Te Wai Ora o Tāne Draft Integrated Water Strategy
Hearings Panel
AGENDA

Notice of Meeting:
A Hearings Panel meeting will be held on:

Date: Monday 12 August 2019
Time: 9.30am
Venue: Committee Room 1, Level 2, Civic Offices,
53 Hereford Street, Christchurch

Panel
Members
Councillor Phil Clearwater
Councillor Anne Galloway
Councillor Yani Johanson
Councillor Sara Templeton

7 August 2019

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www.ccc.govt.nz

Note: The reports contained within this agenda are for consideration and should not be construed as Council policy unless and until adopted. If you require further information relating to any reports, please contact the person named on the report.

To view copies of Agendas and Minutes, visit:
https://www.ccc.govt.nz/the-council/meetings-agendas-and-minutes/
## Strategic Framework

**The Council’s Vision** – Christchurch is a city of opportunity for all.
Open to new ideas, new people and new ways of doing things – a city where anything is possible.

<table>
<thead>
<tr>
<th>Whiria ngā whenu o ngā papa Honoa ki te maurua tāukiuki</th>
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</thead>
<tbody>
<tr>
<td>Bind together the strands of each mat And join together with the seams of respect and reciprocity.</td>
</tr>
<tr>
<td>The partnership with Papatipu Rūnanga reflects mutual understanding and respect, and a goal of improving the economic, cultural, environmental and social wellbeing for all.</td>
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<table>
<thead>
<tr>
<th>Overarching Principle</th>
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<tbody>
<tr>
<td>Partnership - Our people are our taonga – to be treasured and encouraged. By working together we can create a city that uses their skill and talent, where we can all participate, and be valued.</td>
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<table>
<thead>
<tr>
<th>Supporting Principles</th>
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<td>Accountability</td>
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<td>Affordability</td>
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<td>Agility</td>
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<td>Equity</td>
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<td>Innovation</td>
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<tr>
<th>Collaboration</th>
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<td>Prudent Financial Management</td>
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<td>Stewardship</td>
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<td>Wellbeing and resilience</td>
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<td>Trust</td>
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## Community Outcomes

What we want to achieve together as our city evolves

<table>
<thead>
<tr>
<th>Strong communities</th>
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<tr>
<td>Strong sense of community</td>
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<td>Active participation in civic life</td>
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<tr>
<td>Safe and healthy communities</td>
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<tr>
<td>Celebration of our identity through arts, culture, heritage and sport</td>
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<tr>
<td>Valuing the voices of children and young people</td>
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<table>
<thead>
<tr>
<th>Liveable city</th>
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<tr>
<td>Vibrant and thriving central city, suburban and rural centres</td>
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<tr>
<td>A well connected and accessible city</td>
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<tr>
<td>Sufficient supply of, and access to, a range of housing</td>
</tr>
<tr>
<td>21st century garden city we are proud to live in</td>
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<table>
<thead>
<tr>
<th>Healthy environment</th>
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<tbody>
<tr>
<td>Healthy waterways</td>
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<tr>
<td>High quality drinking water</td>
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<tr>
<td>Unique landscapes and indigenous biodiversity are valued</td>
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<tr>
<td>Sustainable use of resources</td>
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<table>
<thead>
<tr>
<th>Prosperous economy</th>
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<tr>
<td>Great place for people, business and investment</td>
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<tr>
<td>An inclusive, equitable economy with broad-based prosperity for all</td>
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<tr>
<td>A productive, adaptive and resilient economic base</td>
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<td>Modern and robust city infrastructure and community facilities</td>
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</tbody>
</table>

## Strategic Priorities

Our focus for improvement over the next three years and beyond

<table>
<thead>
<tr>
<th>Enabling active citizenship and connected communities</th>
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<tr>
<td>Maximising opportunities to develop a vibrant, prosperous and sustainable 21st century city</td>
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<thead>
<tr>
<th>Climate change leadership</th>
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<tr>
<td>Informed and proactive approaches to natural hazard risks</td>
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<tr>
<td>Increasing active, public and shared transport opportunities and use</td>
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<tr>
<td>Safe and sustainable water supply and improved waterways</td>
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1. Apologies
   At the close of the agenda no apologies had been received.

2. Election of a Chairperson
   At the start of the meeting a Chairperson will be elected.

3. Declarations of Interest
   Members are reminded of the need to be vigilant and to stand aside from decision making when a conflict arises between their role as an elected representative and any private or other external interest they might have.
4. Te Wai Ora o Tāne Draft Integrated Water Strategy

Reference: 19/877100
Presenter(s): Diane Shelander, Senior Policy Analyst

1. Purpose of Report

1.1 The purpose of this report is for the Hearings Panel to consider the consultation feedback and views on the Te Wai Ora o Tāne Draft Integrated Water Strategy (Attachment A), to consider the staff recommendation, and to make a recommendation to Council.

1.2 A summary of submissions report analyses the submissions received and provides some recommended changes to the strategy (Attachment B). A tracked change version of the strategy with the recommended changes is also attached (Attachment C).

2. Executive Summary

2.1 The draft Integrated Water Strategy was developed between mid-2015 and mid-2019 over three phases:

- Current state report (situational analysis)
- Issues and options report
- Preparation of draft strategy

2.2 A number of activities were undertaken prior to public consultation on the draft strategy including:

- Briefings to the Council, Infrastructure Transport and Environment Committee, Community Boards and zone committees
- Community stakeholders issues and options workshops
- Huis with Mahaanui Kurataiao Ltd and with Ngāi Tahu
- Environment Canterbury staff workshop

2.3 Public consultation on the draft strategy (Attachment A) was held from 14 June to 21 July 2019.

- Eight drop-in sessions were held at locations across Christchurch, including Banks Peninsula.
- We received 35 submissions.
- In general there was support for the draft strategy, with a number of suggestions for changes to the draft strategy. The summary of submissions report (Attachment B) provides an analysis of the various submission points.

3. Staff Recommendations

That the Hearings Panel:

1. Receive the summary of submissions report
2. Consider all submissions received during the public consultation process.
3. Recommend that the Council adopt the final Integrated Water Strategy.
4. Community Views and Preferences

4.1 Assessment of Significance and Engagement

4.1.1 The decision(s) in this report are of high significance in relation to the Christchurch City Council’s Significance and Engagement Policy.

4.1.2 Engagement requirements for this level of significance included the following:

- Council meeting on 23 May 2019 where approval to consult was granted.
- Working Party meeting on 27 May 2019 to update members prior to consultation.
- Newspaper, radio, and online advertising to ensure people were aware of the draft integrated water strategy consultation.
- Eight drop-in sessions, spread across the city.
- Joint Community Board seminar on Friday 12 July.
- This final round of consultation on the draft integrated water strategy closed the loop on an extensive public engagement project that spanned almost four years. The drop-in sessions in June and July were the final ways for people to have their say, but were preceded by 16 other public consultation events and opportunities between September 2015 and June 2019.

4.1.3 The community engagement and consultation outlined in this report reflects the assessed level of significance.

4.2 Consultation

4.2.1 Consultation on the strategy was open from Friday 14 June to Sunday 21 July 2019.

4.2.2 The consultation Have Your Say link was sent to 213 key stakeholders on Friday 14 June. Hard copies of the strategy and consultation booklets were posted to seven Rūnanga.

4.2.3 Hard copies of the strategy and consultation booklets were made available citywide in libraries and service centres.

4.3 Social media

4.3.1 On 14 June 2019, a Newsline story was shared on the Council Newsline page (https://ccc.govt.nz/news-and-events/newsline/show/3674). This page was viewed 271 times: 110 (44%) via Facebook, 78 (29%) direct to the Newsline page and 73 (27%) via Google.

4.3.2 The Newsline story was also shared on the Facebook page, which had 25 likes, 36 comments, 6 shares, 448 engagements and 101 link clicks. This post had the highest engagement, which could largely be down to the six shares it had and the fact that it was the post that announced the consultation period for the draft integrated water strategy. There was a mix of comments, primarily around the issues of chlorination, water bottling, nitrates and climate change. We responded to one question about chlorination.

4.3.3 On 28 June, a Facebook post advised submitters that the consultation timeframe had been extended. This post had 13 likes, 33 comments, 3 shares, 291 engagements and 28 link clicks. The reach was 10,265 Facebook user

4.3.4 On 24 June, July 1 and July 7 there were community specific Facebook posts advertising drop-in sessions in their communities. These posts had 24 likes, 18 comments, 2 shares, 184 engagements and 37 link clicks. Reach: Somerfield Residents Association, Opawa neighbourhood, Akaroa - what is happening, Parklands Community East Christchurch,
People’s Independent Republic of New Brighton, Beckenham Neighbourhood, Bishopdale Community Group, Woolston Community United community Facebook groups

4.3.5 On 24 June, July 1 and July 7 there were Neighbourly targeted posts. Reach: 129 neighbourhoods total

4.3.6 On July 19, a Facebook post advised that the consultation would close on Sunday. This post had 9 likes, 6 comments, 1 share, 184 engagements and 15 link clicks. 4.3.8. Reach: 8,825 Facebook users.

4.4 Drop-ins

4.4.1 A series of eight drop-in sessions were held across the city. These provided the community the opportunity to come talk about the strategy with the team.

- Tuesday 25 June Central City
- Tuesday 25 June New Brighton
- Wednesday 26 June Beckenham
- Saturday 29 June Duvauchelle, Banks Peninsula
- Wednesday 3 July Belfast
- Thursday 4 July Sockburn
- Monday 8 July Bishopdale
- Tuesday 9 July Woolston

4.5 Advertising

4.5.1 Advertising included the following:

- Radio: MoreFM, The Breeze, Newstalk ZB and iHeart
- Newspapers: 2 quarter page insertions in each of The Press, The Star, Star Communities, Bay Harbour News and Akaroa Mail
- Google Display Network

4.6 Consultation results

4.6.1 During the consultation we received 35 submissions. Of these, 22 were from individuals and the remainder were from community groups, organisations and businesses.

4.6.2 In total, we had 19 attendees to the eight district-wide drop-in sessions. One individual attended two drop-ins which leaves us with 18 individuals. Two of these were Board members so the total number of members of the public were 16 (one of which went on to submit). Of these 16, one was a business representative, six represented community groups and three represented Resident Associations. Of the 16, seven went on to submit (two of which were submitted by other members of their resident/community groups and one was submitted as an individual rather than a business representative).

4.6.3 Consultation themes covered a broad range and are discussed in detail in the Summary of Submissions (Attachment B).

4.6.4 A tracked change version of the strategy (Attachment C) incorporates the recommended changes from the summary of submissions report.
5. Impact on Mana Whenua
  5.1 This option involves a significant decision in relation to ancestral land or a body of water or other elements of intrinsic value, therefore this decision specifically impacts Ngāi Tahu, their culture and traditions.

6. Legal Implications
  6.1 The strategy is not a statutory document but rather an overarching strategy to inform the Council’s planning activities and operations.

Attachments

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Page</th>
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<tbody>
<tr>
<td>A</td>
<td>Draft Integrated Water Strategy - public consultation</td>
<td>9</td>
</tr>
<tr>
<td>B</td>
<td>Summary of Submissions - Draft Integrated Water Strategy</td>
<td>40</td>
</tr>
<tr>
<td>C</td>
<td>Draft Integrated Water Strategy - suggested changes</td>
<td>88</td>
</tr>
</tbody>
</table>

Confirmation of Statutory Compliance

Compliance with Statutory Decision-making Requirements (ss 76 - 81 Local Government Act 2002).
(a) This report contains:
   (i) sufficient information about all reasonably practicable options identified and assessed in terms of their advantages and disadvantages; and
   (ii) adequate consideration of the views and preferences of affected and interested persons bearing in mind any proposed or previous community engagement.
(b) The information reflects the level of significance of the matters covered by the report, as determined in accordance with the Council’s significance and engagement policy.

Signatories

<table>
<thead>
<tr>
<th>Authors</th>
<th>Approved By</th>
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</thead>
<tbody>
<tr>
<td>Diane Shelander - Senior Policy Analyst</td>
<td>Emma Davis - Head of Strategic Policy</td>
</tr>
<tr>
<td>Lori Rankin - Engagement Advisor</td>
<td>Brendan Anstiss - General Manager Strategy and Transformation</td>
</tr>
</tbody>
</table>
HAVE YOUR SAY
Te Wai Ora o Tāne
Draft Integrated Water Strategy

Ōtautahi Christchurch and Te Pātaka o Rākaihautū Banks Peninsula
Consultation open until Sunday 14 July 2019
ccc.govt.nz/ourwater
Whakarāpopotanga whakarae
Executive summary

Water supply, wastewater, stormwater, surface water and groundwater form a fundamental part of the life of the community. Christchurch City Council has a responsibility to ensure that its water services, infrastructure and water taonga are managed in a manner that supports the environmental, social, cultural and economic wellbeing of current and future generations. In this regard we work with Environment Canterbury, which has responsibilities for environmental resources management. The broader legislative and policy context is described in Appendix A.

Our vision to guide that management is:

Te wai ora o Tāne Water for Life
Valuing water and water services for people and the environment

The vision recognises the importance of water, as taonga, to the life of the community of Ōtāhuhu Christchurch, while also recognising the significant cultural values associated with water. Achieving the vision will mean that Christchurch’s water resources and taonga are managed in an integrated way to provide people, communities and future generations with access to safe and sufficient water resources, maintain the integrity of freshwater ecosystems and manage hazards from flooding and sea level rise.

An Integrated Water Strategy will both recognise and support the ongoing recovery activities following the earthquakes, and set a path for our future management of our water resources and water services and associated infrastructure.

It will establish the strategic direction for our sustainable long-term management of water resources and related infrastructure. The draft strategy focuses on water supply, wastewater and surface water including stormwater and flood management.

Principles that have guided the development of the draft strategy are: integration, longevity, touchstone, place-making, flood management, international best practice, efficiency and kaitiakitanga.

The strategy recognises and incorporates the Urban Water Principles - Ngā Wai Manga recommended by central government’s Urban Water Working Group:

- Papatūānuku – Our relationship with the land – papatūānuku – will pre-determine our relationship with water
- Ngā wai tuku kīrī – Our waters are a gift of life provided to us by our tupuna
- Tāngata – Our environments are places of human occupation
- Te hapori me te wai – The community’s love and care for water is enduring
- Tiakina mō apōpō – in building future resilience, our connectedness with the environment is our strength

This draft strategy addresses eleven key strategic issues, relating to managing wastewater discharges, ensuring long term water supply, responding to stormwater management, flooding, and potential sea level rise issues, improving water quality and waterway health, and ensuring that the community values its many different types of water resources

1. Different perceptions of the ‘value’ of the waters
2. Poor state of some waterways
3. Vulnerability of Christchurch’s groundwater source to contamination
4. Wastewater overflows and effects on surface water
5. Treated wastewater discharges into Akaroa Harbour
6. Stormwater discharges and effects on surface water
7. Flooding and flood management
8. Responding/adapting to the anticipated effects of sea level rise on water resources and related infrastructure
9. Long term availability of water for water supply
10. Long term sustainable wastewater treatment and disposal
11. Infrastructure efficiency and resilience
To address these strategic issues, the draft strategy contains four goals, 11 objectives and some suggested approaches to achieve the vision. The goals align with the 2018-28 Community Outcomes, as well as the ‘strategic priorities’ identified in our Strategic Framework.

In summary, the goals and general approach to achieving each of the goals of the draft strategy is as follows.

**Goal 1: The multiple uses of water are valued by all for the benefit of all**
- Increasing awareness – to encourage and engage the community to value and respect the multiple uses of our water resources through advocacy and outreach programmes, demonstration projects that highlight the values of water, and considering the water services charging structure and the way information is conveyed to the community.
- Enhancing natural and cultural values (including ecology, amenity, recreation, heritage and landscape) – through initiatives such as demonstration projects, protection of existing waterway and wetland systems, encouraging and facilitating wetlands, waterways enhancement and naturalisation, addressing stream depletion, facilitating the adoption of water sensitive design and promoting water conservation.

**Goal 2: Water quality and ecosystems are protected and enhanced**
- Improving water quality and enhancing the natural, cultural and ecological values of waterways – through continuing the existing Stormwater Management Plan approach to management of stormwater quality, increasing focus on sediment control measures, implementing source control and water sensitive design, wetlands and waterways enhancement and naturalisation, and where possible retrofitting water quality mitigation for existing developed areas.
- Reducing the effects of wastewater overflows – by network upgradings, targeting efforts to address overflows and reducing inflow and infiltration.
- Understanding groundwater sources and their vulnerability to contamination – through targeted investigations, further implementation of source protection, and restrictions on excavation below groundwater level.
- Recognising the importance of robust data management and modelling to demonstrate performance.

**Goal 3: The effects of flooding, climate change and sea level rise are understood, and the community is assisted to adapt to them**
- Understanding the extent, effect and risk of flooding, and managing effects and adapting to flooding risks by continuing the existing programme of investigations and physical works in the interim, while developing, communicating to the community and then implementing a risk-based approach to managing the effects of flooding using options appropriate to specific situations.
- Understanding risks due to sea level rise and consequences resulting from climate change, and developing an adaptive response.

**Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitiakitanga**
- Managing assets across all disciplines in an integrated manner to maximise attributes such as sales ranking, collaborative benefits, eco-system service harmonies which may not be realised when assets are developed in isolation for a single discipline.
- Managing stormwater collectively wherever practicable in order to maximise efficiency, cost effectiveness and ease of maintenance. Encouraging on-site stormwater management using water sensitive design where collective stormwater management is not feasible (such as areas where urban intensification and redevelopment of industrial and business land is prevalent).
- Managing wastewater systems to meet community needs – including through reviewing and revising trade waste and biosolids management and developing long term solutions for Christchurch’s future growth and for the disposal of treated wastewater from the Akaroa Harbour communities.
- Managing water sources to meet reasonable demands – by improving understanding of water sources and water use, implementing demand management projects and securing access to water supplies.
- Infrastructure efficiency and resilience – by utilising a risk based approach, proactive monitoring, and the implementation of intelligent technology.
- Managing resources collaboratively. Water resources management is complex and requires collaborative integrated work programme across Council units and between stakeholders.

To guide actions to meet the goals and vision of the draft strategy eleven objectives have been identified as follows. **Note that objectives are not listed in any order of priority.**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
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<tbody>
<tr>
<td>Objective 1</td>
<td>Awareness and engagement Increase awareness and engage with the community and mana whenua regarding the multiple uses and values of water.</td>
</tr>
<tr>
<td>Objective 2</td>
<td>Efficient and resilient infrastructure Ensure efficient use of three water infrastructure through a completely integrated management structure and ensure the resilience of entire networks (including natural waterbodies) to future environmental, social and/or cultural changes and natural hazard risks over the long term through timely asset renewal and/or better alternative solutions.</td>
</tr>
<tr>
<td>Objective 3</td>
<td>Enhancement of ecological, cultural and natural values Enhance the ecological, cultural and natural values (including amenity, recreation, customary use, heritage and landscape) of the waterways within the Christchurch urban area and settlements.</td>
</tr>
<tr>
<td>Objective 4</td>
<td>Water quality improvement Improve the water quality of surface water resources to protect ecosystem health and provide for contact recreation, food gathering, mahi kai and cultural values.</td>
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<tr>
<td>Objective 5</td>
<td>Wastewater overflow management Reduce and work towards eliminating the effects of wastewater overflow.</td>
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<tr>
<td>Objective 6</td>
<td>Flood risk Understand the likely extent and effects of flooding, and the risk posed by flooding.</td>
</tr>
<tr>
<td>Objective 7</td>
<td>Flood management and adaptation Manage and adapt to the effects of flooding using natural systems, planning tools, community adaptation and infrastructure solutions.</td>
</tr>
<tr>
<td>Objective 8</td>
<td>Sustainable wastewater systems Manage the effects of the wastewater systems to meet community needs for environmental, social, cultural and economic sustainability over the long term.</td>
</tr>
<tr>
<td>Objective 9</td>
<td>Groundwater protection Advance source protection of groundwater recharge areas and surface water supply sources for all drinking water supplies.</td>
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<tr>
<td>Objective 10</td>
<td>Improvement in understanding of aquifer system Understand the vulnerability, transit times and extent of confining layers of the Christchurch aquifers as well as the link to surface water quantity and quality.</td>
</tr>
<tr>
<td>Objective 11</td>
<td>Safe and sustainable water supply Manage the water sources for drinking water supplies to meet the forecast reasonable demands over the long term and ensure efficiency of water use, and ensure demonstrably safe drinking water without the need for residual disinfection.</td>
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</table>
A suite of approaches to support the objectives and goals are put forward and are listed below.

<table>
<thead>
<tr>
<th>Option</th>
<th>Objective(s) to be addressed</th>
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</table>
| 7.1-1 and 7.3-1 Advocacy and Outreach | 1. Awareness and engagement  
2. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.1-2 and 7.3-2 Demonstration Projects – waterway naturalisation | 1. Awareness and engagement  
2. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.1-3 Facilitate Water Sensitive Design | 1. Awareness and engagement |
| 7.1-4 Improve public understanding of the cost of water services | 1. Awareness and engagement |
| 7.1-5 and 7.1-7 Waterways and wetlands enhancement and naturalisation | 1. Awareness and engagement  
2. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.2-1 Proactive risk-based asset renewals | 2. Efficient and resilient infrastructure |
| 7.2-2 Proactive monitoring of condition | 2. Efficient and resilient infrastructure |
| 7.2-3 Intelligent technology | 2. Efficient and resilient infrastructure |
| 7.2-4 Continuing to manage for 6 core values for stormwater and flood management | 2. Efficient and resilient infrastructure |
| 7.3-3 Continue and enhance the implementation of the current approach to stormwater management | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-4 Increased sediment control | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-5 Waterway vegetation management | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-6 and 7.3-7 Wastewater and stormwater network upgrades and real time control technology | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-8 Appropriate policy and plan provisions for water sensitive design | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-9 Development of stormwater discharge standards | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.4-2 Effects based network consent | 5. Wastewater overflows management |
| 7.4-3 Reducing inflow and infiltration to the public network | 5. Wastewater overflows management |
| 7.4-4 Repair/renewal of private sewer laterals | 5. Wastewater overflows management |
| 7.5-1 Continue the current approach for flooding and flood management | 6 and 7. Flood risk and flood management and adaptation |
| 7.5-2 Continue to develop a risk based approach to flood management | 6 and 7. Flood risk and flood management and adaptation |
| 7.5-3 Communicate a risk based approach to the community and foster community support | 6 and 7. Flood risk and flood management and adaptation |
| 7.5-4 Implement options tailored to address flood management in specific circumstances | 6 and 7. Flood risk and flood management and adaptation |
| 7.6-1 Trade waste management | 8. Sustainable wastewater systems |

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<thead>
<tr>
<th>Option</th>
<th>Objective(s) to be addressed</th>
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<tbody>
<tr>
<td>7.6-2 Biosolids management with multiple paths for beneficial reuse</td>
<td>8. Sustainable wastewater systems</td>
</tr>
<tr>
<td>7.6-3 Develop a long term wastewater treatment and collection solution to accommodate Christchurch’s future growth</td>
<td>8. Sustainable wastewater systems</td>
</tr>
<tr>
<td>7.6-4 Reduce the generation of wastewater at source</td>
<td>8. Sustainable wastewater systems</td>
</tr>
<tr>
<td>7.6-5 Agree with community on a long term solution for the treated wastewater discharges into Akahau Harbour</td>
<td>8. Sustainable wastewater systems</td>
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</tbody>
</table>
| 7.7-1 and 7.8-4 Support research and monitoring programmes to better understand groundwater vulnerability to contamination and improve the understanding of groundwater sources | 9 and 10. Groundwater protection and improvement in understanding of aquifer system  
11. Sustainable water supply |
| 7.7-3 Restrictions on excavating and filling below groundwater level | 9 and 10. Groundwater protection and improvement in understanding of aquifer system  
11. Sustainable water supply |
| 7.7-4 Partner with Environment Canterbury and neighbouring district councils | 9 and 10. Groundwater protection and improvement in understanding of aquifer system  
11. Sustainable water supply |
| 7.8-2 Source protection | 9 and 10. Groundwater protection and improvement in understanding of aquifer system  
11. Sustainable water supply |
| 7.8-3 Improve understanding of water use and develop a water demand management programme | 11. Sustainable water supply |
| 7.8-10 Implement pressure management zones | 11. Sustainable water supply |
| 7.8-3 Implement “smart” water network operation | 11. Sustainable water supply |
| 7.8-5 Secure access to the Christchurch groundwater supplies | 11. Sustainable water supply |
| 7.8-6 Enable reuse and harvesting | 11. Sustainable water supply |
| 7.8-7 Enhance management of below-ground well heads | 11. Sustainable water supply |
| 7.8-8 Collaboration with other territorial authorities to retain control of public infrastructure | 11. Sustainable water supply |

The draft strategy recognises the various roles of local, regional and national governments as well as public and private organisations and the general public, and how each can contribute to realising the draft strategy’s vision.

The draft strategy also supports the implementation of the Canterbury Water Management Strategy, in particular with respect to the following targets: ecosystem health and biodiversity, kaitiakitanga, drinking water, recreational and amenity opportunities, water-use efficiency and environmental limits.
Te tuatahi Part one:
Tāhuhu korero
Technical and background information
1. Kupu whakataki

Introduction

1.1 Why develop an Integrated Water Strategy?

Water resources play a fundamental part in providing for the needs of, and shaping the community. The Christchurch City Council provides water supply, wastewater and stormwater services and infrastructure throughout the District. Waterways and coastal waters also form a fundamental part of both the landscape and lives of the community.

The Draft Integrated Water Strategy (the draft strategy) is a high level overarching strategy developed to consider all of these different water resources, values and demands, and set a framework to help us manage them in an integrated way over at least the next 100 years. The strategy also provides for the requirements of working with manawhenua under the National Policy Statement on Freshwater 2014 (Freshwater NPS) and other statutory and non-statutory plans, policies and strategies.

The draft strategy recognises our responsibilities to ensure water services and infrastructure support environmental, social, cultural and economic well-being of current and future generations. In fulfilling these responsibilities we work with the community and with Environment Canterbury, which is responsible for environmental resource management.

1.2 Our water resources

Christchurch’s freshwater resources include springs, streams, rivers, lakes, wetlands, lagoon, estuaries and high-quality groundwater. These water resources are an important part of the unique culture and the natural values of the area, shaping the landscape and Christchurch’s heritage.

Water is fundamentally important to Ngāi Tahu, highly valued by the community for recreation, and crucial to the health of the environment in which the community lives.

Christchurch’s water infrastructure includes:

- groundwater and surface water sources for community drinking water supply and the infrastructure that conveys water from source to end-user, including treatment where necessary
- wastewater collection, treatment and discharge network
- stormwater collection, detention, treatment and conveyance and disposal network.

The actual and potential adverse effects of discharges of stormwater (and sometimes wastewater) to the streams, rivers, estuaries, harbours and into land in Christchurch need to be managed, as do any effects of flooding.

The potential effects of climate change will also need to be responded to and adapted to over the duration of the draft strategy.

1.3 Integration

Three Council strategies relating to the sustainable management of Christchurch’s water resources were adopted by the Council between 2009 and 2013:

- Water Supply Strategy 2009 – 2039
- Surface Water Strategy 2009 – 2039
- Wastewater Strategy 2013

Although efforts to take account of other water resources and their inter-relationships were made during the development of each of the existing water-related strategies, the extent to which this could be achieved was relatively limited. This has led to the development of the Integrated Water Strategy.

The Integrated Water Strategy will sit within the context of the work being undertaken by the Canterbury community under the Canterbury Water Management Strategy. The strategy will also sit within the work being undertaken to fulfil requirements under the Freshwater NPS, and the establishment of Te Hononga, a joint Council-Ngāi Tahu initiative and work programme.

1.4 Scope

The draft strategy covers respect and stewardship of the water resources within Christchurch through the sustainable and integrated management of Christchurch’s water supply (including its groundwater sources), wastewater and surface water (including stormwater and flooding).

Also included within the draft strategy is an overall approach for addressing impacts of sea level rise on waterways, stormwater management and flood management. The draft strategy also covers working relationships with Ngāi Tahu.

The draft strategy primarily considers matters over which we and/or the local community can manage or influence. Matters pertaining to water resources on a regional or national level are managed through a variety of other policy and regulatory instruments, such as the Canterbury Water Management Strategy, the Land and Water Regional Plan, the Resource Management Act, national environmental standards and national policy statements.

1.5 Development of the Draft Integrated Water Strategy

The draft strategy has been developed as part of our Healthy Environment strategies programme. The process for developing the strategy is outlined in Figure 1-1. The next step for this draft is public consultation.
1.6 Legislative and policy context

There are a series of legislative and policy drivers for the preparation of the draft strategy, including:

- Te Tiriti o Waitangi Treaty of Waitangi
- Resource Management Act 1991
- Local Government Act 2002
- Health Act 1956, as amended
- Mahaenui Iwi Management Plan 2013
- National Policy Statement for Freshwater Management, as amended
- National Environmental Standard for Sources of Human Drinking Water
- New Zealand Coastal Policy Statement 2010
- Canterbury Regional Policy Statement
- Regional Coastal Environment Plan for the Canterbury Region
- Canterbury Land and Water Regional Plan
- Christchurch District Plan
- Waimakariri River Regional Plan (2004, as amended)
- Canterbury Water Management Strategy

A summary outline of relevant legislative and policy drivers is contained in Appendix A.

The work of the zone committees and other parties in implementing the Canterbury Water Management Strategy will be relevant to implementing the Integrated Water Strategy.
2. Te kaupapa matua

Purpose

The purpose of the draft strategy is to provide strategic direction for:

- sustainable and integrated management of water resources and taonga and guardianship of that asset
- integrated management of related infrastructure and services
- managing the effects of water infrastructure on surface, coastal and groundwater resources
- guiding Council decision making including how we will involve, work with, and reflect manawhenua values and community interests in freshwater management and decision making.

The draft strategy is a high-level long-term strategy. A series of short, medium and long term goals have been identified to allow the community, manawhenua and the Council to meet the strategy’s vision.

3. Te Whakakitenga

Vision

Achieving the vision means that Christchurch’s water resources are managed in a sustainable, adaptive and integrated way to:

- provide people, communities and future generations with access to safe and sufficient water resources
- maintain the integrity of freshwater ecosystems
- manage hazards from flooding and sea level rise.

Te wai ora o Tāne - Water for life

Valuing water and water services for people and the environment

4. Ngā mātāpono arataki

Guiding principles

We developed the following principles to guide the preparation of the draft strategy:

- Kaitiakitanga - Kaitiakitanga “entails an active exercise of responsibility in a manner beneficial to the resource” in which responsibility is two-fold: “ultimate aim of protecting maori” and “the duty to pass the environment to future generations in a state which is as good as, or better than, the current state”. This guiding principle, of actively seeking to protect our water resources and improve their state for future generations, is the keystone of the strategy.
- Integration – the strategy needs to provide guidance to other Council strategies and plans, and provide an opportunity to integrate the management of water services, other Council infrastructure, in particular parks and roading, and water resources.
- Longevity - the strategy should not be time bound, but will be intergenerational, while also being aspirational yet pragmatic, affordable, “real” and achievable.
- Touchstone – an Integrated Water Strategy is fundamental to our activities serving and benefiting the community. It will be a tool to be used in discussions internally within the Council and in interactions with the public.
- Place-making – the strategy needs to be cognisant of the concept of place-making bringing the community with the Council into the development of spaces, recognising community values, livability, cultural values and amenity and integrating the use of green space and open space assets with water management.
- Flood management – the strategy acknowledges that surface water and floodplain management will become increasingly important to provide the community with liveable spaces and for addressing the effects of ongoing environmental changes such as climate change, sea level rise and changes to groundwater.
- International best practice – the strategy must draw on appropriate international experience and best practice to facilitate and advance continuous improvement, using comparable examples with relevant drivers to demonstrate where strategy outcomes have been achieved successfully elsewhere to demonstrate that they are achievable, pragmatic and worthwhile.
- Efficiency –there is a need to rationalise the three existing water-related Council strategies, to respond in the short-term to the effects of the earthquakes and to maximise the cross-benefits when considering replacement or new assets.

The Urban Water Working Group, led by the Ministry for the Environment, developed five key principles that have also informed the draft strategy:

- Papatūānuku - Our relationship with the land – papatūānuku will pre-determine our relationship with water. This principle incorporates protection and enhancement of ecosystem health through integrated planning; green infrastructure engineering and mitigating impacts on waterbodies at or near source.
- Ngā Wai Tuku Kiri – Our waters are a gift of life provided to us by our tupuna. This principle recognises the whakapapa and relationship that mana whenua have with the waters in their rohe.
- Tāngata - Our environments are places of human occupation. The two-pronged focus of this principle is recognition of community aspirations and values for their urban spaces along with the consideration of full life cycle costs and benefits in building and infrastructure investment decisions.
- Te Hāpori Me Te Wai – The community’s love and care for water is enduring. Underpinning this principle are growing and nurturing kaitiakitanga of water ecosystems, along with providing for meaningful and quality information to support decision-making and behaviour change.
- Taikiri Mā Arapū – In building future resilience, our connectedness with the environment is our strength. Included within this principle is the need for improving community resilience and conserving our water resources.

1 As expressed in the Mackenzie HK Management Plan 2013
5. Ātātake rautaki
Strategic issues

Eleven key strategic issues have been identified.

The following discussion briefly outlines each of the key issues (in no priority order), highlighting why they are key strategic issues. This gives context to the development of the goals, objectives and preferred options encompassed in the draft strategy.

5.1 Different perceptions of the ‘value’ of the waters
The community has different and often conflicting perceptions of the ‘value’ and appropriate associated uses of the waters. During the engagement workshops prior to the preparation of the draft strategy, the ‘wonderful, clean water’ within the District was identified. For some members of the community, the way water is used does not match the high quality and value of the resource.

Ngā Tahi have a longstanding relationship to water resources, including specific rights, interests and values that are fundamental to ongoing identity and well-being. Water is considered a taonga first and foremost and something to be protected in its natural state. This covers all forms of water, including water conveyed by drains.

Why is it a key issue?
Understanding the multiple uses and values of water is essential for driving change. If all uses of water are understood and valued, particularly surface waterways and sources of potable water, this will enable the draft strategy’s vision to be achieved. Furthermore, we are committed to working with iwi and hapū to identify and provide for mana怀enua values and interests in freshwater management.

5.2 Poor state of waterways
Surface water catchments in the urban area and rural settlements are subject to contamination from a combination of stormwater, wastewater overflows and other inputs such as sediment and animal and wastewater contamination.

Generally, in Christchurch, poorer waterway health is recorded in urban areas of the district, and better waterway health is recorded in rural areas. Receiving water bodies, such as Te Iputai, Te Wairua, Wairewa and the bays and harbours of the Peninsula also have water quality issues that require improvement.

Cultural Health Assessments of the Te Iputai Avon-Healthcare Estuary and Pūharekekeru Stx catchments show that these water bodies are in a state of poor cultural health, and on the whole do not meet basic standards for cultural use. The protection, and indeed enhancement, of instream values are essential in providing for these basic health and safety needs.

Why is it a key issue?
Good waterway health (i.e. water quality and habitat) is necessary for the protection of public health and safety, to safeguard the life-supporting capacity and ecosystems of surface water bodies, and in recognition of the need to provide for Māori cultural values. There is an increasing focus nationally on freshwater quality, and the community has clearly identified aspirations for improved waterway health throughout Christchurch.

5.3 Vulnerability of Christchurch’s groundwater source to contamination
The Christchurch metropolitan drinking water source is high quality groundwater. However, there are emerging trends in relation to the potential risk of contamination of Christchurch’s groundwater sources in shallow aquifers, which need to be better managed. Following the 2016 outbreak of campylobacteriosis in Havelock North there has been greater scrutiny of ‘secure’ groundwater sources, greater rigour with which drinking water sources are assessed for security and questions raised about reliance on ‘secure’ groundwater status for untreated drinking water supplies.

Recent groundwater studies in the Waimakariri and Christchurch-West Melton groundwater zones indicate that groundwater in deeper aquifers north of the Waimakariri River flows under the river and into the deeper aquifers in the Christchurch-West Melton zone model. Models show that the movement of groundwater is likely to result in a slow increase in nitrate levels in the deeper aquifers in the Christchurch-West Melton zone 50 to 100 years.

Ecosystem health in groundwater is also affected by contaminants. Tiny invertebrates living in groundwater (stygofauna) are thought to ‘purify’ the water in which they live, by feeding on organic matter and maintaining void spaces in the groundwater systems in a clean condition to maintain porosity (to enable flow) and oxygen. Stygo fauna can be adversely affected by contaminants such as nitrates, pesticides and heavy metals.

Why is it a key issue?
The general public perception appears to be of a well-protected aquifer system, however the degree of protection varies. Not all of the Christchurch metropolitan area lies above well-protected confined aquifers. The availability of high quality groundwater for public water supply is an extremely valuable natural resource for Christchurch, and potentially significant health, economic and environmental effects could result from contamination if groundwater is not appropriately protected.

Rising levels of nitrates in groundwater in the Waimakariri zone would influence the source of Christchurch’s drinking water, raising concerns about future risk to human and ecosystem health. A recent Danish epidemiological study found that at nitrate-nitrogen levels in drinking water at or above 0.87 mg/L there was a statistically significant increase in risk of colorectal cancer.⁷

The level at which groundwater ecosystem health may be maintained has been assessed at anywhere from 3.9 mg/L to protect 90% of aquatic species⁸ to an annual median of no more than 0.55 mg/L nitrate-nitrogen as the appropriate level to protect stygofauna in the groundwater at Te Waikeromopui Springs.⁹

5.4 Wastewater overflows and effects on surface water
Without exception, wastewater networks around the world have overflows. Christchurch is no different. This has been exacerbated by damage to the wastewater network caused by the 2010/2011 earthquakes.

Overflows of wastewater are an ongoing concern for the community, particularly mana whenua who seek the elimination of overflows to provide for safe cultural use, including mahinga kai. Therefore continually working towards solutions to manage, minimise and potentially eliminate overflows is critical.

Why is it a key issue?
Wastewater network overflows can adversely affect the water quality and ecology of waterways, cause a public health risk, and are culturally unacceptable. However the actual effects are often less than might be perceived by the community due to the events being temporary and sporadic in nature and occurring at the time of higher flow and greater dilution in the receiving waters. There is a challenge therefore in managing wastewater network overflows to address the community, cultural and ecological concerns, without unnecessarily devoting large amounts of funds that could be used elsewhere to improve water quality.

Shipping cots in the Aorere area, Ōkaihau Avon River

Diesel pollution in a portion of Haldangton Brook, June 2016

1. Jong Scholthof et al, Nitrate in drinking water and colorectal cancer risk: A nationwide population-based cohort study, International Journal of Cancer, 2018. Note that the study referred to 3.97 mg/L, nitrate, which is equivalent to 8.7 mg/L, nitrate-nitrogen.


3. From the National Policy Statement on Freshwater, updated in 2017. Note that the 14% addresses surface water supplies only, not groundwater.

5.5 Treated wastewater discharges into Akaroa Harbour

Two wastewater treatment plants at Akaroa and Duvashelle discharge treated wastewater into Akaroa Harbour. There is a dual issue for these discharges – the concern of the community and Ōnuku Rānanga about ongoing discharges to the harbour (notwithstanding the wastewater is treated to reasonably high levels), and the issue for the Council of the feasibility, practicality and cost of land disposal or land contact of the treated wastewater.

Why is it a key issue?

Discharging treated wastewater to the harbour is offensive to members of the community. The discharge is particularly offensive to Ōnuku Rānanga, whose preference is for the treated wastewater to be taken out of the harbour and irrigated onto land. We need to find a solution that balances the concerns of the community and Ōnuku Rānanga, and environmental effects with appropriate use of ratepayer funds.

5.6 Stormwater discharges and effects on surface water

The quality of stormwater has a significant effect on surface water quality. Stormwater from urban catchments contains a wide range of contaminants ranging from suspended sediments, nutrients and micro-organisms to chemical contaminants, metals and synthetic hydrocarbons. Untreated stormwater entering streams during the first flush of rain following a dry period typically contain high concentrations of contaminants. These discharges impact on both instream ecology and water quality as well as community use, recreation and customary and cultural uses.

Why is it a key issue?

Ongoing management of stormwater is essential and necessary to protect the quality of the groundwater and surface water resources of Christchurch. However, the design, development and installation of stormwater treatment can be expensive and complex, particularly in already developed areas where retrofitting devices is the only feasible option. In addition, ‘hard’ infrastructure alone is not likely to achieve a degree of contaminant reduction needed for substantive surface water quality improvements. Other ‘source control’ initiatives, such as behaviour change (e.g. switching to copper-free brake pads and being more vigilant on sediment discharge from construction sites) will be needed as well.

5.7 Flooding and flood management

The main rivers in the Christchurch metropolitan area – the Ōtākaro Avon, Ōpawa and Heathcote, Huritini Halswell and Pūharakekeni Styx – have spring-fed base flows which originate from the shallow aquifers underlying the area. These rivers have relatively small surface water catchments which respond quickly to local rainfall, and cause flooding beyond the river and tributary channels from time to time.

The hill suburbs of Christchurch and the short, steep stream catchments of Te Pataka o Rākaihauti Banks Peninsula receive a higher annual average rainfall than the flat lands, and experience higher intensity rainfalls as well. This, combined with the steep terrain, can result in high velocity flood flows, soil erosion, landslips and short term flooding.

The 2010/2011 earthquakes have also affected flooding. An increase in the incidence of flooding is most evident in areas close to waterways, and where soft ground has settled and thus become more flood prone. The earthquakes also had a significant effect on the capacity of surface waterways to convey floodwaters, as lateral spread has narrowed channels and so reduced their capacity.

In some areas, groundwater is very close to the ground surface and inhibits the infiltration of floodwaters into the soil. This increases runoff, which may worsen flooding and sometimes leads to prolonged standing surface water.

Why is it a key issue?

Flooding ranges from nuisance flooding such as on roads or private property which may limit access or cause inconvenience, to flood water affecting infrastructure and entering dwellings, causing significant damage or threatening life safety. Under the Health Act 1956, the Christchurch District Drainage Act and the Local Government Act, we have a responsibility to provide for the health and safety of the community and maintain a duty of care with respect to managing drainage, and the effects of flooding. Flooding and flood management are also clearly linked to the issue of the effects of sea level rise, groundwater level rise and the anticipated effects of climate change. It is also important to consider the need to provide for flood management areas and devices such as retention basins, wetlands and swales that can help provide solutions for integrated flood and water management.
5.8 Responding/adapting to the anticipated effects of climate change and sea level rise

Sea level rise has significant implications for the district (in terms of increased coastal inundation, shallower groundwater, higher flooding levels including river flooding) and accelerated coastal erosion. Increased salination of freshwater resources as well as potential changes to ecology, including subsequent changes to mahinga kai resources are also issues.

Coastal areas in the east of the Christchurch metropolitan area, low lying land in the mid to lower Ōtākaro Avon River catchment and lower Opawa Heathcote River catchment, and low lying areas in the main Akaroa Harbour settlements are particularly vulnerable. Sea level rise and shallowing of groundwater level in some areas, combined with extreme storm events will exacerbate the risk of inundation, and also increase the likelihood of the Ōtakaro Avon and Opawa Heathcote Rivers overtopping their banks, which since the earthquakes, now happens on a daily basis along the lower Opawa Heathcote River. Pukerenekenui Stys River is also vulnerable from tidal flooding of the existing sand dunes bordering Brooklands Lagoon.

In some instances, shallowing of groundwater has resulted in the water spilling out at the surface and preventing floodwaters from soaking into the soil. Such areas have already experienced prolonged spells of standing water. The frequency and extent of these issues is likely to increase with climate-change induced shallowing of groundwater levels.

Why is it a key issue?

Sea level rise and associated coastal erosion will pose a risk to water services infrastructure in coastal areas in Christchurch. Wastewater pipelines, pump stations and other critical utility infrastructure in low lying coastal areas will potentially be affected by sea level rise. Stormwater networks in low-lying areas may suffer from backwater effects, raised groundwater levels and impeded drainage. Road pavements, which are designed assuming normally dry ground conditions, will deteriorate quickly where groundwater is very shallow.

There is a significant reduction in pavement strength due to the ingress of water, which damages and weakens supporting subgrade layers, and can cause, for example, increased number and size of potholes.

Current planning is based on current predicted sea-level rise. The Council and the community need to be mindful that predictions may change and future sea-level rise may be greater than currently forecast. Development of dynamic adaptive planning pathways will be required in order to inform decisions in light of the uncertainty with sea-level rise predictions.

5.9 Long term availability of water for water supply

The Christchurch metropolitan area has an abundant source of very high quality groundwater. However, the exact capacity and availability of the overall aquifer is unknown, and the alternative water sources (e.g. Waimakariri River) would be significantly more expensive than the current supply. In addition, several Te Pātaka o Rakahauotu Banks Peninsula schemes already have limited water sources. Catchment and groundwater protection may not be adequate, particularly in Te Pātaka o Rakahauotu Banks Peninsula, which could lead to future water quality and availability issues. Also a concern for the community is the extent to which large-scale water takes from the same aquifers as those used for Christchurch’s public water supply may affect our ability to acquire additional water takes to respond to future demand.

Why is it a key issue?

Access to high-quality drinking water is important and high quality drinking water should be used appropriately to ensure the long term availability of the existing water sources, to support guardianship of our drinking water sources particularly in light of the impacts of climate change. There are also significant social, health, cultural, environmental and economic costs of not providing a reliable and safe source of water supply to the community.

5.10 Long term sustainable wastewater treatment and disposal

Wastewater treatment and disposal needs for the Christchurch metropolitan area have been addressed for the next 20 years at least. As the Christchurch metropolitan area expands to the north and southwest, the cost of conveying wastewater from these growth areas to the Christchurch Wastewater Treatment Plant in Bromley will increase. Beyond 2040, Christchurch’s wastewater treatment and disposal system may require changes to accommodate these growth areas.

The immediate challenge for managing the wastewater systems is to provide a long term solution to the treated wastewater discharges into Akaroa Harbour that addresses the concerns of the community and the Ōnuku Rūnanga.

Why is it a key issue?

We are developing long term wastewater treatment and disposal solutions that can accommodate future growth while balancing lifecycle costs of new assets against community and cultural concerns and environmental effects. There is the opportunity to develop more integrated solutions in the long term along with multiple pathways for beneficial reuse of biosolids. Further, as disposal of treated wastewater directly into waterbodies is not acceptable to mana whenua we are actively collaborating with Papatū Rūnanga to develop appropriate solutions for wastewater management.
5.11 Infrastructure efficiency and resilience

There have been increased water and wastewater pipe failures compared to pre-earthquake due to both age related deterioration as well as earthquake damage. A significant number of assets created in post-war construction booms are reaching the end of their lives and will require renewal. Significant infrastructure repairs are also underway to address the effects of the earthquakes.

We want to increase the resilience of the three waters infrastructure. We need to further develop a proactive risk based approach to asset management that balances long term affordability for the ratepayer against the cost of managing the asset risks. There is also a need to look at environmental infrastructure that provides additional services in relation to flood management, stormwater retention and treatment as well as ecological and cultural outcomes.

A Board of Inquiry investigation into the 2016 campylobacteriosis outbreak in Havelock North highlighted the need for greater oversight of the safety and security of both the source of community drinking water supplies and the infrastructure that delivers drinking water to customers.

Additionally there are other initiatives affecting three waters services:

- A review of the manner in which water supply, wastewater and stormwater services are delivered in New Zealand is underway. Proposals include a separate national regulatory body to direct and oversee provision of the three waters services and possible ‘super-regional’ public drinking water suppliers. We remain committed to local control over three waters services integrated with all other community services.

- Ministry of Health has updated drinking water standards and is reviewing the regulatory framework for drinking water.

Another issue for parts of Christchurch has to do with small settlements that are not serviced with a public water supply. For some of these communities drinking water is provided through a private scheme. Residents in other settlements rely on their own bores or rainwater as their drinking water source. Consideration of whether to provide a public reticulated supply to currently unserviced settlements will require consideration of benefits afforded to those settlements against the costs of providing a public water supply, which can be high for more remote settlements.

Emerging contaminants are another area which can present challenges for managing water resources. Emerging contaminants are substances have not been commonly monitored but may have the potential to cause adverse effects on human health or ecosystem health.

Why is it a key issue?

In addition to earthquake damage, there is an approaching ‘bow wave’ of aging pipes and associated infrastructure that need renewal due to historic city growth patterns leading to large lengths of pipes needing renewal over a similar time period. The additional renewal requirements have the potential to impact on the affordability of rates and innovative solutions are required to improve efficient use and renewal of infrastructure.

For the groundwater-sourced public water supply to remain untreated, both the source and the infrastructure that deliver the water must be deemed ‘secure’. The challenge for us is to ensure that Christchurch’s drinking water is demonstrably safe and does not require residual treatment.

There is also the need for us to develop and retrofit additional stormwater, flood and wastewater treatment infrastructure. We need to ensure that infrastructure types are fit for purpose in the long term and to consider non-asset solutions where practical. Involving the community and in particular mana whenua in the design and development of water infrastructure is critical.
6. Ngā whāinga Goals

There are four goals for achieving the strategic vision, which align with the 2018–28 Community Outcomes\(^4\) as well as the ‘strategic priorities’ identified in our Strategic Framework\(^5\).

