siberia and Alaska. 70 species (70% of the total) are classified as wetland/coastal birds and numbers of these peak at 6000+ in late summer/ autumn. The following 26 wetland/coastal bird species use the lagoon and environs in numbers of national, regional or local significance (defined as >5% of local or regional or >1% of national populations: based on lagoon bird monitoring data and best estimates for local/regional/national populations).

- New Zealand Shoveler Grey Teal N
- New Zealand Scaup N
- South Island Pied Oystercatcher N
- Bar-tailed Godwit R
- Pied Stilt R
- Paradise Shelduck R
- Pied Cormorant R
- White-faced Heron R
- Royal Spoonbill R
- Caspian Tern R
- White-fronted Tern R
- Black-fronted Tern R
- Black-billed Gull R
- New Zealand Kingfisher R
- Variable Oystercatcher L
- Banded Dotterel L
- Black Swan L
- Canada Goose L
- Mallard L
- Black Cormorant L
- Little Cormorant L
- Spotted Shag L
- Pukeko L
- Red-billed Gull L
- Black-backed Gull L

## **Biodiversity of the Christchurch West Melton zone.**

Many rare species are also recorded on the lagoon including sightings in the last few years of such species as Hudsonian Godwit, Asiatic Whimbrel, Ruff, Black Stilt, Little Tern, Arctic Skua, Chestnut-breasted Shelduck, Long-tailed Cuckoo, Cape Barren Goose and Australasian Crested Grebe. The Brooklands Lagoon complex is the second largest wetland area within the "urban" part of Christchurch City (ie; excluding Banks Peninsula) and in terms of bird abundance and species richness is the second most important local site for wetland/coastal birdlife (Innes et al. 1991). In both rankings, Brooklands is second only to the Avon-Heathcote Estuary/Bromley Oxidation Ponds and ahead of such other sites as Travis Wetland, Styx Mill Basin, Horseshoe Lake and Peacock Springs. The Brooklands Lagoon wetland complex is an important wintering site and migration stop for wetland/coastal birdlife that breed on the Waimakariri Riverbed as well as in other parts of Canterbury and the eastern South Island. Brooklands is also an important breeding ground in its own right. Notable bird nesting areas include the sandspit; the saltmarsh margins and the Kaiapoi Oxidation Ponds.

DRAFT

28. 06. 2012

9. EARLY ENGAGEMENT ON DRAFT PRIORITY OUTCOMES

8.30PM

The Committee will receive a paper on early engagement on draft priority outcomes (refer **attached**).

<b>AGENDA ITEM NO:</b>	<b>SUBJECT MATTER:</b> Early engagement on draft Priority Outcomes
<b>REPORT:</b> Christchurch West Melton Zone Committee	<b>DATE OF MEETING:</b> 28 June 2012
<b>REPORT BY:</b> Matthew Ross, Facilitator	

**PURPOSE**

This agenda item is for the Zone Committee to discuss and agree an approach for early engagement on draft Priority Outcomes for the Zone.

**BACKGROUND**

The Work Programme identifies “*engagement with community and stakeholders on priority outcomes seeking comment, buy-in, ideas for delivery pathways, including liaise with other CWMS Committees*” during July 2012.

The Facilitator has prepared a proposed engagement programme for the Zone Committee to consider. The purpose of early engagement on draft Priority Outcomes is to help inform the further development of the draft Zone Implementation Programme (ZIP) with input from interested parties.

**RECOMMENDATION**

The Zone Committee recommends the proposed engagement activities.

## DISCUSSION

### Proposed early engagement activities

#### Targeted engagement

- Regional Council, Christchurch City Council, Selwyn District Council
  - Formal paper to councils advising initial draft priority outcomes and seeking feedback
  - Available Zone Committee members in attendance to answer questions
- Rūnanga
  - Letter explaining initial draft priority outcomes and seeking feedback
  - Available Zone Committee members meet with Rūnanga if invited
- Community Boards
  - Feedback/engagement materials sent
- Key water management organisations and existing community groups e.g. Styx, Ihutai Trust, Okeover Stream Group, Canterbury District Health Board, Department of Conservation
  - CCC/SDC/ECan staff identify relevant groups
  - Feedback/engagement materials sent with invitation to meet with Zone Committee
  - 1 day/evening set aside for meetings with available Zone Committee members (in whole or part of day)
  - Facilitator in attendance for whole day
- Interested individuals
  - Email sent via CCC/SDC/ECan existing email lists for interested individuals
- “Next generation” of decision makers
  - 1 day workshop around a “youth” zone committee concept
  - Develops draft priority outcomes/compares and contrasts with Zone Committee’s version
  - Run by Environment Canterbury
  - Output shared with Zone Committee
- Other CWMS Committees
  - Share draft priorities with Regional Committee via Jon Harding as Regional Committee representative, and seek feedback from their July meeting
  - Ian Fox as Chair writes to Selwyn-Waihora Zone and Waimakariri Zones advising them of draft priorities and seeking feedback where relating to cross-boarder matters

#### General engagement

- Front page news item on CCC/SDC/ECan websites with link to electronic feedback/comment
- Christchurch Zone Committee Facebook page set up and actively managed by Environment Canterbury CWMS team
  - Runs for period of consultation/engagement
  - Focussed on draft priority outcomes
- Joint media releases by CCC/SDC/ECan

28. 06. 2012

**10. WORK PROGRAMME TO PRODUCE ZONE IMPLEMENTATION PROGRAMME (ZIP) 8.45PM**

The Committee will consider their ways of working and the work programme for producing the zone implementation programme (refer **attachments 1 and 2**).