**Goal 1: The multiple uses of water are valued by all for the benefit of all**

All life depends on water. Good quality water is essential for quality public health and wellbeing. Water is also valued for many other reasons, including its ecological function and role in maintaining biodiversity, its core relationship to Ngāi Tahu culture and identity (including mahinga kai), its landscape, amenity, recreational value, and its role in supporting agriculture and industry.

For Ngāi Tahu, the relationships and obligations of people to place are fundamental and are held and passed down by whakapapa. Present generations hold the responsibility of being kaitiaki and for ensuring that the essential elements of life are passed on in an equal or improved state of health. This can only be achieved by strong rules, policies, strategies we enforce which protect the taonga status of waterbodies and provide for ongoing customary and cultural use.

Within the community, people have different perceptions of the ‘value’ of all types of water, including stormwater and wastewater resources. This includes different priorities and understanding of the value the multiple uses of the city’s water resources e.g. ecology, recreation, food gathering, receiving environment for discharges.

The key elements of this goal are:

- Increasing awareness – to encourage and engage the community to value and respect the multiple uses of our water resources through advocacy and outreach programmes, demonstration projects that highlight the values of water, and considering the water services charging structure and the way information is conveyed to the community.
- Enhancing natural and cultural values (including ecology, amenity, recreation, heritage and landscape) – through initiatives such as demonstration projects, protection of existing waterway and wetland systems, encouraging and facilitating wetlands, waterways enhancement and naturalisation, addressing stream depletion, facilitating the adoption of water sensitive design and promoting water conservation.

**Goal 2: Water quality and ecosystems are protected and enhanced**

Achieving a high standard of water quality in Christchurch’s surface and groundwater is essential for improving the ecosystem health of water resources, protecting and restoring all Ngāi Tahu values associated with surface water resources and supporting a range of recreation activities on and around waterways. Good water quality adds to the amenity value of surface waterways, and is essential in the Te Patako o Rakahauti Banks Peninsula streams and rivers and the Christchurch aquifers which supply drinking water to the Christchurch community.

Springs, streams, rivers, lakes and associated wetlands provide important ecosystem values, and are essential to the existence of plants, invertebrates, fish and birds. The estuaries, coastal lagoons (hāpu), harbours and the coastal marine area connected to these waterbodies are also important and must be protected and enhanced.

The key elements of this goal are:

- Improving water quality and enhancing the natural, cultural and ecological values of waterways – through continuing the existing Stormwater Management Plan approach to management of stormwater quality, increasing focus on sediment control measures, implementing source control and water sensitive design, wetlands and waterways enhancement and naturalisation, and where possible retrofitting water quality mitigation for existing developed areas.

- Reducing the effects of wastewater overflows – by network upgrades, targeting efforts to address overflows and reducing inflow and infiltration.
- Understanding groundwater sources and their vulnerability to contamination – through targeted investigations, further implementation of source protection, and restrictions on excavation below groundwater level.

**Goal 3: The effects of flooding, climate change and sea level rise are understood, and the community is assisted to adapt to them**

The Christchurch metropolitan area is naturally flood prone, much of it is formed on vast areas of drained swamps and wetlands, and there are significant flood plains within its boundaries. Managing high flows in urban waterways and stormwater from new and existing developments and reserving space for the natural flow of the waterways are necessary to reduce the risk of flooding to the community – in other words, ‘making room for the river’. In Te Patako o Rakahauti Banks Peninsula, the shorter steeper catchments present their own challenges in terms of managing flooding in the small settlements. The ongoing management of lake, estuary and coastal lagoon openings and levels (including Te Roto o Wairere Lake Forthby and Te Waihora Lake Ellesmere) in conjunction with manawatuus, affecting landowners and the community are also important.

Sealevel rise has implications for the district in terms of increased coastal inundation, shallower groundwater, particularly in coastal areas and along tidal stretches of the rivers, higher flooding levels and erosion. It is therefore necessary to take a long term view and have a flexible approach to the management of flooding and sea level rise that enables the community to understand the risks and make timely adaptations when pre-defined conditions or triggers are met.

The key elements of this goal are:

- Understanding risks due to sea level rise and consequences resulting from climate change, and developing an adaptive response.

**Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitiakitanga**

Managing water in a sustainable and integrated way is an overarching goal that covers the long-term sustainability of the water supplies and the wastewater treatment and disposal systems. This also encompasses the integration of the waters and the renewal of aging infrastructure. The principle of kaitiakitanga requires Council to take a long term and balanced approach to water management with a focus on solutions and cultural and community outcomes, including recreation and mahinga kai. It also highlights the important connection between water quantity (managing abstraction and recharge) and water quality (treatment and discharge) and the natural flows in the surface waters.

The key elements of this goal are:

- Managing assets across all disciplines in an integrated manner to maximise attributes like place-making, collaborative benefits, eco-system service harmonies which may not be realised when assets are developed in isolation for a single discipline.
- Managing stormwater collectively wherever practicable in order to maximise efficiency, cost effectiveness and ease of maintenance. Encouraging on-site stormwater management using water sensitive design

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where collective stormwater management is not feasible (such as areas where urban intensification and redevelopment of industrial and business land is prevalent).

- Managing wastewater systems to meet community needs – including through reviewing and revising trade waste and biosolids management and developing long term solutions for Christchurch’s future growth and for the disposal of treated wastewater from the Akaroa Harbour communities.
- Managing water sources to meet reasonable demands – by improving understanding of water sources and water use, implementing demand management projects and securing access to water supplies.
- Infrastructure efficiency and resilience – by utilising a risk based approach, proactive monitoring and the implementation of intelligent technology.
- Managing resources collaboratively. Water resources management is complex and requires collaborative integrated work programme across Council units and between stakeholders.

The draft strategy supports the implementation of the Canterbury Water Management Strategy (CWMS), as shown in the following table.

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<td>Recreational and amenity opportunities</td>
<td>1, 2</td>
<td>1, 3, 4</td>
</tr>
<tr>
<td>Water-use efficiency</td>
<td>1, 4</td>
<td>2, 5, 11</td>
</tr>
<tr>
<td>Environmental limits</td>
<td>1, 2</td>
<td>4, 4, 6, 9</td>
</tr>
</tbody>
</table>

Note that other Council policies and strategies also support the implementation of the Canterbury Water Management Strategy, including but not limited to the Biodiversity Strategy, the Infrastructure Strategy, the Economic Development Strategy, the Energy Action Plan, the Sustainable Energy Strategy and the Sustainability Policy.

7. Ngā paetae Objectives

While some of the issues outlined in Section 5 are those for which we can exercise some degree of direct control, for other issues we will need support from marae whanau, the wider community, regional and central governments, and other stakeholders in order to the objectives of the draft strategy.

The objectives are not listed in any order of priority.

7.1 Objective 1: Awareness and engagement

Increase awareness and engage with the community and mana whenua regarding the multiple uses and values of water

Current situation

Encouraging and engaging the community to value and respect the multiple uses of water will enable a culture shift to a future where all uses of water are valued.

There are numerous causes of contamination in the urbanised areas and community behaviour can influence many of these; for example sediment from construction, bacteria from waterfowl and dog faeces, and dumping of litter into the waterways. Residential properties pay targeted rates for the three water services but these charges are not specifically shown on the rates bill. The typical public perception is that the supply of drinking water is virtually free and unlimited. Most residential properties are metered but some meters cover more than one property. Residential meters are read every two years and information on water use is only sent to high water users. Per capita water consumption is higher than other New Zealand cities that have universal metering and volumetric pricing.

Suggested approaches

Works aimed at achieving this objective should seek to link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Mahaanui Kurataiao where relevant and appropriate.

1. Advocacy and outreach

The need for a ‘step-change’ in the way people value Christchurch water was identified in the stakeholder workshops. Advocacy and outreach initiatives would be the foundation to support other suggested approaches implemented for the draft strategy, valuing all of the waters needs to become a ‘top-of-mind’ issue for the majority of the population to achieve the ‘step-change’ required to a future where the waters are valued by all.
7.2 Objective 2: Efficient and resilient infrastructure

Ensure efficient use of three water infrastructure and ensure the resilience of entire networks (including natural waterbodies) over the long term through timely asset renewal and/or better alternative solutions.

Current situation

There have been increased water supply and wastewater pipe failures due to both age-related deterioration and earthquake damage. Damage to stormwater and land drainage assets including damaged pipes and pump stations, as well as stopbanks and box drains was also caused by the earthquakes. We have started work towards a proactive risk-based approach to asset renewal that takes into account asset criticality, condition and performance.

In addition, the 2017 Government Inquiry into the Havelock North drinking water issues has resulted in a trend towards a more rigorous assessment of water supply security. We initiated a programme of works to upgrade below-ground wellheads to regain the ‘secure’ status of the metropolitan Christchurch water supply. Re-attainment of secure status will enable us to retire the temporary chlorination of the metropolitan Christchurch public water supply put in place from March 2018.

Ngāi Tahu have played a prominent and influential role in the re-build of Otatara Christchurch, particularly around designing the urban environment in a way that respects the taonga status of its waterways. Ngāi Tahu wish to maintain this role and ensure that improved infrastructure is developed that reflects Ngāi Tahu values.

Suggested approaches

There may be opportunities for projects undertaken to meet objective 2 to link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Mahaeara Kurataiao Ltd.

1. Proactive risk-based asset renewals

Development of formal procedures for assessment of asset criticality, condition and performance is the first stage to improve our renewal planning approach. The second stage requires development of processes and guidelines for renewals criteria, renewals modelling and identification of opportunities to renew a group of assets that are inter-related. A key supporting action is the asset data capture, verification and validation programme, particularly for Te Patake o Rakahāhutapu Banks Peninsula infrastructure which has the greatest data gaps.

2. Proactive monitoring of condition

Condition based monitoring is the process of systematic data collection and evaluation to identify changes in performance or condition of a system, or its components, so that remedial interventions can be planned in a cost effective manner to maintain reliability and ensure continued service for customers. Condition-based monitoring is seen as a national and international best practice.

3. Intelligent technology

Intelligent technology would be used to improve infrastructure asset renewal and/or to enable more efficient use of existing infrastructure.

4. Continuing to manage for the six core values for stormwater and flood management

For over 20 years, we have focused on a multi-value and multi-party approach to stormwater and flood management. By identifying six core values – ecology, drainage, culture, heritage, landscape and recreation – as the drivers for improved surface water, stormwater...
7.3 Objectives 3 and 4: Enhancement of ecological, cultural and natural values and water quality improvement

3: Enhance the ecological, cultural and natural values (including amenity, recreation, customary use, heritage and landscape) of waterways

4: Improve the water quality of surface water resources to protect ecosystem health and provide for contact recreation, food gathering and cultural values.

Current situation
Concern over the quality of rivers and streams has been consistent in feedback from the community and mana whenua.

The highly urbanised catchments such as the Ōtākaro Avon and Ōpāwaho Heathcote Rivers have poorer ecological health, whereas the less urbanised areas, such as the upper reaches of the Pōhakureke River, the Ōtukahero catchment and many of the Te Pataka o Rākaihauti Banks Peninsula waterways have much better ecological health.

Suggested approaches
Where appropriate works undertaken to achieve these objectives should link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Māhau Rūnanga Kaitiakitanga Ltd.

1. Advocacy and outreach and Demonstration projects
These two approaches are shared in common with the suggested approaches 1 and 2 for objective 1.

2. Continue and enhance implementation of the current approach to stormwater management

The Stormwater Management Plans being prepared as part of the Comprehensive Stormwater Network Discharge Consent consider a number of measures for implementation in particular catchments or areas of catchments, such as:

- continuing a comprehensive surface water quality monitoring network to prioritise areas for stormwater management upgrading and treatment
- assessing stormwater network expansion and treatment and storage improvement opportunities
- requiring greenfield and significant infill residential developments to construct stormwater detention and treatment systems or connect to an existing collective mitigation system
- exploring options for retrofitting existing infrastructure
- undertaking stormwater network drain clearing practices
- working with landowners, and commercial and industrial land users to address on-site stormwater management practices
- installing rainwater gardens and investigating pavement types
- implementing large-scale measures such as sedimentation and detention ponds and wetlands where suitable land is available

Our current aim is for all of the catchments in the Christchurch District to be covered by a Stormwater Management Plan by 2020.

Controlling contaminants at source would lead to an improvement in the state of waterways in Christchurch. Some of these controls require a nationwide, co-ordinated response and we could advocate to central Government for this.

3. Increased sediment control
Sediment discharges are a frequent cause of adverse effects in Christchurch's surface waterways, including Whakaraupō Lyttelton Harbour and Akaroa Harbour. Conditions are placed on resource consents for developments, but there are a number of other measures that could be instituted to increase control over the effects of sediment discharges such as:

- land use controls to limit vegetation clearance and overgrazing in areas identified as priorities for addressing sediment discharge
- improved mitigation of sediment discharges from road corridors and cuttings
- monitoring and enforcement of erosion control.
Wastewater and stormwater network upgrades and real-time control technology also have a significant role to play in improving the resilience of the networks.

Continuing to consider and, where possible, address capacity constraints at the time of installing new and replacing existing infrastructure provides a cost-effective solution for managed improvements.

Additional consideration and implementation of real-time control technology to make use of spare network capacity offers further opportunities to reduce overflows.

6. Wetlands and waterways enhancement and naturalisation

Continuing naturalisation works of key identified wetlands and waterways, and protection of existing waterbody and wetland systems, should form an important measure to assist the community to value water and to improve the state of the District’s waterways.

Our Waterways, Wetlands and Drainage Guide (WWDG) could be used to assist with this work.

7. Implementation of water sensitive design

The basic approach of water sensitive design is described in relation to suggested approach 3 under objective 1, in relation to enabling the community to implement water sensitive design measures. Water sensitive design can also be applied at multiple scales, for structure planning, subdivision and site development. It is appropriate for both greenfield sites and brownfield redevelopment. It can have a significant positive effect in reducing adverse effects on water quality and can reduce the effects of downstream flooding by delaying discharges and utilising ground soakage to reduce immediate runoff.

A combination of regional policy statement, regional plan and district plan provisions would facilitate adoption of water sensitive design into developments where collective stormwater systems do not exist or have insufficient capacity. We are directly responsible only for district plan provisions. To implement this option we work closely with Environment Canterbury to ensure the regional planning framework appropriately facilitates the adoption of water sensitive design.

8. Development of stormwater discharge standards

Through a regulatory mechanism, such as the Comprehensive Stormwater Network Discharge Consent or section 35 of the Water Supply, Wastewater and Stormwater Bylaws 2014, standards for stormwater discharges could be developed. These standards could aid in limiting the concentration of affected contaminants in stormwater, and hence to receiving surface water bodies.

Proposed ways of measuring achievement of the objective:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhance ecological values</td>
<td>Quantitative, Macroinvertebrate, Community Index scores</td>
</tr>
<tr>
<td>Decreasing sediment inputs</td>
<td>Fine sediment percent cover of stream bed, Maximum concentrations of Total Suspended Sediment in surface water</td>
</tr>
<tr>
<td>Reducing copper, lead and zinc levels</td>
<td>Maximum concentrations of dissolved copper, lead and zinc in surface water and sediment</td>
</tr>
<tr>
<td>Reducing nutrient levels</td>
<td>Maximum total macrophyte cover of the stream bed, Maximum filamentous algae cover of the stream bed</td>
</tr>
<tr>
<td>Mara wherius values</td>
<td>Cultural Health Index (CHI) and State of Takaha scores</td>
</tr>
</tbody>
</table>

7.4 Objective 5: Wastewater overflows management

Reduce and work towards eliminating, the effects of wastewater overflows.

Current situation

Wastewater network overflows can adversely affect the water quality and ecology of waterways, and may pose a public health risk. The overflows are also considered culturally offensive to Ngāi Tahu who either maintain or have aspirations to carryout mahianga kai food gathering practices. Ngāi Tahu oppose wastewater overflows and wish to see the elimination of untreated wastewater into waterways.

Challenges for managing wastewater overflows and community perception include:

- Pre-earthquake some parts of the wastewater network had insufficient capacity to convey storm flows. Stormwater inflow and groundwater infiltration entering the wastewater network has significantly increased as a result of the earthquakes, resulting in a further reduction in capacity.
- Rapid post-earthquake housing development on the periphery of the Christchurch metropolitan area, together with new housing intensification areas arising from the Land Use Recovery Plan, and the potential for further intensification as a result of provisions in the Christchurch District Plan, has placed, and is likely to continue to place, considerable additional pressure on the capacity of parts of the network.
- Experience in Christchurch, nationally and overseas has demonstrated the difficulty of significantly reducing inflow and infiltration. Once the easily identified sources have been determined and resolved and treated (such as significant individual illegal stormwater connections), there would then be a diminishing level of return on investment in inflow and infiltration reduction programmes.

Suggested approaches

Works aimed at achieving this objective could link to joint work programmes with Ngāi Tahu Papatū Rūnanga and Mahaanui Kurataiao where relevant and appropriate.

1. Wastewater network upgrades

To date, infrastructure construction projects have been designed to both provide capacity for growth and to address wet weather overflow reduction. Preliminary post-SCIRT wastewater modelling results show that the wastewater network is worse than before the 2010/2011 earthquakes.

Continuing to co-ordinate capacity improvements with renewal of infrastructure provides a cost-effective solution for managed improvements. Additional consideration and implementation of real-time control technology to make use of spare network capacity offers further opportunities to reduce overflows.

Increased use of pressure and vacuum sewer systems (or other smart systems) is expected to progressively reduce levels of inflow and infiltration within local catchments. This should be undertaken in parallel with improvements to the stormwater systems in those catchments to maximise the benefits of these types of wastewater systems.

2. Effects based wastewater network consent

There are environmental, social and cultural pressures regarding management of wastewater overflows. However, the traditional approach to catchment management focused on managing wastewater overflows risks spending large sums of money for little benefit in terms of actual community outcomes unless stormwater contamination is also addressed. An integrated effects-based network overflow consent would assess total catchment pollution from both stormwater and wastewater discharges, so that mitigation efforts and infrastructure spending can be prioritised based on cost-effective and risk-based water quality outcomes.

3. Reducing inflow and infiltration

There is a clear link between wastewater overflows and inflow and infiltration into the wastewater network. Inflow can be reduced by measures such as addressing illegal household stormwater connections to the wastewater network and sealing vents on wastewater manholes to exclude stormwater from the system. Increased use of pressure and vacuum sewers will reduce levels of infiltration and also therefore reduce overflows.
7.5 Objective 6 and Objective 7: Flood risk and flood management and adaptation

6: Understand the likely extent and effect of flooding, and the risk posed by flooding

7: Manage and adapt to the effects of flooding using natural systems, planning tools, community adaptation and infrastructure solutions

Objectives 6 and 7 are grouped together as they both relate to flooding and flood management

Current situation
We already have in place a comprehensive approach to flooding and flood management that dates back to the early work of the Christchurch Drainage Board at the start of the twentieth century. However, the earthquakes had a significant effect on both flood management assets and the waterways of Christchurch, particularly in the Christchurch metropolitan area. The increase in flooding as a result of the earthquakes is most evident in areas close to the waterways, where soft ground has settled and thus become more flood prone.

Suggested approaches
Works aimed at achieving these objectives could seek to link to joint work programmes with Ngāi Tahu Papatūānui Rūnanga and Māhaua Kuratawhaia where relevant and appropriate.

1. Enhance the current approach for flooding and flood management

We have a multi-value management and treatment philosophy, and have begun preparing comprehensive Stormwater Management Plans. Stormwater Management Plans for all areas will have been prepared by 2020, the implementation of the recommendations of these plans will be a longer term exercise.

Flood models across the city are also being updated. A comprehensive and integrated city-wide assessment of flood-risk will help us to better understand the implications of management decisions being made, and to make appropriate decisions around how to address flood risk in an integrated way.

Monitoring of shallow groundwater level across the city will improve flood modelling accuracy and help inform decisions.

District Plan provisions to address known flood hazard (including defining flood management areas) have been developed and implemented. The continued development of flood models to cover the full area of the city and the unfolding effects of sea level rise mean that District Plan provisions will continue to evolve.

The earthquakes had a significant effect on flood management assets and the waterways of the district, particularly in the Christchurch metropolitan area. In response, we launched the Land Drainage Recovery Programme in 2012. There are a range of physical defences proposed in the programme, including stopbanks, pump stations, waterway channel modifications (widering, re-grading, bank trimming), floodwater storage and property level defences (such as house raising).

2. Develop a risk based approach to managing the effects of flooding

Best practice for flood risk mitigation is to develop a risk based approach. Decisions on floodplain management in the lower reaches of our major rivers need to be made within an ‘all hazards’ framework. We have already taken the first steps towards a risk based approach to flood management:

- Delivering an integrated approach to flood modelling across the city
- Developing a financial model to feed into the integrated city-wide flood modelling, to enable the economic costs of options to be considered against each other
- Undertaking a multi-hazards analysis to inform decisions on floodplain management in the lower reaches of our major rivers
- The work under the Land Drainage Recovery Programme and other Council projects consider at a local scale the options and costs of particular flood management or mitigation options for specific sites, balancing those against the residual consequences of flooding, and prioritising actions

A system that is adaptive and responsive to change needs to be developed and flood management processes and procedures developed so that:

- Sustainable floodplain development and risk management are a normal part of business and community activities and development
- People are informed and understand and accept the level of flood risk in Christchurch

- A combination of measures (such as those outlined above) is instituted, rather than reliance on single approaches in isolation
- Long term outcomes rather than short term measures are considered
- Integrated catchment and floodplain management is undertaken as a matter of course
- Natural processes and systems are understood and taken into account
- Climate change and variability are factored in.

We will continue to work with other territorial authorities, Environment Canterbury and the Government to develop appropriate flood mitigation responses.

3. Communicate a risk based approach to the community and foster community support

Best practice for a risk based approach to flood management emphasises the need for conversations with the affected communities about the options and approaches – particularly in relation to responses that do not involve structural measures.

A conversation needs to be held with the community about feasible and realistic levels of service in relation to management of flooding across Christchurch, informed by the outputs of the current modelling, additional modelling, the works under the Land Drainage Recovery Programme, and the development of the Stormwater Management Plans, noting the uncertainty resulting from climate change.
4. Implement options tailored to address flood management in specific circumstances

The implementation of a whole-of-catchment approach that includes a range of tools to address flood risk is an important component of a risk-based approach to flood management. Our existing programme of Stormwater Management Plans offers an opportunity to move further towards whole-of-catchment integrated floodplain management and a risk-based approach.

A number of tools exist for flood management. Some of these were canvassed in stakeholder workshops as part of the development of the draft strategy, including:

- Review of operation and management regimes - provides opportunities to maintain the inlet capacity of the stormwater system, to reduce the incidence of nuisance flooding.
- Development of multi-use areas - where appropriately sited public open space can be used as flood detention areas and to reduce the effects of downstream flooding. The Residential Red Zone in the Otakaro Avon catchment is an opportunity to ‘make room for the river’, by re-aligning the stopbanks onto a more stable foundation away from the present water edge.
- Property specific interventions - such as house purchase, house tanking, raising floor levels, relocation, and development of commercial properties to withstand the effects of flooding.
- Engineering solutions - such as stopbanks, stormwater detention and ponding areas, in order to delay the impacts of climate change and allow prolonged occupation of areas at risk of flooding.
- Development of District Plan provisions aimed at limiting development in flood-prone areas is also likely to play an important role in integrated floodplain management.

Other tools suggested through available best practice include:

- Ongoing communication and education plans to inform people of flood risk.
- Naturalising areas to achieve better management of stormwater.
- Advice to landowners on flooding and mitigation options.
- Land purchase.

Proposed ways of measuring achievement of the objective:

- For each flooding event, the measure is the number of habitable floors affected (expressed per 1,000 properties connected to the stormwater system), targeting a decreasing event-by-event trend for similar-sized events. Use modelling to demonstrate year by year improvements.

7.6 Objective 8: Sustainable wastewater systems

Manage the effects of the wastewater systems to meet community needs for environmental, social, cultural and economic sustainability over the long term.

Current situation

The immediate challenge for managing the wastewater systems is to provide a long-term solution to the treated wastewater discharges into Akaroa Harbour that addresses the concerns of the community and Onuku Rirangi.

Wastewater treatment and disposal needs for the Christchurch metropolitan area have been addressed for the next 20 years at least. Beyond 2040, Christchurch’s wastewater treatment and disposal system may require changes to accommodate the new areas of growth in the north and southwest.

Suggested approaches

There may be opportunities for projects undertaken to meet objective 8 to link to joint work programmes with Ngati Tahu Papatipu Rirangi and Mahauns Kurataiao Ltd.

1. Improved trade waste management

The Trade Waste Bylaw 2015 includes measures to advance waste minimisation and cleaner production, and other measures to protect the wastewater infrastructure and natural waterways.

Improved management of trade waste could include regulatory or non-regulatory mechanisms to encourage trade waste customers to pre-treat at source.

2. Biosolids management with multiple pathways for beneficial reuse

The current biosolids management approach is centralised dewatering and thermal drying of biosolids at the Christchurch Wastewater Treatment Plant to stabilise the material and minimise volume (this includes trucking of biosolids from the Akaroa Harbour plants to Christchurch for processing). The dried biosolids are then trucked to the West Coast for beneficial use in remediation of the Stockton Coal Mine land. Reuse is also consented in Cherry’s Forest or the material can go to landfill. An opportunity exists to reconsider biosolids treatment and reuse, particularly from the Akaroa Harbour wastewater treatment plants. There may be opportunities for multiple paths for beneficial reuse of biosolids in the future.

3. Develop a long-term wastewater treatment and collection solution to accommodate future growth

The Christchurch wastewater treatment plant at Bromley has sufficient capacity to treat flow associated with projected growth for the next twenty to twenty-five years. A shift in the city’s population has already occurred to the north and to the west of the city as a result of the earthquakes and is expected to continue. This will result in longer conveyance distances and increased average retention time within the wastewater network. We need to fully investigate alternatives to centralised wastewater treatment to address wastewater treatment and disposal needs after 2040 for the Christchurch metropolitan area (including Whakaraupō-Lyttleton Harbour). The alternatives include decentralised treatment, satellite treatment plants and/or sewer mining.
5. Agree with Ngāi Tahu and the community on long term solution for treated wastewater in Akaroa Harbour

We have been working on an upgrade for the Akaroa wastewater scheme and its discharge to address the ongoing concern from the local community, including Omuku and Waitrewa Rūnanga, about the current treatment plant location at Takapirirke and the discharge of treated wastewater directly into Akaroa Harbour. The community and local rūnanga have expressed strong preferences for treated wastewater to be available for non-potable reuse and irrigation to land. A new wastewater treatment plant on an alternative site above Akaroa has been consented. We are exploring alternatives to the harbour discharge.

The discharge of treated wastewater from the Duvauchelle wastewater treatment plant into Akaroa Harbour is consented until 2032. The Duvauchelle wastewater treatment plant provides secondary treatment of wastewater and ultraviolet (UV) disinfection before discharging the treated wastewater to the Harbour via a 1.6km long outfall pipeline. Consent conditions require the investigation of alternative disposal options.

Proposed ways of measuring achievement of the objective:

- Maintain consent compliance for wastewater treatment plants; targeting 100% consent compliance.
- Percentage of biosolids diverted from landfill; targeting 100% of biosolids are diverted from landfill (assumes all biosolids diverted from landfill have beneficial reuse).

7.7 Objective 9 and Objective 10: Groundwater protection and improvement in understanding of aquifer system

9: Advance source protection of groundwater recharge areas and surface water supply sources for all drinking water supplies

10: Understand the vulnerability, transit times and extent of confining layers of the Christchurch aquifers as well as the link to surface water quantity and quality

Objectives 9 and 10 are grouped together as they both relate to protecting the quality of water sources for drinking water supplies.

Current situation

The availability of high quality groundwater for public water supply is an extremely valuable natural resource for Christchurch and has been a source of pride for residents. Common to all groundwater sources, Christchurch’s aquifers are vulnerable to contamination and, while the likelihood of contamination of the deeper aquifers is very small, the consequences would be significant, costly and potentially irreversible.

Recent groundwater monitoring and modelling has found that groundwater from deeper aquifers north of the Waimakariri River can travel under the river and into the deeper Christchurch aquifers. This is a concern due to the rising nitrate levels in groundwater in the Waimakariri zone.

A recent Danish epidemiological study has found a strong link between nitrate concentration in drinking water and increased risk of colorectal cancer when nitrate is present at concentrations at or above 0.87 mg/l nitrate-nitrogen.

Suggested approaches

- Support research and monitoring programs to better understand groundwater vulnerability to contamination

Improving understanding of the extent and potential contamination mechanisms for groundwater would help to determine actions needed to address the issue of groundwater vulnerability. This could impact on stormwater management, and improve the poor waterbody state by maintaining the quality of groundwater discharging to the District’s surface waterways.

2. Source protection of drinking water supplies

For the Christchurch metropolitan area, source protection could consist of a detailed assessment of general aquifer vulnerability, a capture zone analysis for each Council drinking water well, and a contaminant inventory to identify specific risks for each well.

In particular establishment of a precautionary limit for nitrate in groundwater sources of public drinking water is needed.

Recommendations for groundwater protection should be developed for each Council drinking water supply protection zone. Public education would be an important part of the source protection approach.

We will continue to advocate for improvements in groundwater protection at both the regional and national levels. This would form a part of our commitment to manage and mitigate risk of contamination of Christchurch’s urban public water supplies, to protect public health and avoid the need for residual disinfection. This links to approaches suggested for objective 11.

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2 For example, the level at which gastrointestinal symptom health may be maintained has been assessed at anywhere from 3.0 mg/l to protect 90% of aquatic species and 2.4 mg/l to protect 99% of aquatic species to an annual median of no more than 3.5 mg/l, nitrate-nitrogen as the appropriate level to protect infants in the groundwater at Te Wairapopouri Springs. With respect to human health, the New Zealand Drinking Water Standard is 1.0 mg/l, nitrate-nitrogen, a recent Danish study found an increased risk of colorectal cancer at nitrate Nitrogen levels as low as 0.87 mg/l.
3. Restrictions on excavation and filling below groundwater level

In areas to the west of the Christchurch metropolitan area, excavation activities (primarily quarrying for gravel extraction) represent a risk to groundwater quality, particularly in relation to the backfilling and rehabilitation of excavated areas over the unconfined aquifers. A further risk is the longer term potential for groundwater level to rise with the completion of large scale irrigation schemes on the Canterbury Plains. This could result in contact with possible contaminated backfill already in place in excavations that were at the time of excavation above the highest recorded groundwater level, but in the future could be within areas of increased groundwater levels. Controlling the depth of excavation in relation to the groundwater level, requirements for rehabilitation plans and control of material used for backfilling would help to manage the risk to groundwater quality.

A further risk is the longer term potential for groundwater level to rise with the completion of large scale irrigation schemes on the Canterbury Plains. This could result in contact with possible contaminated backfill already in place in excavations that were at the time of excavation above the highest recorded groundwater level, but in the future could be within areas of increased groundwater levels.

4. Partner with Environment Canterbury and neighbouring district councils

Suggested approaches will not be effective without partnering and engaging with Environment Canterbury and neighbouring district councils. Through its regional planning and consenting processes Environment Canterbury establishes policies and rules which manage activities which may affect groundwater quality and/or quantity.

Matters affecting groundwater are not constrained to jurisdictional boundaries. The inter-zone nitrate issue described in section 7.7 is one example. We will be unwavering in its advocacy for minimising nitrate incursion into groundwater sources used for drinking water supply.

We will continue to work collaboratively with Environment Canterbury and Waimakariri and Selwyn District Councils to promote and enhance groundwater protection.

7.8 Objective 11: Sustainable water supply

Manage the water sources for drinking water supplies to meet the forecast reasonable demands over the long term and ensure efficiency of water use.

Current situation

A clear message from stakeholders, manawhenua and the community is the desire to both protect and make the best use of existing drinking water sources. The Christchurch metropolitan area and Whakaraupō Lyttelton Harbour settlements have an abundant but finite source of high quality groundwater. Several Te Patako o Rakahauhi Banks Peninsula schemes however have limited water source availability e.g. water restrictions are typically implemented in Akaroa during the peak summer holiday season. Options may be needed in the shorter term for Te Patako o Rakahauhi Banks Peninsula settlements to ensure sustainable water supplies are available.

Environment Canterbury manages water resources through its regional plans and policies. We manage water resources through our District Plan and its strategies and policies. More information about how water resources are managed by the Council and Environment Canterbury can be found in Appendix A.

We have long recognised the need to ensure the sustainability of Christchurch’s groundwater and has undertaken water demand management and leakage reduction work since at least 1996.

Protection of the Christchurch aquifers from contamination and infrastructure upgrades continue to be a key priority, along with testing to provide ongoing confidence that the metropolitan Christchurch public water supply poses minimal public health risk. However, it is noted that central government is reviewing the regulatory policy arrangements for drinking water supply and some form of treatment (UV disinfection, chlorination etc.) may become more likely. Additionally, it is becoming apparent that other public health initiatives e.g. fluoridation may impact on water supply infrastructure in future.2

An untreated public water supply for the Christchurch metropolitan area is embedded in Christchurch’s social and cultural identity. We remain committed to providing demonstrably safe drinking water without the need for residual disinfection.

Suggested approaches

The following preferred options were identified to address this objective:

1. Improve understanding of water use and develop improved demand management programme

This option builds on the legacy of our water demand studies undertaken since 1996. Our water demand forecasting model can assess the potential impact of water demand management initiatives. Examples of water demand management interventions that could be evaluated include more frequent meter reading with results provided to residents, assessment of volumetric charging as noted in option 4 for objective 1, incentives to encourage retrofit of dual flush toilets and installation of sub-surface garden watering systems.

We will continue to work with Environment Canterbury to develop an agreed forecast for reasonable demand and reasonable availability.

2. Implement pressure management zones

Pressure management of water supply zones is a well-recognised national and international best practice with multiple benefits for extending infrastructure service life, and reducing leakage, operational costs and service interruptions. We are currently piloting the benefits of pressure management in urban Christchurch through the Rakhiti (New Brighton) zone...
4. Improve understanding of groundwater sources and levels

The understanding of both the Christchurch aquifers and the groundwater sources for the Te Pātaka o Rākaihautū Banks Peninsula water supply schemes needs to improve. The Christchurch aquifers are abundant, but have an unknown overall capacity and availability. In addition to the Council wells for the urban Christchurch water supply, other users including individual commercial and industrial properties have their own private bores, so overall take is also uncertain.

The Council and Environment Canterbury will collaborate with managing the shallow groundwater monitoring network formerly owned and operated by the Earthquake Commission.

We will continue to work with Environment Canterbury, the Government, universities and crown research institutes to advance our understanding of the groundwater system, including impacts of climate change and sea level rise.

This option links to option 1 for objectives 9 and 10.

5. Secure access to Christchurch groundwater sources for public drinking water supply

The Resource Management Act 1991 and the Freshwater NPS provide for the allocation of water to specific end uses. While a regional plan only has an effective life of 10 years, the establishment of a policy framework for allocation for community drinking water supplies would provide greater security of access to groundwater in the absence of resource consents.

6. Enable reuse and harvesting

Installation of on-site water sources for non-potable uses of water (e.g. garden irrigation, toilet flushing and clothes washing) could have multiple benefits including stormwater attenuation and reduction in water demands and wastewater flows to the network. Examples of on-site water sources are greywater reuse and rainwater harvesting.

Mana whenua noted that reuse and harvesting should be encouraged, particularly if residential volumetric pricing was introduced. Mana whenua consider that an advantage of residential volumetric charging could be the ability to enable incentives for incorporating reuse into sustainable house design e.g. greywater and rainwater harvesting.

8. Collaboration with other territorial authorities to retain control of public water infrastructure

We will continue to collaborate and share information with other city and district councils, Local Government New Zealand and central government. We will continue to advocate for ensuring that local communities have control over the provision of public water infrastructure to achieve effective integration of all community services.

Proposed ways of measuring achievement of the objective:

- Annual total volume of potable water abstracted for urban supplies in litres per person per day (where total water abstracted includes non-residential use, residential use, leakage etc.), targeting a decreasing year-on-year trend for this measure
- Real water loss in litres per connection per day, targeting a decreasing year-on-year trend for this measure
Te tuatouru Part three:
Whakatinatanga Implementation
8. Te whakatinanatanga
Stepwise and parallel implementation

The Integrated Water Strategy is intended to be an enduring long-term strategy. Implementation of many of the preferred options is also long-term, recognising its 100 year plus horizon. Resourcing for actions arising out of the implementation plans will be determined through the Long Term Plan process. Key to this process will be recognition that budgetary priorities must include not only business-as-usual infrastructure renewals and replacements and allowance for providing for growth, but also proactive capital and operational projects to ensure the long-term sustainability of the water services infrastructure in Christchurch.

Implementation plans will need to outline means of measuring achievement of the Integrated Water Strategy (including further development of the proposed measures included in the draft strategy), and high-level cost estimates, targets and monitoring that are realistically set and periodically reviewed and reassessed. All implementation plans will consider the ongoing relationship with manawhenaua and joint work programmes to be developed and implemented with Ngāi Tahu Papatipu Rūnanga and Mahaenui Kurataiao Ltd.

9. Ngā rauemi me ngā āheinga
Resources and capability

The following are key parties and stakeholders with roles to play in implementing the Integrated Water Strategy:

Christchurch City Council owns and operates the water services infrastructure for Christchurch.

Ngāi Tahu, through the six local rūnanga – Te Ngāi Tūhihuri Rūnanga, Te Hapū o Ngāi Tahu Whaka (Rāpaki), Te Rūnanga o Kuokourarata, Ōnuku Rūnanga, Wairewa Rūnanga and Te Teumatu Rūnanga, supported by Mahaenui Kurataiao Ltd and Te Rūnanga o Ngāi Tahu – provide resource management skills and have mātauranga and kaikōkāinga over resources.

Environment Canterbury has statutory planning responsibilities, is active in stream care programmes and water quality monitoring, flood management responsibilities, and maintains the Waimakariri River flood protection scheme.

Waimakariri District Council and Selwyn District Council have the same statutory functions as the Christchurch City Council. Opportunities for greater co-ordination and co-operation should be explored.

Community and Public Health provides public health services to the community and aims to create environments, communities and families that support healthy choices and lifestyles.

The Department of Conservation has overall responsibility for indigenous biodiversity conservation under a range of statutory mechanisms, such as the Conservation Act 1987, Reserves Act 1977 and Wildlife Act 1953.

Fish and Game New Zealand are an angler and game bird hunter organisation with a statutory mandate to manage New Zealand’s freshwater fisheries and game bird hunting, and has interests in the management of freshwater resources.

Other key groups and organisations with interests in water and water services infrastructure, public and community organisations such as Community Boards, water management zone committees, Avon-Otakaro Network, Ōpōtiki-Heathcote River Network and stream care groups.

The community in general and business and industry players also have key roles to play in implementing the strategy, as their actions have a direct impact on achieving the vision and goals.
10. Te aroturuki me te arotake  
Monitoring evaluation and review

It is intended that the strategy should be a living document that can be adjusted in the face of additional information, changing circumstances and further national and international developments in best practice over time.

The strategy should be formally reviewed on a six-yearly basis to match the Long Term Plan cycle, with a review recommended to occur in the year prior to a Long Term Plan so that specific projects or changes in priorities can be fed into that plan. The first review of the strategy is targeted for financial year 2023/24.

The implementation plans that follow the adoption of the strategy should be reviewed periodically.
Appendix A
Legislative and policy context

The management of water supply, stormwater and wastewater infrastructure and of surface water, groundwater and coastal waters sits within a comprehensive legislative and statutory framework. The key elements of that framework are outlined below.

Te Tiriti o Waitangi - Treaty of Waitangi
Te Tiriti o Waitangi established a partnership between the Crown and tangata whenua. Māori were guaranteed possession of their lands, forests, fisheries and other possessions. The Treaty partnership requires both parties to act in good faith and to make informed decisions. The principles of the Treaty recognise and guarantee the protection of tino rangatiratanga (sovereignty) and empower kaitakanga as customary trusteeship to be exercised by tangata whenua over their taonga, such as sacred and traditional places, built heritage, traditional practices and cultural heritage resources including water. Of particular importance is the principle for the Crown to actively protect Māori interests.

The requirement for Council to take into account Te Tiriti o Waitangi arises through requirements in the Local Government Act 2002 and the Resource Management Act 1991 (as amended).

The Mahaaunu Iwi Management Plan 2013 (IMP)
The IMP provides a statement of Ngāi Tahu issues, objectives and policies for natural resource and environmental management. The IMP includes a chapter on the management of water which addresses the rights and values of Ngāi Tahu hapū within Christchurch associated with water, the management of activities that affect water and the cultural impact of those activities. The IMP also includes as a key policy that local authorities are required to initiate and develop processes for implementing the Mahaaunu IMP in council planning and decision-making. The IMP also references and is consistent with the Te Ririnui o Ngāi Tahu Freshwater Policy Statement as a key part of the water management policy framework.

Local Government Act 2002 (LGA)
The LGA outlines the purpose of territorial authorities to meet the current and future needs of communities for good-quality local infrastructure, local public services and performance of regulatory functions in a way that is most cost-effective for households and businesses. The LGA also requires territorial authorities to assess the water supply and sanitary services and provide and maintain services to the community in a manner that promotes the four wellbeing outlined in the LGA.

2014 amendments to the LGA added a requirement for territorial authorities to prepare a 30-year infrastructure strategy in conjunction with their long-term planning.

Health Act 1956
Under the Health Act, it is the duty of every local authority to improve, promote and protect public health within its district. In respect to water, local authorities have an obligation to provide surface water, wastewater and water supply infrastructure (Section 25). The Health Act provides for each local authority to make bylaws for improving, promoting, or protecting public health and regulating drainage and the collection and disposal of wastewater.

Health (Drinking Water) Amendment Act 2007
The Health (Drinking Water) Amendment Act requires water suppliers to “take all practicable steps” to comply with drinking water standards. This Act makes mandatory standards for drinking water that had previously been voluntary.

The Act applies to all drinking water suppliers who supply at least 25 people for at least 60 days a year.

The Act also requires that water suppliers prepare and implement public health risk management plans (water safety plans) for their supplies, along with assessments of drinking water supplies. These plans are intended to assist the drinking water suppliers in managing risks to both public water supply sources and the infrastructure and network that make up the public water supply systems, including risks such as proximity of contaminated sites to source water, leakage of contaminants into source water, and natural disasters such as earthquakes or tsunamis.

The most recent approved water safety plans for Christchurch’s public water supplies are listed in the bibliography.

Resource Management Act 1991 (RMA) and RMA Framework
In order to achieve its sustainable management purpose, the RMA sets out the duties and functions of regional and territorial authorities and sets out a hierarchy of planning documents.

In regards to the management of water resources, the responsibility largely lies with regional authorities while the control of the effects of land-use activities largely lies with territorial authorities.

The RMA provides for the preparation of national policy statements, national environmental standards, regional policy statements, regional plans and district plans. The most relevant documents are discussed below, and will, through their objectives, policies and rules, set the resource management context for water, water services and associated infrastructure management in Christchurch.

The Canterbury Regional Plans, the Christchurch Plan, the Banks Peninsula District Plan and the Christchurch District Plan impact the management of water services and infrastructure. All activities associated with the establishment and operation of water services and infrastructure must be assessed against the rules of these plans, which will influence what and where infrastructure can be developed, how it is managed, its development cost and the timing of development.

National Environmental Standard (NES) for Sources of Human Drinking Water
Under its authority provided in the RMA the Ministry for the Environment established a NES for drinking water which became effective in mid-2008. The NES aims to ensure that land use activities do not pollute human drinking water sources. The NES requires local governments to consider the effect of catchment activities on drinking water sources. The NES also requires that new consents affecting drinking water catchments can only be granted if the proposed activity will not result in drinking water becoming not-potable or undesirable after treatment.

New Zealand Coastal Policy Statement 2010 (NZCPS)
Under the NZCPS local authorities have a role in safeguarding the integrity, form, functioning and resilience of the coastal environment. In relation to the management of the three waters, the NZCPS places responsibilities on regional and territorial authorities in respect of:

- Taking steps to avoid adverse effects of stormwater discharge to water in the coastal environment including:
  - Avoid where practicable and otherwise remedy cross contamination of sewage and stormwater systems
  - Contaminant and sediment loads in stormwater at source
  - Promoting designs that reduce flows to stormwater reticulation systems at source
  - Avoiding the discharge of human sewage directly to water in the coastal environment without treatment
  - Ensuring adequate consideration of alternatives and being informed by tangata whenua in terms of discharging treated human sewage to the coastal marine area
  - Enhancing coastal water quality

National Policy Statement for Freshwater Management (Freshwater NPS), as amended
The Freshwater NPS requires regional councils to recognise the national significance of freshwater for all New Zealanders through including provisions within their regional policy statements to set freshwater objectives and set environmental standards for all of the freshwater management units in its region.

The Freshwater NPS requires territorial authorities to give effect to the regional policy statement and include rules in their district plans that sustainably manage the demands on freshwater. The Freshwater NPS also requires local authorities to take reasonable steps to involve and work with iwi and hapū in the management of freshwater and identify tangata whenua values and interests in
freshwater and reflect these values and interests when managing and making decisions regarding freshwater within the region.

**Canterbury Regional Policy Statement (RPS)**

Under section 75 of the RMA, the Council must give effect to the Canterbury RPS by setting out objectives, policies and methods in district plans that are consistent with the RPS. While the RPS does not place direct responsibilities on the Council for the provision and management of the three waters, the strategy must be consistent with the RPS in order to appropriately guide future district plan development and the consenting of future three waters activities to meet the requirements under the RPS, and the planning documents that sit under it.

In relation to the management of the three waters, there are four key chapters within the RPS which direct the management of water infrastructure and guide the protection of natural and physical resources and cultural values. They are Chapter 5 Land Use and Infrastructure, Chapter 7 Fresh Water, Chapter 8 Coastal Environment, Chapter 9 Ecosystems and Indigenous Biodiversity and Chapter 12 Natural Hazards.

The RPS is due for review in 2021.

**Regional Coastal Environment Plan (RCEP) for the Canterbury Region**

The RCEP for Canterbury controls activities within the coastal environment to promote the appropriate use of the coastal environment, and the maintenance of the natural character of the coastal environment and coastal water quality. Any three waters activities within the coastal environment or discharging to the coastal environment are subject to the rules under the RCEP. The RCEP is scheduled to be reviewed in 2021.

**Canterbury Land and Water Regional Plan (LWRP) 2017**

The Canterbury LWRP establishes objectives, policies and rules for land and water management on a regional-wide basis in chapters 3, 4 and 5, and also provides for catchment-specific ("sub-regional") policies and rules in chapters 6 through 15. Rules include those for discharges to land and water and takes from surface and groundwater.

**Waimakariri River Regional Plan 2004, as amended**

The Waimakariri River Regional Plan recognises the need to protect both water quantity and water quality of the Waimakariri River. The purpose of the Plan is to promote sustainable management of the River and connected groundwater. Objective 5.1 seeks to "enable present and future generations to gain cultural, social, recreational, economic, health and other benefits from the rivers, lakes and wetlands in the Waimakariri River Catchment, and from the hydraulically connected groundwater while (a) safeguarding their existing value for efficiently providing for sources of drinking water for people and their animals".

**Chirstchurch City District Plan**

The Christchurch City District Plan, the Banks Peninsula District Plan and the Christchurch District Plan manage land use activities across Christchurch District.

**Other legislation**


**Bylaws**

**Water Supply, Wastewater and Stormwater Bylaw 2014**

This bylaw manages and regulates our water supply, wastewater and stormwater systems.

The bylaw:

- Sets out the requirements for connecting to the public water supply;
- Provides for water supply demand management;
- Establishes regulations for backflow prevention;
- Provides for protection of the wastewater network;
- Establishes conditions for connecting and discharging to our stormwater network;
- Provides rules for design of stormwater systems;
- Restricts or prohibits specified activities in relation to the stormwater network; and
- Allows for future development of minimum standards for discharges into the stormwater network.

**Trade Waste Bylaw 2015**

This bylaw regulates the discharge of trade waste into our wastewater network, including:

- Conditions for long-term, intermittent or temporary trade water discharges;
- Three grades of discharges: permitted, conditional and prohibited;
- Conditions for suspension or cancellation of permission to discharge trade waste; and
- Requirements for sampling, analysis and monitoring.

**Canterbury Water Management Strategy (CWMS)**

The CWMS is a non-statutory framework for managing water led by Environment Canterbury, Ngai Tahu and Canterbury’s District and City Councils and implemented by local communities. The Canterbury Region is split into ten zones which are each governed by a committee which is tasked with making recommendations for the best way to manage water in their area. Each zone committee is required to prepare a zone implementation programme (ZIP), which contains recommendations aimed at meeting CWMS targets in their respective zones. ZIP recommendations may be focussed on regional and/or district councils, iwi and/or other parties.

The CWMS established targets for ten subject areas:

- Ecosystem health/biodiversity
- Natural character of braided rivers
- Kaitaia kaitanga
- Drinking water
- Recreational and amenity opportunities
- Water-use efficiency
- Irrigated land area
- Energy security and efficiency
- Regional and national economies
- Environmental limits

The Integrated Water Strategy has a key role in contributing to the implementation of relevant recommendations put forward by the Zone Committees.

**Christchurch-West Melton Zone Implementation Programme (ZIP)**

This ZIP forms a package of recommendations for the zone that have been developed in consultation with key stakeholders and the general public to give effect to the Canterbury Water Management Strategy.

The Christchurch-West Melton ZIP focuses on five priority issues:

- Enhancing and managing waterways for recreation, relaxation and amenity
- Improving surface water quality and safeguarding surface water flows
- Enhancing healthy ecosystems, indigenous biodiversity, and valued introduced species and landscapes
- Safeguarding groundwater quality and flows for multiple uses
- Making efficient use of water and managing demand

**Banks Peninsula Zone Implementation Programme (ZIP)**

The Banks Peninsula ZIP identifies key areas of focus and includes priority outcomes and recommendations to Environment Canterbury for each area.

In relation to the three waters, recommendations in relation to water quality and wastewater include upgrading and management of water resources and infrastructure, management and prevention of discharges and contamination, further research to be undertaken, efficiency and implementation of new technologies.

**Selwyn-Waihora Zone Implementation Programme (ZIP)**

Five key areas of work have been established for the Selwyn-Waihora ZIP, including: nutrient and water management, water supply, Te Wahipounamu and lowland waterways, braided rivers/upper plains/high country, and biodiversity.

Within the key areas, the priority critical issues to be addressed include setting limits for nutrients and water storage.
Appendix B

References

Aquifers - underground layers of porous rock or sand through which groundwater flows.

Biosolids - solids separated by wastewater treatment processes that have been stabilized to reduce pathogens and pest-atraction, and which can be beneficially reused.

Christchurch - the whole of Christchurch District, including the Ōtautahi Christchurch City urban area, other settlement areas in the district, Te Patako a Rakaharuru Banks Peninsula and all rural areas within the jurisdiction of the Council.

Christchurch metropolitan area - 'urban Ōtautahi Christchurch, as opposed to 'Christchurch' which refers to the entire district.

Greyswater - used water from sinks, washing machines, showers and baths, dish washers and similar appliances, but not including any toilet wastewater. Water from toilet flushing is known as black water.

Groundwater - water stored beneath Earth's surface in aquifers (layers of water-bearing rock or sand). Groundwater tends to be abstracted from deeper aquifers tens to hundreds of metres below the ground surface) for drinking water, whilst shallow groundwater (water within a few metres of the ground surface) may contribute to flood issues.

Inflow - when stormwater enters the wastewater network via surface ponding of stormwater entering wastewater manholes and private gully traps and via illegal cross connections between the wastewater and urban stormwater networks.

Infiltration - when groundwater or stormwater seeps into wastewater pipelines and structures through breaks or joints.

Kaitiakitanga - the intergenerational responsibility and right of tangata whenua to take care of the environment and resources upon which we depend (as defined in the Ōtautahi Water Management Plan 2013).

Mahinga kai - the customary gathering of food and natural materials and the places where those resources are gathered (as defined in the Ngāi Tahu Claims Settlement Act 1998).

Māori - the essential life force of all things, spiritual essence (as defined in the Mahārangi Iwi Management Plan 2013).

Non-potable - water suitable for uses other than human drinking water, such as industrial process water and landscape irrigation.

Papatūana Rūnanga - marae based councils, administering the affairs of the hapō (as defined in the Mahārangi Iwi Management Plan 2013).

Potable - water suitable for human drinking water.

Recycling - a network of pipes and pumps.

SCIRT - Stronger Christchurch Infrastructure Rebuild Team. An alliance of Christchurch City Council, New Zealand Transport Agency, Department of Prime Minister and Cabinet, City Care, Downer, Fulton Hogan, Fletcher and McConnell Dowell established after the 2010-2011 earthquakes. The SCIRT programme was completed in 2017.

SEWER - a pipe that carries wastewater.

Sewerage system - another name for wastewater reticulation.

Stormwater - water that originates during precipitation events and snow/ice melt. Stormwater can soak into the soil (infiltrate), be held on the surface and evaporate, or runoff and end up in nearby streams, rivers, or other water bodies (surface water).

Surface water - includes drains, streams, rivers, lakes, wetlands, lagoons, springs and estuaries.

Taonga - treasure (as defined in the Mahārangi Iwi Management Plan 2013).

Wastewater - both the liquid and non-liquid portions of municipal sewage.

Water supply - all drinking water provided to households, public buildings, gardens and sports fields, and commercial and industrial customers through our water supply reticulation systems. It does not include the private residential and commercial supplies that operate in Christchurch, which are not owned or operated by, or on behalf of, the Council. It also doesn't include 'community water supplies' operated by other organisations (e.g., Christchurch International Airport).

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Cover image: Kayaking on the Ōtākaro Avon River – Kelvin McMillan

Page 6: Avon River Antigua boathouses – Kelvin McMillan

Page 7: Ōtākaro Avon River reflections in autumn – Kelvin McMillan

Page 8: A hikai full of tuna - Photo courtesy Te Rūnanga o Ngāi Tahu

Page 6: Te Waihora Lake Ellesmere sunset – Kelvin McMillan

Page 7: Having fun at Margaret Mahy playground – Christchurch City Council

Page 8: Shopping carts in the Avonhead area, Ōtākaro Avon River – Christchurch City Council

Page 10: Diesel pollution in a portion of Addington Brook, June 2006 – Christchurch City Council

Page 12: Signage near Akaroa wastewater outlet – Christchurch City Council

Page 12: Retention basin drainage covers at Wigram Skies - Kelvin McMillan

Page 13: Ōtākaro Avon River flooding, March 2014 – Christchurch City Council

Page 14: Storm waves in the estuary at South Brighton, 2009 – Christchurch City Council

Page 15: Aylmers Stream intake

Page 16: Wastewater pipe damaged in February 2011 earthquake

Page 18: Eel grabbing a moray

Page 23: Earthquake damaged pipe – City Care

Page 23: Pump station, Aranui, is an example of greater infrastructure resilience - Christchurch City Council

Page 24: Canaan geese along Ōtākaro Avon River – Kelvin McMillan

Page 25: Planting for erosion control, Bowendale Park – Kelvin McMillan

Page 25: Rusting roof – Christchurch City Council

Page 26: Knights Stream restoration riffle and fish pass – Christchurch City Council

Page 26: Stormwater control, Tait Industrial Park – Kelvin McMillan

Page 27: Warning sign, Ōtākaro Avon River, after 22 February 2011 earthquake – Christchurch City Council

Page 28: Pressure wastewater system, east-central Christchurch – Stronger Christchurch

Page 29: Flooding on Christchurch-Akaroa Road, August 2012 – Christchurch City Council

Page 30: Tay Street Drain #1 check valves, part of Floodton Basin flood mitigation works - Christchurch City Council

Page 31: Trickling filters, Christchurch Wastewater treatment plant – Kelvin McMillan

Page 31: Biosolids dryer, Christchurch Wastewater treatment plant – Christchurch City Council

Page 32: Akaroa wastewater treatment plant – Kelvin McMillan

Page 33: Artisan bread – John Webber

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Page 35: Intake for Douvachelle water supply, Pipers Stream – Christchurch City Council

Page 36: Waterside campaign 2015/16 – Christchurch City Council

Page 36: Water efficiency Label – Ministry for the Environment

Page 37: Using rainwater at Riccarton Park – Christchurch City Council

Page 37: Eastern end of Waimakariri River – Kelvin McMillan

Page 38: Ngā Purā Water – Kelvin McMillan

Page 40: Te Tihi o Kahurika Castle Rock reflected in lower Opawa Healthcote – Christchurch City Council

Page 43: Raupo, Te Waihora Lake Ellesmere – Kelvin McMillan
Drop-in-sessions

Come along to one of our drop-in sessions to talk to us about the draft strategy:

Tuesday 25 June 12–2pm
Turanga Central Library
60 Cathedral Square
Central City

Tuesday 25 June 4.30–6pm
New Brighton Board Room
Corner Beresford and Union Street
New Brighton

Wednesday 26 June 4.30–6pm
Beckenham Service Centre Board Room
66 Colombo Street
Beckenham

Saturday 29 June 2–4pm
Duvauchelle Hall
6039 Christchurch Akaroa Road
Banks Peninsula

Wednesday 3 July 3.30–5.30pm
Belfast School
700 Main North Rd
Belfast

Thursday 4 July 4.30–6pm
Upper Riccarton Library
71 Main South Road
Sockburn

Monday 8 July 4.30–6pm
Orauwhata: Bishopdale Community Centre
13 Bishopdale Court
Bishopdale Shopping Centre

Tuesday 9 July 4.30–6pm
Woolston Community Library
689 Ferry Road
Woolston

Engagement Team

53 Hereford Street, Christchurch 8011
PO Box 73016, Christchurch 8154
941 8999
engagement@ccc.govt.nz
ccc.govt.nz/OurWater
CHRISTCHURCH CITY COUNCIL
DRAFT INTEGRATED WATER STRATEGY

CONSULTATION ANALYSIS

Summary of Submissions for Hearings Panel

Strategy & Transformation Group
Christchurch City Council

12 August 2019
EXECUTIVE SUMMARY

Between mid-2015 and mid-2019 a draft Integrated Water Strategy was developed as part of the Healthy Environment Programme. The Strategy is a replacement of three Council water-related strategies:

- Surface Water Strategy 2009-2039, adopted by the Council in 2009
- Wastewater Strategy 2013, adopted by the Council in 2013

The development of the draft strategy included the following steps and processes:

- Report outlining the current state (situational analysis)
- Report identifying issues and some options to address them
  - Stakeholder workshops and a hui were held to inform this report
- First working draft strategy
- Further refinement of draft strategy including further stakeholder workshops and a hui
- Draft strategy released for public consultation

Public consultation was held from 14 June to 21 July 2019.

A total of 35 submissions were received during the public consultation period, as follows:

<table>
<thead>
<tr>
<th>Submitter</th>
<th>Submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals</td>
<td>22</td>
</tr>
<tr>
<td>Community Boards</td>
<td>4</td>
</tr>
<tr>
<td>Residents associations</td>
<td>3</td>
</tr>
<tr>
<td>Community groups</td>
<td>1</td>
</tr>
<tr>
<td>Research organisations</td>
<td>1</td>
</tr>
<tr>
<td>Health organisations</td>
<td>1</td>
</tr>
<tr>
<td>Family trusts</td>
<td>1</td>
</tr>
<tr>
<td>Commercial/business</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

Of the 35 submitters, 14 requested to speak on their submissions to the Hearings Panel.

14 major themes have emerged from the consultation process:

- Comments on the five main sections of the draft strategy: vision, goals, guiding principles, strategic issues, objectives
- Comments on nine subject areas: groundwater protection, water supplies, infrastructure and asset management, wastewater, flooding and flood management, surface water quality, surface water quantity, water efficiency and conservation, and implementation.
- General comments

Briefly, submitters told us:

- There was general support for the draft strategy
- Multiple changes were sought, most of which were points to provide greater clarity
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1 INTRODUCTION

1.1 Background

Currently there are three individual water-related Council strategies.

- Surface Water Strategy 2009-2039, adopted by the Council in November 2009

Although efforts were made during the development of each of these three strategies to take account of the other ‘waters’ and their inter-relationships, the extent to which these inter-relationships were explored and strengthened was limited. It was recognised that continued separation of the water-related strategies had unintentionally limited a truly integrated approach.

Because much of the work on two of the water strategies - Water Supply and Surface Water - had been undertaken over nine years ago both strategies were due for review.

In addition, legislative and regulatory changes have arisen that strengthen the need for a more integrated approach, such as the 2013 and 2014 amendments to the Local Government Act 2002 the National Policy Statement on Freshwater Management that was amended in 2014, and changes to both the New Zealand Drinking Water Standards and the Health Act 1956 (in 2018 and 2019) to strengthen the regulations for drinking water.

An integrated water strategy was also needed to better reflect the challenges and opportunities of the recovery period following the 2010-2011 earthquakes. Although the Wastewater Strategy has had a strong focus on earthquake recovery matters the Water Supply and Surface Water strategies were completed well before the earthquakes occurred.

In addition there was insufficient direction provided in the Surface Water Strategy for floodplain management, which has emerged as a key challenge following the Canterbury earthquakes.

1.2 Integrated water strategy project

The project to develop an integrated water strategy was initiated in August 2015. The project’s aim was to establish an integrated overarching strategic direction for Christchurch City Council’s management of its water resources: water supply, wastewater, surface water, stormwater and flooding management/mitigation.

The project consists of three main phases:

- Phase 1: analysis of the current state of water supply, wastewater and surface water including stormwater management and flooding (situational analysis), completed in October 2015;
- Phase 2: consideration of key issues and options that were identified through key stakeholder workshops and hui, as well as research on national and international best practice, completed in December 2015;
- Phase 3: preparation of a first working draft strategy for public consultation (mid-2016), subsequent preparation of a draft strategy for public consultation (May 2019), preparation of a final draft strategy that incorporates Hearings Panel’s recommendations (to be completed), and the Council’s decision for a final approved strategy (to be completed).
1.3 Consultation and engagement process

1.3.1 Pre-consultation engagement activities

As part of the development of the Draft Strategy, engagement was undertaken with both internal and external stakeholders on issues and options for the sustainable management of water resources in Christchurch.

Table 1 summarises the pre-public consultation activities that were undertaken as part of the wider engagement process.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 2015</td>
<td>Infrastructure Transport and Environment Committee briefing</td>
</tr>
<tr>
<td>Sept 2015</td>
<td>Combined Community Board seminar</td>
</tr>
<tr>
<td>Oct 2015</td>
<td>Updates to zone committees</td>
</tr>
<tr>
<td>Oct 2015</td>
<td>Scoping meeting with Mahaanui Kurataiao Ltd</td>
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<tr>
<td>Oct 2015</td>
<td>Combined Community Board seminar</td>
</tr>
<tr>
<td>Nov 2015</td>
<td>Community stakeholders issues &amp; options workshops</td>
</tr>
<tr>
<td>Nov 2015</td>
<td>Hui with Mahaanui Kurataiao Ltd and local iwi</td>
</tr>
<tr>
<td>Feb/Mar 2016</td>
<td>Zone committee briefings</td>
</tr>
<tr>
<td>Feb 2016</td>
<td>Combined Community Board seminar</td>
</tr>
<tr>
<td>Mar 2016</td>
<td>Zone committee review of early internal draft</td>
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<tr>
<td>Mar 2016</td>
<td>Rūnanga stakeholders’ review of early internal draft</td>
</tr>
<tr>
<td>July 2017</td>
<td>Te Rūnanga hui</td>
</tr>
<tr>
<td>Feb 2019</td>
<td>Te Rūnanga hui</td>
</tr>
<tr>
<td>Apr 2019</td>
<td>Zone committees workshop</td>
</tr>
<tr>
<td>Apr 2019</td>
<td>Environment Canterbury staff workshop</td>
</tr>
<tr>
<td>Apr 2019</td>
<td>Councillors briefing</td>
</tr>
<tr>
<td>May 2019</td>
<td>Community Board Chairs and staff briefing</td>
</tr>
</tbody>
</table>

1.3.2 Public consultation

Consultation on the draft strategy was not required under the Local Government Act 2002 as a special consultative procedure. Nevertheless the Council deemed that the public should be consulted on the Draft Integrated Water Strategy, in line with the Council’s Consultation Policy 2003.

The public consultation period began on 14 June 2019 and closed 21 July 2019.

In the first week of the consultation period, copies of a summary document and the draft Strategy were provided in hard copy to Council libraries and customer service centres, Councillors, the Mayor and seven rūnanga.

Consultation Analysis - Draft Integrated Water Strategy
Community Boards, the Council’s Executive Leadership Team and other key Council officers were contacted about the draft strategy and were directed to the Have Your Say page for the public consultation.

Other individuals, organisations, Resident and Business Associations and community groups were contacted about the draft strategy and were directed to the Have Your Say page for the public consultation.

A public consultation portal was provided on the Council’s Have Your Say web pages, with links to the full Draft Strategy, a summary document, and a PDF version of a questionnaire (see Figure 1). An online version of the questionnaire was provided through the Have Your Say page.

Figure 1. Consultation documents

Public consultation activities included:

- Have Your Say website, with promotion on the Council home page
- Media release on 14 June 2019
- Advertisements in The Press, The Star and neighbourhood newspapers
- Advertising on the radio
- Promotion on the Council’s Facebook and Twitter pages
- Council Newsline story on Friday 14 June 2019
- Draft Strategy and consultation document distributed to service centres and libraries and key stakeholders
- Link to the Draft Strategy and consultation Have Your Say webpage sent to key stakeholders
- Public drop-in sessions held on:

Consultation Analysis - Draft Integrated Water Strategy
25 June 2019, Tūranga Central Library
25 June 2019, New Brighton Board Room
26 June 42019, Beckenham Service Centre Board Room
29 June 2019, Duvauchelle Hall
3 July 2019, Belfast School
4 July 2019, Upper Riccarton Library
8 July 2019, Ōrauwhata Bishopdale Community Centre
9 July 2019, Woolston Community Library
Community Boards briefing 12 July 2019

A list of organisations and individuals that were contacted about the draft strategy and its public consultation is provided in Appendix 4.

Submissions on the draft strategy could be made through any one of several means:

- completing the online version of the submission form on the Have Your Say web site
- mailing the hard copy version of the submission form to the Council
- sending an email to the Council
- sending a hard copy letter or other hard copy written submission to the Council

The public could access information electronically through the Council’s Have Your Say page and hard copy at Council libraries and service centres as well as at all of the public drop-in sessions.

1.4 Submissions received

A total of 35 submissions were received. Of these, 22 were from individuals and the remainder were from community groups, organisations and businesses.

Table 2 summarises the number of responses received, whether they attended a public drop-in or not and respondents’ locations.

25 submissions used the consultation submission form. Of these all but one submission also included additional comments to one of more of the five questions in their submission forms.

The remainder of the submissions received were open-ended narrative submissions. These ranged in length from half a page to 10 pages.

<table>
<thead>
<tr>
<th>Submitter</th>
<th>#</th>
<th>Attended public drop-in</th>
<th>Location(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>26458</td>
<td>No</td>
<td>Not supplied</td>
</tr>
<tr>
<td>Individual</td>
<td>26459</td>
<td>Yes, twice</td>
<td>Redwood</td>
</tr>
<tr>
<td>Individual</td>
<td>26457</td>
<td>No</td>
<td>Papanui</td>
</tr>
<tr>
<td>Individual</td>
<td>25857</td>
<td>No</td>
<td>North Beach</td>
</tr>
<tr>
<td>Individual</td>
<td>25589</td>
<td>No</td>
<td>Christchurch</td>
</tr>
<tr>
<td>Submitter</td>
<td>#</td>
<td>Attended public drop-in</td>
<td>Location(s)</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-------</td>
<td>-------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Individual</td>
<td>25602</td>
<td>No</td>
<td>Upper Riccarton</td>
</tr>
<tr>
<td>Individual</td>
<td>25795</td>
<td>No</td>
<td>Redcliffs</td>
</tr>
<tr>
<td>Individual</td>
<td>25891</td>
<td>No</td>
<td>Harewood</td>
</tr>
<tr>
<td>Individual</td>
<td>25930</td>
<td>No</td>
<td>Parklands</td>
</tr>
<tr>
<td>Individual</td>
<td>25955</td>
<td>No</td>
<td>Christchurch</td>
</tr>
<tr>
<td>Individual</td>
<td>26105</td>
<td>Yes</td>
<td>Wigram</td>
</tr>
<tr>
<td>Individual</td>
<td>26120</td>
<td>No</td>
<td>Sumner</td>
</tr>
<tr>
<td>Individual</td>
<td>26180</td>
<td>Yes</td>
<td>Upper Moutere, Tasman</td>
</tr>
<tr>
<td>Individual</td>
<td>26200</td>
<td>No</td>
<td>New Brighton</td>
</tr>
<tr>
<td>Individual</td>
<td>26227</td>
<td>No</td>
<td>Christchurch</td>
</tr>
<tr>
<td>Individual</td>
<td>26236</td>
<td>Yes</td>
<td>Mount Pleasant</td>
</tr>
<tr>
<td>Individual</td>
<td>26332</td>
<td>No</td>
<td>Redwood</td>
</tr>
<tr>
<td>Individual</td>
<td>26365</td>
<td>No</td>
<td>Heathcote</td>
</tr>
<tr>
<td>Individual</td>
<td>26366</td>
<td>No</td>
<td>New Brighton</td>
</tr>
<tr>
<td>Individual</td>
<td>26390</td>
<td>No</td>
<td>Merivale</td>
</tr>
<tr>
<td>Individual</td>
<td>26258</td>
<td>No</td>
<td>Halswell</td>
</tr>
<tr>
<td>Individual</td>
<td>26391</td>
<td>No</td>
<td>Sumner</td>
</tr>
<tr>
<td>Waipuna/Halswell-Hornby-Riccarton Community Board</td>
<td>26492</td>
<td>No</td>
<td>Halswell-Hornby-Riccarton</td>
</tr>
<tr>
<td>Spreydon-Cashmere Community Board</td>
<td>26359</td>
<td>No</td>
<td>Spreydon-Cashmere</td>
</tr>
<tr>
<td>Coastal-Burwood Community Board</td>
<td>26353</td>
<td>No</td>
<td>Coastal-Burwood</td>
</tr>
<tr>
<td>Banks Peninsula Community Board</td>
<td>26268</td>
<td>Yes</td>
<td>Banks Peninsula</td>
</tr>
<tr>
<td>Neighbourhood association</td>
<td>26460</td>
<td>Yes</td>
<td>Beckenham/Spreydon</td>
</tr>
<tr>
<td>Residents associations</td>
<td>26192</td>
<td>Yes</td>
<td>South Brighton</td>
</tr>
<tr>
<td>Residents associations</td>
<td>25591</td>
<td>No</td>
<td>Cashmere</td>
</tr>
<tr>
<td>Community Groups</td>
<td>26455</td>
<td>Yes</td>
<td>Opawa Heathcote</td>
</tr>
<tr>
<td>Research organisations</td>
<td>26367</td>
<td>No</td>
<td>Christchurch</td>
</tr>
<tr>
<td>Health Organisations</td>
<td>26348</td>
<td>No</td>
<td>Christchurch</td>
</tr>
<tr>
<td>Family Trusts</td>
<td>26231</td>
<td>No</td>
<td>Christchurch</td>
</tr>
<tr>
<td>Commercial/business</td>
<td>26454</td>
<td>No</td>
<td>Auckland</td>
</tr>
</tbody>
</table>
Table 3 lists the submitters who had indicated at the time of their written submission that they wished to be heard by the Hearings Panel. This information is current as of the date of this report. Appendix 3 lists all submitters.

**Table 3. Submitters wishing to be heard**

<table>
<thead>
<tr>
<th>Submitter</th>
<th>Submission number</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linda Stewart</td>
<td>25353</td>
<td>Coastal Burwood community Board</td>
</tr>
<tr>
<td>Karina Hay</td>
<td>26192</td>
<td>Christchurch Coastal Residents United</td>
</tr>
<tr>
<td>Kerry Hayes</td>
<td>26227</td>
<td>self</td>
</tr>
<tr>
<td>Beverley Broad</td>
<td>26231</td>
<td>Charles and Beverley L Broad Family trusts</td>
</tr>
<tr>
<td>David Hawke</td>
<td>26258</td>
<td>self</td>
</tr>
<tr>
<td>Pam Richardson</td>
<td>26268</td>
<td>Banks Peninsula Community Board</td>
</tr>
<tr>
<td>Dr Alistair Humphrey</td>
<td>26348</td>
<td>Community and Public Health, CDHB</td>
</tr>
<tr>
<td>Karolin Potter</td>
<td>26359</td>
<td>Spreydon Cashmere Community Board</td>
</tr>
<tr>
<td>Andrew Dark</td>
<td>26367</td>
<td>Aqualinc Research Limited</td>
</tr>
<tr>
<td>Vicky Southworth</td>
<td>26391</td>
<td>self</td>
</tr>
<tr>
<td>Pat Dwyer</td>
<td>26454</td>
<td>New Zealand Steel Ltd</td>
</tr>
<tr>
<td>Annabelle Hasselman</td>
<td>26455</td>
<td>Ōpāwaho Heathcote River Network</td>
</tr>
<tr>
<td>Peter Tuffley</td>
<td>26460</td>
<td>Beckenham Neighbourhood Association</td>
</tr>
<tr>
<td>Peter Dow</td>
<td>26492</td>
<td>Halswell-Hornby-Riccarton Community Board</td>
</tr>
</tbody>
</table>

2 ANALYSIS OF SUBMISSIONS

2.1 Introduction

25 submitters chose to respond to some or all of the five questions on the consultation submission form. The responses to the five questions on the form are summarised in section 2.2. Some of these submitters also added comments on the submission form.

11 submitters did not answer any of the five questions on the consultation form and submitted narrative submissions.

The key themes from the narrative submissions, including comments from the submission forms, are discussed in section 2.3.
2.2 Consultation feedback form

A consultation feedback form was provided on the Have Your Say web site, the hard and electronic copies of the draft Strategy and the hard and electronic copies of the summary document. The form included five questions for which quantitative responses (agree, disagree, neither agree nor disagree) were solicited along with space for additional comments (see Appendix 1).

Not all submitters who used the form answered all five questions, and not all submitters using the form provided comments.

Five submitters disagreed with all five questions.

- One submitter noted in response to the first question (see 2.2.1) that the water system should ‘be left alone’.
- Another submitter made a comment about superfluous flowery statements in response to question 1 and objected to the absence of content about Environment Canterbury allowing dairy farmers to contaminate groundwater.
- One submitter had a number of comments, which are included in the discussion in section 2.3.
- One submitter disagreed on the basis that it doesn’t ‘scale’ to include all resources available in the world.

Most of the ‘neither agree nor disagree’ answers were accompanied by comments that are discussed in section 2.3.

2.2.1 Vision and guiding principles - Do you agree or disagree with the vision and guiding principles for managing the ‘three waters’ water supply, wastewater, and stormwater/surface water) in Christchurch?

There were a total of 25 responses to this question.

<table>
<thead>
<tr>
<th>Response</th>
<th>number</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>14</td>
<td>56</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>6</td>
<td>24</td>
</tr>
</tbody>
</table>

2.2.2 Key issues facing ‘three waters’ - Do you agree or disagree with the key issues facing management of the ‘three waters’ in Christchurch?

There were a total of 25 responses to this question.

<table>
<thead>
<tr>
<th>Response</th>
<th>number</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>14</td>
<td>56</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>6</td>
<td>24</td>
</tr>
</tbody>
</table>
2.2.3 Goals and objectives - Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?

There were a total of 24 responses to this question.

<table>
<thead>
<tr>
<th>Response</th>
<th>number</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>13</td>
<td>54</td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>5</td>
<td>21</td>
</tr>
</tbody>
</table>

2.2.4 Recommendations - Do you agree or disagree with the recommendations for achieving the aim and vision for managing the ‘three waters’ in Christchurch?

There were a total of 23 responses to this question.

<table>
<thead>
<tr>
<th>Response</th>
<th>number</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>13</td>
<td>57</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>5</td>
<td>22</td>
</tr>
</tbody>
</table>

2.2.5 Direction of the strategy - Overall, do you support the direction of the Draft Integrated Water Strategy?

There were a total of 21 responses to this question.

<table>
<thead>
<tr>
<th>Response</th>
<th>number</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>14</td>
<td>67</td>
</tr>
<tr>
<td>Disagree</td>
<td>7</td>
<td>33</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

2.3 Narrative submissions

The key points from additional comments provided with submission forms and well as open-ended narrative submissions are discussed in sections 2.3.1 through 2.3.14.

Some comments in these submissions supported specific elements of the draft Strategy, some comments sought minor changes in the text and others disagreed with or sought more substantive changes to the draft Strategy.

Suggested amendments supported by staff are noted in the recommendations in section 4 of this report.

2.3.1 Vision

There were seven comments on concerning the wording of the vision and/or the bulleted statements in Section 3 of the draft strategy. The submission points are summarised in the table below.
<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amend the vision to ‘Water for Life and Living’</td>
<td>26192</td>
<td>Proposed change is somewhat broader than scope of draft strategy.</td>
</tr>
<tr>
<td>Request changes to bullet points under the vision:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Amend third bullet point <em>better understand</em> and manage hazards from flooding and sea level rise</td>
<td>26192</td>
<td>(1) Support amendment</td>
</tr>
<tr>
<td>(2) Amend second bullet point - Maintain the integrity <em>and indigenous biodiversity</em> of freshwater ecosystems</td>
<td>26258</td>
<td>(2) Support amendment</td>
</tr>
<tr>
<td>(3) Add new 4th bullet point - Progressively restore sections of freshwaters to a more indigenous state</td>
<td>26258</td>
<td>(3) Not needed with amendment noted above</td>
</tr>
<tr>
<td>(4) Amend second bullet point to include all ecosystems not just freshwater: <em>Maintain the integrity of freshwater ecosystems</em> (<em>terrestrial, freshwater and coastal</em>)</td>
<td>26370</td>
<td>(4) The draft strategy covers water resources and water infrastructure, not the entire scope of all ecosystems. Amendment not supported.</td>
</tr>
<tr>
<td>Vision needs to encapsulate benefits of water sensitive design</td>
<td>26391</td>
<td>Water sensitive design is a lower level of detail (e.g. in Goal 2). Amendment not supported.</td>
</tr>
<tr>
<td>Vision statement is meaningless</td>
<td>26458</td>
<td>Vision statement is appropriate. Amendment not supported.</td>
</tr>
</tbody>
</table>

**2.3.2 Guiding principles**

There were six comments concerning the guiding principles in section 4 of the draft strategy. The submission points are summarised in the table below.

<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Several of the ‘guiding principles’ are not in fact guiding principles</td>
<td>26227</td>
<td>The guiding principles are appropriate and reasonable.</td>
</tr>
<tr>
<td>Delete ‘Longevity’ from guiding principles - is redundant with kaitiakitanga as a guiding principle</td>
<td>26458</td>
<td>‘Longevity’ as a guiding principle is appropriate and is not a duplication of kaitiakitanga. Amendment not supported.</td>
</tr>
<tr>
<td>Amend definition/description of place making</td>
<td>26192 26353</td>
<td>Text was not intended as definitive definition but rather in to serve to highlight integration of water management services with other community services: making the most of community assets to create high-quality public spaces. Amendment not supported.</td>
</tr>
</tbody>
</table>
2.3.3 Strategic issues

There were 18 comments on the strategic issues in section 5 of the draft strategy. The submission points are summarised in the table below.

<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need to define what is meant by ‘dynamic adaptive planning pathways’ in issue 5.8.</td>
<td>26192</td>
<td>The preceding text in the paragraph provides the context/meaning; it refers to the fact that over time circumstances may change so planning needs to be able to adapt and respond accordingly. No change to strategy recommended.</td>
</tr>
<tr>
<td>Need to include the Ngāi Tahu perspective</td>
<td>26258</td>
<td>Ngai Tahu perspectives feature throughout the draft strategy. No change to strategy recommended</td>
</tr>
<tr>
<td>Suggest that interaction and facilitation of knowledge sharing between organisation may allow for addressing key issues more efficiently</td>
<td>26370</td>
<td>Noted. No change to strategy recommended</td>
</tr>
<tr>
<td>There are other reasons for cleaner waterways besides Māori cultural values such as ecological and community aspirations</td>
<td>26455</td>
<td>There are multiple reasons for cleaner waterways, which are already addressed in the draft strategy (e.g., ecosystem health). No change to strategy recommended</td>
</tr>
<tr>
<td>Need to include effects of drought due to climate change, not just flooding risks</td>
<td>26457</td>
<td>Support amendment. To section 5.9 add: The long-term effects of climate change, with the potential for warmer and drier summers in Canterbury, would be likely to affect surface and groundwater quantity and could also increase seasonal peak demand on public water supplies.</td>
</tr>
<tr>
<td>Submission point(s)</td>
<td>submitter(s)</td>
<td>Staff response</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Amend sentence in 5.2 Surface water catchments in the urban area and rural areas settlements are subject to contamination from a combination of stormwater, wastewater overflows and other inputs such as sediment and animal and waterfowl contamination.</td>
<td>26458</td>
<td>Accept amendment</td>
</tr>
<tr>
<td>Amend sentence in 5.2 Generally, in Christchurch, poorer waterway health is recorded in urban areas of the district, and better waterway health is recorded variable in rural areas throughout the district. Receiving waterbodies, such as Te Ihutai, Te Waihora, Te Roto o Wairewa and the bays and harbours of the Peninsula also have water quality issues that require improvement.</td>
<td>26458</td>
<td>Accept amendment</td>
</tr>
<tr>
<td>Add new paragraph in section 5.6 after first paragraph Sediment pollution is a particular issue in any catchment with highly erodible loess soils. This includes the Port Hills and the rest of Banks Peninsula. Sediment contamination has a major impact on both in-stream and coastal ecology and has resulted in harbour infilling, particularly in Lyttelton Harbour Whakaraupo.</td>
<td>26458</td>
<td>Note that soil erosion in Banks Peninsula and Port Hills already mentioned in section 5.7. Suggest a brief amendment to section 5.6: Stormwater from urban catchments contains a wide range of contaminants ranging from suspended sediments, nutrients and micro-organisms to chemical contaminants, metals and synthetic hydrocarbons. Sediment is a particular issue in the Port Hills and Banks Peninsula due to highly erodible loess soils. Untreated stormwater entering streams during the first flush of rain following a dry period.</td>
</tr>
<tr>
<td>Amend sentence in section 5.8: Coastal areas in the east of the Christchurch metropolitan area, low lying land in the mid to lower Ōtākaro Avon River catchment and lower Opāwaho Heathcote River catchment, and low lying areas in all Banks Peninsula bays and harbours, and in Little River, are particularly vulnerable.</td>
<td>26458</td>
<td>Suggest following change: Coastal areas in the east of the Christchurch metropolitan area, low lying land in the mid to lower Ōtākaro Avon River catchment and lower Opāwaho Heathcote River catchment, and low lying areas in the main Akaroa Harbour settlements in Banks Peninsula, are particularly vulnerable.</td>
</tr>
<tr>
<td>Amend sentence in section 5.8 Sea level rise and associated coastal erosion will pose a risk to water services infrastructure in coastal areas in throughout Christchurch district.</td>
<td>26458</td>
<td>Accept amendment but note that ‘Christchurch’ is defined in the draft strategy as incorporating the whole of the district within Christchurch’s jurisdictional boundaries.</td>
</tr>
</tbody>
</table>
### Submission point(s) | submitter(s) | Staff response
--- | --- | ---
Need to add a paragraph in section 5.8 about other effects of climate change beside sea level rise | 26458 | Already addressed in section 5.7. No change to strategy recommended.
Need to add a paragraph in section 5.8 about effect of increased costs to ratepayers. | 26458 | All the issues can have a cost. No change to strategy recommended.
Add to section 5.9 that Banks Peninsula is entirely dependent on rainfall for water supply. | 26458 | Not accurate. No change to strategy recommended.
Add new paragraph in section 5.10 There is some evidence discharges from underperforming on-site wastewater treatment systems (septic tanks) may be contaminating waterways. | 26458 | Septic tanks are the purview of ECan. No change to strategy recommended.
Move second paragraph in section 5.11 | 26458 | Not necessary. No change to strategy recommended.
Move last paragraph in section 5.11 to section 5.9 | 26458 | Paragraph is about infrastructure so section 5.11 is appropriate. No change to strategy recommended.
Move first paragraph on page 17 (section 5.11) | 26458 | Paragraph is about both water and wastewater so section 5.11 is appropriate. No change to strategy recommended.
Amend sentence on page 17 The challenge for us is to ensure that artesian Christchurch’s drinking water is demonstrably safe and does not require residual treatment. | 26458 | Inaccurate as proposed. Suggest following amendment: The challenge for us is to ensure that Christchurch’s drinking water is demonstrably safe and that groundwater-sourced supplies do not require residual treatment.

### 2.3.4 Goals

There were 19 comments on the draft goals in section 6 of the draft strategy. The submission points are summarised in the table below.

### Submission point(s) | submitter(s) | Staff response
--- | --- | ---
What is meant by ‘valuing’ water | 26227 26391 | Add explanatory text to Goal 1: Goal 1: The multiple uses of water are valued (cherished, respected) by all for the benefit of all.
Goal 1 is vague. | 26227 | Goal 1 is appropriate. No change to strategy recommended.
Goal 1 should include a statement on promotion of conservation of water to retain quantity and quality of groundwater | 26359 | Conservation is already included in Goal 1. No change to strategy recommended.
<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>With respect to Goal 1 there is no mention of the contribution that over-emphasis on water as a resource to be exploited has had on degrading water quality</td>
<td>26460</td>
<td>Relates to matters under ECan’s purview. No change to strategy recommended.</td>
</tr>
<tr>
<td>Change wording of Goal 2 - replace ‘enhanced’ with ‘restored’</td>
<td>26258</td>
<td>‘Enhanced’ used as ‘restored’ is arguable (restored to what point). Amendment not supported.</td>
</tr>
<tr>
<td>Goal 2 should include a statement about seeking to influence Government regulation of water.</td>
<td>26359</td>
<td>Influencing government addressed elsewhere it is not a goal. No change to strategy recommended.</td>
</tr>
<tr>
<td>Goal 2 should include a statement encouraging authorities to work together for ensure water quality</td>
<td>26359</td>
<td>Working with other authorities is addressed elsewhere in the strategy, it is not a goal. No change to strategy recommended.</td>
</tr>
<tr>
<td>Amend sentence under Goal 2 Good water quality adds to the amenity value of surface waterways, and is essential in the Te Pātaka o Rākaihautū Banks Peninsula streams and rivers and the Christchurch aquifers which supply drinking water to the Christchurch community communities.</td>
<td>26458</td>
<td>Accept amendment.</td>
</tr>
<tr>
<td>Add paragraph under Goal 2 The large number of smaller discrete catchments on Banks Peninsula has resulted in species-rich biodiversity and a high degree of freshwater endemism.</td>
<td>26458</td>
<td>Extra detail is not needed. Amendment not supported.</td>
</tr>
<tr>
<td>As written Goal 3 sounds as if climate changes is understood, but it isn’t.</td>
<td>26192</td>
<td>The goal is that effects are understood; it does not say that they already are.</td>
</tr>
<tr>
<td>Need to include elements such as ‘likelihood’ and ‘uncertainty’ under key elements for Goal 3</td>
<td>26192</td>
<td>Goal 3 is appropriate. Amendment not supported.</td>
</tr>
<tr>
<td>Recommend amending sentence under Goal 3: The key elements of this goal are: ...</td>
<td>26359</td>
<td>Accept amendment.</td>
</tr>
<tr>
<td>• Understanding risks due to sea level rise and consequences resulting from climate change, and developing prioritising development of an adaptive response.</td>
<td>26359</td>
<td>Accept amendment.</td>
</tr>
<tr>
<td>Add new third bullet point under Goal 3  • On Banks Peninsula more water may be allocated for permitted uses than supports sustainable environmental flows</td>
<td>26458</td>
<td>Not a goal; could be considered an ‘issue’ but environmental flows set by ECan. Amendment not supported.</td>
</tr>
<tr>
<td>Submission point(s)</td>
<td>submitter(s)</td>
<td>Staff response</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>Goal 3 should be: Adapting to climate change</td>
<td>26458</td>
<td>Goal 3 is appropriate. No change to strategy</td>
</tr>
<tr>
<td>goal 3 should be: Adapting to climate change</td>
<td></td>
<td>recommended.</td>
</tr>
<tr>
<td>Goal 4 should be re-worded; It's not one goal but 3 and kaitiakitanga should be the first goal</td>
<td>26458</td>
<td>Goal 4 is appropriate. No change to strategy</td>
</tr>
<tr>
<td>Under Goal 4 key elements, second bullet point amend:</td>
<td></td>
<td>recommended.</td>
</tr>
<tr>
<td>Encouraging on-site stormwater management using water sensitive design where</td>
<td></td>
<td>Accept amendment.</td>
</tr>
<tr>
<td>collective stormwater management is not efficient or feasible (such as areas where urban</td>
<td></td>
<td></td>
</tr>
<tr>
<td>intensification and redevelopment of industrial and business land is prevalent).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under Goal 4 amend third bullet point:</td>
<td>26458</td>
<td>Accept amendment.</td>
</tr>
<tr>
<td>Managing wastewater systems to meet community needs – including through reviewing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and revising trade waste and biosolids management and developing long term</td>
<td></td>
<td></td>
</tr>
<tr>
<td>solutions for Christchurch’s future growth and for the disposal of treated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>wastewater from the Akaroa Harbour communities and other Banks Peninsula</td>
<td></td>
<td></td>
</tr>
<tr>
<td>communities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The strategy should reflect that it is key that communities are not forced to leave</td>
<td>26192</td>
<td>There is nothing in the strategy to suggest that</td>
</tr>
<tr>
<td>homes too early or coerced into moving.</td>
<td></td>
<td>people will be forced to leave their homes too</td>
</tr>
<tr>
<td>early etc. No change to strategy recommended.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy may need section to outline how knowledge sharing would be facilitated -</td>
<td>26370</td>
<td>A separate goal is not required. No change to</td>
</tr>
<tr>
<td>may be best done as specific goal that aims to increase industry capability and</td>
<td></td>
<td>strategy recommended.</td>
</tr>
<tr>
<td>engagement through knower sharing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**2.3.5 Groundwater protection**

There were eight comments addressing groundwater protection matters (water quality and/or water quantity).

The submission points are summarised in the table below.
<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit level of nitrates allowed in groundwater in order to protect human health and/or groundwater ecosystem</td>
<td>26180 25795 26200 26353 26366 26390 26359</td>
<td>Noted. This is already addressed in sections 5.3 and 7.7 of the draft strategy.</td>
</tr>
<tr>
<td>1.2 Add action to Objective 11 to Work with ECan to (1) identity all unknown water takes to fully account for total volume abstracted from groundwater and (2) develop estimate of total sustainable water take</td>
<td>26200</td>
<td>This is a matter under ECan's purview. Note that 7.7-4 addresses working with ECan on both groundwater quantity and quality issues. No change to strategy recommended.</td>
</tr>
<tr>
<td>Add action to Objective 11 - Advocate for changes to Overseas Investment Act; (1) Christchurch's groundwater to be 'sensitive asset' under OIA (2) Water bottling and large irrigation scheme proposals be assessed as to whether they are in the &quot;national interest&quot; environmentally, economically and are of good character</td>
<td>26200</td>
<td>This is a lower level of detail not appropriate to the strategy and would come under 7.7, in particular 7.7-2. Amendment not supported.</td>
</tr>
<tr>
<td>Add action to Objective 11 - Investigate applying to Government for water conservation order for Christchurch's aquifers</td>
<td>26200</td>
<td>This is a lower level of detail not appropriate to the strategy and would come under 7.7, in particular 7.7-2. Amendment not supported.</td>
</tr>
<tr>
<td>Need to collaborate with ECan, researchers and consultants to understand the vulnerability of Christchurch's water supply and effects from other groundwater abstraction on availability</td>
<td>26367</td>
<td>Collaboration with ECan already in the strategy. Could amend action 7.7-4: We will continue to work collaboratively with Environment Canterbury and Waimakariri and Selwyn District Councils, as well as with other stakeholders, to promote and enhance groundwater protection.</td>
</tr>
<tr>
<td>Need to better understand potential impact of non-consumptive takes for ground-source heat pump systems</td>
<td>26367</td>
<td>This is a lower level of detail not appropriate to the strategy and would come under section 7.7.</td>
</tr>
<tr>
<td>Protection of groundwater sources from contamination is the highest priority.</td>
<td>26492</td>
<td>Noted. Groundwater protection covered in Goal 2 and in Objective 9.</td>
</tr>
<tr>
<td>Support restricting excavation and filling below groundwater level as noted in section 7.7 option 3.</td>
<td>25795 26492</td>
<td>Noted.</td>
</tr>
</tbody>
</table>

In addition, some submitters commented on groundwater-related matters that are outside the scope of the draft strategy. Their comments are discussed in section 2.3.14.
### 2.3.6 Water supplies

There were ten comments that addressed water supply matters. The submission points are summarised in the table below.

<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorination – Keep drinking water chlorine-free (applies to previously untreated supply)</td>
<td>26120</td>
<td>Noted. Council is committed to returning the previously untreated urban water supply to untreated status, as indicated in section 7.8. No change to strategy recommended.</td>
</tr>
<tr>
<td>Volumetric charging – do not support, water supply should be ‘free’</td>
<td>25891 25602</td>
<td>Strategy does not commit the Council to a decision on charging users based on how much water they use. No change to strategy recommended.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Note that ‘user pays’ is a more equitable and fair way to fund the costs of providing the service than the current funding mechanism. It is also well established that where water supply services are funded under a ‘user pays’ mechanism water is used more efficiently.]</td>
</tr>
<tr>
<td>Supports review of volumetric charging</td>
<td>26348</td>
<td>Noted.</td>
</tr>
<tr>
<td>Amend first bullet point on measurement for Objective 11:</td>
<td>26200</td>
<td>Measures in the draft are consistent with metric reported in annual water suppliers’ survey. Amendment not supported.</td>
</tr>
<tr>
<td>Annual total volume of potable water abstracted from each of the confined aquifers for urban supplies in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Litres per person per day for residential use,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cubic metres per day for commercial and industrial properties,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Cubic metres per day for aquifer water loss including leakage etc.,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>targeting a decreasing year-on-year trend for these measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong support for Objective 11 to continue high quality treatment for surface water-sourced supplies</td>
<td>26268</td>
<td>Noted.</td>
</tr>
<tr>
<td>Supports publicly reticulated drinking water supply to currently unserviced settlements</td>
<td>26348</td>
<td>Noted. Included in issue 5.11. No change to strategy recommended.</td>
</tr>
<tr>
<td>Support two-fold approach to protecting source water from contamination and ensuring efficiency, resilience and resulting safety of the infrastructure</td>
<td>26348</td>
<td>Noted.</td>
</tr>
<tr>
<td>Submission point(s)</td>
<td>submitter(s)</td>
<td>Staff response</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Support an integrated approach that extends beyond Christchurch's boundary for providing access to safe and sufficient water supply</td>
<td>26367</td>
<td>Noted.</td>
</tr>
<tr>
<td>Oppose compulsory fluoridation</td>
<td>26390</td>
<td>Strategy does not propose to fluoridate water. No change to strategy recommended.</td>
</tr>
</tbody>
</table>
| In light of concerns about nitrate suggest that nitrate-free alternatives are investigated, e.g. rainwater collection, collecting water from Canterbury headwaters, desalination of seawater | 26460        | Could amend section 7.8 to add new option: **9. Investigate other potential water supply sources.**
In light of concerns about nitrate levels in drinking water sources, other potential sources could be investigated, such as large-scale rainwater collection schemes, piping water from headwaters of Canterbury's alpine rivers, desalination of seawater. |

### 2.3.7 Infrastructure and asset management

There were five comments concerning infrastructure and asset management. The submission points are summarised in the table below.