<b>AGENDA ITEM NO:</b>	<b>SUBJECT MATTER:</b> Work Programme to ZIP
<b>REPORT:</b> Christchurch West Melton Zone Committee	<b>DATE OF MEETING:</b> 28 June 2012
<b>REPORT BY:</b> Matthew Ross, Facilitator	

**PURPOSE**

Agenda item is for the Zone Committee to discuss and agree ways of working and the work programme for producing the Zone Implementation Programme (ZIP).

**BACKGROUND**

The updated work programme as of 28 June 2012 is attached.

After the 28<sup>th</sup> June meeting, the Zone Committee only has 9 hrs of meeting time available before the draft ZIP is released for public consultation and engagement.

In order to produce a well informed and developed draft ZIP the committee members will need additional working time together. The Facilitator has included possible options in the discussion.

In addition, there are areas of content that the committee has yet to consider e.g. flooding and flood management.

**ATTACHMENTS**

- Work Programme as of 28 June 2012

## DISCUSSION

### “More time” - Ways of working options

#### Either

- Establish working groups by priority issue area (used successfully by other zones)
  - Working groups meet as necessary to develop recommendations
  - Additional content is provided to working groups as necessary to inform
  - 1 – 2 meetings per month
  - 2-3 committee members per working group
  - Working Group presents recommendations to full committee for consideration

#### Or

- Recommendations developed by full committee in meeting (being trialled by Banks Peninsula Zone Committee)
  - Requires much longer meetings or meeting more often
    - Other zones generally meet for between 4-6 hr during ZIP development

#### Or

- Recommendations developed by full committee in separate workshop
  - Requires at 1 to 2 half day workshops per priority issue

#### And

- 2 stage ZIP (Regional Committee is developing Regional Implementation Programme in 2 stages)
  - ZIP version 1.1 finalised in November 2012
    - Includes all priority outcomes
    - Focuses on recommendations for 12-24 months
  - ZIP version 1.2 finalised in June 2012
    - Updated with recommendations for years 2-5

**CHRISTCHURCH-WEST MELTON ZONE COMMITTEE**  
**DRAFT WORK PROGRAMME, AS OF 28 JUNE 2012**

<i>Date / Event</i>	<i>Content</i>
31 <sup>st</sup> May 2012  <i>Public meeting 7</i>	<i>Short public meeting Review interim Chair and Deputy Chair appointments/arrangements</i>
31 <sup>st</sup> May 2012 <i>Following public meeting</i>	<i>Priority Outcomes Workshop</i>
28 <sup>th</sup> June 2012  <b>Public meeting 8</b>	<b>Affirm and refine priority outcomes (as necessary)</b>  <b>Discuss and confirm Immediate Steps approach for the zone</b>  <b>Stakeholder exercise: Who, what, when?</b>  <b>Establish working groups by priority outcome topics - Identify key information requirements to develop ZIP content/recommendations</b>
July 2012	<i>Targeted engagement with community and stakeholders on priority outcomes seeking comment, buy-in, ideas for delivery pathways, including liaise with other CWMS Committees</i>  <i>Working groups meet to consider "pathways" to deliver priority outcomes and draft recommendations</i>
25 <sup>th</sup> July 2012  <b>Public meeting 9</b>	<i>Updates from Working Groups – outlining pathways and draft recommendations</i>  <i>Presentations on topics not covered prior to May 2012 and new topics identified from working groups</i>  <b>Flooding and flood management</b>
August 2012	<i>Working groups meet to further refine recommendations</i>
23 <sup>rd</sup> August 2012  <b>Public meeting 10</b>	<i>Consider "first-cut" draft ZIP</i>  <i>Presentations on topics not covered prior to May 2012 and new topics identified from working groups</i>
September 2012	<i>Working groups meet to further refine recommendations</i>
27 <sup>th</sup> September 2012  <b>Public meeting 11</b>	<i>Confirm draft ZIP for engagement and consultation process</i>  <i>Presentations on topics not covered prior to May 2012 and new topics identified from working groups</i>
October 2012	<i>ZIP engagement and consultation period inc: Community and stakeholder meetings Electronic/written submissions</i>
25 <sup>th</sup> October 2012  <b>Public meeting 12</b>	<i>Items that need to be addressed / considered further</i>
November 2012	<i>Ongoing ZIP engagement and consultation period Collate and consider responses Recommended changes to draft ZIP developed</i>

<b>28<sup>th</sup> November 2012</b> <b>Public meeting 12</b>	<i>Consider recommended updates to draft ZIP.</i> <i>Confirm ZIP version.</i>
<i>December 2012</i>	<i>Formally present ZIP to CCC, SDC, Environment Canterbury</i>
<i>Feb 2012</i> <i>Public meeting 13</i>	<i>Receive implementation responses/project schedules from key delivery organisations</i>