<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better management of water infrastructure is needed</td>
<td>26180</td>
<td>This is one of the issues that the strategy is attempting to address. No change recommended to the strategy.</td>
</tr>
<tr>
<td></td>
<td>25857</td>
<td></td>
</tr>
<tr>
<td>No more additional expenditure on water supply network after well heads repaired</td>
<td>25589</td>
<td>Not appropriate as the proposal is not long-term strategic thinking. The Council must continue to invest in new and replacement water supply infrastructure for several reasons: water take global consent requires demonstration of water efficiency and demand management, ‘chlorine-free’ may depend on higher standard of infrastructure, growth will require new infrastructure.</td>
</tr>
<tr>
<td>“Proactive risk-based asset renewals” is a bottom-up approach; international best practice is top-down approach for optimal asset replacement</td>
<td>26227</td>
<td>Not consistent with engineering advice. No change recommended to strategy.</td>
</tr>
<tr>
<td>Support the proactive risk-based approach to asset management</td>
<td>26348</td>
<td>Noted.</td>
</tr>
<tr>
<td>Supports water supply, wastewater &amp; stormwater infrastructure upgrades</td>
<td>26348</td>
<td>Noted.</td>
</tr>
</tbody>
</table>

### 2.3.8 Wastewater

There were eight comments concerning wastewater management. The submission points are summarised in the table below.
<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce or eliminate discharges to harbour, groundwater or waterbodies</td>
<td>26231</td>
<td>Options for disposal of treated wastewater are included in the strategy. No change recommended to the strategy.</td>
</tr>
<tr>
<td></td>
<td>26390</td>
<td></td>
</tr>
<tr>
<td>Concerns about public health issues related to biosolids and/or greywater reuse</td>
<td>26390</td>
<td>Suggest amending sections 7.1-3, 7.6-2 and 7.8-6 to note needs for consideration of public health risks and mitigations for biosolids and greywater reuse.</td>
</tr>
<tr>
<td></td>
<td>26348</td>
<td>(see Section 4 of this report for proposed changes)</td>
</tr>
<tr>
<td>Council should investigate ultraviolet treatment systems for wastewater to allow</td>
<td>26353</td>
<td>Add new option 6 to section 7.6:</td>
</tr>
<tr>
<td>for potential reuse</td>
<td></td>
<td><strong>6. Investigate potential reuse of treated wastewater. One alternative to treated wastewater discharges to the environment could be reuse - this would require investigation of costs, benefits and public acceptance.</strong></td>
</tr>
<tr>
<td>Need to investigate wastewater needs of small communities in Banks Peninsula</td>
<td>26268</td>
<td>Add new option 7 to 7.6:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>7. Investigate wastewater options for small Banks Peninsula settlements. Smaller communities in Banks Peninsula are not serviced by a public wastewater network. Investigations of the costs and benefits to provide such service could be undertaken.</strong></td>
</tr>
<tr>
<td>Recommend the Council conduct workshops/information evening on reducing flow and</td>
<td>26457</td>
<td>Suggest amending option 7.4-4:</td>
</tr>
<tr>
<td>infiltration for homeowners</td>
<td></td>
<td>… contamination resulting from untreated wastewater leakage affecting surface groundwater quality. <strong>Included under this approach is public engagement and education about issues with private laterals.</strong></td>
</tr>
<tr>
<td>Amend objective 5: Reduce and work towards eliminating the incidence and effects of</td>
<td>26460</td>
<td>Change proposed would be redundant as the issue is about the effects of overflows. Amendment not supported.</td>
</tr>
<tr>
<td>wastewater overflows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amend suggested approach 2 under Objective 5 that incidence-based overflow consent</td>
<td>26460</td>
<td>The approach in the strategy would provide for a more effective means of meeting community outcomes. Amendment not supported.</td>
</tr>
<tr>
<td>criteria won’t be abandoned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regarding section 7.6, (Objective 8) concern that 20 years not a long time to</td>
<td>26492</td>
<td>The approached suggested in section 7.6 would enable risk-based and condition-based forward asset planning for the wastewater network. No change to the strategy recommended.</td>
</tr>
<tr>
<td>arrive at any new treatment solution for metropolitan Christchurch</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2.3.9 Flooding and flood management

There were 17 comments concerning flooding and flood management. The submission points are summarised in the table below.
<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>For action 4 in objectives 6 &amp; 7 - support development of multi-use areas and 'making room for the river' in residential red zone but want to avoid construction of artificial stopbanks/paths/tracks that would inhibit natural basin</td>
<td>26200</td>
<td>Noted. Red-zone planning will determine future use of red-zone.</td>
</tr>
<tr>
<td>Clearly separate 'normal' flooding from flood hazards from climate-moderated flooding</td>
<td>26192</td>
<td>Strategy covers both adequately and climate change has already impacted the intensity and frequency of flooding. No change to the strategy recommended.</td>
</tr>
<tr>
<td>Better consideration of cost/benefit analysis around flooding - decisions need to take into account long-term effect on community wellbeing</td>
<td>26192</td>
<td>Strategy addresses need to tailor responses to specific circumstances. Community well-being is part of this. No change to strategy recommended.</td>
</tr>
<tr>
<td>Need a 7th value - social wellbeing and health - to the 6 core values for stormwater and flood management</td>
<td>26192</td>
<td>As two of the 6 values are culture and recreation it isn’t necessary to add a 7th. No change to strategy is recommended.</td>
</tr>
<tr>
<td>Strategy needs to acknowledge that hydrologists' stormwater event frequency models use the past to predict the future as opposed to climate change modelling showing greater frequency of more extreme events.</td>
<td>26258</td>
<td>Models use a mix of data from the past and predictions for the future. This is a lower level of detail than needed. No change to strategy is recommended.</td>
</tr>
<tr>
<td>Change wording around sea level rise as potential risk in 5.8: Why is it a key issue? Sea level rise and associated coastal erosion will pose a potential risk to water services infrastructure in coastal areas in Christchurch. And also: Current planning is based on current predicted sea-level rise. The Council and the community need to be mindful that predictions may change and future sea-level rise may be greater or less than currently forecast.</td>
<td>26353</td>
<td>Sea level rise has already been factored into our modelling and design of infrastructure in coastal areas. No change is recommended.</td>
</tr>
</tbody>
</table>

Section 5.8 says that flood management clearly linked to sea level rise and other factors - provide examples | 26353 | Rising sea levels are clearly linked to flooding. The Council has recently amended its tidal modelling to take this into account. No change to the strategy is recommended. |
<p>| Some land drainage infrastructure not working to discharge water into rivers | 26353 | No change to the strategy is recommended. |</p>
<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-removal of fine silts from liquefaction contribute to impermeability of some</td>
<td>26353</td>
<td>No change to the strategy is recommended.</td>
</tr>
<tr>
<td>soils/reduction in stormwater draining into soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need more frequent weed control to benefit water flow</td>
<td>26353</td>
<td>No change to the strategy is recommended.</td>
</tr>
<tr>
<td>Need to better understand potential impact of sea level rise on shallow groundwater</td>
<td>26367</td>
<td>Noted. Strategy proposes to get that better understanding. No changes to the</td>
</tr>
<tr>
<td>and subsequent effects on infrastructure</td>
<td></td>
<td>strategy recommended.</td>
</tr>
<tr>
<td>More work needed to understand interaction of shallow groundwater and flooding</td>
<td>26367</td>
<td>Noted. Strategy proposes to get that better understanding. No changes to the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>strategy recommended.</td>
</tr>
<tr>
<td>Need to acknowledge that council will have to address managed retreats from</td>
<td>26390</td>
<td>Strategy notes that there’s a need to tailor responses to specific circumstances.</td>
</tr>
<tr>
<td>residential areas in low-lying parts of the city</td>
<td></td>
<td>No changes recommended to the strategy.</td>
</tr>
<tr>
<td>Support encouragement of on-site stormwater management</td>
<td>26390</td>
<td>Noted.</td>
</tr>
<tr>
<td>Needs to be more emphasis put on advice to landowners about flooding and</td>
<td>26359</td>
<td>Public engagement and awareness is addressed on the strategy. No change is</td>
</tr>
<tr>
<td>mitigation options, in reference to action 4 section 7.5</td>
<td></td>
<td>recommended to the strategy.</td>
</tr>
<tr>
<td>Question whether some designs of drainage swales is best practice - gave Swale</td>
<td>26492</td>
<td>This is a lower level of detail than appropriate for the strategy. No change is</td>
</tr>
<tr>
<td>outside Sevenoaks School next to Qualifes Drain Number 1</td>
<td></td>
<td>recommended to the strategy.</td>
</tr>
<tr>
<td>Suggest there are opportunities to integrate additional services into land</td>
<td>26492</td>
<td>Noted. This features in the strategy already (e.g. in guiding principles).</td>
</tr>
<tr>
<td>drainage spaces - transport facilities alongside land drainage sites</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2.3.10 Surface water quality

There were seven comments concerning surface water quality. The submission points are summarised in the table below.

<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline for assessing water quality needs to be clearly stated</td>
<td>26258</td>
<td>This is addressed in our state of the environment monitoring. No change to the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>strategy is recommended.</td>
</tr>
<tr>
<td>Support objectives 3 and 4</td>
<td>26268</td>
<td>Noted.</td>
</tr>
</tbody>
</table>

---

Consultation Analysis - Draft Integrated Water Strategy
2.3.11 Surface water quantity

Six comments were received concerning surface water quantity. The submission points are summarised in the table below.

<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submitter(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>No mention of impact of reduced infiltration where groundwater supports baseflow of</td>
<td>26391</td>
<td>Low groundwater levels outside of Council control. Bulk of groundwater inflow is from the Waimakariri River. No change to strategy is recommended.</td>
</tr>
<tr>
<td>surface water (e.g. low flow in Avon in dry months). Increasing densification will</td>
<td></td>
<td></td>
</tr>
<tr>
<td>further reduce infiltration without mitigation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need to engage public to manage stormwater at source to reduce regular flows that</td>
<td>26391</td>
<td>Public engagement and awareness is an objective in the strategy for which there are several actions. No change in the strategy is recommended.</td>
</tr>
<tr>
<td>occur with each storm event</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NZ Steel wish to be consulted over development of stormwater discharges standards -</td>
<td>26454</td>
<td>Lower level of detail. No change in the strategy is recommended.</td>
</tr>
<tr>
<td>in reference to section 7.3 action 8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommend best practice aquatic weed management plan as matter</td>
<td>26455</td>
<td>Aquatic vegetation management addressed in option 4 section 7.3. Note that an investigation of</td>
</tr>
</tbody>
</table>
### Submission point(s) | submitter(s) | Staff response
--- | --- | ---
of urgency as existing dredging and weed control are contributing to spread of invasive weeds |  | methods of aquatic vegetation management is proposed in the comprehensive stormwater discharge consent. No change in strategy is recommended.
Need to work with ECAn and others to implement a programme to reduce overland sediment flow from Port Hills into the Heathcote River | 26455 | Sediment is addressed in section 7.3. No change is strategy is recommended.
Need to include setting of minimum/medium flows for springs - springs drying up have negative effects on ecosystems and instream values of rivers like the Avon | 26457 | This would fall under ECAn’s purview. No change to strategy is recommended.

#### 2.3.12 Water efficiency/conservation

Two comments were received about water efficiency and conservation. The submission points are summarised in the table below.

### Submission point(s) | submitter(s) | Staff response
--- | --- | ---
Strategy should include reference to measures to increase uptake of rainwater harvesting. | 26258 26353 | Rainwater harvesting is included in section 7.8. No change recommended to strategy.
Investigate 'reuse of two waters' for recycling (rainwater & greywater) | 26268 26390 | Greywater reuse and rainwater harvesting are included in section 7.8. No change recommended to strategy.

#### 2.3.13 Implementation

Five comments were received about water efficiency and conservation. The submission points are summarised in the table below.

### Submission point(s) | submitter(s) | Staff response
--- | --- | ---
Strategy needs mechanism/pathway for legally binding implementation - reference to district plan | 26258 | This will be a formal strategy of Council under the Local Government Act. As such it has some weight in judicial proceedings. No change recommended to strategy.
Will there be an implementation plan | 26391 26455 | Section 8 notes that implementation plans will be prepared, and budgets agreed through the Long Term Plan process. No change recommended to the strategy.
Need to include timeline for implementation plan(s) | 26455 | Implementation plans will be prepared, and will be amended as applicable. No change recommended to the strategy.
Zone committees should be involved in the development of implementation plans | 26458 | Zone committees will be involved as applicable. No change recommended to the strategy.
### Submission point(s) | submittor(s) | Staff response
--- | --- | ---
Need to include river care groups in development of implementation plans | 26455 | Implementation plans separate from strategy, noting that the Community Water Partnership programme, which includes water care groups, will be part of the implementation of the strategy. No change recommended to the strategy.

### 2.3.14 General comments
General comments on the draft Strategy varied widely. Some of these comments were relevant to draft strategy and are listed below.

<table>
<thead>
<tr>
<th>Submission point(s)</th>
<th>submittor(s)</th>
<th>Staff response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs executive summary</td>
<td>25891</td>
<td>There is already an Executive Summary, which includes the vision, a list of the guiding principles, a brief description of the 11 key strategic issues, a summary of each of the 4 goals and brief descriptions of the 11 objectives and related proposed actions.</td>
</tr>
<tr>
<td>'Three waters’ not clearly defined</td>
<td>25891</td>
<td>Add definition to Glossary: <strong>'Three waters’</strong> – potable water supplies, wastewaters and surface water (including stormwater and flooding/floodplain management) and their infrastructure.</td>
</tr>
<tr>
<td>Not enough coverage of Banks Peninsula and its water services</td>
<td>26236</td>
<td>Banks Peninsula features throughout strategy. No change recommended to strategy.</td>
</tr>
<tr>
<td>Appreciate that strategy includes a strong Banks Peninsula lens</td>
<td>26268</td>
<td>Noted.</td>
</tr>
<tr>
<td>Insufficient detail in &quot;3 and 4&quot;</td>
<td>25891</td>
<td>Strategy is high level. No change to strategy recommended.</td>
</tr>
<tr>
<td>Strategy not integrated; no links between the various actions</td>
<td>26227</td>
<td>There are multiple linkages. Propose to add graphic to show this (see section 4 of this report for proposed change to section 7).</td>
</tr>
<tr>
<td>Not reader-friendly</td>
<td>26332 26459</td>
<td>Tried to strike balance between accuracy, succinctness and simplicity, some of the issues and information is, by necessity, complex.</td>
</tr>
<tr>
<td>The purpose of zone committees is provide strategic direction to Council staff so the zone committees should have been involved in the co-design of the strategy</td>
<td>26458</td>
<td>The primary purpose of the zone committees is to develop a zone implementation programme that gives effect to the Canterbury Water Management Strategy. As part of that their roles include providing recommendations to councils and others. Zone committees were involved in the development of the strategy as shown is section 1.3.1 of this report.</td>
</tr>
<tr>
<td>Objective 7 in Executive Summary needs detailed elaboration</td>
<td>26192</td>
<td>Executive Summary kept brief as is appropriate, with details in the main body of the strategy.</td>
</tr>
<tr>
<td>Submission point(s)</td>
<td>submitter(s)</td>
<td>Staff response</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
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</tr>
<tr>
<td>Further engagement with the public is recommended</td>
<td>26455 26459</td>
<td>There have been multiple iterations of stakeholder engagement in the development of the strategy and there were eight drop-in sessions held across the district that the public could attend.</td>
</tr>
<tr>
<td>&quot;Our&quot; and &quot;we&quot; appear to refer to the Council and exclude the public - strategy should include the wider community</td>
<td>26458</td>
<td>Strategy explicitly includes the whole of Christchurch, not just the Council.</td>
</tr>
<tr>
<td>Consideration of mana whenua content appears to be unwelcome add-in</td>
<td>26458</td>
<td>Incorrect. There was engagement with iwi at various stages over the course of the development of the strategy.</td>
</tr>
<tr>
<td>Not an overarching document</td>
<td>26458</td>
<td>Strategy is intended to be an umbrella across all ‘three waters’</td>
</tr>
<tr>
<td>Insert a paragraph about the zone committees in section 10</td>
<td>26458</td>
<td>Not necessary, noting that no other committees are listed in that section.</td>
</tr>
<tr>
<td>Amend sentence on page 2 - The actual and potential effects of climate change will also need to be responded to or adopted to over the duration of the draft strategy.</td>
<td>26458</td>
<td>Accept amendment.</td>
</tr>
<tr>
<td>Kaitiakitanga doesn't come through</td>
<td>26458</td>
<td>It has been a guiding principle in the development of the strategy.</td>
</tr>
<tr>
<td>Add Zone Implementation Plans to list of legislation/policy in section 1.6.</td>
<td>26458</td>
<td>These documents that implement the Canterbury Water Management Strategy. Note that not all possible regulations, polices and strategies are listed in section 1.6. Zone implementation programmes are listed, with other polices, regulations, etc. in Appendix to the Strategy.</td>
</tr>
<tr>
<td>Amend sentence in section 1.5 The work of the zone committees and other parties in implementing the Canterbury Water Management Strategy will be is directly relevant to implementing the Integrated water Strategy.</td>
<td>26458</td>
<td>Amendment not supported.</td>
</tr>
<tr>
<td>Amend 4th bullet point in section 2 (Purpose) guiding Council decision making including how we will involve, work with, and reflect manawhenua values and community interests in freshwater management and decision making.</td>
<td>26458</td>
<td>In the first instance the strategy guides Council decision-making (e.g. developing draft LTPs and annual plans; preparing asset management plans, etc.).</td>
</tr>
<tr>
<td>Use 'waterbodies' not 'waterways'</td>
<td>26458</td>
<td>Accept amendment.</td>
</tr>
<tr>
<td>Add the ZIP Addendum to the section on the Banks Peninsula ZIP in the Appendix.</td>
<td>26458</td>
<td>Accept amendment.</td>
</tr>
</tbody>
</table>

Consultation Analysis - Draft Integrated Water Strategy
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>The 11 objectives should be listed in order of priority</td>
<td>26460</td>
<td>Objectives were not put in any order of priority intentionally.</td>
</tr>
<tr>
<td>The 11 objectives should be conceptually linked (e.g. objectives relates to waste, flood risk)</td>
<td>26460</td>
<td>The objective are linked by topic (e.g. objectives 3 and 4; objectives 6 and 7).</td>
</tr>
<tr>
<td>Recommend a summary section to identify all those elements amenable to the Council’s direct control and those that aren’t</td>
<td>26460</td>
<td>Not considered to be necessary and could be counter-productive to developing a partnership approach.</td>
</tr>
<tr>
<td>Recommend that a mechanism is put in place to strongly protect strategy from recension without public consultation and support</td>
<td>26460</td>
<td>Not necessary, as demonstrated by the public consultations conducted for all of the healthy environment strategies.</td>
</tr>
<tr>
<td>There is no particular mention of commercial or industrial stakeholders nor opportunities for knowledge sharing with these stakeholders. Suggest amending objective 1: Increase awareness, facilitate sharing of technical knowledge and engage with the community (residential and commercial) and mana whenua regarding the multiple uses and values of water</td>
<td>26370</td>
<td>Accept amendment.</td>
</tr>
<tr>
<td>Individuals have key role to play but limited mention of this</td>
<td>26391</td>
<td>Role of public features throughout document.</td>
</tr>
<tr>
<td>Recommend that the Council provide more encouragement for to take responsibility on their own properties</td>
<td>26455</td>
<td>Engagement and awareness covered in strategy.</td>
</tr>
<tr>
<td>Need to initiate a programme of public education and ongoing dialogue on climate change and rising sea levels</td>
<td>26460</td>
<td>Engagement and awareness covered in strategy. Future strategy work on climate change is expected to address this as well.</td>
</tr>
</tbody>
</table>

Several comments fell outside the scope and purpose of the draft Strategy, and have not been considered further by staff.

- One submission referred to global-scale matters well beyond the scope or influence of the Council.
- One submission sought to ban commercial water takes
- One submission wanted something in the strategy about ECan supporting dairying
- One submission referred to revision of the district plan
- One recommended a ‘whole of the City’ visioning for what the City would look like in 100 years
- Four submissions asked for control of water bottling plants
• One submission wanted the Council to notify a consent application

3 ISSUES AND LIMITATIONS

As with any consultation, it is important to note the issues and limitations that creep into the process, in order to ensure that findings are reliable and for the Council to have faith in them.

As those who made submissions were self-selected, the summary of submissions reflects the views of the submissions received and does not necessarily reflect a scientifically robust representation of the opinions of Christchurch residents concerning the future of water resources management in Christchurch.

Although some of the submissions received were in the format of the feedback form provided with the draft Strategy, the summary document and the Have Your Say web site, other submissions were open-ended, which required manual interpretation.

The analysis was conducted as thoroughly as possible, given time and resource constraints on the preparation of this report.
4 RECOMMENDED CHANGES TO THE STRATEGY

As a result of the feedback received during the public consultation, staff recommend a number of changes to the draft Strategy, which are summarised in Table 4 below. Added text is shown in blue underlined font, and deleted text is show in red strikeout font.

Table 4. Staff recommended changes to the Strategy

<table>
<thead>
<tr>
<th>Section</th>
<th>Text in Draft</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Submitter-prompted changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple sections</td>
<td>Use of term ‘waterways’ in multiple sections</td>
<td>Replace ‘waterways’ with ‘waterbodies’</td>
<td>Replace the term ‘waterways’ with the term ‘waterbodies’ throughout the strategy</td>
</tr>
</tbody>
</table>
| 1.2 | 1.2 Our water resources  
...  
The potential effects of climate change will also need to be responded or adapted to over the duration of the draft strategy. | Editing for clarification | 1.2 Our water resources  
...  
The actual and potential effects of climate change will also need to be responded to or adopted to over the duration of the draft strategy. |
| 3 Te Whakakitenga Vision | Achieving the vision means that Christchurch’s water resources are managed in a sustainable, adaptive and integrated way to:  
- provide people, communities and future generations with access to safe and sufficient water resources  
- maintain the integrity of freshwater ecosystems  
- manage hazards from flooding and sea level rise. | Amend second and third bullet points | Achieving the vision means that Christchurch’s water resources are managed in a sustainable, adaptive and integrated way to:  
- provide people, communities and future generations with access to safe and sufficient water resources  
- Maintain the integrity and indigenous biodiversity of freshwater ecosystems  
- better understand and manage hazards from flooding and sea level rise |

Consultation Analysis - Draft Integrated Water Strategy
<table>
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<tbody>
<tr>
<td>4 Ngā mātāpono aratangi Guiding principles</td>
<td>Add new guiding principle on inclusiveness</td>
</tr>
<tr>
<td>5.2</td>
<td>Surface water catchments in the urban area and rural settlements are subject to contamination from a combination of stormwater, wastewater overflows and other inputs such as sediment and animal and waterfowl contamination. Generally, in Christchurch, poorer waterway health is recorded in urban areas of the district, and better waterway health is recorded in rural areas. Receiving waterbodies, such as Te Ihutai, Te Waikora, Wairewa and the bays and harbours of the Peninsula also have water quality issues that require improvement.</td>
</tr>
<tr>
<td></td>
<td>Editing for clarification</td>
</tr>
<tr>
<td>5.6</td>
<td>Stormwater discharges and effects on surface water The quality of stormwater has a significant effect on surface water quality. Stormwater from urban catchments contains a wide range of contaminants ranging from suspended sediments, nutrients and micro-organisms to chemical contaminants, metals and synthetic hydrocarbons. Untreated stormwater entering streams during the first flush of rain following a dry period typically contain high concentrations of contaminants. …</td>
</tr>
<tr>
<td></td>
<td>Add content concerning sedimentation</td>
</tr>
<tr>
<td></td>
<td>Surface water catchments in the urban area and rural areas setlements are subject to contamination from a combination of stormwater, wastewater overflows and other inputs such as sediment and animal and waterfowl contamination. Generally, in Christchurch, poorer waterway health is recorded in urban areas of the district, and better waterway health is recorded variable in rural areas throughout the district. Receiving waterbodies, such as Te Ihutai, Te Waikora, Te Roto o Wairewa and the bays and harbours of the Peninsula also have water quality issues that require improvement.</td>
</tr>
</tbody>
</table>
| | 5.6 Stormwater discharges and effects on surface water Stormwater from urban catchments contains a wide range of contaminants ranging from suspended sediments, nutrients and micro-organisms to chemical contaminants, metals and synthetic hydrocarbons. Sediment is a particular issue in the Port Hills and Banks Peninsula due to highly erodible loess soils. Untreated stormwater entering streams during the first flush of rain following a dry period.
<table>
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</table>
| 5.8     | 5.8 Responding/adapting to the anticipated effects of climate change and sea level rise  
... Coastal areas in the east of the Christchurch metropolitan area, low lying land in the mid to lower Ōtākaro Avon River catchment and lower Ōpāwahō Heathcote River catchment, and low lying areas in the main Akaroa Harbour settlements are particularly vulnerable. ... Why is it a key issue? Sea level rise and associated coastal erosion will pose a risk to water services infrastructure in coastal areas in Christchurch. | Editing for clarification | 5.8 Responding/adapting to the anticipated effects of climate change and sea level rise  
... Coastal areas in the east of the Christchurch metropolitan area, low lying land in the mid to lower Ōtākaro Avon River catchment and lower Ōpāwahō Heathcote River catchment, and low lying areas in the main Akaroa Harbour settlements in Banks Peninsula, are particularly vulnerable.  
... Why is it a key issue? Sea level rise and associated coastal erosion will pose a risk to water services infrastructure in coastal areas in throughout Christchurch district. |
| 5.9     | 5.9 Long term availability of water for water supply  
... Catchment and groundwater protection may not be adequate, particularly in Te Pātaka o Rākaihautū Banks Peninsula, which could lead to future water quality and availability issues. Also a concern for the community is the extent to which ... | Include effects of drought due to climate change, not just flooding risks | 5.9 Long term availability of water for water supply  
... Catchment and groundwater protection may not be adequate, particularly in Te Pātaka o Rākaihautū Banks Peninsula, which could lead to future water quality and availability issues. The long-term effects of climate change, with the potential for warmer and drier summers in Canterbury, would be likely to affect surface and groundwater quantity and could also increase seasonal peak demand on public water supplies. Also a concern for the community is the extent to which ... |
<table>
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</tr>
</thead>
</table>
| 5.11    | 5.11 Infrastructure efficiency and resilience …  
**Why is it a key issue …**  
For the groundwater-sourced public water supply to remain untreated, both the source and the infrastructure that deliver the water must be deemed ‘secure’. The challenge for us is to ensure that Christchurch’s drinking water is demonstrably safe and does not require residual treatment. | Editing for clarification | 5.11 Infrastructure efficiency and resilience …  
**Why is it a key issue …**  
For the groundwater-sourced public water supply to remain untreated, both the source and the infrastructure that deliver the water must be deemed ‘secure’. The challenge for us is to ensure that Christchurch’s drinking water is demonstrably safe and does not require residual treatment. |
| 6 Ngā whāinga Goals | Goal 1: The multiple uses of water are valued by all for the benefit of all | Editing for clarification | Goal 1: The multiple uses of water are valued [cherished, respected] by all for the benefit of all. |
| 6 Ngā whāinga Goals | Goal 2: Water quality and ecosystems are protected and enhanced … Good water quality adds to the amenity value of surface waterways, and is essential in the Te Pātaka o Rākaihautū / Banks Peninsula streams and rivers and the Christchurch aquifers which supply drinking water to the Christchurch community. | Editing for clarification | Goal 2: Water quality and ecosystems are protected and enhanced … Good water quality adds to the amenity value of surface waterways, and is essential in the Te Pātaka o Rākaihautū Banks Peninsula streams and rivers and the Christchurch aquifers which supply drinking water to the Christchurch community. |
| 6 Ngā whāinga Goals | Goal 3: The effects of flooding, climate change and sea level rise are understood, and the community is assisted to adapt to them  
The key elements of this goal are:  
- Understanding the extent, effect and risk of flooding, and managing effects and adapting to flooding risks…  
- Understanding risks due to sea level rise and consequences resulting from climate change, and developing an adaptive response. | Editing for clarification | Goal 3: The effects of flooding, climate change and sea level rise are understood, and the community is assisted to adapt to them  
The key elements of this goal are:  
- Understanding the extent, effect and risk of flooding, and managing effects and adapting to flooding risks…  
- Understanding risks due to sea level rise and consequences resulting from climate change, and developing prioritising development of an adaptive response. |

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</table>
| 6 Ngā whāinga Goals      | Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitiakitanga Managing water in a sustainable and integrated way … The key elements of this goal are:  
  • Managing assets across …  
  • Managing stormwater collectively wherever practicable in order to maximise efficiency, cost effectiveness and ease of maintenance. Encouraging on-site stormwater management using water sensitive design where collective stormwater management is not feasible (such as areas where urban intensification and redevelopment of industrial and business land is prevalent). … | Editing for clarification – second bullet point                                                                 | Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitiakitanga Managing water in a sustainable and integrated way … The key elements of this goal are:  
  • Managing assets across …  
  • Managing stormwater collectively wherever practicable in order to maximise efficiency, cost effectiveness and ease of maintenance. Encouraging on-site stormwater management using water sensitive design where collective stormwater management is not efficient or feasible (such as areas where urban intensification and redevelopment of industrial and business land is prevalent). … |
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<tbody>
<tr>
<td>6 Ngā whāinga Goals</td>
<td>Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitiakitanga ... The key elements of this goal are: • Managing assets across ... • Managing stormwater collectively ... • Managing wastewater systems to meet community needs – including through reviewing and revising trade waste and biosolids management and developing long term solutions for Christchurch’s future growth and for the disposal of treated wastewater from the Akaroa Harbour communities</td>
<td>Editing for clarification – third bullet point</td>
<td>Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitiakitanga ... The key elements of this goal are: • Managing assets across ... • Managing stormwater collectively ... • Managing wastewater systems to meet community needs – including through reviewing and revising trade waste and biosolids management and developing long term solutions for Christchurch’s future growth and for the disposal of treated wastewater from the Akaroa Harbour communities and other Banks Peninsula communities.</td>
</tr>
<tr>
<td>7.1</td>
<td>7.1 Objective 1: Awareness and engagement Increase awareness and engage with the community and mana whenua regarding the multiple uses and values of water</td>
<td>Include commercial/industrial stakeholders and opportunities for knowledge-sharing</td>
<td>7.1 Objective 1: Awareness and engagement Increase awareness, facilitate sharing of technical knowledge and engage with the community (residential and commercial) and mana whenua regarding the multiple uses and values of water</td>
</tr>
<tr>
<td>7.1</td>
<td>3. Facilitate water sensitive design ... The community has expressed a desire for water sensitive design measures such as rainwater harvesting and greywater reuse to be made easier to incorporate into new or renovated houses or housing developments. This suggested approach has linkages to a related approach to address objective 3.</td>
<td>Concerns about public health risk related to biosolids and greywater reuse</td>
<td>Amend option 7.1-3 3. Facilitate water sensitive design ... The community has expressed a desire for water sensitive design measures such as rainwater harvesting and greywater reuse to be made easier to incorporate into new or renovated houses or housing developments. Measures that might include greywater reuse need to consider public health risks and how they could be mitigated. This suggested approach has linkages to a related approach to address objective 3.</td>
</tr>
<tr>
<td>Section</td>
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</tr>
</tbody>
</table>
| 7.3     | Current situation  
Concern over the quality of rivers and streams has been consistent in feedback from the community and manawhenua. 
The highly urbanised catchments such as the Ōtākaro Avon and Ōpāwaho Heathcote Rivers have poorer ecological health, whereas | Include Huritini Halswell River with urbanised catchment | Current situation  
Concern over the quality of rivers and streams has been consistent in feedback from the community and manawhenua. 
The highly urbanised catchments such as the Ōtākaro Avon, and Ōpāwaho Heathcote and Huritini Halswell Rivers have poorer ecological health, whereas |
| 7.4     | 4. Encouraging or requiring repair/renewal of private sewer laterals  
... Private lateral upgrades will help to reduce wastewater overflows and improving the state of Christchurch’s surface waterways as well as reduce the potential for groundwater contamination resulting from untreated wastewater leakage affecting surface groundwater quality. | Editing for clarification | 4. Encouraging or requiring repair/renewal of private sewer laterals  
... Private lateral upgrades will help to reduce wastewater overflows and improving the state of Christchurch’s surface waterways as well as reduce the potential for groundwater contamination resulting from untreated wastewater leakage affecting surface groundwater quality. | Included under this approach is public engagement and education about issues with private laterals. |
| 7.6     | 2. Biosolids management with multiple pathways for beneficial reuse  
The current biosolids management approach is centralised dewatering and thermal drying of biosolids at the Christchurch Wastewater Treatment Plant to stabilise the material and minimise volume (this includes trucking of biosolids from the Akaroa Harbour plants to Christchurch for processing). ... There may be opportunities for multiple paths for beneficial reuse of biosolids in the future. | Concerns about public health risk related to biosolids and greywater reuse | Amend option 7.6-2  
2. Biosolids management with multiple pathways for beneficial reuse  
The current biosolids management approach is centralised dewatering and thermal drying of biosolids at the Christchurch Wastewater Treatment Plant to stabilise the material and minimise volume (this includes trucking of biosolids from the Akaroa Harbour plants to Christchurch for processing). ... There may be opportunities for multiple paths for beneficial reuse of biosolids in the future. | Options for biosolids reuse will need to consider public health risks and ways to mitigate them. |
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</thead>
<tbody>
<tr>
<td>7.6</td>
<td>Add option for investigating treated wastewater reuse</td>
<td><strong>6. Investigate potential reuse of treated wastewater</strong>&lt;br&gt;One alternative to treated wastewater discharges to the environment could be reuse – this would require investigation of costs, benefits and public acceptance.</td>
<td></td>
</tr>
<tr>
<td>7.6</td>
<td>Add option for increasing public awareness of issue with private laterals</td>
<td><strong>7. Investigate wastewater options for small Banks Peninsula settlements</strong>&lt;br&gt;Smaller communities in Banks Peninsula are not serviced by a public wastewater network. Investigations of the costs and benefits to provide such service could be undertaken.</td>
<td></td>
</tr>
<tr>
<td>7.8</td>
<td>6. Enable reuse and harvesting … Mana whenua consider that an advantage of residential volumetric charging could be the ability to enable incentives for incorporating reuse into sustainable house design e.g. greywater and rainwater harvesting.</td>
<td>Concerns about public health risk related to biosolids and greywater reuse</td>
<td>Amend option 7.8-6&lt;br&gt;Mana whenua consider that an advantage of residential volumetric charging could be the ability to enable incentives for incorporating reuse into sustainable house design e.g. greywater and rainwater harvesting. Options for greywater reuse harvesting will need to include considerations for methods to mitigate public health risks.</td>
</tr>
<tr>
<td>7.8</td>
<td>Suggestion to investigate nitrate-free alternatives for drinking water sources</td>
<td><strong>9. Investigate other potential water supply sources.</strong>&lt;br&gt;In light of concerns about nitrate levels in drinking water sources, other potential sources could be investigated, such as large-scale rainwater collection schemes, piping water from headwaters of Canterbury’s alpine rivers, desalination of seawater.</td>
<td>Add new option 7.8-9</td>
</tr>
<tr>
<td>Section</td>
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</tr>
</tbody>
</table>
| Appendix A       | Canterbury Water Management Strategy (CWMS)  
The CWMS is a non-statutory framework for managing water led by Environment Canterbury, Ngāi Tahu and Canterbury’s District and City Councils and implemented by local communities.  
…  
Banks Peninsula Zone Implementation Programme (ZIP)  
…  
In relation to the three waters, recommendations in relation to water quality and wastewater include upgrading and management of water resources and infrastructure, management and prevention of discharges and contamination, further research to be undertaken, efficiency and implementation of new technologies.  
Selwyn-Waihora Zone Implementation Programme (ZIP)                                                                                                                                                                                                                                 | Add Banks Peninsula Zone Implementation Programme Addendum to content for the zone committee                                                                                                                                                                                                     | Canterbury Water Management Strategy (CWMS)  
The CWMS is a non-statutory framework for managing water led by Environment Canterbury, Ngāi Tahu and Canterbury’s District and City Councils and implemented by local communities.  
…  
Banks Peninsula Zone Implementation Programme (ZIP)  
…  
In relation to the three waters, recommendations in relation to water quality and wastewater include upgrading and management of water resources and infrastructure, management and prevention of discharges and contamination, further research to be undertaken, efficiency and implementation of new technologies.  
The Banks Peninsula ZIP Addendum (ZIPA) focuses on the Te Roto o Wairewa/Lake Forsyth catchment with recommendations to improve water quality. The ZIPA informed the development of Plan Change 6 of the Canterbury Land and Water Regional Plan.  
Selwyn-Waihora Zone Implementation Programme (ZIP)                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                           |
| Glossary         | ‘Three waters’ not clearly defined                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Add new term and definition to Glossary:  
‘Three waters’ – potable water supplies, wastewater and surface water (including stormwater and flooding/floodplain management) and their infrastructure                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                           |
<table>
<thead>
<tr>
<th>Section</th>
<th>Text in Draft</th>
<th>Consultation Feedback</th>
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<tbody>
<tr>
<td><strong>Typos and clarifications – staff-initiated changes</strong></td>
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<tr>
<td>Throughout document</td>
<td>Staff comment:</td>
<td>Remove 'draft' throughout the document</td>
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<td>Remove 'draft' throughout the document to enable Councillors to receive a better idea of what the final strategy may look like</td>
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<tr>
<td>Executive summary and Section 4</td>
<td>Missing footnote numbers in text</td>
<td>Replace missing footnote numbers</td>
<td></td>
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<td></td>
<td>Staff comment:</td>
<td>The goals align with the 2018-28 Community Outcomes $^3$</td>
<td></td>
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<tr>
<td></td>
<td>Missing footnote numbers 1, 3 and 4 from text in Executive Summary and section 4</td>
<td>Kaitiakitanga … as good as, or better than, the current state $^3$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Staff comment:</td>
<td>The Urban Water Working Group, led by the Ministry for the Environment, developed five key principles $^5$</td>
<td></td>
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<tr>
<td>Section 1.5</td>
<td>Staff comment:</td>
<td>Delete last sentence.</td>
<td></td>
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<tr>
<td></td>
<td>Deletion of last sentence after the Hearings Panel concludes.</td>
<td>The next step for this draft is public consultation.</td>
<td></td>
</tr>
<tr>
<td>Section 4</td>
<td>Staff comment:</td>
<td>Correct typo:</td>
<td></td>
</tr>
<tr>
<td>Ngā mātauranga arataki Guiding principles</td>
<td>Typo in sentence about Te Hapori Me Te Woi: ‘ate’ should be ‘are’</td>
<td>Te hāpori me te wai - The community’s love and care for water is enduring. Underpinning this principle are are growing and nurturing kaitiakitanga of water ecosystems, along with providing for meaningful and quality information to support decision-making and behaviour change.</td>
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<tr>
<td>Section</td>
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<td>Recommended Change</td>
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</tr>
<tr>
<td>7. Ngā paetae Objectives</td>
<td>While some of the issues outlined in Section 5 are those for which we can exercise some degree of control, for other issues we will need support from manawhenua, the wider community, regional and central governments, and other stakeholders in order to the objectives of the draft strategy. The objectives are not listed in any order of priority.</td>
<td>Staff comment: The relationship between the basic elements of the strategy were not as clear as they could be. Typo in opening paragraph – missing the word ‘achieve’.</td>
<td>Add ‘achieve’ to first sentence. Add a new sentence before the last sentence in introductory text and insert new graphic showing relationships of the basic elements of the strategy. 7. Nga paetae Objectives While some of the issues outlined in Section 5 are those for which we can exercise some degree of control, for other issues we will need support from manawhenua, the wider community, regional and central governments, and other stakeholders in order to achieve the objectives of the draft strategy. Each of the 11 objectives directly relates to at least two of the four goals. The objectives are not listed in any order of priority.</td>
</tr>
<tr>
<td>Section</td>
<td>Text in Draft</td>
<td>Consultation Feedback</td>
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</tbody>
</table>
| 7.3 Objectives 3 and 4 | 6. Wetlands and waterways enhancement and naturalisation...
   Our Waterways, Wetlands and Drainage Guide (WWDG) could be used to assist with this work. | **Staff comment:**
   WWDG is superfluous | **Italicise title and delete WWDG**
   Our [Waterways, Wetlands and Drainage Guide (WWDG)](WWDG) could be used to assist with this work. |
| 7.7 Objective 9 and 10 | | **Staff comment:**
   Typo in 7.7-4; reference to section 7.7 should be to section 5.3 | **Correct typo in suggested approach 7.7-4**
   The inter-zone nitrate issue described in section 7.7 is one example. |
| Appendix A | **Staff comment:**
   Ngāi Wheke requested the inclusion of the Whaka Ora Healthy Harbour Plan | **New text to be added:**
   Add Whaka-Ora Healthy Harbour Plan to list of strategies in Appendix A Legislative and policy context, after the Canterbury Water Management Strategy section, as follows.
   **Whaka-Ora Healthy Harbour Plan – Whakaraupo/Lyttelton Harbour Catchment Management Plan**
   Te Hapū o Ngāi Wheke, Lyttelton Port Company, Environment Canterbury, Christchurch City Council, and Te Rūnanga o Ngāi Tahu in consultation with harbour communities developed the Whaka-Ora Healthy Harbour Plan, which is designed to help improve the cultural and ecological health of Whakaraupo/Lyttelton Harbour. The Plan addresses issues including pollution of waterways, erosion and sedimentation and indigenous biodiversity. | |
| Appendix B | **Staff comment:**
   The sub-heading ‘Glossary’ was omitted when the document was formatted for printing | **Add ‘Glossary’ in Heading 2 style:**
   Appendix B References
   Glossary
   Aquifers – underground layers of porous rock or sand . . . | |
5 APPENDICES

1. Consultation feedback form
2. List of submitters
3. Organisations and individuals contacted
5.1 Consultation feedback form

HAVE YOUR SAY

Draft Intergrated Water Strategy

Do you agree or disagree with the vision and guiding principles for managing the ‘three waters’ (water supply, wastewater, and stormwater/surface water) in Christchurch? (See sections 3 and 4 of the draft strategy)

☐ Agree ☐ Neither agree nor disagree ☐ Disagree

Comments: __________________________

Do you agree or disagree with the key issues facing management of the ‘three waters’ in Christchurch? (See section 5 of the draft strategy)

☐ Agree ☐ Neither agree nor disagree ☐ Disagree

Comments: __________________________

Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? (See sections 6 and 7 of the draft strategy)

☐ Agree ☐ Neither agree nor disagree ☐ Disagree

Comments: __________________________

Do you agree or disagree with the recommendations for achieving the aim and vision for managing the ‘three waters’ in Christchurch? (See section 7 of the draft strategy)

☐ Agree ☐ Neither agree nor disagree ☐ Disagree

Comments: __________________________

Overall, do you support the direction of the Draft Integrated Water Strategy? ☐ Yes ☐ No

Do you have any other comments?

____________________________________

Consultation Analysis - Draft Integrated Water Strategy
### 5.2 List of Submitters

<table>
<thead>
<tr>
<th>Submitter</th>
<th>Submitter number</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patricia Scarlett</td>
<td>25589</td>
<td>self</td>
</tr>
<tr>
<td>Ralph Roden</td>
<td>25591</td>
<td>Cashmere Residents’ Association</td>
</tr>
<tr>
<td>Robyn Hewland</td>
<td>25602</td>
<td>self</td>
</tr>
<tr>
<td>Prue Edmond</td>
<td>25795</td>
<td>self</td>
</tr>
<tr>
<td>Andrew McKay</td>
<td>25857</td>
<td>self</td>
</tr>
<tr>
<td>Patricia Blake</td>
<td>25891</td>
<td>self</td>
</tr>
<tr>
<td>Marilyn Vicary</td>
<td>25930</td>
<td>self</td>
</tr>
<tr>
<td>Rob Kara</td>
<td>25955</td>
<td>self</td>
</tr>
<tr>
<td>Matt Ward</td>
<td>26105</td>
<td>self</td>
</tr>
<tr>
<td>Marnie Kent</td>
<td>26120</td>
<td>self</td>
</tr>
<tr>
<td>Anna McClure</td>
<td>26180</td>
<td>self</td>
</tr>
<tr>
<td>Karina Hay</td>
<td>26192</td>
<td>Christchurch Coastal Residents United</td>
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<tr>
<td>Mike Currie</td>
<td>26200</td>
<td>self</td>
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<tr>
<td>Kerry Mayes</td>
<td>26227</td>
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<tr>
<td>Beverley Broad</td>
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<td>Charles and Beverley L Broad Family trusts</td>
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<td>Christine McCormack</td>
<td>26236</td>
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<tr>
<td>David Hawke</td>
<td>26258</td>
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<tr>
<td>Pam Richardson</td>
<td>26268</td>
<td>Banks Peninsula Community Board</td>
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<tr>
<td>Patrick Clifford</td>
<td>26332</td>
<td>self</td>
</tr>
<tr>
<td>Alizon Paterson/Dr Alistair Humphrey</td>
<td>26348</td>
<td>Community and Public Health, CDHB</td>
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<tr>
<td>Linda Stewart</td>
<td>26353</td>
<td>Coastal-Burwood Community Board</td>
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<td>Karolin Potter</td>
<td>26359</td>
<td>Spreydon Cashmere Community Board</td>
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<td>Ramzi Addison</td>
<td>26365</td>
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<tr>
<td>Chris Tyler</td>
<td>26366</td>
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<tr>
<td>Andrew Dark</td>
<td>26367</td>
<td>Aqualinc Research Limited</td>
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<tr>
<td>Gareth Taylor</td>
<td>26370</td>
<td>Lyttelton Port Company</td>
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<tr>
<td>Annette and Michael Hamblett</td>
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<td>self</td>
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<td>Vicky Southworth</td>
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<tr>
<td>Pat Dwyer</td>
<td>26454</td>
<td>New Zealand Steel</td>
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<td>---------------------</td>
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<td>---------------------------------------------</td>
</tr>
<tr>
<td>Annabelle Hasselman</td>
<td>26455</td>
<td>Opāwaho Heathcote River Network</td>
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<tr>
<td>Ann Kennedy</td>
<td>26457</td>
<td>self</td>
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<tr>
<td>Paula Smith</td>
<td>26458</td>
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<tr>
<td>Simon Britten</td>
<td>26459</td>
<td>self</td>
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<tr>
<td>Peter Tuffley</td>
<td>26460</td>
<td>Beckenham Neighbourhood Association</td>
</tr>
<tr>
<td>Peter Dow</td>
<td>26492</td>
<td>Halswell-Hornby-Riccarton Community Board</td>
</tr>
</tbody>
</table>
5.3 Organisations and individuals contacted

Mayor
Councillors
CEO
Community Boards
Libraries
Service centres
Ōnuku Rūnanga
Te Ngāi Tūāhuriri Rūnanga
Te Rūnanga o Ngāi Tahu
Te Rūnanga of Koukourārata
Te Hapu o Ngāti Wheke (Rāpaki)
Te Taumutu runanga
Wairewa runanga
Environment Canterbury
Selwyn District Council
Waimakariri District Council
Canterbury District Health Board
Water management zone committees
Regenerate Christchurch
Ōtākaro Limited
Canterbury District Health Board
Addington Neighbourhood Association
Akaroa Ratepayers Association
Aranui Community Trust
Avon loop Planning Association
Avondale Residents’ Association
Avonhead Community Group
Avonside Community Group
Avonside Residents Association
Awatea Residents Association
Beckenham Neighbourhood Association
Belfast Area Residents’ Association
Burwood East Residents’ Association
Cashmere Residents Association
Cass Bay Residents’ Association
Central Riccarton Residents’ Association
Charleston Neighbourhood Association
Charters Bay Residents’ Association
Chester Street East Residents Association
Chester Street Residents Association
Christchurch Combined Residents’ Group
Church Bay Neighbourhood Assn
Clifton Neighbourhood Committee
Corsair Bay Residents’ Association
Cowlishaw St, Patten St & Retreat Rd Residents’ Soc.

Cracroft Residents’ Association
Dallington Residents’ Association
Deans Avenue Precinct Society
Delamain Resident’s Association
Diamond Harbour Community Association
Ellington Residents Association
Englefield Residents’ Association
Ferrymead Brookhaven Residents Association
Friends of Avonhead Park Cemetery
Gilberthorpes Estate Residents’ Group
Glandovey Idris Straven Residents’ Association
Governors Bay Community Association
Greater Hornby Residents Association
Halswell Community
Halswell Community Project
Halswell Residents’ Association
Hamilton Avenue & Otara Street Residents’ Assn
Heathcote Valley Community Association
Iam & Upper Riccarton Residents’ Association
Inner City East Neighbourhood Group (ICENG)
Inner City West Neighbourhood Ass, Inc (ICON)
Kainga Residents’ Association
Kennedy’s Bush Neighbourhood Association
Le Bons Bay Residents’ Association
Linwood Neighbourhood Committee
Little River Residents’ Association
Lower Cashmere Residents Association
Lyttelton Community Association
Mervile Precinct Society
Moa Neighbourhood Committee
Mt Pleasant Mem. Com’ty Ctr & Ratep’rs Assn
North New Brighton Residents’ Association
Northshore Residents’ Association
Northwood Residents’ Association
Opawa/St Martins Residents’ Association
Parklands Residents’ Association Inc
Peterborough Village
Phillipstown Residents’ Association
Port Levy Residents’ Association
Purau Residents’ Association
Redcliffs Residents’ Association
Riccarton Bush - Kilmarnock Residents’ Assn
Riccarton Park Residents’ Association
Richmond Residents and Business Assn
Robinsons Bay Residents association
Roimata Community Incorporated Society

Consultation Analysis - Draft Integrated Water Strategy
Shirley Residents' Group
Sommerfield Residents' Association
South Brighton Residents' Association
Southshore Residents' Association (SSRA)
Spencerville Residents' Association
Spreydon Neighbour Network
St Albans Residents' Association
St James Avenue Residents' Association
Steadman Road Area Residents' Group
Stewarts Gully Residents' Association
Summer Residents' Association
Takamatua Ratepayers Association
Taylors Mistake Association
Templeton Residents' Association
Tikao Bay Ratepayers’ Assn/Tikao Bay Boating Club
Victoria Neighbourhood Association
Wainui Residents’ Association
Wakatu Avenue Residents Group
Waltham Community Cottage
Westmorland Residents’ Association
Woolston Community Association
Yaldhurst Rural Residents’ Association Inc
Age Concern Canterbury
Akaroa Harbour Issues Working Party
Aoteaorua Water Action
Arawa Canoe Club
Avon Heathcote Estuary Ihuatui Trust
Avon-Ōtākaro Network
Canterbury Anglers Club
Canterbury Rowing Association
Canterbury Windsports Association
Cashmere Stream Care Group
Central City Business Association
Christchurch Coastal Residents United
Christchurch Employers' Chamber of Commerce
Christchurch Estuary Assn.
Christchurch International Airport
ChristchurchNZ
City Mission
Combined Christchurch Residents Assn
Community & Public Health
Dairy NZ
Department of Conservation
Department of Conservation
Disability Advisory Group Christchurch
Environment Institute of Australia & NZ
EOS Ecology
ESR
Federated Farmers North Canterbury
Fire & Emergency NZ Region 4
Fish and Game North Canterbury
Grey Power Federation Inc.
Landcare Research
Lucas Associates
Lyttelton Environment Group
Lyttelton Port of Christchurch
Mahaanui Kurataiao Ltd (MKT)
Multicultural Council
National Inst. of Water Atmospheric Research
Network of the Iam Stream (NOTIS)
Network Waitangi Otatuhai
New Zealand Salmon Anglers
Opawaho-Heathcote River Network
Royal Forest & Bird Protection Society
Royal Forest & Bird Society North Canterbury
SCION
Shirley Stream Care Group
Social Equity & Wellbeing Network
Styx Living Laboratory
Sustainable Living Programme
Sustainable Ōtāuhutu Christchurch
The Manufacturers Network
Travis Wetland Trust
Waihora Ellesmere Trust (WET)
Waterwatch Canterbury
Waterways Centre for Freshwater Management
Whakaraupo / Lyttelton Harbour Issues Group
Te Wai Ora o Tāne

Integrated Water Strategy

Ōtautahi Christchurch and Te Pātaka o Rākaihautū Banks Peninsula
Rārangi āpoko Contents

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Whakarāpopototanga whakarae Executive summary

Water supply, wastewater, stormwater, surface water and groundwater form a fundamental part of the life of the community. Christchurch City Council has a responsibility to ensure that its water services, infrastructure and water taonga are managed in a manner that supports the environmental, social, cultural and economic wellbeing of current and future generations. In this regard we work with Environment Canterbury, which has responsibilities for environmental resources management. The broader legislative and policy context is described in Appendix A.

Our vision to guide that management is:

Te wai ora o Tāne Water for life
Valuing water and water services for people and the environment

The vision recognises the importance of water, as taonga, to the life of the community of Ōtautahi Christchurch, while also recognising the significant cultural values associated with water. Achieving the vision will mean that Christchurch’s water resources and taonga are managed in an integrated way to provide people, communities and future generations with access to safe and sufficient water resources, maintain the integrity of freshwater ecosystems and manage hazards from flooding and sea level rise.

An Integrated Water Strategy will both recognise and support the ongoing recovery activities following the earthquakes, and set a path for our future management of our water resources and water services and associated infrastructure.

It will establish the strategic direction for our sustainable long-term management of water resources and related infrastructure. The draft strategy focuses on water supply, wastewater and surface water including stormwater and flood management.

Principles that have guided the development of the draft strategy are: integration, longevity, touchstone, place-making, flood management, international best practice, efficiency and kaitiakitanga.

The strategy recognises and incorporates the Urban Water Principles - Ngā Wai Manga recommended by central government’s Urban Water Working Group:

- Papatūānuku – Our relationship with the land – papatūānuku – will pre-determine our relationship with water
- Ngā wai tuku kiri – Our waters are a gift of life provided to us by our tupuna
- Tāngata – Our environments are places of human occupation
- Te hāpori me te wai – The community’s love and care for water is enduring
- Tiakina mō āpōpō – In building future resilience, our connectedness with the environment is our strength

This draft strategy addresses eleven key strategic issues, relating to managing wastewater discharges, ensuring long term water supply, responding to stormwater management, flooding, and potential sea level rise issues, improving water quality and waterway health, and ensuring that the community values its many different types of water resources.

1. Different perceptions of the ‘value’ of the waters
2. Poor state of some waterways
3. Vulnerability of Christchurch’s groundwater source to contamination
4. Wastewater overflows and effects on surface water
5. Treated wastewater discharges into Akaroa Harbour
6. Stormwater discharges and effects on surface water
7. Flooding and flood management
8. Responding/adapting to the anticipated effects of sea level rise on water resources and related infrastructure
9. Long term availability of water for water supply
10. Long term sustainable wastewater treatment and disposal
11. Infrastructure efficiency and resilience

To address these strategic issues, the draft strategy contains four goals, 11 objectives and some suggested approaches to achieve the vision. The goals align with the 2018-28 Community Outcomes\(^1\), as well as the ‘strategic priorities’ identified in our Strategic Framework\(^2\).

In summary, the goals and general approach to achieving each of the goals of the draft strategy is as follows.

**Goal 1: The multiple uses of water are valued by all for the benefit of all**

- Increasing awareness – to encourage and engage the community to value and respect the multiple uses of our water resources through advocacy and outreach programmes, demonstration projects that highlight the values of water, and considering the water services charging structure and the way information is conveyed to the community.

- Enhancing natural and cultural values (including ecology, amenity, recreation, heritage and landscape) through initiatives such as demonstration projects, protection of existing waterway and wetland systems, encouraging and facilitating wetlands, waterways/waterbodies enhancement and naturalisation, addressing stream depletion, facilitating the adoption of water sensitive design and promoting water conservation.

**Goal 2: Water quality and ecosystems are protected and enhanced**

- Improving water quality and enhancing the natural, cultural and ecological values of waterways/waterbodies – through continuing the existing Stormwater Management Plan approach to management of stormwater quality, increasing focus on sediment control measures, implementing source control and water sensitive design, wetlands and waterways/waterbodies enhancement and naturalisation, and where possible retrofitting water quality mitigation for existing developed areas.

- Reducing the effects of wastewater overflows – by network upgrades, targeting efforts to address overflows and reducing inflow and infiltration.

- Understanding groundwater sources and their vulnerability to contamination – through targeted investigations, further implementation of source protection, and restrictions on excavation below groundwater level.

- Recognising the importance of robust data management and modelling to demonstrate performance.

**Goal 3: The effects of flooding, climate change and sea level rise are understood, and the community is assisted to adapt to them**

- Understanding the extent, effect and risk of flooding, and managing effects and adapting to flooding risks – by continuing the existing programme of investigations and physical works in the interim, while developing, communicating to the community and then implementing a risk based approach to managing the effects of flooding using options appropriate to specific situations.

- Understanding risks due to sea level rise and consequences resulting from climate change, and developing an adaptive response.

**Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitiakitanga**

- Managing assets across all disciplines in an integrated manner to maximise attributes such as place making, collaborative benefits, eco-system service harmonies which may not be realised when assets are developed in isolation for a single discipline.

- Managing stormwater collectively wherever practicable in order to maximise efficiency, cost effectiveness and ease of maintenance. Encouraging on-site stormwater management using water sensitive design where collective stormwater management is not feasible (such as areas where urban intensification and redevelopment of industrial and business land is prevalent).

- Managing wastewater systems to meet community needs – including through reviewing and revising trade waste and biosolids management and developing long term solutions for Christchurch’s future growth and for the disposal of treated wastewater from the Akaroa Harbour communities.

---


- Managing water sources to meet reasonable demands by improving understanding of water sources and water use, implementing demand management projects and securing access to water supplies.
- Infrastructure efficiency and resilience – by utilising a risk based approach, proactive monitoring, and the implementation of intelligent technology.
- Managing resources collaboratively. Water resources management is complex and requires collaborative integrated work programme across Council units and between stakeholders.

To guide actions to meet the goals and vision of the [draft] strategy eleven objectives have been identified as follows. Note that objectives are not listed in any order of priority.

<table>
<thead>
<tr>
<th>Objective 1</th>
<th>Awareness and engagement</th>
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<td>Increase awareness and engage with the community and mana whenua regarding the multiple uses and values of water.</td>
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<tr>
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<th>Efficient and resilient infrastructure</th>
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<td>Ensure efficient use of three waters infrastructure through a completely integrated management structure and ensure the resilience of entire networks (including natural waterbodies) to future environmental, social and/or cultural changes and natural hazard risks over the long term through timely asset renewal and/or better alternative solutions.</td>
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<tr>
<th>Objective 3</th>
<th>Enhancement of ecological, cultural and natural values</th>
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<tr>
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<td>Enhance the ecological, cultural and natural values (including amenity, recreation, customary use, heritage and landscape) of the waterways/waterbodies within the Christchurch urban area and settlements.</td>
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<th>Water quality improvement</th>
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<tr>
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<td>Improve the water quality of surface water resources to protect ecosystem health and provide for contact recreation, food gathering, mahinga kai and cultural values.</td>
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<th>Objective 5</th>
<th>Wastewater overflows management</th>
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<td>Reduce and work towards eliminating the effects of wastewater overflows.</td>
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<th>Flood risk</th>
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<td>Understand the likely extent and effects of flooding, and the risk posed by flooding.</td>
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<th>Objective 7</th>
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<tr>
<td></td>
<td>Manage and adapt to the effects of flooding using natural systems, planning tools, community adaptation and infrastructure solutions.</td>
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<table>
<thead>
<tr>
<th>Objective 8</th>
<th>Sustainable wastewater systems</th>
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<tbody>
<tr>
<td></td>
<td>Manage the effects of the wastewater systems to meet community needs for environmental, social, cultural and economic sustainability over the long term.</td>
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<table>
<thead>
<tr>
<th>Objective 9</th>
<th>Groundwater protection</th>
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<tbody>
<tr>
<td></td>
<td>Advance source protection of groundwater recharge areas and surface water supply sources for all drinking water supplies.</td>
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<tr>
<th>Objective 10</th>
<th>Improvement in understanding of aquifer system</th>
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<tbody>
<tr>
<td></td>
<td>Understand the vulnerability, transit times and extent of confining layers of the Christchurch aquifers as well as the link to surface water quantity and quality.</td>
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<table>
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<tr>
<th>Objective 11</th>
<th>Safe and sustainable water supply</th>
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<tbody>
<tr>
<td></td>
<td>Manage the water sources for drinking water supplies to meet the forecast reasonable demands over the long term and ensure efficiency of water use, and ensure demonstrably safe drinking water without the need for residual disinfection.</td>
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A suite of approaches to support the objectives and goals are put forward and are listed below.

<table>
<thead>
<tr>
<th>Option</th>
<th>Objective(s) to be addressed</th>
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| 7.1-1 and 7.3-1 Advocacy and Outreach | 1. Awareness and engagement  
2 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.1-2 and 7.3-2 Demonstration Projects – waterway naturalisation | 1. Awareness and engagement  
3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.1-3 Facilitate Water Sensitive Design | 1. Awareness and engagement |
| 7.1-4 Improve public understanding of the cost of water services | 1. Awareness and engagement |
| 7.1-5 and 3-7 Waterways/Waterbodies and wetlands enhancement and naturalisation | 1. Awareness and engagement  
3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.2-1 Proactive risk-based asset renewals | 2. Efficient and resilient infrastructure |
| 7.2-2 Proactive monitoring of condition | 2. Efficient and resilient infrastructure |
| 7.2-3 Intelligent technology | 2. Efficient and resilient infrastructure |
| 7.2-4 Continuing to manage for core values for stormwater and flood management | 2. Efficient and resilient infrastructure |
| 7.3-3 Continue and enhance the implementation of the current approach to stormwater management | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-4 Increased sediment control | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-5 Waterway vegetation management | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-6 and 7.5-1 Wastewater and stormwater network upgrades and real time control technology | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement  
5. Wastewater overflows management |
| 7.3-8 Appropriate policy and plan provisions for water sensitive design | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.3-9 Development of stormwater discharge standards | 3 and 4. Enhancement of ecological, cultural and natural values and water quality improvement |
| 7.4-2 Effects based network consent | 5. Wastewater overflows management |
| 7.4-3 Reducing inflow and infiltration to the public network | 5. Wastewater overflows management |
| 7.4-4 Repair/renewal of private sewer laterals | 5. Wastewater overflows management |
| 7.5-1 Continue the current approach for flooding and flood management | 6 and 7. Flood risk and flood management and adaptation |
| 7.5-2 Continue to develop a risk based approach to flood management | 6 and 7. Flood risk and flood management and adaptation |
| 7.5-3 Communicate a risk based approach to the community and foster community support | 6 and 7. Flood risk and flood management and adaptation |
| 7.5-4 Implement options tailored to address flood management in specific circumstances | 6 and 7. Flood risk and flood management and adaptation |
| 7.6-1 Trade waste management | 8. Sustainable wastewater systems |

The draft strategy recognises the various roles of local, regional and national governments as well as public and private organisations and the general public, and how each can contribute to realising the draft strategy’s vision.
The draft strategy also supports the implementation of the Canterbury Water Management Strategy, in particular with respect to the following targets: ecosystem health and biodiversity, kaitiakitanga, drinking water, recreational and amenity opportunities, water-use efficiency and environmental limits.
Te tuatahi **Part one:**
Tāhuhu korero
Technical and background information
1 Kupu whakataki Introduction

1.1 Why develop an Integrated Water Strategy?

Water resources play a fundamental part in providing for the needs of, and shaping the community. The Christchurch City Council provides water supply, wastewater and stormwater services and infrastructure throughout the District. Waterways/Waterbodies and coastal waters also form a fundamental part of both the landscape and lives of the community.

The Draft Integrated Water Strategy (the draft strategy) is a high level overarching strategy developed to consider all of these different water resources, values and demands, and set a framework to help us manage them in an integrated way over at least the next 100 years. The strategy also provides for the requirements of working with manawhenua under the National Policy Statement on Freshwater 2014 (Freshwater NPS) and other statutory and non-statutory plans, policies and strategies.

The draft strategy recognises our responsibilities to ensure water services and infrastructure support environmental, social, cultural and economic well-being of current and future generations. In fulfilling these responsibilities we work with the community and with Environment Canterbury, which is responsible for environmental resource management.

1.2 Our water resources

Christchurch’s freshwater resources include springs, streams, rivers, lakes, wetlands, lagoon, estuaries and high-quality groundwater. These water resources are an important part of the unique culture and the natural values of the area, shaping the landscape and Christchurch’s heritage.

Water is fundamentally important to Ngāi Tahu, highly valued by the community for recreation, and crucial to the health of the environment in which the community lives.

Christchurch’s water infrastructure includes:

- groundwater and surface water sources for community drinking water supply and the infrastructure that conveys water from source to end-user, including treatment where necessary
- wastewater collection, treatment and discharge network
- stormwater collection, detention, treatment and conveyance and disposal network.

The actual and potential adverse effects of discharges of stormwater (and sometimes wastewater) to the streams, rivers, estuaries, harbours and into land in Christchurch need to be managed, as do any effects of flooding.

The actual and potential effects of climate change will also need to be responded or adapted to over the duration of the draft strategy.

1.3 Integration

Three Council strategies relating to the sustainable management of Christchurch’s water resources were adopted by the Council between 2009 and 2013:

- Water Supply Strategy 2009 - 2039
- Surface Water Strategy 2009 - 2039
- Wastewater Strategy 2013

Although efforts to take account of other water resources and their inter-relationships were made during the development of each of the existing water-related strategies, the extent to which this could be achieved was relatively limited. This has led to the development of the Integrated Water Strategy.

The Integrated Water Strategy will sit within the context of the work being undertaken by the Canterbury community under the Canterbury Water Management Strategy. The strategy will also sit within the work being undertaken to fulfil requirements under the Freshwater NPS, and the establishment of Te Hononga, a joint Council-Ngāi Tahu initiative and work programme.

Te Wai Ora o Tāne Draft Integrated Water Strategy
1.4 Scope

The draft strategy covers respect and stewardship of the water resources within Christchurch through the sustainable and integrated management of Christchurch’s water supply (including its groundwater sources), wastewater and surface water (including stormwater and flooding).

Also included within the draft strategy is an overall approach for addressing impacts of sea level rise on waterways/waterbodies, stormwater management and flood management. The draft strategy also covers working relationships with Ngāi Tahu.

The draft strategy primarily considers matters over which we and/or the local community can manage or influence. Matters pertaining to water resources on a regional or national level are managed through a variety of other policy and regulatory instruments, such as the Canterbury Water Management Strategy, the Land and Water Regional Plan, the Resource Management Act, national environmental standards and national policy statements.

1.5 Development of the Draft Integrated Water Strategy

The draft strategy has been developed as part of our Healthy Environment strategies programme. The process for developing the strategy is outlined in Figure 1-1. The next step for this draft is public consultation.

![Development process; Integrated Water Strategy](image1)

The relationship of the Integrated Water Strategy to other Council plans, strategies and policies is shown in Figure 1-2.

![Relationships of the Integrated Water Strategy within Council](image2)

Te Wai Ora o Tāne | Draft Integrated Water Strategy
1.6 Legislative and policy context

There are a series of legislative and policy drivers for the preparation of the draft strategy, including:

- Te Tiriti o Waitangi Treaty of Waitangi
- Resource Management Act 1991
- Local Government Act 2002
- Health Act 1956, as amended
- Mahaanui Iwi Management Plan 2013
- National Policy Statement for Freshwater Management, as amended
- National Environmental Standard for Sources of Human Drinking Water
- New Zealand Coastal Policy Statement 2010
- Canterbury Regional Policy Statement
- Regional Coastal Environment Plan for the Canterbury Region
- Canterbury Land and Water Regional Plan
- Christchurch District Plan
- Waimakariri River Regional Plan (2004, as amended)
- Canterbury Water Management Strategy

A summary outline of relevant legislative and policy drivers is contained in Appendix A.

The work of the zone committees and other parties in implementing the Canterbury Water Management Strategy will be relevant to implementing the Integrated Water Strategy.

Statutes and policies influencing water management

Te Wai Ora o Tāne | Draft: Integrated Water Strategy
Te tuarua Part two

Te Rautaki

The Strategy
2 Te kaupapa matua Purpose

The purpose of the draft strategy is to provide strategic direction for:

- sustainable and integrated management of water resources and taonga and guardianship of that asset
- integrated management of related infrastructure and services
- managing the effects of water infrastructure on surface, coastal and groundwater resources
- guiding Council decision making including how we will involve, work with, and reflect manawhenua values and community interests in freshwater management and decision making.

The draft strategy is a high-level long term strategy. A series of short, medium and long term goals have been identified to allow the community, manawhenua and the Council to meet the strategy’s vision.

3 Te Whakakitenga Vision

Te wai ora o Tāne –
Water for life
Valuing water and water services for people and the environment

Achieving the vision means that Christchurch’s water resources are managed in a sustainable, adaptive and integrated way to:

- provide people, communities and future generations with access to safe and sufficient water resources
- maintain the integrity and indigenous biodiversity of freshwater ecosystems
- better understand and manage hazards from flooding and sea level rise.

4 Ngā mātāpono arataki Guiding principles

We developed the following principles to guide the preparation of the draft strategy:

- Kaitiakitanga – Kaitiakitanga “entails an active exercise of responsibility in a manner beneficial to the resource” in which responsibility is two-fold: “ultimate aim of protecting mauri” and “the duty to pass the environment to future generations in a state which is as good as, or better than, the current state”\(^3\). This guiding principle, of actively seeking to protect our water resources and improve their state for future generations, is the keystone of the strategy.
- Integration – the strategy needs to provide guidance to other Council strategies and plans, and provide an opportunity to integrate the management of water services, other Council infrastructure, in particular parks and roading, and water resources.
- Longevity – the strategy should not be time bound, but will be intergenerational, while also being aspirational yet pragmatic, affordable, ‘real’ and achievable.
- Touchstone – an Integrated Water Strategy is fundamental to our activities serving and benefiting the

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\(^3\) As expressed in the Mahi Māori | Draft: Integrated Water Strategy
community. It will be a tool to be used in discussions internally within the Council and in interactions with the public.

- **Place-making** – the strategy needs to be cognisant of the concept of place-making (bringing the community with the Council into the development of spaces, recognising community values, liveability, cultural values and amenity) and integrating the use of green space and open space assets with water management.

- **Flood management** – the strategy acknowledges that surface water and floodplain management will become increasingly important to provide the community with liveable spaces and for addressing the effects of ongoing environmental changes such as climate change, sea level rise and changes to groundwater.

- **International best practice** – the strategy must draw on appropriate international experience and best practice to facilitate and advance continuous improvement, using comparable examples with relevant drivers to demonstrate where strategy outcomes have been achieved successfully elsewhere to demonstrate that they are achievable, pragmatic and worthwhile.

- **Efficiency** – there is a need to rationalise the three existing water-related Council strategies, to respond in the short-term to the effects of the earthquakes and to maximise the cross-benefits when considering replacement or new assets.

- **Inclusiveness** – The strategy can only be fully realised with the support and knowledge-sharing from the whole of the Christchurch community, including iwi, residents, organisations, business and industry, other stakeholders.

The Urban Water Working Group, led by the Ministry for the Environment, developed five key principles\(^3\) that have also informed the draft strategy:

- **Papatūānuku** – Our relationship with the land – papatūānuku – will pre-determine our relationship with water. This principle incorporates protection and enhancement of ecosystem health through integrated planning; ‘green infrastructure engineering and mitigating impacts on waterbodies at or near source.

- **Ngā Wai Tuku Kiriu** – Our waters are a gift of life provided to us by our tupuna. This principle recognises the whakapapa and relationship that mana whenua have with the waters in their rohe.

- **Tāngata** – Our environments are places of human occupation. The two-pronged focus of this principle is recognition of community aspirations and values for their urban spaces along with the consideration of full life cycle costs and benefits in building and infrastructure investment decisions.

- **Te Hāpori Me Te Wai** – The community’s love and care for water is enduring. Underpinning this principle are the growing and nurturing kaitiakitanga of water ecosystems, along with providing for meaningful and quality information to support decision-making and behaviour change.

- **Tiakina Mō Apōpō** – In building future resilience, our connectedness with the environment is our strength. Included within this principle is the need for improving community resilience and conserving our water resources

## 5 Ngā take rautaki Strategic issues

**Eleven key strategic issues have been identified.**

The following discussion briefly outlines each of the key issues (in no priority order), highlighting why they are key strategic issues. This gives context to the development of the goals, objectives and preferred options encompassed in the draft strategy.

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Te Wai Ora o Tāne | Draft-Integrated Water Strategy
5.1 Different perceptions of the ‘value’ of the waters

The community has different and often conflicting perceptions of the ‘value’ and appropriate associated uses of the waters. During the engagement workshops prior to the preparation of the draft strategy, the ‘wonderful, clean water’ within the District was identified. For some members of the community, the way water is used does not match the high quality and value of the resource.

Ngā Tahu have a longstanding relationship to water resources, including specific rights, interests and values that are fundamental to ongoing identity and wellbeing. Water is considered a taonga first and foremost and something to be protected in its natural state. This covers all forms of water, including water conveyed by drains.

**Why is it a key issue?**

Understanding the multiple uses and values of water is essential for driving change. If all uses of water are understood and valued, particularly surface waterways and bodies and sources of potable water, this will enable the draft strategy’s vision to be achieved. Furthermore, we are committed to working with iwi, tane, hapū and ririnanga to identify and provide for manahenua values and interests in freshwater management.

5.2 Poor state of waterways and waterbodies

Surface water catchments in the urban area and rural settlements are subject to contamination from a combination of stormwater, wastewater overflows and other inputs such as sediment and animal and waterfowl contamination.

Generally, in Christchurch, poorer waterway health is recorded in urban areas of the district, and better waterway health is variable in rural areas throughout the district. Receiving waterbodies, such as Te Ihuatai, Te Roto o Waihora, Wairewa and the bays and harbours of the Peninsula also have water quality issues that require improvement.

Cultural Health Assessments of the Te Ihuatai Aon-Heathcote Estuary and Pōharakekenui Styx catchments show that these water bodies are in a state of poor cultural health, and on the whole do not meet basic standards for cultural use. The protection, and indeed enhancement, of instream values are essential in providing for these basic health and safety needs.

**Why is it a key issue?**

Good waterway health (i.e. water quality and habitat) is necessary for the protection of public health and safety, to safeguard the life-supporting capacity and ecosystems of surface water bodies, and in recognition of the need to provide for Māori cultural values. There is an increasing focus nationally on freshwater quality, and the community has clearly identified aspirations for improved waterway health throughout Christchurch.

5.3 Vulnerability of Christchurch’s groundwater source to contamination

The Christchurch metropolitan drinking water source is high quality groundwater. However, there are emerging trends in relation to the potential risk of contamination of Christchurch’s groundwater sources in shallow aquifers, which need to be better managed. Following the 2016 outbreak of campylobacteriosis in Havelock North there has been greater scrutiny of ‘secure’ groundwater sources, greater rigour with which drinking water sources are assessed for security and questions raised about reliance on ‘secure’ groundwater status for untreated drinking water supplies.

Recent groundwater studies in the Waimakariri and Christchurch-West Melton groundwater zones indicate that groundwater in deeper aquifers north of the Waimakariri River flows under the river and into the deeper aquifers in the Christchurch-West Melton groundwater zone. Models show that the movement of groundwater is likely to result in a slow increase in nitrate levels in the deeper aquifers in the Christchurch-West Melton zone over 50 to 100 years.

Ecosystem health in groundwater is also affected by contaminants. Tiny invertebrates living in groundwater (stygofauna) are thought to ‘purify’ the water in which they live, by feeding on organic matter and maintaining void spaces in the groundwater systems in a clean condition to maintain porosity (to enable flow) and oxygen. Stygofauna can be adversely affected by contaminants such as nitrates, pesticides and heavy metals.

**Why is it a key issue?**

The general public perception appears to be of a well-protected aquifer system, however the degree of protection varies. Not all of the Christchurch metropolitan area lies above well-protected confined aquifers. The availability of high quality groundwater for public water supply is an extremely valuable natural resource for Christchurch, and...
potentially significant health, economic and environmental effects could result from contamination if groundwater is not appropriately protected.

Rising levels of nitrates in groundwater in the Waimakariri zone would influence the source of Christchurch’s drinking water, raising concerns about future risk to human and ecosystem health. A recent Danish epidemiological study found that at nitrate-nitrogen levels in drinking water at or above 0.87 mg/L there was a statistically significant increase in risk of colorectal cancer.¹

The level at which groundwater ecosystem health may be maintained has been assessed at anywhere from 3.9 mg/L to protect 90% of aquatic species⁶ to an annual median of no more than 0.55 mg/L nitrate-nitrogen as the appropriate level to protect stygofauna in the groundwater at Te Waikoropupū Springs.⁷

5.4 Wastewater overflows and effects on surface water

Without exception, wastewater networks around the world have overflows. Christchurch is no different. This has been exacerbated by damage to the wastewater network caused by the 2010/2011 earthquakes.

Overflows of wastewater are an ongoing concern for the community, particularly manawhenua who seek the elimination of overflows to provide for safe cultural use, including mahinga kai. Therefore continually working towards solutions to manage, minimise and potentially eliminate overflows is critical.

Why is it a key issue?

Wastewater network overflows can adversely affect the water quality and ecology of waterways and waterbodies, can cause a public health risk, and are culturally unacceptable. However the actual effects are often less than might be perceived by the community due to the events being temporary and sporadic in nature and occurring at the time of higher flow and greater dilution in the receiving waters. There is a challenge therefore in managing wastewater network overflows to address the community, cultural and ecological concerns, without unnecessarily devoting large amounts of funds that could be used elsewhere to improve water quality.

5.5 Treated wastewater discharges into Akaroa Harbour

Two wastewater treatment plants at Akaroa and Duvauchelle discharge treated wastewater into Akaroa Harbour. There is a dual issue for these discharges – the concern of the community and Ōnuku Rūnanga about ongoing discharges to the harbour (notwithstanding the wastewater is treated to reasonably high levels), and the issue for the Council of the feasibility, practicality and cost of land disposal or land contact of the treated wastewater.

Why is it a key issue?

Discharging treated wastewater to the harbour is offensive to members of the community. The discharge is particularly offensive to Ōnuku Rūnanga, whose preference is for the treated wastewater to be taken out of the harbour and irrigated onto land. We need to find a solution that balances the concerns of the community and Ōnuku Rūnanga, and environmental effects with appropriate use of ratepayer funds.

5.6 Stormwater discharges and effects on surface water

The quality of stormwater has a significant effect on surface water quality. Stormwater from urban catchments contains a wide range of contaminants ranging from suspended sediments, nutrients and micro-organisms to chemical contaminants, metals and synthetic hydrocarbons. Sediment is a particular issue in the Port Hills and Banks Peninsula due to highly erodible loess soils. Untreated stormwater entering streams during the first flush of rain following a dry period typically contain high concentrations of contaminants. These discharges impact on both instream ecology and water quality as well as community use, recreation and customary and cultural uses.

Why is it a key issue?

Ongoing management of stormwater is essential and necessary to protect the quality of the groundwater and surface water resources of Christchurch. However, the design, development and installation of stormwater treatment can be expensive and complex, particularly in already developed areas where retrofitting devices is the only feasible option. In addition, ‘hard’ infrastructure alone is not likely to achieve a degree of contaminant reduction needed for

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¹ Jong Schullehner et al. Nitrate in drinking water and colorectal cancer risk: A nationwide population-based cohort study, International Journal of Cancer, 2018. Note that the study referred to 3.87 mg/L nitrate, which is equivalent to 0.87 mg/L nitrate-nitrogen.

⁶ From the National Policy Statement on Freshwater as updated in 2017. Note that that the NPS addresses surface waters only, not groundwater.

⁷ Expert panel consensus to the Te Waikoropupū Springs Water Conservation Order Special Tribunal.
substantive surface water quality improvements. Other ‘source control’ initiatives, such as behaviour change (e.g. switching to copper-free brake pads and being more vigilant on sediment discharge from construction sites) will be needed as well.

5.7 Flooding and flood management

The main rivers in the Christchurch metropolitan area – the Ōtākaro Avon, Ōpāwahō Heathcote, Huritini Halswell and Pūharaokenui Styx – have spring-fed base flows which originate from the shallow aquifers underlying the area. These rivers have relatively small surface water catchments which respond quickly to local rainfall, and cause flooding beyond the river and tributary channels from time to time.

The hill suburbs of Christchurch and the short, steep stream catchments of Te Pātaka o Rākaihautū Banks Peninsula receive a higher annual average rainfall than the flat lands, and experience higher intensity rainfalls as well. This, combined with the steep terrain, can result in high velocity flood flows, soil erosion, landslips and short term flooding.

The 2010/2011 earthquakes have also affected flooding. An increase in the incidence of flooding is most evident in areas close to waterways, and where soft ground has settled and thus become more flood prone. The earthquakes also had a significant effect on the capacity of surface waterways to convey floodwaters, as lateral spread has narrowed channels and so reduced their capacity.

In some areas, groundwater is very close to the ground surface and inhibits the infiltration of floodwaters into the soil. This increases runoff, which may worsen flooding and sometimes leads to prolonged standing surface water.

Why is it a key issue?

Flooding ranges from nuisance flooding such as on roads or private property which may limit access or cause inconvenience, to flood water affecting infrastructure and entering dwellings, causing significant damage or threatening life safety. Under the Health Act 1956, the Christchurch District Drainage Act and the Local Government Act, we have a responsibility to provide for the health and safety of the community and maintain a duty of care with respect to managing drainage, and the effects of flooding. Flooding and flood management are also clearly linked to the issue of the effects of sea level rise, groundwater level rise and the anticipated effects of climate change. It is also important to consider the need to provide for flood management areas and devices such as retention basins, wetlands and swales that can help provide solutions for integrated flood and water management.

5.8 Responding/adapting to the anticipated effects of climate change and sea level rise

Sea level rise has significant implications for the district (in terms of increased coastal inundation, shallower groundwater, higher flooding levels (including river flooding) and accelerated coastal erosion. Increased salination of freshwater resources as well as potential changes to ecology, including subsequent changes to mahinga kai resources are also issues.

Coastal areas in the east of the Christchurch metropolitan area, low lying land in the mid to lower Ōtākaro Avon River catchment and lower Ōpāwahō Heathcote River catchment, and low lying areas in the main Akaroa Harbour settlements in Banks Peninsula are particularly vulnerable. Sea level rise and shallowing of groundwater level in some areas, combined with extreme storm events will exacerbate the risk of inundation, and also increase the likelihood of the Ōtākaro Avon and Ōpāwahō Heathcote Rivers overtopping their banks, which since the earthquakes, now happens on a king tide along the lower Ōpāwahō Heathcote River. Pūharaokenui Styx River is also vulnerable from tidal flooding overtop of the existing sand dunes bordering Brooklands Lagoon.

In some instances, shallowing of groundwater has resulted in the water spilling out at the surface and preventing floodwaters from soaking into the soil. Such areas have already experienced prolonged spells of standing water. The frequency and extent of these issues is likely to increase with climate-change induced shallowing of groundwater levels.

Why is it a key issue?

Sea level rise and associated coastal erosion will pose a risk to water services infrastructure in coastal areas in Christchurch district. Wastewater pipelines, pump stations and other critical utility infrastructure in low lying coastal areas will potentially be affected by sea level rise. Stormwater networks in low-lying areas may suffer from backwater effects, raised groundwater levels and impeded drainage. Roading pavements, which are designed assuming normally dry ground conditions, will deteriorate quickly where groundwater is very shallow. There is a significant reduction in pavement strength due to the ingress of water, which damages and weakens supporting subgrade layers, and can cause, for example, increased number and size of potholes.
Current planning is based on current predicted sea-level rise. The Council and the community need to be mindful that predictions may change and future sea-level rise may be greater than currently forecast. Development of dynamic adaptive planning pathways will be required in order to inform decisions in light of the uncertainty with sea-level rise predictions.

5.9 Long term availability of water for water supply

The Christchurch metropolitan area has an abundant source of very high quality groundwater. However, the exact capacity and availability of the overall aquifer is unknown, and the alternative water sources (e.g. Waimakariri River) would be significantly more expensive than the current supply. In addition, several Te Pātaka o Rākaiautū Banks Peninsula schemes already have limited water sources. Catchment and groundwater protection may not be adequate, particularly in Te Pātaka o Rākaiautū Banks Peninsula, which could lead to future water quality and availability issues. The long-term effects of climate change, with the potential for warmer and drier summers in Canterbury, would be likely to affect surface and groundwater quantity and could also increase seasonal peak demand on public water supplies. Also a concern for the community is the extent to which large-scale water takes from the same aquifers as those used for Christchurch’s public water supply may affect our ability to acquire additional water takes to respond to future demand.

Why is it a key issue?

Access to high quality drinking water is important and high quality drinking water should be used appropriately to ensure the long term availability of the existing water sources, to support guardianship of our drinking water sources particularly in light of the impacts of climate change. There are also significant social, health, cultural, environmental and economic costs of not providing a reliable and safe source of water supply to the community.

5.10 Long term sustainable wastewater treatment and disposal

Wastewater treatment and disposal needs for the Christchurch metropolitan area have been addressed for the next 20 years at least. As the Christchurch metropolitan area expands to the north and southwest, the cost of conveying wastewater from these growth areas to the Christchurch Wastewater Treatment Plant in Bromley will increase. Beyond 2040, Christchurch’s wastewater treatment and disposal system may require changes to accommodate these growth areas.

The immediate challenge for managing the wastewater systems is to provide a long term solution to the treated wastewater discharges into Akaroa Harbour that addresses the concerns of the community and the Ōnuku Rūnanga.

Why is it a key issue?

We are developing long term wastewater treatment and disposal solutions that can accommodate future growth while balancing lifecycle costs of new assets against community and cultural concerns and environmental effects. There is the opportunity to develop more integrated solutions in the long term along with multiple paths for beneficial reuse of biosolids. Further, as disposal of treated wastewater directly into waterbodies is not acceptable to manawhenua we are actively collaborating with Papatipu Rūnanga to develop appropriate solutions for wastewater management.

5.11 Infrastructure efficiency and resilience

There have been increased water and wastewater pipe failures compared to pre-earthquake due to both age related deterioration as well as earthquake damage. A significant number of assets created in post-war construction booms are reaching the end of their lives and will require renewal. Significant infrastructure repairs are also underway to address the effects of the earthquakes.

We want to increase the resilience of the three waters infrastructure. We need to further develop a proactive risk based approach to asset management that balances long term affordability for the ratepayer against the cost of managing the asset risks. There is also a need to look at environmental infrastructure that provides additional services in relation to flood management, stormwater retention and treatment as well as ecological and cultural outcomes.

A Board of Inquiry investigation into the 2016 campylobacteriosis outbreak in Havelock North highlighted the need for greater oversight of the safety and security of both the source of community drinking water supplies and the infrastructure that delivers drinking water to customers.

Additionally there are other initiatives affecting three waters services:
A review of the manner in which water supply, wastewater and stormwater services are delivered in New Zealand is underway. Proposals include a separate national regulatory body to direct and oversee provision of the three waters services and possible ‘supra-regional’ public drinking water suppliers. We remain committed to local control over three waters services integrated with all other community services.

Ministry of Health has updated drinking water standards and is reviewing the regulatory framework for drinking water.

Another issue for parts of Christchurch has to do with small settlements that are not serviced with a public water supply. For some of these communities drinking water is provided through a private scheme. Residents in other settlements rely on their own bores or rainwater as their drinking water source. Consideration of whether to provide a public reticulated supply to currently unserviced settlements will require consideration of benefits afforded to those settlements against the costs of providing a public water supply, which can be high for more remote settlements.

Emerging contaminants are another area which can present challenges for manage water resources. Emerging contaminants are substances have not been commonly monitored but may have the potential to cause adverse effects on human health or ecosystem health.

Why is it a key issue?

In addition to earthquake damage, there is an approaching ‘bow wave’ of aging pipes and associated infrastructure that need renewal due to historic city growth patterns leading to large lengths of pipes needing renewal over a similar time period. The additional renewal requirements have the potential to impact on the affordability of rates and innovative solutions are required to improve efficient use and renewal of infrastructure.

For the groundwater-sourced public water supply to remain untreated, both the source and the infrastructure that deliver the water must be deemed ‘secure’. The challenge for us is to ensure that Christchurch’s drinking water is demonstrably safe and groundwater-sourced supplies do not require residual treatment.

There is also the need for us to develop and retrofit additional stormwater, flood and wastewater treatment infrastructure. We need to ensure that infrastructure types are fit for purpose in the long term and to consider non-asset solutions where practical. Involve the community and in particular manawhenua in the design and development of water infrastructure is critical.

6  Ngā whāinga Goals

There are four goals for achieving the strategic vision, which align with the 2018-28 Community Outcomes as well as the ‘strategic priorities’ identified in our Strategic Framework.

Goal 1: The multiple uses of water are valued (cherished, respected) by all for the benefit of all

All life depends on water. Good quality water is essential for quality public health and wellbeing. Water is also valued for many other reasons, including its ecological function and role in maintaining biodiversity, its core relationship to Ngāi Tahu culture and identity (including mahi kai), its landscape, amenity, recreational value, and its role in supporting agriculture and industry.

For Ngāi Tahu, the relationships and obligations of people to place are fundamental and are held and passed down by whakapapa. Present generations hold the responsibility of being kaitiaki and for ensuring that the essential elements of life are passed on in an equal or improved state of health. This can only be achieved by strong rules, policies, strategies we enforce which protect the taonga status of waterbodies and provide for ongoing customary and cultural use.

Within the community, people have different perceptions of the ‘value’ of all types of water, including stormwater and wastewater resources. This includes different priorities and understanding of the value the multiple uses of the city’s water resources e.g. ecology, recreation, food gathering, receiving environment for discharges.

The key elements of this goal are:

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Te Wai Ora o Tāne | Draft: Integrated Water Strategy
- Increasing awareness – to encourage and engage the community to value and respect the multiple uses of our water resources through advocacy and outreach programmes, demonstration projects that highlight the values of water, and considering the water services charging structure and the way information is conveyed to the community.

- Enhancing natural and cultural values (including ecology, amenity, recreation, heritage and landscape) - through initiatives such as demonstration projects, protection of existing waterway and wetland systems, encouraging and facilitating wetlands, waterwayswaterbodies enhancement and naturalisation, addressing stream depletion, facilitating the adoption of water sensitive design and promoting water conservation.

**Goal 2: Water quality and ecosystems are protected and enhanced**

Achieving a high standard of water quality in Christchurch's surface and groundwater is essential for improving the ecosystem health of water resources, protecting and restoring Ngāi Tahu values associated with surface water resources and supporting a range of recreation activities on and around waterwayswaterbodies. Good water quality adds to the amenity value of surface waterwayswaterbodies, and is essential in the Te Pātaka o Rākaihautū Banks Peninsula streams and rivers and the Christchurch aquifers which supply drinking water to the Christchurch communitiescommunity.

Springs, streams, rivers, lakes and associated wetlands provide important ecosystem values, and are essential to the existence of plants, invertebrates, fish and birds.

The estuaries, coastal lagoons (hāpuā), harbours and the coastal marine area connected to these waterbodies are also important and must be protected and enhanced.

**The key elements of this goal are:**

- Improving water quality and enhancing the natural, cultural and ecological values of waterwayswaterbodies – through continuing the existing Stormwater Management Plan approach to management of stormwater quality, increasing focus on sediment control measures, implementing source control and water sensitive design, wetlands and waterwayswaterbodies enhancement and naturalisation, and where possible retrofitting water quality mitigation for existing developed areas.

- Reducing the effects of wastewater overflows – by network upgrades, targeting efforts to address overflows and reducing inflow and infiltration.  

- Protecting understanding groundwater sources and their vulnerability to contamination – through targeted investigations to improve understanding, further implementation of source protection, advocacy and restrictions on excavation below groundwater level.

**Goal 3: The effects of flooding, climate change and sea level rise are understood, and the community is assisted to adapt to them**

The Christchurch metropolitan area is naturally flood prone, much of it is formed on vast areas of drained swamps and wetlands, and there are significant flood plains within its boundaries. Managing high flows in urban waterwayswaterbodies and stormwater from new and existing developments and reserving space for the natural flow of the waterwayswaterbodies are necessary to reduce the risk of flooding to the community – in other words, ‘making room for the river’. In Te Pātaka o Rākaihautū Banks Peninsula, the shorter steeper catchments present their own challenges in terms of managing flooding in the small settlements. The ongoing management of lake, estuary and coastal lagoon openings and levels (including Te Roto oWairewa Lake Forsyth and Te Waihora Lake Ellesmere) in conjunction with manawhenua, affecting landowners and the community are also important.

Sea level rise has implications for the district in terms of increased coastal inundation, shallower groundwater, particularly in coastal areas and along tidal stretches of the rivers, higher flooding levels and erosion. It is therefore necessary to take a long term view and have a flexible approach to the management of flooding and sea level rise that enables the community to understand the risks and make timely adaptations when pre-defined conditions or triggers are met.

**The key elements of this goal are:**

- Understanding the extent, effect and risk of flooding, and managing effects and adapting to flooding risks – by continuing the existing programme of investigations and physical works in the interim, while developing, communicating to the community and then implementing a risk based approach to managing the effects of flooding using options appropriate to specific situations.

Te Wai Ora o Tāne | Draft Integrated Water Strategy
Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitiakitanga

Managing water in a sustainable and integrated way is an over-arching goal that covers the long term sustainability of the water supplies and the wastewater treatment and disposal systems. This also encompasses the integration of the waters and the renewal of aging infrastructure. The principle of kaitiakitanga requires Council to take a long term and balanced approach to water management with a focus on solutions and cultural and community outcomes, including recreation and mahinga kai. It also highlights the important connection between water quantity (managing abstraction and recharge) and water quality (treatment and discharge) and the natural flows in the surface waters.

The key elements of this goal are:

- Managing assets across all disciplines in an integrated manner to maximise attributes like place-making, collaborative benefits, eco-system service harmonies which may not be realised when assets are developed in isolation for a single discipline.
- Managing stormwater collectively wherever practicable in order to maximise efficiency, cost effectiveness and ease of maintenance. Encouraging on-site stormwater management using water sensitive design where collective stormwater management is not efficient or feasible (such as areas where urban intensification and redevelopment of industrial and business land is prevalent).
- Managing wastewater systems to meet community needs – including through reviewing and revising trade waste and biosolids management and developing long term solutions for Christchurch’s future growth and for the disposal of treated wastewater from the Akaroa Harbour communities and other Banks Peninsula communities.
- Managing water sources to meet reasonable demands – by improving understanding of water sources and water use, implementing demand management projects and securing access to water supplies.
- Infrastructure efficiency and resilience – by utilising a risk based approach, proactive monitoring and the implementation of intelligent technology.
- Managing resources collaboratively. Water resources management is complex and requires collaborative integrated work programme across Council units and between stakeholders.

The draft strategy supports the implementation of the Canterbury Water Management Strategy (CWMS), as shown in the following table.

<table>
<thead>
<tr>
<th>CWMS target</th>
<th>Relevant draft strategy goal(s)</th>
<th>Relevant draft strategy objective(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem health/biodiversity</td>
<td>1, 2</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Kaitiakitanga</td>
<td>1, 3, 4</td>
<td>1, 3, 4, 5, 9</td>
</tr>
<tr>
<td>Drinking water</td>
<td>1, 4</td>
<td>9, 10, 11</td>
</tr>
<tr>
<td>Recreational and amenity opportunities</td>
<td>1, 2</td>
<td>1, 3, 4</td>
</tr>
<tr>
<td>Water-use efficiency</td>
<td>1, 4</td>
<td>2, 5, 11</td>
</tr>
<tr>
<td>Environmental limits</td>
<td>1, 2</td>
<td>4, 4, 8, 9</td>
</tr>
</tbody>
</table>

Note that other Council policies and strategies also support the implementation of the Canterbury Water Management Strategy, including but not limited to the Biodiversity Strategy, the Infrastructure Strategy, the Economic Development Strategy, the Energy Action Plan, the Sustainable Energy Strategy and the Sustainability Policy.
7 Ngā paetae Objectives

While some of the issues outlined in Section 5 are those for which we can exercise some degree of direct control, for other issues we will need support from manawhenua, the wider community, regional and central governments, and other stakeholders in order to achieve the objectives of the draft strategy.

Each of the 11 objectives directly relates to at least two of the four goals. The objectives are not listed in any order of priority.

7.1 Objective 1: Awareness and engagement

Increase awareness, facilitate sharing of technical knowledge and engage with the community (residential and commercial) and mana whenua regarding the multiple uses and values of water

Current situation

Encouraging and engaging the community to value and respect the multiple uses of water will enable a culture shift to a future where all uses of water are valued.

There are numerous causes of contamination in the urbanised areas and community behaviour can influence many of these; for example sediment from construction, bacteria from waterfowl and dog faeces, and dumping of litter into the waterways/waterbodies. Residential properties pay targeted rates for the three water services but these charges are not specifically shown on the rates bill. The typical public perception is that the supply of drinking water is virtually free and unlimited. Most residential properties are metered but some meters cover more than one property. Residential meters are read every two years and information on water use is only sent to high water users. Per capita water consumption is higher than other New Zealand cities that have universal metering and volumetric pricing.

Suggested approaches

Works aimed at achieving this objective should seek to link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Maharaui Kurataia where relevant and appropriate.

1. Advocacy and outreach

The need for a ‘step-change’ in the way people value Christchurch water was identified in the stakeholder workshops. Advocacy and outreach initiatives would be the foundation to support other suggested approaches implemented for the draft strategy, valuing all of the waters needs to become a ‘top-of-mind’ issue for the majority of the population to achieve the ‘step-change’ required to a future where the waters are valued by all.

2. Demonstration projects

Stakeholders have suggested demonstration projects as an interim measure for naturalising the waterways/waterbodies in the Christchurch metropolitan area. This recognises the potentially large scale and cost of the works necessary to fully implement naturalisation. Implementation of projects to protect areas of...
springs and naturalising existing piped waterways would support mana whenua aspirations, ensuring relevant Ngāi Tahu Papatipu Rūnanga are involved, and provide demonstrations of the value of water and waterways.

3. Facilitate water sensitive design

Water sensitive design seeks to protect and enhance natural freshwater systems, sustainably manage water resources, and mimic natural processes to achieve enhanced outcomes for ecosystems and communities. The community has expressed a desire for water sensitive design measures such as rainwater harvesting and greywater reuse to be made easier to incorporate into new or renovated houses or housing developments. Measures that include greywater reuse need to consider public health risks and how they could be mitigated. This suggested approach has linkages to a related approach to address objective 3.

4. Improve public understanding of the cost of water services

Our current charging structures are targeted rates for water supply, wastewater and stormwater services. This approach means that, unless they are high water users (typically non-residential customers charged for their excess water use on a volumetric basis), all customers of our water services pay a common rate for each water service regardless of the volume consumed or produced. Changing our water services charging structure was raised as an option during engagement workshops.

5. Waterways and wetlands enhancement and naturalisation

Encouraging and facilitating naturalisation works in key identified waterways and wetlands can assist the community to value water, and to improve the state of the District’s waterways. Works could be Council initiated or developed in collaboration with developers and/or local communities, or undertaken by community groups (with our support).

Proposed ways of measuring achievement of the objective

- Annual average residential consumption of drinking water in litres per resident per day
- Peak day water supplied per connected property (L/connection/day)
- Assessment of the state of the Takiwā

7.2 Objective 2: Efficient and resilient infrastructure

Ensure efficient use of three waters infrastructure and ensure the resilience of entire networks (including natural waterbodies) over the long term through timely asset renewal and/or better alternative solutions

Current situation

There have been increased water supply and wastewater pipe failures due to both age related deterioration and earthquake damage. Damage to stormwater and land drainage assets including damaged pipes and pump stations, as well as stop banks and box drains was also caused by the earthquakes. We have started work towards a proactive risk based approach to asset renewal that takes into account asset criticality, condition and performance.

In addition, the 2017 Government Inquiry into the Havelock North drinking water issues has resulted in a trend towards a more rigorous assessment of water supply security. We initiated a programme of works to upgrade below-ground wellheads to regain the ‘secure’ status of the metropolitan Christchurch water supply. Re-attainment of secure status will enable us to retire the temporary chlorination of the metropolitan Christchurch public water supply put in place from March 2018.

Ngāi Tahu have played a prominent and influential role in the re-build of Ōtautahi Christchurch, particularly around designing the urban environment in a way that respects the taonga status of its waterways. Ngāi Tahu wish to maintain this role and ensure that improved infrastructure is developed that reflects Ngāi Tahu values.

Suggested approaches

There may be opportunities for projects undertaken to meet objective 2 to link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Mahaanui Kurataiao Ltd.

1. Proactive risk-based asset renewals

Development of formal procedures for assessment of asset criticality, condition and performance is the first stage to improve our renewal planning approach. The second stage requires development of processes and guidelines for renewals criteria, renewals modelling and identification of opportunities to renew a group of assets that are
inter-related. A key supporting action is the asset data capture, verification and validation programme, particularly for Te Pātaka o Rākaihautū Banks Peninsula infrastructure which has the greatest data gaps.

2. **Proactive monitoring of condition**
   
   Condition-based monitoring is the process of systematic data collection and evaluation to identify changes in performance or condition of a system, or its components, so that remedial interventions can be planned in a cost effective manner to maintain reliability and ensure continued service for customers. Condition-based monitoring is seen as a national and international best practice.

3. **Intelligent technology**
   
   Intelligent technology would be used to improve infrastructure asset renewal and/or to enable more efficient use of existing infrastructure.

4. **Continuing to manage for the six core values for stormwater and flood management**
   
   For over 20 years, we have focused on a multi-value and multi-party approach to stormwater and flood management. By identifying six core values — ecology, drainage, culture, heritage, landscape and recreation — as the drivers for improved surface water, stormwater and flood management, we have begun to translate legislative requirements and community aspirations into tangible refinements of a more sustainable approach to asset management.

5. **Emerging contaminants**
   
   We will continue to monitor scientific evidence regarding emerging contaminants.

**Proposed ways of measuring achievement of the objective**

- Water main breaks per 100km per year, targeting a decreasing year-on-year trend
- Wastewater collection system dry weather overflows per 1000 connected properties per year, targeting a decreasing year-on-year trend

7.3 **Objectives 3 and 4: Enhancement of ecological, cultural and natural values and water quality improvement**

3: **Enhance the ecological, cultural and natural values (including amenity, recreation, customary use, heritage and landscape) of waterways/waterbodies**

4: **Improve the water quality of surface water resources to protect ecosystem health and provide for contact recreation, food gathering and cultural values**

**Current situation**

Concern over the quality of rivers and streams has been consistent in feedback from the community and manawhenua.

The highly urbanised catchments such as the Ōtākaro Avon, and Opāwaho Heathcote and Huritini Halowell Rivers have poorer ecological health, whereas the less urbanised areas, such as the upper reaches of the Pūharakekenui Styx River, the Ōtukaikino catchment and many of the Te Pātaka o Rākaihautū Banks Peninsula waterways/waterbodies have much better ecological health.

**Suggested approaches**

Where appropriate works undertaken to achieve these objectives should link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Mahaanui Kurataiao Ltd.

1. **Advocacy and outreach and demonstration projects**
   
   These two approaches are shared in common with the suggested approaches 1 and 2 for objective 1.

2. **Continue and enhance implementation of the current approach to stormwater management**
   
   The Stormwater Management Plans being prepared as part of the Comprehensive Stormwater Network Discharge Consent consider a number of measures for implementation in particular catchments or areas of catchments, such as:
   
   - continuing a comprehensive surface water quality monitoring network to prioritise areas for stormwater management upgrading and treatment

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Te Wai Ora o Tāne | Draft: Integrated Water Strategy
- assessing stormwater network expansion and treatment and storage improvement opportunities
- requiring greenfield and significant infill residential developments to construct stormwater detention and treatment systems or connect to an existing collective mitigation system
- exploring options for retrofitting existing infrastructure
- undertaking stormwater network drain clearing practices
- working with landowners, and commercial and industrial land users to address on-site stormwater management practices
- installing rainwater gardens and investigating pavement types
- implementing large-scale measures such as sedimentation and detention ponds and wetlands where suitable land is available

Our current aim is for all of the catchments in the Christchurch District to be covered by a Stormwater Management Plan by 2020.

Controlling contaminants at source would lead to an improvement in the state of waterways/waterbodies in Christchurch. Some of these controls require a nationwide, co-ordinated response and we could advocate to central Government for this.

3. Increased sediment control

Sediment discharges are a frequent cause of adverse effects in Christchurch’s surface waterways/waterbodies, including Whakaraupō Lyttelton Harbour and Akaroa Harbour. Conditions are placed on resource consents for developments, but there are a number of other measures that could be instituted to increase control over the effects of sediment discharges such as:

- land use controls to limit vegetation clearance and overgrazing in areas identified as priorities for addressing sediment discharge
- improved mitigation of sediment discharges from road corridors and cuttings
- monitoring and enforcement of erosion control.

4. Waterway vegetation management

Aquatic vegetation clearance is undertaken, both in-channel and along banks, throughout many of our waterways/waterbodies to maintain channel capacity for flood flows and recreational use. The removal of this vegetation can remove habitat and food for animals, such as fish, and can result in the discharge of sediment when plants along banks are removed.

Stakeholder workshops identified the option of adjusting vegetation removal practices to take into account the ecological values of waterways/waterbodies, such as controlling growth of flag iris in the lower Ōtākaro Avon River and refraining from ‘shaving’ banks along areas of the Ōtākaro Avon and Ōpāwaho Heathcote Rivers to support inanga spawning in these areas.

5. Stormwater and wastewater network upgrades and real-time control technology

Wastewater and stormwater network upgrades and real time control technology also have a significant role to play in improving the resilience of the networks. Increasing the resilience of the network will both improve the ability of the network to cope with further seismic or other natural hazard events, and also reduce the potential for adverse effects from discharges from damaged or inadequate areas of the networks.

Wastewater and stormwater network upgrades and real time control technology also have a significant role to play in improving the resilience of the networks.

Continuing to consider and, where possible address capacity constraints at the time of installing new and replacing existing infrastructure provides a cost effective solution for managed improvements. Additional consideration and implementation of real-time control technology to make use of spare network capacity offers further opportunities to reduce overflows.

6. Wetlands and waterways/waterbodies enhancement and naturalisation

Continuing naturalisation works of key identified wetlands and waterways/waterbodies, and protection of existing waterbody and wetland systems, should form an important measure to assist the community to value water and to improve the state of the District’s waterways/waterbodies.

Our Waterways, Wetlands and Drainage Guide (WWDG) could be used to assist with this work.

Te Wai Ora o Tāne | Draft Integrated Water Strategy
7. **Implementation of water sensitive design**

The basic approach of water sensitive design is described in relation to suggested approach 3 under objective 1, in relation to enabling the community to implement water sensitive design measures. Water sensitive design can also be applied at multiple scales, for structure planning, subdivision and site development. It is appropriate for both greenfield sites and brownfield redevelopment. It can have a significant positive effect in reducing adverse effects on water quality and can reduce the effects of downstream flooding by delaying discharges and utilising ground seepage to reduce immediate runoff.

A combination of regional policy statement, regional plan and district plan provisions would facilitate adoption of water sensitive design into developments where collective stormwater systems do not exist or have insufficient capacity. We are directly responsible only for district plan provisions. To implement this option we work closely with Environment Canterbury to ensure the regional planning framework appropriately facilitates the adoption of water sensitive design.

8. **Development of stormwater discharge standards**

Through a regulatory mechanism, such as the Comprehensive Stormwater Network Discharge Consent or section 35 of the Water Supply, Wastewater and Stormwater Bylaw 2014, standards for stormwater discharges could be developed. These standards could aid in limiting the concentration of affected contaminants in stormwater, and thence to receiving surface water bodies.

**Proposed ways of measuring achievement of the objective**

<table>
<thead>
<tr>
<th>Enhance ecological values</th>
<th>Quantitative Macroinvertebrate Community Index scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreasing sediment inputs</td>
<td>Fine sediment percent cover of stream bed</td>
</tr>
<tr>
<td></td>
<td>Maximum concentrations of Total Suspended Sediment in surface water</td>
</tr>
<tr>
<td>Reducing copper, lead and zinc levels</td>
<td>Maximum concentrations of dissolved copper, lead and zinc in surface water and sediment</td>
</tr>
<tr>
<td>Reducing nutrient levels</td>
<td>Maximum total macrophyte cover of the stream bed</td>
</tr>
<tr>
<td></td>
<td>Maximum filamentous algae cover of the stream bed</td>
</tr>
<tr>
<td>Mana whenua values</td>
<td>Cultural Health Index (CHI) and State of Takiwā scores</td>
</tr>
</tbody>
</table>

7.4 **Objective 5: Wastewater overflows management**

**Reduce and work towards eliminating, the effects of wastewater overflows**

**Current situation**

Wastewater network overflows can adversely affect the water quality and ecology of waterways/bodies, and may pose a public health risk. The overflows are also considered culturally offensive to Ngāi Tahu who either maintain or have aspirations to carryout mahinga kai food gathering practices. Ngāi Tahu oppose wastewater overflows and wish to see the elimination of untreated wastewater into waterways/bodies.

**Challenges for managing wastewater overflows and community perception include**

- Pre-earthquake some parts of the wastewater network had insufficient capacity to convey storm flows. Stormwater inflow and groundwater infiltration entering the wastewater network has significantly increased as a result of the earthquakes, resulting in a further reduction in capacity.

- Rapid post-earthquake housing development on the periphery of the Christchurch metropolitan area, together with new housing intensification areas arising from the Land Use Recovery Plan, and the potential for further intensification as a result of provisions in the Christchurch District Plan, has placed, and is likely to continue to place, considerable additional pressure on the capacity of parts of the network.

- Experience in Christchurch, nationally and overseas has demonstrated the difficulty of significantly reducing inflow and infiltration. Once the easily identified sources have been determined and resolved and treated
(such as significant individual illegal stormwater connections), there would then be a diminishing level of return on investment in inflow and infiltration reduction programmes.

**Suggested approaches**

Works aimed at achieving this objective could link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Mahaanui Kurataiao where relevant and appropriate.

1. **Wastewater network upgrades**

   To date, infrastructure construction projects have been designed to both provide capacity for growth and to address wet weather overflow reduction. Preliminary post-SCIRT wastewater modelling results show that the wastewater network is worse than before the 2010/2011 earthquakes.

   Continuing to co-ordinate capacity improvements with renewal of infrastructure provides a cost effective solution for managed improvements. Additional consideration and implementation of real-time control technology to make use of spare network capacity offers further opportunities to reduce overflows.

   Increased use of pressure and vacuum sewer systems (or other smart systems) is expected to progressively reduce levels of inflow and infiltration within local catchments. This should be undertaken in parallel with improvements to the stormwater systems in those catchments to maximise the benefits of these types of wastewater systems.

2. **Effects based wastewater network consent**

   There are environmental, social and cultural pressures regarding management of wastewater overflows. However the traditional approach to catchment management focused on managing wastewater overflows risks spending large sums of money for little benefit in terms of actual community outcomes unless stormwater contamination is also addressed. An integrated effects-based network overflow consent would assess total catchment pollution from both stormwater and wastewater discharges, so that mitigation efforts and infrastructure spending can be prioritised based on cost effective and risk based water quality outcomes.

3. **Reducing inflow and infiltration**

   There is a clear link between wastewater overflows and inflow and infiltration into the wastewater network. Inflow can be reduced by measures such as addressing illegal household stormwater connections to the wastewater network and sealing vents on wastewater manholes to exclude stormwater from the system. Increased use of pressure and vacuum sewers will reduce levels of infiltration and also therefore reduce overflows.

4. **Encouraging or requiring repair/renewal of private sewer laterals**

   Private laterals are not our responsibility but can be a significant source of infiltration to wastewater networks and potential groundwater contamination, particularly where laterals are in poor condition, or earthquake damaged.

   Private lateral upgrades will help to reduce wastewater overflows and improving the state of Christchurch's surface waterwayswaterbodies as well as reduce the potential for groundwater contamination resulting from untreated wastewater leakage affecting surface groundwater quality. Included under this approach is public engagement and education about issues with private laterals.

**Proposed ways of measuring achievement of the objective**

- Reducing frequency of overflows, reported as the annual number of overflows per 1000km of pipe

**7.5 Objective 6 and objective 7: Flood risk and flood management and adaptation**

6: Understand the likely extent and effect of flooding, and the risk posed by flooding

7: Manage and adapt to the effects of flooding using natural systems, planning tools, community adaptation and infrastructure solutions

Objectives 6 and 7 are grouped together as they both relate to flooding and flood management.

**Current situation**

We already have in place a comprehensive approach to flooding and flood management that dates back to the early work of the Christchurch Drainage Board at the start of the twentieth century. However, the earthquakes had a significant effect on both flood management assets and the waterwayswaterbodies of Christchurch, particularly in the

Te Wai Ora o Tāne | Draft Integrated Water Strategy
Christchurch metropolitan area. The increase in flooding as a result of the earthquakes is most evident in areas close to the waterways/waterbodies, where soft ground has settled and thus become more flood prone.

**Suggested approaches**

Works aimed at achieving these objectives could seek to link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Mahanaui Kurataiao where relevant and appropriate.

1. **Enhance the current approach for flooding and flood management**

   We have a multi-value management and treatment philosophy, and has begun preparing comprehensive Stormwater Management Plans. Stormwater Management Plans for all areas will have been prepared by 2020, the implementation of the recommendations of these plans will be a longer term exercise.

   Flood models across the city are also being updated. A comprehensive and integrated city-wide assessment of flood-risk will help us to better understand the implications of management decisions being made, and to make appropriate decisions around how to address flood risk in an integrated way.

   Monitoring of shallow groundwater level across the city will improve flood modelling accuracy and help inform decisions.

   District Plan provisions to address known flood hazard (including defining flood management areas) have been developed and implemented. The continued development of flood models to cover the full area of the city and the unfolding effects of sea level rise mean that District Plan provisions will continue to evolve.

   The earthquakes had a significant effect on flood management assets and the waterways/waterbodies of the district, particularly in the Christchurch metropolitan area. In response, we launched the Land Drainage Recovery Programme in 2012. There are a range of physical defences proposed in the programme, including stop banks, pump stations, waterway channel modifications (widening, re-grading, bank trimming), floodwater storage and property level defences (such as house raising).

2. **Develop a risk based approach to managing the effects of flooding**

   Best practice for flood risk mitigation is to develop a risk based approach. Decisions on floodplain management in the lower reaches of our major rivers need to be made within an ‘all hazards’ framework. We have already taken the first steps towards a risk based approach to flood management:

   - Delivering an integrated approach to flood modelling across the city
   - Developing a financial model to feed into the integrated city-wide flood modelling, to enable the economic costs of options to be considered against each other
   - Undertaking a multi-hazards analysis to inform decisions on floodplain management in the lower reaches of our major rivers
   - The work under the Land Drainage Recovery Programme and other Council projects consider at a local scale the options and costs of particular flood management or mitigation options for specific sites, balancing those against the residual consequences of flooding, and prioritising actions

   A system that is adaptive and responsive to change needs to be developed and flood management processes and procedures developed so that:

   - Sustainable flood plain development and risk management are a normal part of business and community activities and development
   - People are informed and understand and accept the level of flood risk in Christchurch
   - A combination of measures (such as those outlined above) is instituted, rather than reliance on single approaches in isolation
   - Long term outcomes rather than short term measures are considered
   - Integrated catchment and floodplain management is undertaken as a matter of course
   - Natural processes and systems are understood and taken into account
   - Climate change and variability are factored in.

   We will continue to work with other territorial authorities, Environment Canterbury and the Government to develop appropriate flood mitigation responses.

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Te Wai Ora o Tāne | **Draft**-Integrated Water Strategy
3. **Communicate a risk based approach to the community and foster community support**

   Best practice for a risk based approach to flood management emphasises the need for conversations with the affected communities about the options and approaches – particularly in relation to responses that do not involve structural measures.

   A conversation needs to be held with the community about feasible and realistic levels of service in relation to management of flooding across Christchurch, informed by the outputs of the current modelling, additional modelling, the works under the Land Drainage Recovery Programme, and the development of the Stormwater Management Plans, noting the uncertainty resulting from climate change.

4. **Implement options tailored to address flood management in specific circumstances**

   The implementation of a whole-of-catchment approach that includes a range of tools to address flood risk is an important component of a risk based approach to flood management. Our existing programme of Stormwater Management Plans offers an opportunity to move further towards whole-of-catchment integrated floodplain management and a risk based approach.

   A number of tools exist for flood management. Some of these were canvassed in stakeholder workshops as part of the development of the *draft* strategy, including:

   - Review of operation and management regimes - provides opportunities to maintain the inlet capacity of the stormwater system, to reduce the incidence of nuisance flooding
   - Development of multi-use areas - where appropriately sited public open space can be used as flood detention areas and to reduce the effects of downstream flooding. The Residential Red Zone in the Ōtākaro Avon catchment is an opportunity to ‘make room for the river’, by re-aligning the stop banks onto a more stable foundation away from the present water edge
   - Property specific interventions - such as house purchase, house tanking, raising floor levels, relocation, and development of commercial properties to withstand the effects of flooding
   - Engineering solutions - such as stop banks, stormwater detention and ponding areas, in order to delay the impacts of climate change and allow prolonged occupation of areas at risk of flooding.
   - Development of District Plan provisions aimed at limiting development in flood-prone areas is also likely to play an important role in integrated floodplain management.

   Other tools suggested through available best practice include:

   - Ongoing communication and education plans to inform people of flood risk
   - Naturalising areas to achieve better management of stormwater
   - Advice to landowners on flooding and mitigation options
   - Land purchase.

   **Proposed ways of measuring achievement of the objective**

   - For each flooding event, the measure is the number of habitable floors affected (expressed per 1000 properties connected to the stormwater system), targeting a decreasing event-by-event trend for similar sized events. Use modelling to demonstrate year by year improvements.

7.6 **Objective 8: Sustainable wastewater systems**

   **Manage the effects of the wastewater systems to meet community needs for environmental, social, cultural and economic sustainability over the long term**

   **Current situation**

   The immediate challenge for managing the wastewater systems is to provide a long term solution to the treated wastewater discharges into Akaroa Harbour that addresses the concerns of the community and Ōnuku Rūnanga.

   Wastewater treatment and disposal needs for the Christchurch metropolitan area have been addressed for the next 20 years at least. Beyond 2040, Christchurch’s wastewater treatment and disposal system may require changes to accommodate the new areas of growth in the north and southwest.

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Suggested approaches

There may be opportunities for projects undertaken to meet objective 8 to link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Mahaanui Kurataiao Ltd.

1. **Improved trade waste management**
   
   The Trade Waste Bylaw 2015 includes measures to advance waste minimisation and cleaner production, and other measures to protect the wastewater infrastructure and natural waterways/waterbodies.

   Improved management of trade waste could include regulatory or non-regulatory mechanisms to encourage trade waste customers to pre-treat at source.

2. **Biosolids management with multiple pathways for beneficial reuse**
   
   The current biosolids management approach is centralised dewatering and thermal drying of biosolids at the Christchurch Wastewater Treatment Plant to stabilise the material and minimise volume (this includes trucking of biosolids from the Akaroa Harbour plants to Christchurch for processing). The dried biosolids are then trucked to the West Coast for beneficial use in remediation of the Stockton Coal Mine land. Reuse is also consented in Chaney’s Forest or the material can go to landfill. An opportunity exists to reconsider biosolids treatment and reuse, particularly from the Akaroa Harbour wastewater treatment plants. There may be opportunities for multiple paths for beneficial reuse of biosolids in the future. Options for biosolids reuse will need to consider public health risks and ways to mitigate them.

3. **Develop a long term wastewater treatment and collection solution to accommodate future growth**
   
   The Christchurch wastewater treatment plant at Bromley has sufficient capacity to treat flow associated with projected growth for the next twenty to twenty five years. A shift in the city’s population has already occurred to the north and to the west of the city as a result of the earthquakes and is expected to continue. This will result in longer conveyance distances and increased average retention time within the wastewater network. We need to fully investigate alternatives to centralised wastewater treatment to address wastewater treatment and disposal needs after 2040 for the Christchurch metropolitan area (including Whakaraupō Lyttelton Harbour). The alternatives include decentralised treatment, satellite treatment plants and/or sewer mining.

   All three alternatives have the potential for beneficial reuse of treated wastewater due to lower volumes. An example would be as irrigation water for Council sports fields/parks and/or industrial or agricultural use. Recovery of nutrients from wastewater treatment streams, in particular the recovery of phosphorus, are opportunities for the future.

4. **Reduce generation of wastewater at source**
   
   Increasing water use efficiency in domestic, commercial and industrial settings, to directly reduce the volume of wastewater being generated is currently done through education, with bylaw requirements regulating trade waste discharges.

   Compliance checks are used and could be expanded as necessary to address the impact of other water users on wastewater discharges. Water demand management can lead to a reduction in the volume of wastewater volume where the measures target water use inside buildings. Reducing wastewater at source could extend to the programme of inflow and infiltration identification and reduction.

   This approach links to reduction of inflow and infiltration (option 3, objective 5), trade waste management (option 1, objective 8) and water demand management (option 1, objective 11).

5. ** Agree with Ngāi Tahu and the community on long term solution for treated wastewater in Akaroa Harbour**
   
   We have been working on an upgrade for the Akaroa wastewater scheme and its discharge to address the ongoing concern from the local community, including Onuku and Wairewa Rūnanga, about the current treatment plant location at Takapūneke and the discharge of treated wastewater directly into Akaroa Harbour. The community and local rūnanga have expressed strong preferences for treated wastewater to be available for non-potable reuse and irrigation to land. A new wastewater treatment plant on an alternative site above Akaroa has been consented. We are exploring alternatives to the harbour discharge.

   The discharge of treated wastewater from the Duvauchelle wastewater treatment plant into Akaroa Harbour is consented until 2023. The Duvauchelle wastewater treatment plant provides secondary treatment of wastewater and ultraviolet (UV) disinfection before discharging the treated wastewater to the Harbour via a 1.6km long outfall pipeline. Consent conditions require the investigation of alternative disposal options.

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6. Investigate potential use of treated wastewater

One alternative to treated wastewater discharges to the environment could be reuse – this would require investigation of costs, benefits and public acceptance.

7. Investigate wastewater options for small Banks Peninsula settlements

Smaller communities in Banks Peninsula are not serviced by a public wastewater network. Investigations of the costs and benefits to provide such service could be undertaken.

Proposed ways of measuring achievement of the objective

- Maintain consent compliance for wastewater treatment plants; targeting 100% consent compliance.
- Percentage of biosolids diverted from landfill; targeting 100% of biosolids are diverted from landfill (assumes all biosolids diverted from landfill have beneficial reuse).

7.7 Objective 9 and objective 10: Groundwater protection and improvement in understanding of aquifer system

9: Advance source protection of groundwater recharge areas and surface water supply sources for all drinking water supplies

10: Understand the vulnerability, transit times and extent of confining layers of the Christchurch aquifers as well as the link to surface water quantity and quality

Objectives 9 and 10 are grouped together as they both relate to protecting the quality of water sources for drinking water supplies.

Current situation

The availability of high quality groundwater for public water supply is an extremely valuable natural resource for Christchurch and has been a source of pride for residents. Common to all groundwater sources, Christchurch’s aquifers are vulnerable to contamination and, while the likelihood of contamination of the deeper aquifers is very small, the consequences would be significant, costly and potentially irreversible.

Recent groundwater monitoring and modelling has found that groundwater from deeper aquifers north of the Waimakariri River can travel under the river and into the deeper Christchurch aquifers. This is a concern due to the rising nitrate levels in groundwater in the Waimakariri zone.

A recent Danish epidemiological study has found a strong link between nitrate concentration in drinking water and increased risk of colorectal cancer when nitrate is present at concentrations at or above 0.87mg/L nitrate-nitrogen.

Suggested approaches

Works aimed at achieving this objective could to link to joint work programmes with Ngāi Tahu Papatipu Rūnanga and Mahaanui Kurataiao where relevant and appropriate.

1. Support research and monitoring programmes to better understand of groundwater vulnerability to contamination

Improving understanding of the extent and potential contamination mechanisms for groundwater would help to determine actions needed to address the issue of groundwater vulnerability. This could impact on stormwater management, and improve the poor waterbody state by maintaining the quality of groundwater discharging to the District’s surface waterways/waterbodies.

2. Source protection of drinking water supplies

For the Christchurch metropolitan area, source protection could consist of a detailed assessment of general aquifer vulnerability, a capture zone analysis for each Council drinking water well, and a contaminant inventory to identify specific risks for each well.

In particular establishment of a precautionary limit for nitrate in groundwater sources of public drinking water is needed10.

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10 For example, the level at which groundwater ecosystem health may be maintained has been assessed at anywhere from 3.9 mg/L to protect 90% of aquatic species and 2.4 mg/L to protect 95% of aquatic species to an annual median of no more than 0.55 mg/L nitrate-nitrogen as the

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Recommendations for groundwater protection should be developed for each Council drinking water supply protection zone. Public education would be an important part of the source protection approach.

We will continue to advocate for improvements in groundwater protection at both the regional and national levels. This would form a part of our commitment to manage and mitigate risk of contamination of Christchurch’s urban public water supplies, to protect public health and avoid the need for residual disinfection. This links to approaches suggested for objective 11.

3. **Restrictions on excavation and filling below groundwater level**

   In areas to the west of the Christchurch metropolitan area, excavation activities (primarily quarrying for gravel extraction) represent a risk to groundwater quality, particularly in relation to the backfilling and rehabilitation of excavated areas over the unconfined aquifers. A further risk is the longer term potential for groundwater level to rise with the completion of large scale irrigation schemes on the Canterbury Plains. This could result in contact with possible contaminated backfill already in place in excavations that were at the time of excavation above the highest recorded groundwater level, but in the future could be within areas of increased groundwater levels.

   Controlling the depth of excavation in relation to the groundwater level, requirements for rehabilitation plans and control of material used for backfilling would help to manage the risk to groundwater quality.

   A further risk is the longer term potential for groundwater level to rise with the completion of large scale irrigation schemes on the Canterbury Plains. This could result in contact with possible contaminated backfill already in place in excavations that were at the time of excavation above the highest recorded groundwater level, but in the future could be within areas of increased groundwater levels.

4. **Partner with Environment Canterbury and neighbouring district councils**

   Suggested approaches will not be effective without partnering and engaging with Environment Canterbury and neighbouring district councils. Through its regional planning and consenting processes Environment Canterbury establishes policies and rules which manage activities which may affect groundwater quality and/or quantity.

   Matters affecting groundwater are not constrained to jurisdictional boundaries. The inter-zone nitrate issue described in section 7.7 is one example. We will be unwavering in its advocacy for minimising nitrate incursion into groundwater sources used for drinking water supply.

   We will continue to work collaboratively with Environment Canterbury and Waimakariri and Selwyn District Councils to promote and enhance groundwater protection.

**Proposed ways of measuring achievement of the objective**

- Proportion of Council drinking water wells with source protection zones identified that provide specific protection/management of land use around the existing community supply wells.

- Monitoring groundwater quality of biological and chemical contaminants of concerns (e.g. nitrates) against human health and ecosystem health parameters.

**7.8 Objective 11: Sustainable water supply**

**Manage the water sources for drinking water supplies to meet the forecast reasonable demands over the long term and ensure efficiency of water use.**

**Current situation**

A clear message from stakeholders, manawhenua and the community is the desire to both protect and make the best use of existing drinking water sources. The Christchurch metropolitan area and Whakaraupō Lyttelton Harbour settlements have an abundant but finite source of high quality groundwater. Several

Te Pātaka o Rākaihautū Banks Peninsula schemes however have limited water source availability e.g. water restrictions are typically implemented in Akaroa during the peak summer holiday season. Options may be needed in the shorter term for Te Pātaka o Rākaihautū Banks Peninsula settlements to ensure sustainable water supplies are available.

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appropriate level to protect stygofauna in the groundwater at Te Waikoropupū Springs.). With respect to human health, while the New Zealand Drinking Water Standard is 11.3 mg/L nitrate-Nitrogen, a recent Danish study found an increased risk of colorectal cancer at nitrate-Nitrogen levels as low as 0.87 mg/L.

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Environment Canterbury manages water resources through its regional plans and policies. We manage water resources through our District Plan and its strategies and policies. More information about how water resources are managed by the Council and Environment Canterbury can be found in Appendix A.

We have long recognised the need to ensure the sustainability of Christchurch’s groundwater and has undertaken water demand management and leakage reduction work since at least 1996.

Protection of the Christchurch aquifers from contamination and infrastructure upgrades continue to be a key priority, along with testing to provide ongoing confidence that the metropolitan Christchurch public water supply poses minimal public health risk. However, it is noted that central government is reviewing the regulatory policy arrangements for drinking water supply and some form of treatment (UV disinfection, chlorination etc.) may become more likely. Additionally, it is becoming apparent that other public health initiatives e.g. fluoridation may impact on water supply infrastructure in future.11

An untreated public water supply for the Christchurch metropolitan area is embedded in Christchurch’s social and cultural identity. We remain committed to providing demonstrably safe drinking water without the need for residual disinfection.

**Suggested approaches**

The following preferred options were identified to address this objective:

1. **Improve understanding of water use and develop improved demand management programme**

   This option builds on the legacy of our water demand studies undertaken since 1996. Our water demand forecasting model can assess the potential impact of water demand management initiatives. Examples of water demand management interventions that could be evaluated include more frequent meter reading with results provided to residents, assessment of volumetric charging as noted in option 4 for objective 1, incentives to encourage retrofit of dual flush toilets and installation of sub-surface garden watering systems.

   We will continue to work with Environment Canterbury to develop an agreed forecast for reasonable demand and reasonable availability.

2. **Implement pressure management zones**

   Pressure management of water supply zones is a well-recognised national and international best practice with multiple benefits for extending infrastructure service life, and reducing leakage, operational costs and service interruptions. We are currently piloting the benefits of pressure management in urban Christchurch through the Rāwhiti (New Brighton) zone pressure management trial with the primary goal quantifying the benefits of reduced breakages, fewer service interruptions, lower leakage rates, increased asset life and lower power costs. A key finding from the earthquakes was that smaller zones also greatly assist in managing recovery of water supply systems should Christchurch experience another significant seismic event or other major disaster.

3. **Implement ‘smart’ water supply network operation**

   ‘Smart’ technologies could be used to improve network operation and reduce demands and leakage to prolong the long term availability of the water sources. Instantaneous monitoring technology can also provide an assurance as to water quality and public safety.

   We have been installing water meters in recent years with the capability for conversion to ‘smart’ meter readings and estimate that over 50% of current meters are ready for smart communication technology to be fitted (at a cost). The key benefit of remote reading is a large reduction in the cost per reading, enabling more frequent readings (e.g. every 15 minutes). Smart metering has many benefits including early notification of leaks and meter issues and a better understanding of daily water use for each property.

4. **Improve understanding of groundwater sources and levels**

   The understanding of both the Christchurch aquifers and the groundwater sources for the Te Pātaka o Rākaihautū Banks Peninsula water supply schemes needs improve. The Christchurch aquifers are abundant, but have an unknown overall capacity and availability. In addition to the Council wells for the urban Christchurch water supply, other users including individual commercial and industrial properties have their own private bores, so overall take is also uncertain.

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| Te Wai Ora o Tāne | [Draft] Integrated Water Strategy |
The Council and Environment Canterbury will collaborate with managing the shallow groundwater monitoring network formerly owned and operated by the Earthquake Commission.

We will continue to work with Environment Canterbury, the Government, universities and crown research institutes to advance our understanding of the groundwater system, including impacts of climate change and sea level rise.

This option links to option 1 for objectives 9 and 10.

5. **Secure access to Christchurch groundwater sources for public drinking water supply**

   The Resource Management Act 1991 and the Freshwater NPS provide for the allocation of water to specific end uses. While a regional plan only has an effective life of 10 years, the establishment of a policy framework for allocation for community drinking water supplies would provide greater security of access to groundwater in the absence of resource consents.

6. **Enable reuse and harvesting**

   Installation of on-site water sources for non-potable uses of water (e.g. garden irrigation, toilet flushing and clothes washing) could have multiple benefits including stormwater attenuation and reduction in water demands and wastewater flows to the network. Examples of on-site water sources are greywater reuse and rainwater harvesting.

   Mana whenua noted that reuse and harvesting should be encouraged, particularly if residential volumetric pricing was introduced. Mana whenua consider that an advantage of residential volumetric charging could be the ability to enable incentives for incorporating reuse into sustainable house design e.g. greywater and rainwater harvesting.

   **Options for greywater reuse harvesting will need to include considerations for methods to mitigate public health risks.**

7. **Enhance management of below-ground well heads**

   As one of the consequences of the 2017 Government inquiry into the Havelock North campylobacteriosis outbreak, greater rigour is being applied to the assessment of well head security. In response to that increased rigour, we are strengthening its asset management regime for all drinking water wells and well heads to maximise security of the wells. This work is being undertaken to enable us to demonstrate that, along with other initiatives such as enhanced asset management and a robust monitoring programme, delivery of drinking water can be safely delivered to residents without the need for residual disinfection for the Christchurch, Lyttelton Harbour and Brooklands-Kainga supplies. We remain committed to managing and mitigating risk of contamination of its groundwater-sourced supplies to avoid the need for residual disinfection. To that end, we will continue to work with the Canterbury District health Board and the Government.

8. **Collaboration with other territorial authorities to retain control of public water infrastructure**

   We will continue to collaborate and share information with other city and district councils, Local Government New Zealand and central government. We will continue to advocate for ensuring that local communities have control over the provision of public water infrastructure to achieve effective integration of all community services.

9. **Investigate other potential water supply sources.**

   In light of concerns about nitrate levels in drinking water sources, treatment and other potential sources could be investigated, such as large-scale rainwater collection schemes, piping water from headwaters of Canterbury’s alpine rivers, desalination of seawater.

   **Proposed ways of measuring achievement of the objective**

   - Annual total volume of potable water abstracted for urban supplies in litres per person per day (where total water abstracted includes non-residential use, residential use, leakage etc.), targeting a decreasing year-on-year trend for this measure
   - Real water loss in litres per connection per day, targeting a decreasing year-on-year trend for this measure

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Te tuatoru Part three:
Whakatinanatanga
Implementation
8 Te whakatinanatanga Stepwise and parallel implementation

The Integrated Water Strategy is intended to be an enduring long-term strategy. Implementation of many of the preferred options is also long-term, recognising its 100 year plus horizon. Resourcing for actions arising out of the implementation plans will be determined through the Long Term Plan process. Key to this process will be recognition that budgetary priorities must include not only business-as-usual infrastructure renewals and replacements and allowance for providing for growth, but also proactive capital and operational projects to ensure the long-term sustainability of the water services infrastructure in Christchurch.

Implementation plans will need to outline means of measuring achievement of the Integrated Water Strategy (including further development of the proposed measures included in the draft strategy), and high-level cost estimates, targets and monitoring that are realistically set and periodically reviewed and reassessed. All implementation plans will consider the ongoing relationship with manawhenua and joint work programmes to be development and implemented with Ngāi Tahu Papatipu Rūnanga and Mahaanui Kurataiao Ltd.

9 Ngā rauemi me ngā âheinga Resources and capability

The following are key parties and stakeholders with roles to play in implementing the Integrated Water Strategy:

Christchurch City Council owns and operates the water services infrastructure for Christchurch.

Ngāi Tahu, through the six local rūnanga – Te Ngāi Tūāhuriri Rūnanga, Te Hapū o Ngāti Whēke (Rāpaki), Te Rūnanga o Kaukourārata, Ōnuku Rūnanga, Wairewa Rūnanga and Te Taumutu Rūnanga, supported by Mahaanui Kurataiao Ltd and Te Rūnanga o Ngāi Tahu – provide resource management skills and have mātauranga and kaitiakitanga over resources.

Environment Canterbury has statutory planning responsibilities, is active in stream care programmes and water quality monitoring, flood management responsibilities, and maintains the Waimakariri River flood protection scheme.

Waimakariri District Council and Selwyn District Council have the same statutory functions as the Christchurch City Council. Opportunities for greater co-ordination and co-operation should be explored.

Community and Public Health provides public health services to the community and aims to create environments, communities and families that support healthy choices and lifestyles.

The Department of Conservation has overall responsibility for indigenous biodiversity conservation under a range of statutory mechanisms, such as the Conservation Act 1987, Reserves Act 1977 and Wildlife Act 1953.

Fish and Game New Zealand are an angler and game bird hunter organisation with a statutory mandate to manage New Zealand’s freshwater fisheries and game bird hunting, and has interests in the management of freshwater resources.

Other key groups and organisations with interests in water and water services infrastructure, public and community organisations such as Community Boards, water management zone committees, Avon-Ōtākaro Network, Ōpāwahono-Heathcote River Network and stream care groups.

The community in general and business and industry players also have key roles to play in implementing the strategy, as their actions have a direct impact on achieving the vision and goals.

10 Te aroturuki me te arotake Monitoring evaluation and review

It is intended that the strategy should be a living document that can be adjusted in the face of additional information, changing circumstances and further national and international developments in best practice over time.

The strategy should be formally reviewed on a six-yearly basis to match the Long Term Plan cycle, with a review recommended to occur in the year prior to a Long Term Plan so that specific projects or changes in priorities can be fed into that plan. The first review of the strategy is targeted for financial year 2023/24.

The implementation plans that follow the adoption of the strategy should be reviewed periodically.
Appendices

Appendix A Legislative and policy context

The management of water supply, stormwater and wastewater infrastructure and of surface water, groundwater and coastal waters sits within a comprehensive legislative and statutory framework. The key elements of that framework are outlined below.

Te Tiriti o Waitangi - Treaty of Waitangi

Te Tiriti o Waitangi established a partnership between the Crown and tangata whenua. Māori were guaranteed possession of their lands, forests, fisheries and other possessions.

The principles of the Treaty recognise and guarantee the protection of tino rangatiratanga (sovereignty) and empower kaitiakitanga as customary trusteeship to be exercised by tangata whenua over their taonga, such as sacred and traditional places, built heritage, traditional practices and cultural heritage resources including water. Of particular importance is the principle for the Crown to actively protect Māori interests.

The requirement for Council to take into account Te Tiriti o Waitangi arises through requirements in the Local Government Act 2002 and the Resource Management Act 1991 (as amended).

The Mahaanui Iwi Management Plan 2013 (IMP)

The IMP provides a statement of Ngāi Tahu issues, objectives and policies for natural resource and environmental management. The IMP includes a chapter on the management of water which addresses the rights and values of Ngāi Tahu hapū within Christchurch associated with water, the management of activities that affect water and the cultural impact of those activities. The IMP also includes as a key policy that local authorities are required to initiate and develop processes for implementing the Mahaanui IMP in council planning and decision-making. The IMP also references and is consistent with the Te Rūnanga o Ngāi Tahu Freshwater Policy Statement as a key part of the water management policy framework.

Local Government Act 2002 (LGA)

The LGA outlines the purpose of territorial authorities to meet the current and future needs of communities for good-quality local infrastructure, local public services and performance of regulatory functions in a way that is most cost-effective for households and businesses.

The LGA also requires territorial authorities to assess the water supply and sanitary services and provide and maintain services to the community in a manner that promotes the four wellbeing’s outlined in the LGA.

2014 amendments to the LGA added a requirement for territorial authorities to prepare a 30-year infrastructure strategy in conjunction with their long term planning.

Health Act 1956

Under the Health Act, it is the duty of every local authority to improve, promote and protect public health within its district. In respect to water, local authorities have an obligation to provide surface water, wastewater and water supply infrastructure (Section 25). The Health Act provides for each local authority to make bylaws for improving, promoting, or protecting public health and regulating drainage and the collection and disposal of wastewater.

The Health (Drinking Water) Amendment Act 2007

The Health (Drinking Water) Amendment Act requires water suppliers to ‘take all practicable steps’ to comply with drinking water standards. This Act makes mandatory standards for drinking water that had previously been voluntary\(^\text{12}\).

The Act applies to all drinking water suppliers who supply at least 25 people for at least 60 days a year.

The Act also requires that water suppliers prepare and implement public health risk management plans (water safety plans) for their supplies, along with assessments of drinking water supplies. These plans are intended to assist the


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drinking water suppliers in managing risks to both public water supply sources and the infrastructure and network that make up the public water supply systems, including risks such as proximity of contaminated sites to source water, leakage of contaminants into source water, and natural disasters such as earthquakes or tsunamis.

The most recent approved water safety plans for Christchurch’s public water supplies are listed in the bibliography.

**Resource Management Act 1991 (RMA) and RMA Framework**

In order to achieve its sustainable management purpose, the RMA sets out the duties and functions of regional and territorial authorities and sets out a hierarchy of planning documents.

In regards to the management of water resources, the responsibility largely lies with regional authorities while the control of the effects of land-use activities lays largely territorial authorities.

The RMA provides for the preparation of national policy statements, national environmental standards, regional policy statements, regional plans and district plans. The most relevant documents are discussed below, and will, through their objectives, policies and rules set the resource management context for water, water services and associated infrastructure management in Christchurch.

The Canterbury Regional Plans, the Christchurch Plan, the Banks Peninsula District Plan and the Christchurch District Plan impact the management of water services and infrastructure. All activities associated with the establishment and operation of water services and infrastructure must be assessed against the rules of these plans, which will influence what and where infrastructure can be developed, how it is managed, its development cost and the timing of development.

**National Environmental Standard (NES) for Sources of Human Drinking Water**

Under its authority provided in the RMA the Ministry for the Environment established a NES for drinking water which became effective in mid-2008. The NES aims to ensure that land use activities do not pollute human drinking water sources. The NES requires local governments to consider the effect of catchment activities on drinking water sources. The NES also requires that new consents affecting drinking water catchments can only be granted if the proposed activity will not result in drinking water becoming non-potable or unwholesome after treatment.

**New Zealand Coastal Policy Statement 2010 (NZCPS)**

Under the NZCPS local authorities have a role in safeguarding the integrity, form, functioning and resilience of the coastal environment. In relation to the management of the three waters, the NZCPS places responsibilities on regional and territorial authorities in respect of:

- Taking steps to avoid adverse effects of stormwater discharge to water in the coastal environment including:
- Avoid where practicable and otherwise remedy cross contamination of sewage and stormwater systems
- Contaminant and sediment loads in stormwater at source
- Promoting designs that reduce flows to stormwater reticulation systems at source
- Avoiding the discharge of human sewage directly to water in the coastal environment without treatment
- Ensuring adequate consideration of alternatives and being informed by tangata whenua in terms of discharging treated human sewage to the coastal marine area
- Enhancing coastal water quality

**National Policy Statement for Freshwater Management (Freshwater NPS), as amended**

The Freshwater NPS requires regional councils to recognise the national significance of freshwater for all New Zealanders through including provisions within their regional policy statements to set freshwater objectives and set environmental standards for all of the freshwater management units in its region.

The Freshwater NPS requires territorial authorities to give effect to the regional policy statement and include rules in their district plans that sustainably manage the demands on freshwater. The Freshwater NPS also requires local authorities to take reasonable steps to involve and work with iwi and hapū in the management of freshwater and identify tangata whenua values and interests in freshwater and reflect these values and interests when managing and making decisions regarding freshwater within the region.
Canterbury Regional Policy Statement (RPS)

Under section 75 of the RMA, the Council must give effect to the Canterbury RPS by setting out objectives, policies and methods in district plans that are consistent with the RPS. While the RPS does not place direct responsibilities on the Council for the provision and management of the three waters, the strategy must be consistent with the RPS in order to appropriately guide future district plan development and the consenting of future three waters activities to meet the requirements under the RPS, and the planning documents that sit under it.

In relation to the management of the three waters, there are four key chapters within the RPS which direct the management of water infrastructure and guide the protection of natural and physical resources and cultural values. They are Chapter 5 Land Use and Infrastructure, Chapter 7 Fresh Water, Chapter 8 Coastal Environment, Chapter 9 Ecosystems and Indigenous Biodiversity and Chapter 11 Natural Hazards.

The RPS is due for review in 2021.

Regional Coastal Environment Plan (RCEP) for the Canterbury Region

The RCEP for Canterbury controls activities within the coastal environment to promote the appropriate use of the coastal environment, and the maintenance of the natural character of the coastal environment and coastal water quality. Any three waters activities within the coastal environment or discharging to the coastal environment are subject to the rules under the RCEP.

The RCEP is scheduled to be reviewed in 2021.

Canterbury Land and Water Regional Plan (LWRP) 2017

The Canterbury LWRP establishes objectives, policies and rules for land and water management on a regional-wide basis in chapters 3, 4 and 5, and also provides for catchment-specific (‘sub-regional’) policies and rules in chapters 6 through 15. Rules include those for discharges to land and water and takes from surface and groundwater.

Waimakariri River Regional Plan 2004, as amended

The Waimakariri River Regional Plan recognises the need to protect both water quantity and water quality of the Waimakariri River. The purpose of the Plan is to promote sustainable management of the River and connected groundwater. Objective 5.1 seeks to ‘enable present and future generations to gain cultural, social, recreational, economic, health and other benefits from the rivers, lakes and wetlands in the Waimakariri River Catchment, and from the hydraulically connected groundwater while (a) safeguarding their existing value for efficiently providing for sources of drinking water for people and their animals’.

Christchurch City District Plan

The Christchurch City District Plan, the Banks Peninsula District Plan and the Christchurch District Plan manage land use activities across Christchurch District.

Other Legislation


Bylaws

Water Supply, Wastewater and Stormwater Bylaw 2014

This bylaw manages and regulates our water supply, wastewater and stormwater systems.

The bylaw:

- Sets out the requirements for connecting to the public water supply;
- Provides for water supply demand management;
- Establishes regulations for backflow prevention;
- Provides for protection of the wastewater network;
- Establishes conditions for connecting and discharging to our stormwater network;

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• Provides rules for design of stormwater systems;
• Restricts or prohibits specified activities in relation to the stormwater network; and
• Allows for future development of minimum standards for discharges into the stormwater network.

Trade Waste Bylaw 2015
This bylaw regulates the discharge of trade waste into our wastewater network, including:
• Conditions for long-term, intermittent or temporary trade waste discharges;
• Three grades of discharges: permitted, conditional and prohibited;
• Conditions for suspension or cancellation of permission to discharge trade waste; and
• Requirements for sampling, analysis and monitoring.

Canterbury Water Management Strategy (CWMS)
The CWMS is a non-statutory framework for managing water led by Environment Canterbury, Ngāi Tahu and Canterbury's District and City Councils and implemented by local communities. The Canterbury Region is split into ten zones which are each governed by a committee which is tasked with making recommendations for the best way to manage water in their area. Each zone committee is required to prepare a zone implementation programme (ZIP), which contains recommendations aimed at meeting CWMS targets in their respective zones. ZIP recommendations may be focussed on regional and/or district councils, iwi and/or other parties.

The CWMS established targets for ten subject areas:
• Ecosystem health/biodiversity
• Natural character of braided rivers
• Kaikōmako
• Drinking water
• Recreational and amenity opportunities
• Water-use efficiency
• Irrigated land area
• Energy security and efficiency
• Regional and national economies
• Environmental limits

The Integrated Water Strategy has a key role in contributing to the implementation of relevant recommendations put forward by the Zone Committees.

Christchurch–West Melton Zone Implementation Programme (ZIP)
This ZIP forms a package of recommendations for the zone that have been developed in consultation with key stakeholders and the general public to give effect to the Canterbury Water Management Strategy.

The Christchurch–West Melton ZIP focuses on five priority issues:
• Enhancing and managing waterways/waterbodies for recreation, relaxation and amenity
• Improving surface water quality and safeguarding surface water flows
• Enhancing healthy ecosystems, indigenous biodiversity, and valued introduced species and landscapes
• Safeguarding groundwater quality and flows for multiple uses
• Making efficient use of water and managing demand

Banks Peninsula Zone Implementation Programme (ZIP)
The Banks Peninsula ZIP identifies key areas of focus and includes priority outcomes and recommendations to Environment Canterbury for each area.
In relation to the three waters, recommendations in relation to water quality and wastewater include upgrading and management of water resources and infrastructure, management and prevention of discharges and contamination, further research to be undertaken, efficiency and implementation of new technologies.

The Banks Peninsula ZIP Addendum (ZIPA) focuses on the Te Roto o Wairewa/Lake Forsyth catchment with recommendations to improve water quality. The ZIPA informed the development of Plan Change 6 of the Canterbury Land and Water Regional Plan.

Selwyn-Waihora Zone Implementation Programme (ZIP)

Five key areas of work have been established for the Selwyn-Waihora ZIP, including: nutrient and water management, water supply, Te Waihora and lowland waterway/ waterbodies, braided rivers/upper plains/high country, and biodiversity.

Within the key areas, the priority critical issues to be addressed include setting limits for nutrients and water storage.

Whaka-Ora Healthy Harbour Plan – Whakaraupō/Lyttelton Harbour Catchment Management Plan

Te Häpū o Ngāti Whake, Lyttelton Port Company, Environment Canterbury, Christchurch City Council, and Te Rūnanga o Ngāi Tahu in consultation with harbour communities developed the Whaka-Ora Healthy Harbour Plan, which is designed to help improve the cultural and ecological health of Whakaraupō/Lyttelton Harbour. The Plan addresses issues including pollution of waterways, erosion and sedimentation and indigenous biodiversity.

Appendix B References

Glossary

Aquifers - underground layers of porous rock or sand through which groundwater flows.

Biosolids - solids separated by wastewater treatment processes that has been stabilised to reduce pathogens and pest-atraction, and which can be beneficially reused.

Christchurch - the whole of Christchurch District, including the Ōtautahi Christchurch City urban area, other settlement areas in the district, Te Pātaka o Rākaihautū Banks Peninsula and all rural areas within the jurisdiction of the Council.

Christchurch metropolitan area - ‘urban’ Ōtautahi Christchurch, as opposed to ‘Christchurch’ which refers to the entire district.

Greywater - used water from sinks, washing machines, showers and baths, dish washers and similar appliances, but not including any toilet wastewater. Water from toilet flushing is known as black water.

Groundwater - water stored beneath Earth’s surface in aquifers (layers of water-bearing rock or sand). Groundwater tends to be abstracted from deeper aquifers tens to hundreds of metres below the ground surface) for drinking water, whilst shallow groundwater (water within a few metres of the ground surface) may contribute to flood issues.

Inflow - when stormwater enters the wastewater network via surface ponding of stormwater entering wastewater manholes and private gully traps and via illegal cross connections between the wastewater and urban stormwater networks.

Infiltration – when groundwater or stormwater seeps into wastewater pipelines and structures through breaks or joints.

Kaitiakitanga - the intergenerational responsibility and right of tangata whenua to take care of the environment and resources upon which we depend (as defined in the Mahaanui Iwi Management Plan 2013).

Mahinga kai - the customary gathering of food and natural materials and the places where those resources are gathered (as defined in the Ngāi Tahu Claims Settlement Act 1998).

Māori - the essential life force of all things, spiritual essence (as defined in the Mahaanui Iwi Management Plan 2013).

Non-potable - water suitable for uses other than human drinking water, such as industrial process water and landscape irrigation.

Te Wai Ora o Tāne | Draft Integrated Water Strategy
Hearings Panel
12 August 2019

Papatipu Rūnanga - marae based councils, administering the affairs of the hapū (as defined in the Mahaanui Iwi Management Plan 2013).

Potable - water suitable for human drinking water.

Reticulation - a network of pipes and pumps.

SCIRT - Stronger Christchurch Infrastructure Rebuild Team. An alliance of Christchurch City Council, New Zealand Transport Agency, Department of Prime Minister and Cabinet, City Care, Downer, Fulton Hogan, Fletcher and McConnell Dowell established after the 2010-2011 earthquakes. The SCIRT programme was completed in 2017.

Sewer - a pipe that carries wastewater.

Sewerage system - another name for wastewater reticulation.

Stormwater - water that originates during precipitation events and snow/ice melt. Stormwater can soak into the soil (infiltrate), be held on the surface and evaporate, or runoff and end up in nearby streams, rivers, or other water bodies (surface water).

Surface water - includes drains, streams, rivers, lakes, wetlands, lagoons, springs and estuaries.

Taonga - treasure (as defined in the Mahaanui Iwi Management Plan 2013).

‘Three waters’ - public water supplies, wastewater and surface water (including stormwater and flooding/floodplain management) and their infrastructure.

Wastewater - both the liquid and non-liquid portions of municipal sewage.

Water supply - all drinking water provided to households, public buildings, gardens and sports fields, and commercial and industrial customers through our water supply reticulation systems. It does not include the private residential and commercial supplies that operate in Christchurch, which are not owned or operated by, or on behalf of, the Council. It also doesn’t include ‘community water supplies’ operated by other organisations (e.g., Christchurch International Airport).

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(to be updated when re-formatted post hearings panel

Te Wai Ora o Tāne | Draft Integrated Water Strategy
5. **Submissions Received on the Te Wai Ora o Tāne Draft Integrated Water Strategy**

Reference: 19/884753  
Presenter(s): Liz Ryley – Committee Advisor

---

### 1. Purpose of Report

**Purpose of Report**

1.1 This purpose of this report is to collate, for the consideration of the Hearings Panel, the submissions received in response to the consultation on the Te Wai Ora o Tāne Draft Integrated Water Strategy.

1.2 The volumes of submissions are as follows:

1.2.1 **Attachment A** - Volume 1 Heard Submissions – Submitters who have asked to be heard in person by the Hearings Panel, this includes the schedule of submitters.

1.2.2 **Attachment B** – Volume 2 No Longer Wish to be Heard Submissions – Submitters who have advised that they are not able to speak in person at the meeting, or, they no longer wish to be heard.

1.2.3 **Attachment C (Under Separate Cover)** – Volume 3 Not Heard Submissions – Submitters who did not indicate that they wished to be heard by the Hearings Panel. This also includes any late submissions received on the Proposal.

1.3 Note, that the Local Government Act 2002 requires, as one of the principles of consultation, that “the views presented to the local authority should be received by the local authority with an open mind and should be given by the local authority, in making a decision, due consideration” (section 82(1)(e)).

### 2. Staff Recommendations

**That the Hearings Panel:**

1. Accept the written submissions (including any late submissions) received on the Te Wai Ora o Tāne Draft Integrated Water Strategy.

---

### Attachments

<table>
<thead>
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<th>Title</th>
<th>Page</th>
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<tr>
<td>A</td>
<td>Volume 1 - To be Heard Submissions</td>
<td>133</td>
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<tr>
<td>B</td>
<td>Volume 2 - No Longer Wish to be Heard Submissions</td>
<td>208</td>
</tr>
<tr>
<td>C</td>
<td>Volume 3 - Not Heard Submissions</td>
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### Confirmation of Statutory Compliance

Compliance with Statutory Decision-making Requirements (ss 76 - 81 Local Government Act 2002).  
(a) This report contains:
(i) sufficient information about all reasonably practicable options identified and assessed in terms of their advantages and disadvantages; and
(ii) adequate consideration of the views and preferences of affected and interested persons bearing in mind any proposed or previous community engagement.

(b) The information reflects the level of significance of the matters covered by the report, as determined in accordance with the Council's significance and engagement policy.

**Signatories**

<table>
<thead>
<tr>
<th>Author</th>
<th>Liz Ryley - Committee Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved By</td>
<td>Liz Ryley - Committee Advisor</td>
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Submissions on the
Te Wai Ora o Tāne Draft Integrated
Water Strategy

Volume 1

Heard Submissions
Monday, 12 August 2019
### CHRISTCHURCH CITY COUNCIL

**Te Wai Ora o Tāne Draft Integrated Water Strategy**

**SUBMITTERS WHO WISH TO BE HEARD**

**MONDAY, 12 AUGUST 2019**

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<td>9.45am</td>
<td>26348</td>
<td>Dr Alistair Humphrey, Community and Public Health – Canterbury District Health Board</td>
<td>135</td>
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<tr>
<td>9.55am</td>
<td>26367</td>
<td>Andrew Dark, Aqualinc Research Limited</td>
<td>144</td>
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<tr>
<td>10.05am</td>
<td>26460</td>
<td>Peter Tuffley, Beckenham Neighbourhood Association Inc</td>
<td>146</td>
</tr>
<tr>
<td>10.15am</td>
<td>26455</td>
<td>Alisadair Hutchison, Ōpāwaho/Heathcote River Network Inc</td>
<td>150</td>
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<tr>
<td>10.30am</td>
<td>26192</td>
<td>Karina Hay, Christchurch Coastal Residents' United</td>
<td>154</td>
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<tr>
<td>10.40am</td>
<td></td>
<td>Morning Tea</td>
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<td>10.50am</td>
<td>26258</td>
<td>Pam Richardson, Banks Peninsula Community Board</td>
<td>160</td>
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<tr>
<td>11.00am</td>
<td>26391</td>
<td>Rachel Teen (on behalf of Vicky Southworth)</td>
<td>164</td>
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<td>11.10am</td>
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<td>Mike Mora and Ross McFarlane, Waipuna/Halswell-Hornby-Riccarton Community Board</td>
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<tr>
<td>11.20am</td>
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<td>Karolin Potter, Spreydon Cashmere Community Board</td>
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<td>11.35am</td>
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<td>Yvette Couch-Lewis, Te Hapū o Ngātī Whēke Rīk Tainui, Ōnuku Rūnanga</td>
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<td>1.00pm</td>
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<td>David Hawke</td>
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<td>1.05pm</td>
<td>26353</td>
<td>Linda Stewart, Coastal-Burwood Community Board</td>
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**CHRISTCHURCH CITY COUNCIL**

**Te Wai Ora o Tāne Draft Integrated Water Strategy**

- Received via Have Your Say -

**Submissions close Sunday, 21 July 2019**

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<tr>
<td>Would you like to attend the hearings for this consultation?</td>
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<td>Attachments:</td>
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Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?

Comments:

Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?

Comments:

Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?

Comments:
<table>
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<tr>
<th>Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch? Comments:</th>
</tr>
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<tbody>
<tr>
<td>Overall, do you support the direction of the Draft Integrated Water Strategy?</td>
</tr>
<tr>
<td>Any other comments:</td>
</tr>
<tr>
<td>Submission on Te Wai Ora o Tāne Draft Integrated Water Strategy To: Christchurch City Council Submitter: Canterbury District Health Board Attn: Alizon Paterson Community and Public Health C/- Canterbury District Health Board Christchurch Proposal: Strategic direction for sustainable long-term management of water resources and related infrastructure. SUBMISSION ON TE WAI ORA O TĀNE DRAFT INTEGRATED WATER STRATEGY Details of submitter 1. Canterbury District Health Board (CDHB). 2. The submitter is responsible for promoting the reduction of adverse environmental effects on the health of people and communities and to improve, promote and protect their health pursuant to the New Zealand Public Health and Disability Act 2000 and the Health Act 1956. These statutory obligations are the responsibility of the Ministry of Health and, in the Canterbury District, are carried out under contract by Community and Public Health under Crown funding agreements on behalf of the Canterbury District Health Board. 3. The Ministry of Health requires the submitter to reduce potential health risks by such means as submissions to ensure the public health significance of potential adverse effects are adequately considered during policy development. Details of submission 4. The CDHB welcomes the opportunity to comment on the Draft Integrated Water Strategy (the Strategy). The future health of our population is not just reliant on hospitals, but on a responsive environment where all sectors work collaboratively. 5. While health care services are an important determinant of health, health is also influenced by a wide range of factors beyond the health sector. Health care services manage disease and trauma and are an important determinant of health outcomes. However health creation and wellbeing (overall quality of life) is influenced by a wide range of factors beyond the health sector. 6. These influences can be described as the conditions in which people are born, grow, live, work and age, and are impacted by environmental, social and behavioural factors. They are often referred to as the social determinants of health(^1). The diagram(^2) below shows how the various influences on health are complex and interlinked. 7. The most effective way to maximise people's wellbeing is to take these factors into account as early as possible during decision making and strategy development.</td>
</tr>
</tbody>
</table>
Initiatives to improve health outcomes and overall quality of life must involve organisations and groups beyond the health sector, such as local government if they are to have a reasonable impact.

Comments

8. The CDHB are supportive of the approach in the Strategy which recognises that water supply, wastewater, stormwater, surface water and groundwater are interlinked and together form a ‘fundamental part of the life of the community’.

9. The CDHB supports the drinking water, wastewater and stormwater infrastructure upgrades identified in the Strategy which will have a positive impact on public health, particularly by reducing water contamination and improved recreational water quality. We also support the pro-active risk based approach to asset management which goes beyond simple measurements of asset age.

10. The CDHB supports council providing a publicly reticulated supply to currently unserviced settlements, where communities’ drinking water is provided through a private scheme or where they rely on their own bores or rainwater as their drinking water source.

11. The CDHB supports section 17.1.4 regarding the review of charging for water as a means of encouraging the public to value drinking water, this will have a flow on positive impact on the quantity of waste water produced. Any charging introduced should be cognisant of equity and consider the ability of the consumer to pay.

12. The non-potable reuse of grey water and irrigation of treated wastewater is mentioned a number of times in the Strategy. We are aware of the benefits of water reuse from a sustainability perspective as it takes the pressure off potable water supplies. However, such practise may present public health risk due to residual contaminants. Without the appropriate management of the public health risks, including standard operating procedures underpinned with regulations, the reuse of grey water and the irrigation of treated wastewater is not currently supported.

13. The CDHB recognises that biosolids produced at Bromley have been processed to stabilise it and to reduce pathogens and pest attraction. The Strategy makes reference to the inevitable increased production of biosolids which will accompany the growth of the region. There are a variety of end uses for biosolids worldwide and a trend away from land application and disposal in landfills. Council should ensure that the potential public health impacts of any new avenues for the use of the biosolids are fully mitigated.

14. With respect to drinking water CDHB supports the twofold approach of protecting the source water from contamination and ensuring the efficiency, resilience and resulting safety of the infrastructure, these are two of the recognised barriers in the ‘Multi barrier’ approach to maintaining a safe drinking water supply.

15. The CDHB acknowledges Council’s desire for the groundwater-sourced public water supply to remain untreated. We are currently liaising with the Council regarding the ability to address public health concerns and provide demonstrably safe water.

Conclusion

16. The CDHB does wish to be heard in support of this submission.

17. If others make a similar submission, the submitter will not consider presenting a joint case with them at the hearing.

18. Thank you for the opportunity to submit on Te Wai Ora o TĀne Draft Integrated Water Strategy.

Person making the submission
Dr. Alistair Humphrey
Physician

Contact details
Alizon Paterson

Date: 19/07/2019  Public Health
<table>
<thead>
<tr>
<th>For and on behalf of</th>
</tr>
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<tr>
<td>Community and Public Health</td>
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</table>
Submission on Te Wai Ora o Tāne
Draft Integrated Water Strategy

To: Christchurch City Council

Submitter: Canterbury District Health Board
Attn: Alizon Paterson
Community and Public Health
C/- Canterbury District Health Board

Proposal: Strategic direction for sustainable long-term management of water resources and related infrastructure.
SUBMISSION ON TE WAI ORA O TĀNE DRAFT INTEGRATED WATER STRATEGY

Details of submitter
1. Canterbury District Health Board (CDHB).
2. The submitter is responsible for promoting the reduction of adverse environmental effects on the health of people and communities and to improve, promote and protect their health pursuant to the New Zealand Public Health and Disability Act 2000 and the Health Act 1956. These statutory obligations are the responsibility of the Ministry of Health and, in the Canterbury District, are carried out under contract by Community and Public Health under Crown funding agreements on behalf of the Canterbury District Health Board.
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---

7. The most effective way to maximise people’s wellbeing is to take these factors into account as early as possible during decision making and strategy development. Initiatives to improve health outcomes and overall quality of life must involve organisations and groups beyond the health sector, such as local government if they are to have a reasonable impact.

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Comments

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Conclusion
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18. Thank you for the opportunity to submit on Te Wai Ora o Tāne Draft Integrated Water Strategy.

Person making the submission

Dr. Alistair Humphrey
Public Health Physician

Date: 19/07/2019

Contact details
Alizon Paterson
For and on behalf of
Community and Public Health
C/- Canterbury District Health Board
<table>
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<td>Name of Organisation:</td>
<td>Aqualinc Research Limited</td>
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<td>Role in Organisation and No. of people represented:</td>
<td>Business Manager: Research &amp; Development 30</td>
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<tr>
<td>Would you like to attend the hearings for this consultation?</td>
<td>Yes</td>
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<td>No</td>
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<tr>
<td>Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments:</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Providing people, communities and future generations with access to safe and sufficient water resources requires an integrated approach, with a strategic view that extends beyond the boundary of Christchurch City. It is crucial for climate change, sea level rise and groundwater to be considered in the context of water supply and flood management in Christchurch.</td>
</tr>
<tr>
<td>Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? Comments:</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Continuing work is required to understand the vulnerability of Christchurch's drinking water supply, and the potential for other groundwater abstraction and use (both within and outside of Christchurch) to affect the availability of water for Christchurch. This will require collaboration between CCC, ECan, researchers and consultants, and may require fundamental research in addition to the application of existing methods. We are only beginning to understand the potential impact of sea level rise on the shallow groundwater system in Christchurch, and the consequent impacts on existing and future three waters (and other) infrastructure. Improving infrastructure efficiency and resilience is vital, but care needs to be taken to avoid unintended consequences (for example where existing leaky wastewater pipes have been acting as drainage for shallow groundwater, addressing this issue has made groundwater levels shallower in some cases).</td>
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<tr>
<td>Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? Comments:</td>
<td>Agree</td>
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<tr>
<td></td>
<td>We are supportive of the CCC Strategy being aligned with the CWMS targets, and of a collaborative approach with ECan and neighbouring District Councils.</td>
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<tr>
<td>Question</td>
<td>Response</td>
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<tr>
<td>Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch?</td>
<td>Agree</td>
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<tr>
<td>Comments:</td>
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<tr>
<td>Monitoring of shallow groundwater and the integration shallow groundwater responses in flood modelling using data from the existing high spatial and temporal resolution groundwater monitoring programme in Christchurch presents an opportunity to make world-leading progress in this area. To do this well may require modelling tools that do not exist or are not fully developed at the moment: further research is likely to be required. More work is also required to understand how shallow groundwater responses vary across the city, and what drives them, before we can really model this well. In addition to understanding the potential effect of groundwater abstraction from outside of the Christchurch City boundary, it is important to better understand the potential impact of non-consumptive takes for ground-source heat pump systems within the City. This is both in terms of the abstraction from deeper aquifer layers, and the re-injection into shallower layers.</td>
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<tr>
<td>Overall, do you support the direction of the Draft Integrated Water Strategy?</td>
<td>Yes</td>
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<tr>
<td>Any other comments:</td>
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## CHRISTCHURCH CITY COUNCIL

**Te Wai Ora o Tāne Draft Integrated Water Strategy**

- Received via Have Your Say -

**Submissions close Sunday, 21 July 2019**

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<tr>
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<td>Beckenham Neighbourhood Association Inc</td>
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<td>Vice Chair</td>
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<td>Would you like to attend the hearings for this consultation?</td>
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### Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments:

### Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? Comments:

### Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? Comments:
Hearings Panel
12 August 2019

Item No.: 5

Overall, do you support the direction of the Draft Integrated Water Strategy?

Any other comments:

DRAFT CCC DRAFT INTEGRATED WATER STRATEGY:
SUBMISSION BY THE BECKENHAM NEIGHBOURHOOD ASSOCIATION INC.

PREAMBLE

1 We welcome the Draft as the first chapter in what by definition will be a very long work in progress, as a point of departure, as a direction-setter, and above all as a statement of long-term commitment.

2 We hope that the comments and suggestions below may help to turn the aims of this strategy into reality.

NEED TO PRIORITIZE OBJECTIVES

3 The draft lists 11 objectives but says that they “are not listed in any order of priority.” Foreseeably the order of priorities and the balance of emphasis as between different objectives may change over the long timescale of the strategy. However, when it comes to committing resources in order to implement the pursuit of objectives, prioritization is a necessity. We see the absence of any indication of what objectives might be given priority in the next few years of the strategy as a weakness, though it is noteworthy that in the Council’s Annual Plan, Objective 11, “Safe and sustainable water supply”, has been placed at the top of a list of strategic LTP directions.

4 Among candidates for prioritization in the next few years we consider Objective 11 should be the top priority - followed closely by Objectives 5 (Wastewater overflows management), 8 (Sustainable wastewater systems), 4 (Water quality improvement) and 2 (Efficient and resilient infrastructure), all of which we see as being closely interlinked. It would also seem important to link Objective 9 (protection of groundwater from contamination) in this group, as this is key to the long-term defence of Objective 11.

5 In addition to the question of relative priorities, we consider it would make more sense to list the objectives in such a way as to group together objectives that are conceptually linked (e.g. objectives related to wastewater; objectives related to research (6 flood risk, 11 aquifer movement).

VALUE OF WATER (GOAL 1): A SIGNIFICANT OMISSION

6 It concerns us that nowhere in the document is there any direct reference to or acknowledgement of the contribution to degradation of water quality that has resulted over many years from the over-embankment on water as a resource to be exploited for agricultural and other commercial purposes. The document admittedly expresses concern over rising nitrate levels in the Waimakariri zone and the danger of nitrates leaching into Christchurch’s deeper aquifers (p. 33), but is silent as to the agricultural origins of those rising levels.

7 This omission has wide-ranging implications, especially as regards references to CCC working collaboratively with ECan, since it is ECan that has permitted the rising nitrate levels and other water degradation referred to above to occur. CCC may wish to collaborate with ECan – but how willing may ECan be expected to collaborate with CCC where that might mean offending agricultural or other commercial interests? The same question arises with regard to collaboration with Waimakariri District, whose farming constituents may be affected by proposals to reduce nitrate levels. The draft fails to take into account the political dimension involved here.

VULNERABILITY OF AQUIFERS TO NITRATE CONTAMINATION

8 It is probable that the safe level of nitrates in drinking water will turn out to be lower, perhaps much lower than the present permitted levels. It may be impossible – whether for technical or political reasons - to restrict the level of nitrates in the water aquifers to a safe level. What is
certain is that it is very difficult, and perhaps impossible, to remove nitrates from large amounts of water.

9 We therefore suggest that it would be prudent to investigate alternative, nitrate free, sources of water. These could include:

9.1 Rainwater collection at individual dwellings in tanks – on-site collection and storage. This could be promoted by rates reduction for homes with on-site water storage.

9.2 Water being collected in the headwaters of Canterbury rivers and piped to Christchurch.

9.3 Desalination of seawater

10 However, investigating such alternatives should not be regarded as a substitute for doing as much as possible to eliminate agricultural water contamination.

IMPACTS OF STORMWATER ON STREAM WATER QUALITY

11 Under this heading we specifically address Objective 3 (Enhancement of natural, cultural and ecological values), Objective 4 (Water Quality improvement), and Issue 5.6 (Stormwater discharges).

12 We are concerned here that there are three different types of impact, which need to be managed in different ways. Only two of these have explicit plans for amelioration. Firstly some impacts are transitory, particularly from wastewater overflows in times of high rainfall. As noted under issue 5.4, these often have minor practical effects as they come at times of high dilution, but also are offensive to mana whenua (as noted also under Issue 5.10). Secondly, there are also contaminants washed in off roads, which as noted (Issue 5.6) for which it would be very difficult and expensive to retrofit treatment systems, and which really need to be taken up at a national level by controlling the composition of car brake pads, etc.

13 However, a third type of impact, which is a major issue for stream invertebrate life is metal contamination, particularly copper, lead and zinc. Work at the University of Canterbury suggests that even if other sources of pollution are cleaned up, in urban streams metal contamination can be high enough to prevent the restoration of a healthy and diverse stream invertebrate community. A major source of these metals is building materials, such as the use of copper for roofing and spouting. We believe more should be done to prevent the use of these materials, or ensure that if they are used, some sort of on-site filtration occurs to minimise inputs into streams. This issue could be addressed through local building regulations on building materials which could release metal contamination into stormwater. Building regulations are under the sole control of the City Council.

14 So we ask that this be added to Objective 7.3 (Enhancement of Natural and Ecological Values), under bullet point 7 where it talks about “water sensitive design”. This bullet point seems to be largely about stormwater handling before it leaves the site, but we suggest adding a point that building design and materials should be regulated to reduce metal contamination.

WASTEWATER OVERFLOWS MANAGEMENT

15 We wish to see an amendment to the objective stated in the draft (“Reduce and work towards eliminating the effects of wastewater overflows.”) so that it reads, “Reduce and work towards eliminating the incidence and effects of wastewater overflows” (emphasis added).

16 Furthermore, under the heading “Suggested approaches” related to this goal, we wish to see the language of 7.4-2, “Effects-based networks consent” (p 4 iv of the Executive Summary and p 27 of the main text), amended in such a way as to make absolutely explicit that there is no intention to move away from, much less to abandon, incidence-based overflow consent criteria.

RESPONDING/ADAPTING TO ANTICIPATED EFFECTS OF CLIMATE CHANGE AND SEA LEVEL RISES

17 Arguably it is in this area that long-term contingency planning is most problematic. In our view it needs to be recognised at the outset that, in the very long term envisaged in this strategy, it may at some point become necessary to consider measures that at the present time might be regarded as drastic to the point of being politically unacceptable.

18 Such measures might in the distant future extend beyond mere retreat from the present coastline to relocation of the city as a whole, including the creation of a new Port of Christchurch to replace the current port of Lyttelton.

19 While contingency planning to address very distant future scenarios may arguably be premature, it would in our view be advisable to initiate now a programme of public education and ongoing public dialogue on the theme of climate change and rising sea levels and the implications thereof, aimed at fostering and propagating among present and future generations of
Christchurch citizens a mindset that will become flexible enough to contemplate possibilities that for many are at present unthinkable, such as those mentioned above.

CONTROLLABLE AND LESS-CONTROLLABLE STRATEGY ELEMENTS

20 The wide-ranging scope of the draft strategy document embraces some elements that are amenable to direct control (or at least very strong direct influence) by the City Council, and others over which the Council has little if any control.

21 These are referred to in narrative form at various points throughout the body of the document. However, we suggest that there would be value in creating a summary section drawing all those elements together in tabular form and breaking them down according to their respective degrees of amenability/non-amenability to CCC control or influence.

FUTURE-PROOFING THE STRATEGY

22 The very long timescale envisaged in the strategy makes it correspondingly vulnerable to future political change and uncertainty, both at local and at national level. The possibility of its being diluted, or even altogether rescinded, by a future Council cannot be ruled out.

23 We therefore recommend that the present Council put in place some mechanism whereby, without completely binding a future Council, the integrity of the strategy may be strongly protected – such as a provision that public consultation and public support be required before any rescission of the strategy, whether partial or complete, may be made. One possibility we suggest would be to define the city’s water supply and water sources as a strategic asset, making decisions affecting it subject to a public consultation requirement similar to the disposal of other strategic assets.

CONCLUSION

24 We applaud the Council’s initiative in formulating this draft strategy, and we hope that the foregoing observations and suggestions will be seen as supportive and constructive in intent.

25 We wish to be heard in relation to this submission.

19 July 2019

On behalf of the Beckenham Neighbourhood Association Inc.

Peter Tuffley, Vice Chair
**CHRISTCHURCH CITY COUNCIL**  
Te Wai Ora o Tāne Draft Integrated Water Strategy  
*Received via Have Your Say -  
Submissions close Sunday, 21 July 2019*

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Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?  
Comments:  

Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?  
Comments:  

Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?  
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<td>1. Introduction</td>
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The Opāwaho Heathcote River Network

The Opāwaho Heathcote River Network (The Network) is an umbrella organization that facilitates and supports the values, efforts, and needs of our communities along the River. The Network is made up of representatives from eleven community groups in the Opāwaho Heathcote catchment and the Avon-Heathcote Estuary. Our Vision is; 'An ecologically healthy river that people take pride in, care for and enjoy.' Our Purpose is; 'To facilitate a collaborative network which advocates for the regeneration of the whole of the Opawaho Heathcote River.'

The Network provides a voice for local river-care organizations and the communities. It collaborates and advocates with decision making organizations including Christchurch City Council (CCC) and Environment Canterbury (ECan).

The Network seeks to work with the CCC, ECan, Ngai Tahu, community groups and other agencies to develop an integrated approach to the management of the Opāwaho Heathcote River.

2. Draft Integrated Water Strategy
The Opāwaho Heathcote River Network congratulates the Christchurch City Council on its commitment to a long-term Integrated Water Strategy and for producing a comprehensive and well-written document. It captures well the issues for future integrated water management in the City.

The structure of the document is, however, complex and multi-layered with the content necessarily mostly at a general level. There is an overarching vision, eight guiding principles, four goals, eleven objectives, eleven key strategy issues and at least thirty-eight approaches which are designed to meet the objectives. These make it difficult to read and digest. Further engagement with the public is recommended.

Restoring the waterways of Christchurch needs an integrated approach. Ecosystems do not operate in silos.

The bringing together into a single document of thinking for stormwater, wastewater and water supply is a very significant and powerful step forward. It is noted that some of the detailed proposals in the earlier three individual Strategy documents have not been brought forward into this Integrated Strategy. e.g. the Surface Water Strategy of 2009. Is it the intention that a subsequent Implementation Plan for the Integrated Strategy will lay out the detail?

The report will provide a shared focus for CCC staff and will enable them better to work together across the departments. It is not sufficient to encourage integration within the Three Waters workgroup. Other CCC units, such as Greenspace and Streets, have a major role to play in restoring our waterways.

The 100 year horizon is too long a time for accurate prediction but we accept that such a long horizon is necessary for slowly-changing things such as climate change, sea level rise and nitrate concentrations in groundwater. This document sets an excellent foundation and there will be periodic revisions. The Network supports the review of the report every six years to
tie in with the LTP planning cycle.

3. Vision and Guiding Principles
The Network supports the overall vision and guiding principles set out in report and commends the Council for adopting them.

Comments
• The “vision” achieves much in bringing together the many braids of water issues. The task of projecting forward, however, is still to be done. This should be a core task of the first review in 2026. It is recommended that a more inspiring and ambitious approach be taken. We need to be creating a City that has made the most of its water opportunities and managing it in a way that creates sustainable ecological systems.
In the next 100 years is it reasonable to expect our urban rivers to be swimmable?
• It is also important to take a wider view of emerging issues than valuing water and water services. It is recommended that a Whole of Council visioning project be undertaken by the strategy group in CCC to look at what the City might be like in 100 years. That would take into account projections of wider group of factors.
• Integration needs to improve not only within the Council but also between the Council and the community and among agencies. The Network notes and welcomes the good working relations at staff level between CCC and ECAn.

The Network agrees with the key issues facing the management of the 3 waters in Christchurch and commends the Council for adopting them.

Comment
• Poor state of waterways – The importance of Māori cultural values with regard to cleaner waterways is strongly supported by the Network. There are, however, other reasons why our waterways should be cleaned up. eg ecological and the wishes of the general public. These should be included in the wording of this strategic principle.

5. Goals and Objectives of the Draft Integrated Water Strategy
The Network agrees with the goals and objectives of the Integrated Water Strategy.

Comments
• 7.1 Objective1: Awareness and engagement
The Network recommends that the Council gives more encouragement including incentives to householders to take responsibility on their own properties. Many people want to play a part in reducing damaging flows to our waterways. The collective actions of many individuals can make a huge difference at the catchment level.

• 7.3 Objective3: Enhancement of ecological, cultural and natural values
Invasive exotic weeds have become widespread in our waterways and are a huge threat to the natural ecosystems- as well as to the rapid removal of flood flows. A recent report “Lower Heathcote Weed Survey” by Nicolas Head of CCC and his presentation at the Network’s AGM has alerted us to extensive invasions by several weed species in the Lower and Mid Heathcote. Some of these may no longer be able to be eradicated. A specific issue that needs addressing urgently is that existing dredging and weed cutting techniques multiply the weed problem as they create small pieces that spread and re-establish upstream and downstream.

The Network recommends that a Plan for best practice aquatic weed management be prepared as a matter of urgency - with the input from River Care groups.

• 7.3 Objective 4 - Water Quality improvement
The OHRN welcome the increased sediment control measures as sediment is a major contaminant in the Ōpāwaho Heathcote River. It smothers and kills aquatic life. The network recommends that the CCC, ECAn other agencies and the Network develop a plan and an adequately funded implementation programme to reduce significantly the overland sediment flow from the Port Hills into the Ōpāwaho Heathcote River. (Sediment in the Stormwater system is separately controlled by conditions in the comprehensive stormwater consent.) All agencies need to work together to enable the
continued native revegetation of the Port Hills, the reduction of sediment loss and the subsequent improvement in the ecological health of the River.

7.4 Objective 5 - Wastewater overflow management
Wastewater overflows pose a risk to environmental and cultural values of our urban waterways, for this reason the Network recommends to the Council that it requests ECan to notify its current application for a variation to its Wet Weather Overflows consent. The Network and other River Care groups wish to make submissions to the independent panel that will set the conditions on the consent. (This would ensure an equally robust system applies for the variation to the wastewater consent as to the recent CCC Global Stormwater Consent.)

6. Recommendations for Achieving the Aim and the Vision
The Network agrees with the overall recommendations for achieving the aim and the vision for managing the ‘three waters’ in Christchurch

Comment
• The Network notes that the report is very light on specifics when it comes to the important phase of implementing the strategy. Implementation Plans are referred as a means of measuring achievements of the Integrated Water Management Strategy. Also key parties and stakeholders are identified. But there is no indication of timeframes or processes for their development. The Network considers that Implementation Plans are needed within the next two years to set out the missing detail of how progress is to be made and not just to record achievements after they occur. Also as stated earlier in our submission there are detailed implementation measures in the earlier individual strategic water plans that need to be revisited and in some cases re-adopted.
• The Network recommends that the final Strategy includes a timeline for the production of an implementation plan or plans and a specific commitment to include River Care groups in their development.

7. Overall Direction of the Draft Integrated Water Strategy
The Network agrees with the overall direction of the Integrated Water Strategy.
It is an excellent first step.
It needs to be followed up with:
• a whole City visioning project
• Implementation Plans within the next two years.
• The first review in 2026 a stronger inspirational forward focus and capture the potential of our City to be a water sensitive city
The City and this strategy need to provide more opportunities and incentives for the community and individuals to take responsibility and implement behaviour change in the management and use of our unique water resources and ecological systems.
Thank you for the opportunity to make this submission.

We wish to be heard and we look forward to elaborating on our submission.

Annabelle Hasselman
Chairperson
Opiwaho Heathcote River Network
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Christchurch Coastal Residents' United (CCRU) is an association of coastal residents, communities and experts from across New Zealand that look to engage, inform and find solutions for issues that affect Coastal residents. Primarily focused on the Christchurch area but engaging with wider scope across various national and international organization. As our focus is Coastal communities, we have provided this submission on the CCC Draft Integrated Water Strategy with a focus on Coastal infrastructure, response to climate change and SLR in Coastal areas and the Wellbeing of Coastal communities.

**Vision** - Sections 3/4

CCRU suggest your VISION should be retitled “Water for Life and Living”. We believe this better aligns with the Local Government (Community Well-being) Amendment Act 2019 and supports the value of environmental, social, cultural and economic wellbeing of current and future generations.

We also suggest that you amended your third vision statement - “to Better understand and manage hazards from flooding and sea level rise” This would reflect your commitment to a willingness to have ongoing transparent dialogue about current information to hand, adaptation, timelines and options for response

**Principles**

Your concept of place making is important. Our observation is that your definition is not in keeping with the true spirit of place-making. You have indicated that it is about bringing the community with the council. However true placemaking is about strengthening the connection between people and the places they share. Placemaking refers to a collaborative process by which we can shape our public realm in order to maximize shared value. It is not about the “bringing the community along” for the ride as a passenger. The processes need to support equity and justice. Recent work on the ethics of adaptation has pointed out that responsibility of justice and equity extends beyond the institutional actors and communities, but also the professionals, e.g. consultants/modellers and council officers. **We would like to see a definition of Placemaking that more accurately reflects this**

Flood management – your strategy acknowledges the different types of flooding. CCRU believes your strategy needs to be clearer about separating out normal flooding and flood hazards from climate change moderated ones as they will require different time frame considerations and responses

Tangata – We agree” Our environments are places of human occupation” Your strategy needs to better recognise the economic, social and wellbeing cost benefits in respect to the **value of existing communities**. This is particularly important when it has come to historical decision-making processes that have been lacking and yet are paramount to successful adaptation.
Strategies - Section 5

5.7 Flood and flood management – The Government Act states that local councils have a responsibility to provide for the health and safety of the community and maintain a duty of care with respect to managing drainage, and the effects of flooding. Better consideration of cost/benefit analysis is required.

For example, the stormwater outflow for the estuary. There have been numerous issues in the Redcliffs area with Stormwater backup flooding. The design has proven inadequate and the servicing of these is underbudgeted. It has been conveyed to these communities that servicing more than a few times a year is not cost effective. A similar scenario has been ongoing for the Eastern side of the Estuary. This has led to unnecessary surface flooding for coastal communities, that could have been avoided and the budgeted servicing maybe have been sufficient if the design was fit for purpose. The outcome of a design that do not meet community needs for basic infrastructure leads a long-term effect on wellbeing given repeat damage, perceived risk and insurance issues.

“In some areas, groundwater is very close to the ground surface and inhibits the infiltration of floodwaters into the soil. This increases runoff, which may worsen flooding and sometimes leads to prolonged standing surface water” - The response to this needs to be in context with information provided for the city as a whole. Given that large areas of Christchurch City are low-lying, ground surface water is a city-wide conversation (e.g. St. Albans), not just in coastal areas. It is also the case that the after-effects of liquefaction reduce soil permeability, hence high runoff can have very little to do with groundwater levels.

5.8 Responding/ adapting to climate change and SLR. – CCC needs to work better to understand the likelihoods behind climate change projections. This strategy needs to more clearly define the need to separate out flood issues and hazards that are a result of normal flooding and those that are flood hazards from climate change driven modelling and SLR predictions. This is important distinction for timing response and the adaptation process. Clear distinction needs to be made between surface flooding, river flooding (plus storm events + natural tidal cycles, including their probabilities) and the monitoring of and decision making around projected SLR for inland and coastal areas.

“Development of dynamic adaptive planning pathways will be required in order to inform decisions in light of the uncertainty with sea-level rise predictions”

CCRU suggest that there needs to be a fuller definition on what is meant by “dynamic adaptive planning pathways” A full economic analysis needs to be part of this pathway, paying attention to scenario likelihoods. This should also include, as per IPCC opportunities to exploit beneficial opportunities. Adaptation can greatly reduce the impact of sea-level rise (and other coastal changes), although it requires adjustment of coastal management policies to changing circumstances hence it must be as you suggest dynamic. Consequently, CCRU see adaptation is a social, political, and economic process, rather than just a technical exercise, as we have observed so far in Christchurch.

IPCCs definition: The IPCC Fifth Assessment Report define adaptation as ‘the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects’ (IPCC, 2014).
Goals - Section 6

Goal 3: That the effects of flooding, climate change and sea level rise are understood, and the community is assisted to adapt to them.

With the addition of “that” CCRU assume you are indicating your goal here is that there is an ongoing and shared process that enable all stakeholders, community included to gain an understanding if this is your point then we believe it is congruent with your previous statement of the need for a “dynamic pathways”. They way it reads it indicates that climate change is understood- In our view that climate change is not completely understood - there are many potential scenarios, adaptation options and possible outcomes. The economic, social and environmental costs also need to be included, psychosocial costs and how they will be dealt with.

“Sea level rise has implications for the district in terms of increased coastal inundation, shallower groundwater, particularly in coastal areas and along tidal stretches of the rivers, higher flooding levels and erosion. It is therefore necessary to take a long-term view and have a flexible approach to the management of flooding and sea level rise that enables the community to understand the risks and make timely adaptations when pre-defined conditions or triggers are met.”

While on the surface this sounds reasonable although CCRU believe that the strategy should reflect that it is key communities are not forced to leave their homes too early or coerced into moving through financial mechanisms (not protecting homes), using financial instruments etc, that would leave communities vulnerable and foster further inequities. Adaptive trigger points and collective management of those trigger points needs to be clearly financed, otherwise it is just a paper exercise.

Key elements of goal 3

“Understanding the extent, effect and risk of flooding, and managing effects and adapting to flooding risks – by continuing the existing programme of investigations and physical works in the interim, while developing, communicating to the community and then implementing a risk based approach to managing the effects of flooding using options appropriate to specific situations.

Understanding risks due to sea level rise and consequences resulting from climate change and developing an adaptive response.”

CCRU see it as crucial that elements such as likelihood’s and uncertainty are accurately included in the approach to managing the risk and effects of flooding
**Objectives**- Section 7

Continuing to manage for the six core values for stormwater and flood management 4/ page 23

"For over 20 years, we have focused on a multi-value and multi-party approach to stormwater and flood management. By identifying six core values – ecology, drainage, culture, heritage, landscape and recreation – as the drivers for improved surface water, stormwater".

CCRU suggest that in keeping with the LGA and the recent Wellbeing stance of the Govt- It is essential that social wellbeing and health be added to your core values.

Objective 7- executive summary page (iii) Flood management and adaptation

*Manage and adapt to the effects of flooding using natural systems, planning tools, community adaptation and infrastructure solutions.*

Regarding the above Objective 7 in the executive summary page (iii) CCRU believe there should be a strong focus on adaptation solutions and mitigation, especially where there are existing long-term communities rather than default to planning tools as a sole vehicle of management.

In addition, the council need to increase their capability in this emerging field, including consideration of adaptation technology and management in other countries that are further ahead in their adaptation planning, or working with other experts in this field. Experts should also include the communities that will be directly affected by decisions, and ideally the communities should be the decision makers (true partnership approach).

CCRU- Additional comments

CCRU are concerned the strategy does not address the event where communities downstream are affected by flooding due to development upstream. If risk is increased by upstream development, it must be mitigated at no cost to downstream communities.

We suggest that the strategy better foster the need to have a more comprehensive understanding of the likelihoods behind climate change projection.

In relation to Coastal communities, while recognising that higher order documents will inform the shape of a response, there is need to be willing and prepared to explore novel solutions that look to adaption and mitigation before continually reaching for ‘planning tools’ as a primary default response mechanism.

The draft strategy should ensure there is a Provision of solution options that achieve equity across communities and that are able to be implemented.

CCRU believe Placemaking facilitates creative patterns of use, paying attention to the physical, cultural, and social identities that define a place and support its ongoing evolution and wellbeing.
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**CHRISTCHURCH CITY COUNCIL**  
Te Wai Ora o Tāne Draft Integrated Water Strategy  
- Received via Have Your Say -  
*Submissions close Sunday, 21 July 2019*

**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**

Neither agree nor disagree  
Please see attached submission.

**Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?**

Neither agree nor disagree  
Please see attached submission.

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**

Neither agree nor disagree  
Please see attached submission.
| Do you agree or disagree with the recommendations for achieving the aim and vision for managing the ‘three waters’ in Christchurch? Comments: | Neither agree nor disagree  
Please see attached submission. |
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<td>Any other comments:</td>
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The Banks Peninsula Community Board appreciates the opportunity to provide feedback to Christchurch City Council on Te Wai Ora o Tāne Draft Integrated Water Strategy.

The Board’s statutory role is, “to represent, and act as an advocate for, the interests of its community” (Local Government Act 2002, section 52). The Board provides this submission in its capacity as a representative of the communities around Banks Peninsula.

The Board appreciates that the Draft Strategy includes a strong Banks Peninsula lens. For example, the Board supports Objectives 3 and 4: Enhancement of ecological, cultural and natural values and water quality improvement, as well as one of the suggested approaches to increase sediment control in Whakaraupo Lyttelton Harbour and Akaroa Harbour. Water quality issues are a key cultural and environmental concern on the Peninsula, where higher annual average rainfall and steep terrain contribute to soil erosion and slips.

Managing the effects of wastewater systems is another key issue for our communities. The Board appreciates that Objective 8: Sustainable wastewater systems includes suggested approaches for Whakaraupo Lyttelton Harbour, Akaroa and Duvauchelle. However we note that there is no mention of the many other rural communities around the Peninsula, such as Little River, Birdlings Flat and Wainui. Properties in these settlements are serviced by private systems such as septic tanks, but there have been discussions for some time around the Council providing reticulated wastewater systems. We urge the Council to investigate addressing the wastewater needs of small, rural communities on the Peninsula in innovative and cost effective ways.

Banks Peninsula is serviced by several drinking water schemes that source water from a combination of surface water and shallow groundwater. Surface water is more at risk from activities in the catchment, and its low flows come under strain during high demand summer periods. We strongly support the Council’s commitment under Objective 11 to continue high
quality treatment to ensure safe drinking water and to investigate options to deliver sustainable water supplies for all our communities.

The Board would like to speak to its submission.

Yours sincerely,

Pam Richardson
Chairperson, Banks Peninsula Community Board
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<tr>
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<th>Submission No: 26391</th>
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<td><strong>CHRISTCHURCH CITY COUNCIL</strong>&lt;br&gt;Te Wai Ora o Tâne Draft Integrated Water Strategy</td>
<td>- Received via Have Your Say -&lt;br&gt;&lt;i&gt;Submissions close Sunday, 21 July 2019**&lt;/i&gt;</td>
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<tr>
<td>Full Name:</td>
<td>Vicky Southworth</td>
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<td>Neither agree nor disagree&lt;br&gt;&lt;br&gt;I find the vision bland. The strategy talks of looking 100 years ahead and so should be bold. We could aspire to swimming in our urban rivers by then, not just wading and boating! It would be good to see a vision that encapsulates the benefits of Water Sensitive Urban Design which involves minimising environmental impacts, mimicking the natural water cycle, increasing resilience and enhancing the urban aesthetic and recreational opportunities water can provide. This is achieved with full integration of the 'three waters' and urban design, as intended by the strategy, together with, encouraging, supporting and enabling the city's residents and businesses to fully play a part in supporting this vision. The word value has many meanings to many people, and to date 'value' is often used in the financial sense. Perhaps the word 'treasured' which links to the Maori word ‘taonga’, or similar, could be an alternative that clearly defines the change in attitude that is needed whereby we move away from measuring value primarily in a financial way.</td>
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<td><strong>Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?</strong>&lt;br&gt;Comments:</td>
<td>Neither agree nor disagree&lt;br&gt;&lt;br&gt;There is no mention of the impact of reduced infiltration in areas where groundwater supports baseflow. The Avon-Otakaro suffers from low baseflow during dry months following dry winters. Increasing densification will reduce infiltration further without mitigation.</td>
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<td><strong>Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?</strong>&lt;br&gt;Comments:</td>
<td>Neither agree nor disagree&lt;br&gt;&lt;br&gt;Goal 4 seems to me to encapsulate goals 1 and 2. You can’t achieve Goal 4 without achieving 1 and 2.</td>
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Do you agree or disagree with the recommendations for achieving the aim and vision for managing the "three waters" in Christchurch?

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<td>Christchurch with its springs, rivers and aquifers and relatively small size could aspire to being a water sensitive city but individuals have to play a key role in caring for water in all parts of the water cycle to achieve this. There is very limited mention of this. By bringing all landowners into a caring role and seeking opportunities to enable rainwater to infiltrate or be reused, with appropriate treatment in place (such as a simple rain garden), is essential if the urban water cycle is to support the restoration of natural watercourses from small creeks to the rivers to a quality suitable for mahinga kai and contact recreation. This strategy focuses on quality of discharges and the size of peak flows, but does not consider the pattern of flows. A natural system does not have the frequent discharges seen in the urban system caused by runoff from hard surfaces. Engaging citizens fully to manage rainwater at source is necessary to reduce the regular small flows that occur with every rainfall. Management of rainwater on the majority of sites could be achieved over the long term (decades) with the right vision and implementation programme. The current Surface Water Strategy seems to acknowledge this more directly and also identifies the need to find a way to ensure ongoing maintenance in an implementation plan.</td>
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| Overall, do you support the direction of the Draft Integrated Water Strategy? | Yes |

| Any other comments: | It is good to see the explicit intention to integrate the management of the three waters, but this strategy still seems to be focused on the council taking almost complete responsibility for all aspects of managing water with collective and centralised systems only, touching very briefly on the potential to engage with individuals and businesses to ensure individual properties are contributing to a sustainable and resilient water environment. Given the risks of climate change and earthquakes a shift towards including distributed water supply and stormwater management could be advantageous. This strategy is very light on detail compared with the water supply and surface water strategies (I am unfamiliar with the wastewater strategy and can't comment on that). The surface water strategy included details on implementation which is critical if a strategy is to have any effect. Is there to be an implementation plan to be added to this strategy? There was no barrier to CCC implementing the surface water and water supply strategies in an integrated way previously. How will CCC ensure that the different teams fully integrate their plans now to create a shift from siloed working? And will the District Plan be revised to support integrated water management, for example requiring industry and residential properties to incorporate Low Impact Development principles, as well as commercial as required currently? |
Water sensitive urban design - why not more in post-quake Christchurch?

Water sensitive urban design (WSUD) means thinking of rainwater as a resource. In doing so a healthier, more resilient and ecologically richer urban environment can be created. Opportunities include using it for non-potable supply such as toilet flushing; to irrigate gardens or living roofs; and infiltrating it via rain gardens and permeable paving to augment groundwater. To achieve this requires a shift in planning, building technologies and human behaviour. My thesis has focused on four devices: rain gardens, permeable paving, rainwater harvesting and living roofs.

The destructive earthquakes of 2010/11 presented an opportunity to build back a more sustainable Garden City. This would have meant reducing the quantity of largely untreated urban runoff which flows directly into streams and rivers. Urban densification and predicted climate change weather patterns will only increase the negative impacts. Positive changes have included rain gardens installed in public roads, and flood mitigation schemes designed to also reduce contaminant loads and provide habitat. However, on private property concrete and asphalt driveways continue to dominate and rainwater harvesting is a rarity. Toxic copper cladding has gained in popularity while living roofs have remained almost entirely absent. Downpipes are connected to the stormwater system regardless of a site’s suitability for infiltration via permeable paving or rain gardens.

I wanted to understand why building-scale WSUD solutions have not been installed, despite residents wanting a sustainable city. Reconstruction is still ongoing in Christchurch and if the barriers to WSUD are understood, solutions can be proposed to overcome them. The findings are also relevant to other cities as long as the local context is considered.

My findings are based primarily on 29 interviews with a wide range of private, public and research sector professionals involved in development, as well as community advocates for the city’s waterways. In addition I reviewed the planning context and secondary data, including a 2017 Christchurch City Council waterway’s survey that investigated residents’ knowledge and values. Recommendations for change have been informed by Auckland and international experiences.

The stormwater network in Christchurch includes many streams and ditches as well as pipes. The potential for the network to support ecological, aesthetic, cultural and recreational values as well as drainage was recognised in the 1990s. Council guidance, strategy and a multi-value decision-making framework supported a transition that resulted in positive changes seen in public spaces both pre and post-quake. The city council’s own modelling, however, shows that solutions sited on public land only will not provide the level of treatment required to meet the regional council’s in-river water quality limits. Finding a way to engage with private property owners (residential and commercial/industrial) to change on-site practices is therefore essential.
No leadership at the building-scale

The council’s Surface Water Strategy, published in 2009, supports building-scale WSUD devices but development policies and rules in the District Plan have not required their use. In addition, guidance, which is important for developers as it adds certainty to the consenting process, is heavily focused on larger-scale solutions such as basins and wetlands that transfer to council maintenance. Interviewees cited: the disconnect between strategies and the District Plan policies and rules; the desire to get back to normal as quickly as possible; and the like-for-like clauses in insurance policies as inhibitors of change post-quake. A recent policy change will finally see commercial property improving on-site stormwater management.

Planners and engineers, when interviewed, expressed concern about poor long term maintenance of devices on private property which may explain the absence of policy and guidance for on-site devices.

No drivers for voluntary action

There is a lack of motivation for Christchurch’s property owners to voluntarily include WSUD devices. These solutions have a cost, but no payback. Water supply is included in the rates for residents, and charges to commercial users are low. Internationally, water restrictions and fees have been a motivator for change, but water shortages are very rare in Christchurch.

The council’s survey showed that almost half of Christchurch’s residents do not know that rainwater drains directly into the waterways or ocean without treatment. It might be reasonable to assume that with greater knowledge a change would occur. However 63% of survey respondents agreed that it’s least environmentally impacting to wash the car on the lawn but 68% continue to use the street.

Cost

Almost all interviewees cited cost as a barrier and this agrees with international findings. But catchment-scale field experiments in the US and Australia found that even when offered for free, only around 30% of residents take up rainwater harvesting or rain gardens. There is an opportunity cost to devices that take up space, and rain gardens in particular are not perceived to offer a benefit. Of 31 new award-winning homes costing more than $700,000 to construct, presented in the mid and south Canterbury 2018 Master Builders Award magazine, all described luxury materials or features, and over half contained three or more bathrooms. Only one identified sustainability as a design consideration. Arguably many budgets could in fact accommodate sustainable features but they are not prioritised. A developer commented, ‘Developers are led by what the market wants. There’s not a groundswell in buyers wanting the environmental features.’

Lack of support

Interviewees who had investigated water sensitive solutions for their own rebuild projects reported a difficulty in finding suitably knowledgeable architects to advise them. A Green
Star assessor explained that for larger projects WSUD solutions are often designed out at the value-engineering stage because of the lack of payback. Even the New Zealand Green Building Council’s Green Star and Homestar schemes offer little incentive for rainwater management solutions as these generate few points but have a high cost compared with other options in the points-based scheme.

Increasing uptake

There are multiple barriers and multiple actions are needed to address them.

Policy and incentives

Change needs leadership. The in-river quality limits set by the regional council provides a short term motivation, and potential shortage of water supply by 2050, identified in the city council’s Water Supply Strategy, is a driver in the long term.

International research into the uptake of living roofs has shown that there is a strong link between their use and the presence of policy, guidance and incentives. Around half the interviewees supported stronger development policies. An engineer said, ‘If the regulations aren’t there in the first place no one’s going to do it….ethically it’s pretty poor as a professional, but you can also see where your client is coming from, you don’t want to spend money if you don’t have to.’

Christchurch City Council are key. In order to build confidence in technologies local demonstration projects with follow-up monitoring is important. Pilot schemes designed to focus on a particular area within the city and offer a solution to a local issue are a useful way to trial both technology and techniques used to motivate the adoption of more water sensitive solutions. Density bonuses which allow additional building footprint or height to offset the cost of features that provide a public good, such as increased biodiversity and reduced stormwater impacts, are one way to encourage the use of building-scale WSUD solutions on private property at low cost to the council.

In Auckland, policy to protect higher quality catchments requires some rainfall to be retained on site and this has increased the use of WSUD devices in these areas. Developers and their designers are left to decide how best to achieve the requirement, although guidance provides information about all the common building-scale solutions. This supports the view shared by interviewed stormwater experts that design should be site specific and the best solution will vary with both physical characteristics and site end user preferences.

Promote the benefits

Change has to take place in existing areas of development, as well as on new build property. Developers and property owners are more likely to select options that create a direct benefit for themselves. Water-sensitive devices have benefits, but the advantages need promoting more effectively. For example, a living roof is expensive but can create value as a shared garden on an apartment block or a rooftop cafe area on a commercial development, as well as having earthquake damping potential. Permeable paving costs are on a par with higher-end paving solutions, but also provide an attractive low-slip puddle-free option for car
parking areas or walkways. Rain gardens create low maintenance landscaping for residential or commercial properties, once established, with reduced irrigation requirements and no mowing. With the right marketing these features could become desirable landscaping trends. Instead of focusing on stormwater benefits, what are the advantages to the client?

Every little helps

A community representative said, ‘There are lots of people disgusted with the state of the rivers and they want to do something at home but aren’t sure what they can do, or where to go for information and [where] to see an example in operation.’ Small residential DIY rain gardens and rain barrels are easy to install but are not encouraged by Christchurch City Council. Providing simple guidance for solutions that can be implemented by individuals for a small cost empowers people to make a difference. A long-running council programme in Portland, Oregon, paid a small financial incentive and provided on the ground support to help individuals disconnect downspouts and redirect the water safely to lawns and rain gardens. The programme resulted in 56,000 disconnections and the removal of 5 million cubic metres of stormwater from the piped network each year.

Education

Education is needed at multiple levels if Christchurch is to shift towards a water sensitive city. Architects were criticised by several interviewees for being unable to offer well informed advice on water sensitive solutions. An architecture student interviewee explained that sustainability was mostly taught in elective courses rather than a core subject, and that these courses are not popular being seen as ‘boring and bland.’ A professional architect however, observed that sustainability is about the approach rather than a specific technology, of which there are many, and there is a need for a cultural change. Several interviewees felt that environmental education needs to be increased in school to create that change.

Summary

Whilst a major rebuild seemed to offer an opportunity for change, in reality the policies in place before the earthquake strongly influenced the rebuild. Change takes time and needs societal and political support. In Christchurch community groups are advocating for environmental improvement to the city’s waterways, and schools are keen to incorporate more environmental education into their curriculum, but change requires leadership from local government; particularly in the absence of strong national government support.
**CHRISTCHURCH CITY COUNCIL**  
Te Wai Ora o Tāne Draft Integrated Water Strategy  

- Received via Have Your Say -  
*Submissions close Sunday, 21 July 2019*

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<tr>
<th>Full Name:</th>
<th>Peter Dow</th>
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<td>Name of Organisation:</td>
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**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**  
*Comments:*

**Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?**  
*Comments:*

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**  
*Comments:*
Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch?

Comments:

Overall, do you support the direction of the Draft Integrated Water Strategy?

Any other comments:

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<td>ON: Draft Integrated Water Strategy</td>
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<tr>
<td>BY: Waipuna/Halswell-Hornby-Riccarton Community Board</td>
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<tr>
<td>CONTACT: Peter Dow</td>
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<td>Community Board Advisor</td>
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1. INTRODUCTION
The Waipuna/Halswell-Hornby-Riccarton Community Board (the Board) appreciates the opportunity to provide feedback to the Council on the Draft Integrated Water Strategy. The Board offers its general support for the Council’s intention of incorporating this Integrated Water Strategy as a key component in its strategic framework for the sustainable future management of water resources and the provision of related infrastructure. The Board accepts the vision of ‘Water for Life’ as being at the heart of the city’s future sustainability, growth and prosperity. However the vulnerabilities as flagged in the draft Strategy around groundwater source contamination e.g. nitrates, is a strong predictive warning about what could lie ahead.

From the Board’s perspective, this is a real concern for us all.

The Board records its support for the Council’s endeavours and decisions made over water-related issues.

The Board wishes to be heard in support of this submission.

2. SUBMISSION
The Board’s feedback generally follows the format of the online submission form:

Do you agree or disagree with the vision and guiding principles for managing the three waters? (sections 3 and 4)

The Board agrees with the proposed vision and guiding principles noting that the draft Strategy ‘primarily considers matters over which we and/or the local community can manage or influence.’

Do you agree or disagree with the key strategic issues facing management of the three waters in Christchurch? (section 5)

Further to the introductory comments above, the Board’s highest ranked strategic issue is unquestionably the vulnerability of Christchurch’s groundwater sources to contamination, specifically from nitrate incursion (Clause 5.3, page 11).

The wording used in the key issue section (page 11) articulates very well the Board’s shared concerns.

In relation to flooding and flood management (Clause 5.7, page 13), the Board is most appreciative of the Council’s ongoing programme of investing in flood management areas and devices such as retention basins, wetlands and swales that help in providing built solutions for integrated flood and water management.

The growth and urban intensification in the southwest remains ongoing so to have this staged programme of budgeted work happening in this growing area of Christchurch is so important. Alongside this capital works programme is the Board’s request, most recently expressed in its submission on the Annual Plan 2019-20, that matched maintenance budgets for these assets needs to be provided for in the Council’s Long Term and Annual Plans.
While the use of drainage swales is now common practice, the Board does by example, want to draw attention to a situation evident in Murphys Road near its intersection with Quaifes Road in Halswell.

The photographs in Appendix Two are of a swale outside the Sevenoaks School that takes surface water runoff from Murphys Road and some of the stormwater discharge from the nearby Clowenden subdivision. Immediately next to the swale are fresh water springs being the commencement of the Quaifes Drain Number 1 network.

The Board questions the functionality and effectiveness of this particular swale given the strong likelihood that contaminants will discharge into a pristine waterway.

Whilst consented for (refer below link), the Board does question whether this example can in any way represent best practice and feels the Council can do better here given its regulatory responsibilities for subdivision consenting and associated design approvals.


Clause 5.11 on page 16 (Infrastructure efficiency and resilience) talks of ‘a need to further develop a proactive risk-based approach to asset management that balances affordability for the ratepayer against the cost of managing the asset risk.’

and

‘a need to look at environmental infrastructure that provides additional services in relation to flood management, stormwater retention and treatment…..’. The key issue section makes reference to ‘….. innovative solutions are required to improve efficient use and renewal of infrastructure.’

As indicated above, while the Board fully welcomes the ongoing investment in land drainage infrastructure, it feels there are also real opportunities available to integrate additional service features into these utility spaces.

As an example, the Board points to Halswell Road/State Highway 75 (Hendersons Road to Milns Road, south side) where urban development is underway alongside the areas of the Council’s land drainage sites.

The Board suggests an innovative solution here is to integrate a ‘park and ride’ facility for commuters alongside the planned public transport interchange at the Key Activity Centre at Halswell Commons.

In the Board’s view, such a facility would greatly help to ease the traffic growth on the Lincoln Road/Halswell Road corridor into and from the central city.

An example of such compatible infrastructure is the Hibiscus Coast busway station currently under development as part of Auckland Transport’s Northern Busway Extension where stormwater runoff is proposed to be managed by the use of wet ponds.

The existing network of transmission corridors and adjacent land areas throughout the city does in the Board’s view, offer additional scope for providing these types of utility areas in partnership with other agencies and asset owners.

Also in clause 5.11, the Board again notes and supports the Council’s stated ‘commitment to local control over three waters services integrated with all other community services’.

Do you agree or disagree with the goals and objectives? (sections 6 and 7)

Yes, the Board generally agrees with the proposed goals and objectives.

Clause 7.1 Objective 1: Awareness and engagement on page 21 (Current situation) mentions that:

‘Residential properties pay targeted rates for the three water services but these charges are not specifically shown on the rates bill. The typical public perception is that the supply of drinking water is virtually free and unlimited.’

The Board generally supports the suggested approaches set out on pages 21 and 22 of the draft Strategy.

With regard to changing the water services charging structure (page 22, point 4), the Board had contrasting views and could not reach a consensus.

Separately, the Board has noted with interest the situation in relation to the Kapiti District Council on volumetric metering and pricing, as identified in a 2018 report from the Office of the Auditor General.

In relation to Clause 7.5 Objective 6 and 7: Flood risk and flood management and adaptation, the Board provides extracts from Plan Change 60 Living G (Halswell West Zone) taken from the former District Plan.

The Board agrees with the narrative therein and would appreciate knowing whether these same or like provisions, were incorporated into the now operative Christchurch District Plan.
Of the Goals (section 6) to achieve the strategic vision, the Board views Goal 2 (Water quality and ecosystems are protected and enhanced) and Goal 4 (Water is managed in sustainable and integrated way…) to be particularly important.

The Board draws to attention that on page 25 (Current situation) there is comment of the highly urbanised catchments of the Avon and Heathcote Rivers whereas the Halswell catchment, with its own high levels of urban intensification already occurring, is not mentioned. The Board asks that this be recognised and added to the text.

On page 31, clause 7.6 Objective 8: Sustainable wastewater systems, reference is made that ‘Wastewater treatment and disposal needs for the Christchurch metropolitan area have been addressed for the next 20 years at least’.

Given the fundamental strategic importance of the city’s wastewater treatment and collection infrastructure, the Board does have a concern that 20 years is such a short time remaining to have to arrive at a new treatment solution as well as recognising the considerable cost impost that such provision will have on the whole community.

In clause 7.7 on page 33 (Objectives 9 and 10), the Board again notes the reference made to ‘Recent groundwater monitoring and modelling has found that groundwater from deeper aquifers north of the Waimakariri River can travel under the river and into the deeper Christchurch aquifer. This is a concern due to the rising nitrate levels in groundwater in the Waimakariri zone’.

This stated concern by every measure, is shared by the Board. Public statements on this issue made by the Canterbury Medical Officer of Health, Dr Alistair Humphrey, simply reinforce how serious this future risk is for Christchurch.

On page 34, in relation to quarrying for gravel extraction it mentions restrictions on excavation and filling below groundwater level.

The Board continues to message its real concerns about this issue particularly in relation to having a lack of confidence over the control and monitoring frameworks for backfilling and rehabilitation of these excavated areas located over our unconfined aquifers.

Also of shared concern to the Board is the mention made of the ‘further risk being the longer term potential for groundwater levels to rise with the completion of large scale irrigation schemes on the Canterbury Plains. This could result in contact with possible contaminated backfill already in place in excavations that were at the time of excavation above the highest recorded groundwater level…..

Do you agree or disagree with the recommendations for achieving the aim and vision for managing the three waters? (section 7)

The Board agrees with the contents mentioned but as articulated by the Council in its draft Strategy, would also be extremely concerned if the control of Three Waters services was to be taken away.

Overall do you support the direction of the Draft Integrated Water Strategy?

The Board generally supports the direction of the proposed strategy which when implemented will provide the much needed strategic framework to guide the Council’s future works programmes and budget settings.

The pivotal issue for the city’s future security and wellbeing is a plea for the Council to continue to be proactive to ensure protection of our renowned aquifers from contamination.

Do you have any other comments?

The Board notes with interest that the Selwyn District Council (SDC) operates an Asset Management Plan based on Five Waters, these being: water, wastewater, storm water, land drainage and water races.

The Board and the Council has been represented on the SDC’s Water Race Subcommittee for many years and the importance of the Selwyn/Paparua Water Race Networks in terms of its value to Christchurch, is noted and acknowledged.

Some of the recognised key benefits of the network include flow augmentation for the Halswell, Heathcote and Avon headwater catchments and tributaries, natural flora and fauna amenity values, and the ready access to the race network for firefighting.

Mike Mora
Chairperson
Waipuna/Halswell-Hornby-Riccarton Community Board
10 July 2019

3. Advise Environment Canterbury that the Council remains totally committed to the long term security of the city’s drinking water supply.

4. Agree that the Council will make a submission to any proposed change to the Canterbury Land and Water Management Plan outlining the Council’s support for measures to reduce the likelihood of nitrates entering the aquifers that supply Christchurch with its water. (CNCL/2019/00065, 11 April 2019)

2. Invite the Minister for the Environment, Hon David Parker for a discussion on water issues as a follow up to the Water Forum discussions held on 15 February 2019.

3. Write to the Minister for the Environment, Hon David Parker to request that work on the National Environmental Standard for Sources of Human Drinking Water be hastened and broadened to include both the quality and quantity of drinking water, particularly for groundwater resources.

4. Continue to engage with Environment Canterbury Councillors on an urgent plan change to a more clearly defined groundwater allocation regime for Christchurch West-Melton as soon as possible. (CNCL/2019/00065, 11 April 2019)

2. Invite the Minister for the Environment, Hon David Parker for a discussion on water issues as a follow up to the Water Forum discussions held on 15 February 2019.

3. Write to the Minister for the Environment, Hon David Parker to request that work on the National Environmental Standard for Sources of Human Drinking Water be hastened and broadened to include both the quality and quantity of drinking water, particularly for groundwater resources. (CNCL/2019/00099, 23 May 2019)

2. Request that the Working Group make clear that the strategy addresses the key priorities below:

a. A clear objective of our water strategy be to maintain our water free form chlorination
b. Maintaining control of three waters be an integral part of the City Council structure and that the Council will oppose any removal of those functions from the City Council.

c. The protection from pollutants and especially the leaching of nitrates under the Waimakariri and that our objective be to ensure that the nitrate level not be allowed to increase above 0.4mg/L. (CNCL/2019/00118, 13 June 2019)

4. Request staff provide advice on the nitrate incursion issue as part of the Water Supply Strategic Plan 2019-29.

Appendix Two – Photographs and Diagrams

Murphys Road – Land Drainage Swale

Quaifes Drain Number 1 at Murphys Road/Quaifes Road intersection

Planned Hibiscus Coast busway station - Auckland Transport’s Northern Busway Extension

Appendix Three – Managing the supply of and demand for drinking water (Source - Office of the Auditor General Publication Kapiti District Council)

Kāpiti Coast District Council found that alternative water supplies (such as grey water and rain water) reduced the drinking water used by residential consumers by about 30 per cent. Alternative supplies also have a role in increasing community resilience when an emergency affects usual drinking water supply. Of all ratepayers in the district, 75 per cent pay less for water than they would if the Council had stayed with its previous approach of charging for water supply. KCDC estimates that its approach has deferred the need for a new dam by about 40 years.
Peak daily water use is what drives the need for capacity upgrades in the system supplying the drinking water. Peak daily water use decreased by about 25% in the two years after universal metering was put in place.

- About 20 per cent was saved by fixing leaks on private property and lateral pipes, which surprised the Council because it had assumed that leaks were on other parts of the network. The Council now has a proactive laterals renewal programme.
- About 5 per cent was saved by consumers using less water.

Based on a range of factors, including reductions in water use and wastewater discharges, water use reduced by an average of 21 per cent. Estimates of reduced water consumption included reduction in dry-weather wastewater volumes of between 5 per cent and 8 per cent.

Each year, KCDC produces a water conservation report that discusses how it has met its water use target, the work done to manage water use and leakage on the public and private parts of the network, and planned water conservation work for the next financial year. The report fulfils a resource consent condition, but has greater value than merely meeting compliance requirements.


Appendix Four – Former District Plan re Plan Change 60 - Living G (Halswell West Zone)
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11.12.1B To create high value amenity areas by using low engineered solutions, resulting in an aesthetically pleasing environment through a programme of indigenous vegetation and enhancement of existing watercourses. All three watercourses on the site, 10 which form part of the stormwater network, are to be integral components of the open space network.

11.12.1C To create a clear drainage strategy that will focus on the collection, storage and movement of water in a sustainable manner that is both beneficial to the local ecology and educational for the community.

11.12.1D To ensure that the stormwater system is designed in a manner that recognises and provides for Ngai Tahu cultural values, and in particular the enhancement of water quality and ecological values associated with Knights Stream and Quakes Drain. Explanation and Reasons Effective stormwater management also has the potential to be an integral component of the overall development of the site, enhancing the natural environment, natural ecology, and Ngai Tahu cultural values, as well as landscape and recreational opportunities.

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Each residential unit located on a site of 650m2 or larger shall incorporate means of collecting rainwater for use within the site.

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8.1.38 Collection of Roof Rainwater In the Living G (Halswell West) Zone the requirement for rainwater collection on sites of 650m2 or larger is a sustainability measure aimed at reducing the stormwater contribution from larger dwellings on sites which with associated impervious surfaces (driveways and paved areas) will generate proportionally more runoff than dwellings on Density A and B Sites. This is also in keeping with the requirement for commercial buildings. The storage and use of collected rainwater also potentially reduces demands on reticulated water and provides an alternative water source in times of emergency. Reduction of stormwater discharges and demands on surface and groundwater sources supports tangata whenua values.

SUBMISSION TO: Christchurch City Council
ON: Draft Integrated Water Strategy
BY: Waipuna/Halswell-Hornby-Riccarton Community Board
CONTACT: Peter Dow
Community Board Advisor

1. INTRODUCTION

The Waipuna/Halswell-Hornby-Riccarton Community Board (the Board) appreciates the opportunity to provide feedback to the Council on the Draft Integrated Water Strategy.

The Board offers its general support for the Council’s intention of incorporating this Integrated Water Strategy as a key component in its strategic framework for the sustainable future management of water resources and the provision of related infrastructure.

The Board accepts the vision of ‘Water for Life’ as being at the heart of the city’s future sustainability, growth and prosperity.

However the vulnerabilities as flagged in the draft Strategy around groundwater source contamination e.g. nitrates, is a strong predictive warning about what could lie ahead.

From the Board’s perspective, this is a real concern for us all.

The Board records its support for the Council’s endeavours and decisions made over water-related issues.¹

The Board wishes to be heard in support of this submission.

2. SUBMISSION

The Board’s feedback generally follows the format of the online submission form:

*Do you agree or disagree with the vision and guiding principles for managing the three waters? (sections 3 and 4)*

The Board agrees with the proposed vision and guiding principles noting that the draft Strategy ‘primarily considers matters over which we and/or the local community can manage or influence.’¹

*Do you agree or disagree with the key strategic issues facing management of the three waters in Christchurch? (section 5)*

Further to the introductory comments above, the Board’s highest ranked strategic issue is unquestionably the vulnerability of Christchurch’s groundwater sources to contamination, specifically from nitrate incursion (Clause 5.3, page 11).

¹ Refer Appendix One – Excerpts from Christchurch City Council decisions

Trim: 19/819100
The wording used in the key issue section (page 11) articulates very well the Board’s shared concerns.

In relation to flooding and flood management (Clause 5.7, page 13), the Board is most appreciative of the Council’s ongoing programme of investing in flood management areas and devices such as retention basins, wetlands and swales that help in providing built solutions for integrated flood and water management.

The growth and urban intensification in the southwest remains ongoing so to have this staged programme of budgeted work happening in this growing area of Christchurch is so important.

Alongside this capital works programme is the Board’s request, most recently expressed in its submission on the Annual Plan 2019-20, that matched maintenance budgets for these assets needs to be provided for in the Council’s Long Term and Annual Plans.

While the use of drainage swales is now common practice, the Board does by example, want to draw attention to a situation evident in Murphys Road near its intersection with Quaifes Road in Halswell.

The photographs in Appendix Two are of a swale outside the Sevenoaks School that takes surface water runoff from Murphys Road and some of the stormwater discharge from the nearby Clovenden subdivision. Immediately next to the swale are fresh water springs being the commencement of the Quaifes Drain Number 1 network.²

The Board questions the functionality and effectiveness of this particular swale given the strong likelihood that contaminants will discharge into a pristine waterway.

Whilst consented for (refer below link), the Board does question whether this example can in any way represent best practice and feels the Council can do better here given its regulatory responsibilities for subdivision consenting and associated design approvals.


Clause 5.11 on page 16 (Infrastructure efficiency and resilience) talks of ‘a need to further develop a proactive risk-based approach to asset management that balances affordability for the ratepayer against the cost of managing the asset risk.’

and

‘a need to look at environmental infrastructure that provides additional services in relation to flood management, stormwater retention and treatment…..’. The key issue section makes reference to ‘…. innovative solutions are required to improve efficient use and renewal of infrastructure.’

As indicated above, while the Board fully welcomes the ongoing investment in land drainage infrastructure, it feels there are also real opportunities available to integrate additional service features into these utility spaces.

² Refer Appendix Two - Photograph attachments
As an example, the Board points to Halswell Road/State Highway 75 (Hendersons Road to Milns Road, south side) where urban development is underway alongside the areas of the Council’s land drainage sites.

The Board suggests an innovative solution here is to integrate a ‘park and ride’ facility for commuters alongside the planned public transport interchange at the Key Activity Centre at Halswell Commons.

In the Board’s view, such a facility would greatly help to ease the traffic growth on the Lincoln Road/Halswell Road corridor into and from the central city.

An example of such compatible infrastructure is the Hibiscus Coast busway station currently under development as part of Auckland Transport’s Northern Busway Extension where stormwater runoff is proposed to be managed by the use of wet ponds.³

The existing network of transmission corridors and adjacent land areas throughout the city does in the Board’s view, offer additional scope for providing these types of utility areas in partnership with other agencies and asset owners.

Also in clause 5.11, the Board again notes and supports the Council’s stated ‘commitment to local control over three waters services integrated with all other community services’.

**Do you agree or disagree with the goals and objectives? (sections 6 and 7)**

Yes, the Board generally agrees with the proposed goals and objectives.

Clause 7.1 Objective 1: Awareness and engagement on page 21 (Current situation) mentions that:

‘Residential properties pay targeted rates for the three water services but these charges are not specifically shown on the rates bill. The typical public perception is that the supply of drinking water is virtually free and unlimited.’

The Board generally supports the suggested approaches set out on pages 21 and 22 of the draft Strategy.

With regard to changing the water services charging structure (page 22, point 4), the Board had contrasting views and could not reach a consensus.

Separately, the Board has noted with interest the situation in relation to the Kapiti District Council on volumetric metering and pricing, as identified in a 2018 report from the Office of the Auditor General.⁴

In relation to Clause 7.5 Objective 6 and 7: Flood risk and flood management and adaptation, the Board provides extracts from Plan Change 60 Living G (Halswell West Zone) taken from the former District Plan.⁵

The Board agrees with the narrative therein and would appreciate knowing whether these same or like provisions, were incorporated into the new operative Christchurch District Plan.

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³ Refer Appendix Two - Diagram attachment
⁴ Refer Appendix Three – Managing the supply of and demand for drinking water
⁵ Refer Appendix Four – Plan Change 60 Living G (Halswell West Zone)
Of the Goals (section 6) to achieve the strategic vision, the Board views Goal 2 (Water quality and ecosystems are protected and enhanced) and Goal 4 (Water is managed in sustainable and integrated way…) to be particularly important.

The Board draws to attention that on page 25 (Current situation) there is comment of the highly urbanised catchments of the Avon and Heathcote Rivers whereas the Halswell catchment, with its own high levels of urban intensification already occurring, is not mentioned. The Board asks that this be recognised and added to the text.

On page 31, clause 7.6 Objective 8: Sustainable wastewater systems, reference is made that ‘Wastewater treatment and disposal needs for the Christchurch metropolitan area have been addressed for the next 20 years at least’.

Given the fundamental strategic importance of the city’s wastewater treatment and collection infrastructure, the Board does have a concern that 20 years is such a short time remaining to have to arrive at a new treatment solution as well as recognising the considerable cost impost that such provision will have on the whole community.

In clause 7.7 on page 33 (Objectives 9 and 10), the Board again notes the reference made to ‘Recent groundwater monitoring and modelling has found that groundwater from deeper aquifers north of the Waimakariri River can travel under the river and into the deeper Christchurch aquifer. This is a concern due to the rising nitrate levels in groundwater in the Waimakariri zone’.

This stated concern by every measure, is shared by the Board. Public statements on this issue made by the Canterbury Medical Officer of Health, Dr Alistair Humphrey, simply reinforce how serious this future risk is for Christchurch.\(^4\)

On page 34, in relation to quarrying for gravel extraction it mentions restrictions on excavation and filling below groundwater level.

The Board continues to message its real concerns about this issue particularly in relation to having a lack of confidence over the control and monitoring frameworks for backfilling and rehabilitation of these excavated areas located over our unconfined aquifers.

Also of shared concern to the Board is the mention made of the ‘further risk being the longer term potential for groundwater levels to rise with the completion of large scale irrigation schemes on the Canterbury Plains. This could result in contact with possible contaminated backfill already in place in excavations that were at the time of excavation above the highest recorded groundwater level…..’

**Do you agree or disagree with the recommendations for achieving the aim and vision for managing the three waters? (section 7)**

The Board agrees with the contents mentioned but as articulated by the Council in its draft Strategy, would also be extremely concerned if the control of Three Waters services was to be taken away.

**Overall do you support the direction of the Draft Integrated Water Strategy?**

The Board generally supports the direction of the proposed strategy which when implemented will provide the much needed strategic framework to guide the Council’s future works programmes and budget settings.

\(^4\)Video link Dr Alistair Humphrey, Canterbury Medical Officer of Health.  [https://frankfilm.co.nz/](https://frankfilm.co.nz/)
The pivotal issue for the city’s future security and wellbeing is a plea for the Council to continue to be proactive to ensure protection of our renowned aquifers from contamination.

Do you have any other comments?

The Board notes with interest that the Selwyn District Council (SDC) operates an Asset Management Plan based on Five Waters, these being: water, wastewater, storm water, land drainage and water races.

The Board and the Council has been represented on the SDC’s Water Race Subcommittee for many years and the importance of the Selwyn/Paparua Water Race Networks in terms of its value to Christchurch, is noted and acknowledged.

Some of the recognised key benefits of the network include flow augmentation for the Halswell, Heathcote and Avon headwater catchments and tributaries, natural flora and fauna amenity values, and the ready access to the race network for firefighting.7

Mike Mora
Chairperson
Waipuna/Halswell-Hornby-Riccarton Community Board

10 July 2019

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7 Refer Appendix Five - Paparua Water Race Network Map [www.selwyn.govt.nz](http://www.selwyn.govt.nz)
Appendix One – Excerpts taken from Christchurch City Council Decisions

(CNCL/2018/00319, 13 December 2018)

3. Advise Environment Canterbury that the Council remains totally committed to the long term security of the city’s drinking water supply.

4. Agree that the Council will make a submission to any proposed change to the Canterbury Land and Water Management Plan outlining the Council’s support for measures to reduce the likelihood of nitrates entering the aquifers that supply Christchurch with its water.

(CNCL/2019/00065, 11 April 2019)

2. Invite the Minister for the Environment, Hon David Parker for a discussion on water issues as a follow up to the Water Forum discussions held on 15 February 2019.

3. Write to the Minister for the Environment, Hon David Parker to request that work on the National Environmental Standard for Sources of Human Drinking Water be hastened and broadened to include both the quality and quantity of drinking water, particularly for groundwater resources.

4. Continue to engage with Environment Canterbury Councillors on an urgent plan change to a more clearly defined groundwater allocation regime for Christchurch West-Melton as soon as possible.

(CNCL/2019/00065, 11 April 2019)

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3. Write to the Minister for the Environment, Hon David Parker to request that work on the National Environmental Standard for Sources of Human Drinking Water be hastened and broadened to include both the quality and quantity of drinking water, particularly for groundwater resources.

(CNCL/2019/00099, 23 May 2019)

2. Request that the Working Group make clear that the strategy addresses the key priorities below:

   a. A clear objective of our water strategy be to maintain our water free form chlorination

   b. Maintaining control of three waters be an integral part of the City Council structure and that the Council will oppose any removal of those functions from the City Council.

   c. The protection from pollutants and especially the leaching of nitrates under the Waimakariri and that our objective be to ensure that the nitrate level not be allowed to increase above 0.4mg/L.

(CNCL/2019/00118, 13 June 2019)

4. Request staff provide advice on the nitrate incursion issue as part of the Water Supply Strategic Plan 2019-29.

Trim: 19/819100
Appendix Two – Photographs and Diagrams

Murphys Road – Land Drainage Swale

Quaifes Drain Number 1 at Murphys Road/Quaifes Road intersection

Planned Hibiscus Coast busway station - Auckland Transport’s Northern Busway Extension

Trim: 19/819100
Appendix Three – Managing the supply of and demand for drinking water
(Source - Office of the Auditor General Publication Kapiti District Council)

Kāpiti Coast District Council found that alternative water supplies (such as grey water and rain water) reduced the drinking water used by residential consumers by about 30 per cent.

Alternative supplies also have a role in increasing community resilience when an emergency affects usual drinking water supply.

Of all ratepayers in the district, 75 per cent pay less for water than they would if the Council had stayed with its previous approach of charging for water supply. KCDC estimates that its approach has deferred the need for a new dam by about 40 years.

Peak daily water use is what drives the need for capacity upgrades in the system supplying the drinking water. Peak daily water use decreased by about 25% in the two years after universal metering was put in place.

- About 20 per cent was saved by fixing leaks on private property and lateral pipes, which surprised the Council because it had assumed that leaks were on other parts of the network. The Council now has a proactive laterals renewal programme.
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### CHRISTCHURCH CITY COUNCIL

**Te Wai Ora o Tāne Draft Integrated Water Strategy**

*Received via Have Your Say - Submissions close Sunday, 21 July 2019*

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<td>Name of Organisation:</td>
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<td>Would you like to attend the hearings for this consultation?</td>
<td>Yes</td>
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**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**

- **Comments:**
  - Agree

**Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?**

- **Comments:**
  - Agree

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**

- **Comments:**
  - Agree
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DRAFT

Spreydon-Cashmere Community Board

Submission on the TE WAI ORA O TANE - DRAFT INTEGRATED WATER STRATEGY

1. INTRODUCTION

1.1 The Spreydon-Cashmere Community Board ("the Board") appreciates the opportunity to submit on the Te Wai Ora O Tane - draft Integrated Water Strategy ("the Strategy").

1.2 The Board would like to speak to its submission.

2. SUBMISSION

2.1 The Board is extremely supportive of the adoption of a strategy that provides direction and guides decision-making for the integrated management of water resources.

2.2 The Board applauds the vision of TE WAI ORA O TANE – WATER FOR LIFE.

2.3 The Board supports the eleven key strategic issues identified in the strategy.

2.4 The Board area and its proximity to the Opawhao Heathcote River gives the Board an added appreciation for that surface water body in particular and an insight into the threats to the quality of its water and the ecosystems it sustains.

2.5 The Board is supportive of the recognition given throughout the document of the value of education to develop awareness among the public of the multiple values attributed to water and how these can be affected by individual and collective actions. It suggests consideration of adoption of more innovative techniques for engagement. For example the Board regularly receives presentations from staff including power point presentations etc. that summarise and clarify proposals; it could be helpful for similar presentations to be made publicly available as part of the consultation process and beyond this could be online and available in Libraries.

2.6 The Board would like to see Goal 1 include a statement on the promotion of conservation of water to sustain the quantity and quality of water in aquifers.

2.7 The Board considers there would be value in a statement being included in Goal 2 on seeking to influence central Government regulation of matters affecting water quality and ecosystems such as the use of copper brake pads, the types of acceptable roofing etc. with the aim of avoiding the degradation of natural water. It also suggests inclusion of a statement promoting the conservation of water to sustain the quantity and quality of water in aquifers.
2.8 The Board would also like to see Goal 2 include a statement encouraging authorities to work together to ensure the quality of water in all forms and wherever it is.

2.9 The Board would like to see the second bullet point under Goal 3 amended to read “prioritising development of an adaptive response……”

2.10 In terms of Objective 1 the Board supports the need for a “step change” in awareness of the public about our water resources and regards it as important that that includes increasing knowledge on the final destination of contaminants. Advocacy programmes must make it generally known for example that litter and other material going through a storm water drain may end up in a natural waterway.

2.11 The Board notes the poor state of urban waterways is identified as an issue that needs to be addressed and that Objective 3 is to enhance the ecological, cultural and natural values of waterways in the Christchurch urban area. In terms of the measures directed at increasing sediment control shown at 3, Page 25 of the strategy the Board considers that in addition there needs to be conditions on subdivision consents particularly those in hill suburbs that require steps to be taken to ensure that all storm water runoff is retained and treated within the area of the development.

2.12 Objective 4 to improve the water quality of surface water to protect ecosystem health and provide for contact recreation, food gathering and cultural values recognises the need for waterway vegetation management. The steps identified at 4, Page 25 include adjusting vegetation removal practices to take into account the ecological values of waterways. The Board would like to see it spelt out here that the Council’s decision to move away from the use of glyphosate to control weeds and to use other methods means that the level of control may not be what it was formerly.

2.13 In addition the Board considers that the steps identified at 4, Page 25 for adjusting vegetation removal practices should recognise that invasive weeds are spreading through local waterways competing with natural species and changing the ecological balance. The benefit of eradicating weeds and preventing their spread through filling riparian gaps by planting dense competitive native plants as well as reducing mowing and cutting of margins to prevent active spread of seeds needs to be identified.

2.14 The Board is supportive of objectives 6 and 7 directed at understanding flood risk and managing and adapting to the effects of flooding and particularly supports the development of a risk based approach to managing the effects of flooding. The Board is familiar with and commends the work being done under the land Drainage Recovery Programme and various other Council programmes to address flood management and mitigation at a local level. The Board further appreciates the need identified in the strategy (Page 29) for people to be informed so that they can understand and accept the level of flood risk in Christchurch and considers that this requires that there be more emphasis put on advice being provided to landowners on flooding and mitigation options (last point under 4, Page 30).
2.15 With regard to Objectives 9 and 10 directed at protecting groundwater and improving understanding of the aquifer system the Board acknowledges that these are vital for safe drinking water for the city. The Board is concerned at indications of rising nitrate levels in groundwater and the risk this poses for Christchurch’s drinking water supply and would therefore support adoption of a precautionary level for nitrates in the drinking water standard.

3. SUMMARY
The Board supports the Strategy as set out in the consultation documents.

______________________________
Karolin Potter,
Chairperson, Spreydon-Cashmere Community Board.
### CHRISTCHURCH CITY COUNCIL

**Te Wai Ora o Tāne Draft Integrated Water Strategy**

*Received via Have Your Say - Submissions close Sunday, 21 July 2019*

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<th>Brad Thomson</th>
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<tr>
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Comments:

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Comments:

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<td>Any other comments:</td>
<td>I have just gotten feedback on the draft from Ngāti Wheke regarding the inclusion of the Whaka Ora Healthy Harbour Plan. Is there a way this can be included in the strategy as other policy documents and plans have been?</td>
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**CHRISTCHURCH CITY COUNCIL**  
**Te Wai Ora o Tāne Draft Integrated Water Strategy**  
- Received via Have Your Say -  
*Submissions close Sunday, 21 July 2019*

| Full Name: | David Hawke |
| Submitted Date: | 7/15/2019 4:53:30 PM |
| Name of Organisation: |  |
| Role in Organisation and No. of people represented: |  |
| Would you like to attend the hearings for this consultation? | Yes |
| Attachments: | Yes |

**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**  
Comments:  
Agree  
See attached

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See attached |
| Overall, do you support the direction of the Draft Integrated Water Strategy? | Yes              |
| Any other comments:                                                      | See attached     |
Draft Integrated Water Strategy consultation July 2019

Submitter: David Hawke

Standing: Although I am Secretary of Halswell Residents Association (Inc.), this is a submission on my own behalf. In my professional life, I am an environmental chemist specialising in nutrients and trace elements.

Submission format: The following format is based on the questions in the feedback form. Most of the focus of the Submission is on the “key issues facing management” (Question 2 in the feedback form).

Response to Question 1: VISION AND GUIDING PRINCIPLES

- Change “Maintain the integrity of freshwater ecosystems” to “Maintain the integrity and indigenous biodiversity of freshwater ecosystems”.
  - Rationale: a freshwater ecosystem can have “integrity” even when severely impacted, for example by sediment inflow or by invasive species. Including “indigenous biodiversity” clarifies the intention of the statement from the Draft Strategy.
  - The proposed change would make the Vision more compatible with the Draft Strategy’s Goal 2 Water quality and ecosystems are protected and enhanced, and Objectives 3 & 4 Enhancement of ecological, cultural and natural values and water quality improvement.

- Add: “Progressively restore sections of freshwaters to a more indigenous state”.
  - Rationale: the freshwaters we see now are highly degraded from post-colonial times, let alone pre-human times. Without a restoration agenda, we will inevitably suffer from “shifting baseline syndrome” whereby each generation sees what it remembers in its youth as the unaffected state. (If you’re not familiar, search <Shifting Baseline Syndrome> on Google Scholar.)
  - The proposed addition would make the Vision more compatible with the Draft Strategy’s Goal 2 Water quality and ecosystems are protected and enhanced, and Objectives 3 & 4 Enhancement of ecological, cultural and natural values and water quality improvement.
Response to Question 2: KEY ISSUES FACING MANAGEMENT

1. Different perceptions of the ‘value’ of the waters
   - Something to bear in mind is that Ngai Tahu (and its antecedents) occupied the entire Canterbury landscape (and beyond), managing water use and water quality in a holistic way as part of the wider landscape.
   - The Strategy needs to include this perspective.

2. Poor state of waterways
   - The baseline for assessing water and waterway quality needs to be clearly stated; a good starting point might be 1840, although even this ignores the profound environmental change that came with Polynesian settlement in the 1300s.
   - In our area, we have heard stories of a kakahi (freshwater mussel) midden on the banks of the Halswell River near Early Valley Road, and (more recently) abundant koura (freshwater crayfish) in the drain alongside Quaifes Road. Land drainage and agricultural runoff likely destroyed the kakahi many years ago, but poorly implemented and enforced subdivision consents have destroyed the koura population in the last 10 years.
   - I find it incredibly frustrating that (as in many other cases) City Council writes nice strategies but, on the ground, does nothing as the situation degrades around us.

3. Vulnerability of Christchurch’s groundwater source to contamination
   - No particular comment, except that hydrologists and soil scientists have known for decades the inevitability of groundwater contamination following agricultural intensification but with no effective action by any of the local councils.

4. Wastewater overflows and effects on surface water
   - No particular comment

5. Treated wastewater discharges into Akaroa Harbour
   - No particular comment

6. Stormwater discharges and effects on surface water
• Particular examples of poor quality stormwater discharge sources under the control of local
councils include:
  o Oil leaks onto the roadway from poorly maintained buses;
  o Poorly-controlled runoff from subdivisions under development. This partly reflects an
    unwillingness on the part of City Council to effectively police existing resource consents;
  o Inappropriate construction materials, such as copper roofing.
• Other examples under the control of ratepayers and businesses include:
  o Garden leachates (nutrients, toxins)
  o Cleaning products from car washing
  o Domestic wastes incorrectly disposed of
  o Road run-off

7. Flooding and flood management

• This is a major issue in the Halswell area, both as a locality potentially affected by flooding,
  and a source of floodwaters that affect other areas down-river.
• The Draft Strategy needs to acknowledge that hydrologists’ storm event frequency models
  assume that the future will simply be a re-run of the past, whereas climate change modelling
  predicts a greater frequency of more extreme events.

8. Responding/adapting to the anticipated effects of sea-level rise

• No particular comment

9. Long-term availability of water for water supply

• We have previously argued, e.g. in the consultations for Plan Change 60 and the
  Replacement District Plan, for rainwater harvesting to be included in new subdivisions. Rainwater
  harvesting was also an important theme in the post-earthquake “Share an idea” consultation.
• If rainwater harvesting were to be encouraged and taken up across the city, there would be
  a substantial decrease in demand for water.
• Since rainwater harvesting is not part of the District Plan, its uptake has been minimal. We
  propose that the Draft Strategy include reference to measures that will increase uptake. These could
  include rebates on subdivision development contributions for effective rainwater harvesting
  schemes, ratepayer-subsidised retrofitting, or rates remissions for retrofitting.
10. Long-term sustainable wastewater treatment and disposal
   • No particular comment

11. Infrastructure efficiency and resilience
   • No particular comment

Response to Question 3: GOALS & OBJECTIVES
   • Goal 2 Water quality and ecosystems are protected and enhanced needs to recognise the amount of degradation that has occurred post-1840 (let alone post-human settlement). This issue is highlighted in the previous section.
   • I recommend that the goal be changed to Water quality and ecosystems are protected and restored.

Response to Question 4: ACHIEVING THE AIM AND VISION
   • Integrating the Strategy into the District Plan and other regional planning documents is ignored, and must be remedied by providing a pathway to legally binding implementation.
     o Reference to the various plans and other documents is made in Section 1.6 (page 4).
     o Planning decisions, such as whether to permit urban development or agricultural intensification in sensitive areas, ultimately require a solid legal foundation. Without such a foundation, a developer or farmer can simply challenge an unfavourable decision through the legal system — and likely win.
     o The Draft Strategy provides no mechanism or pathway for including its priorities into the planning documents that provide the legal framework for decisions affecting the various categorisations.
     o Unless such a mechanism is included, the final Strategy will have a negligible effect on decision-making. We already see this in the Urban Development Strategy, which could, if fully applied, have achieved many of the objectives of the Draft Integrated Water Strategy.
Response to Question 5: THE OVERALL DIRECTION OF THE DRAFT STRATEGY

- Generally agree, but the Draft Strategy reads like many other City Council strategies that read well but have little practical importance because they lack a road map to implementation in a legally binding way.
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Comments:

Overall, do you support the direction of the Draft Integrated Water Strategy?

Any other comments:

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5.3 Vulnerability of Christchurch’s groundwater source to contamination - the Board agree with concerns about nitrate pollution.

5.8 Flooding and flood management - the key issues section note that flood management are also ‘clearly linked’ to the issue of the effects of sea level rise and other factors. The Board would appreciate examples of that clear linking and suggests a rewording that ‘potentially’ sea level rise will pose a risk. This is consistent with the use of potential in the Introduction section (page 2).

With flood management, effective and fit for purpose existing drainage must be prioritised so an accurate assessment of flood management can be considered. The statement that sea level rise ‘may be greater than currently forecast’ needs to have the wording ‘or less’ added after greater.

5.8 Climate change and sea level rise adaptation. With regards to the comment on the prevention of floodwaters soaking into the soil, the Board notes that non-removal of the fine silts generated from liquefaction contribute to the impermeable nature of some soils.

In item 3 mention is made of river weed control to improve flows. Relating to this, the Board notes that some land drainage infrastructure is not working to remove flooding from the residential areas. Examples can be found in Avondale where residents report vulnerability to flooding is coming from the river and not draining back to the river. The same is true for parts of Burwood. Part of these issues is the land including the Residential Red Zone has slumped due to the high level of liquefaction that discharged in the four main Canterbury earthquakes.

Other non-coastal areas are also suffering flooding - Halswell Basin, Cranford Basin Flockton Basin etc. This includes the Residential Red Zone either side of Pages Road between Anzac Drive and the Pages Road bridge. These areas lie flooded for long periods of time, potentially creating community health issues.

The Board’s view is that these drains need to be functioning to discharge water into the river - not high tide flooding the residential and Residential Re Zones.

In relation to climate change, the Board notes a recent remit by Local Government New Zealand (LGNZ) that called on the Government to include local government representation (as determined by local government) at all levels of policy development, technical risk and resilience assessment, and data acquisition on climate change response policies - with an emphasis on climate adaptation; policy; legal; planning; and financial compensation regimes.

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5.10 Long term sustainable wastewater treatment and disposal. The Board suggests that the Council investigate ultra-violet treatment systems as a long term goal, which would enable a treatment station to be positioned away for the coast and assessed for waste for horticultural purposes.

3. Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? (See sections 6 and 7 of the draft strategy)

The Board agrees with the stated goals however, please reference back to our opening statement. Also, there needs to be an understanding of how the social, well-being and health of communities are impacted so this needs to be an umbrella overarching all the goals or a goal in itself. As this then relates to the Place-making meaning mentioned in our item1.

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SUBMISSION TO: Christchurch City Council

ON: Te Wai Ora o Tāne Draft Integrated Water Strategy

BY: Coastal-Burwood Community Board

CONTACT: Linda Stewart
Chairperson Coastal-Burwood Community Board Submissions Committee

1. INTRODUCTION

The Coastal-Burwood Community Board (the “Board”) appreciates the opportunity to provide a submission on the Te Wai Ora o Tāne Draft Integrated Water Strategy.

The Board wishes to take the opportunity to speak to the hearings panel about this submission.

2. SUBMISSION

By way of an opening statement, the Board’s overarching lenses is that repair of earthquake damage is of prime importance when dealing with surface flooding and coastal inundation. The reason for this is recognition of the effects on community well-being and equity.

Repair/remediation of Earthquake damage is fundamental before looking at adaptation to, for example, flooding inundation. Differentiation between sea level rise, climate change and earthquake damaged areas requires statements of clarification. Earthquake damaged areas that have become vulnerable to what is being described as “premature sea level rise” due to the Ōtākaro Avon River floor rising 1 metre in many places and estuary floor rising due to sand boils and earthquake post-February 2011 earthquake event and consequential land slumping in residential areas of Coastal and Burwood Wards resulted. Further man-made exacerbation caused by the demolition process of properties scouring the land level created new flood areas for residential areas in close proximity. (Examples in South Shore river fringe suburbs of Burwood, Avondale and Dallington) These are all earthquake-damaged consequences that fast track the predicted potential sea level rise and need remediation processes before potential sea level rise affects in eastern areas.

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---

Linda Stewart  
Chairperson, Coastal-Burwood Community Board Submissions Committee  
**COASTAL-BURWOOD COMMUNITY BOARD**  
19 July 2019
Submissions on the
Te Wai Ora o Tāne Draft Integrated
Water Strategy

Volume 2

No Longer Wish to be Heard
Submissions
CHRISTCHURCH CITY COUNCIL

Te Wai Ora o Tāne Draft Integrated Water Strategy

SUBMITTERS WHO NO LONGER WISH TO BE HEARD

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<th>Submission Number</th>
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<tr>
<td>26227</td>
<td>Kerry Mayes</td>
<td>210</td>
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<tr>
<td>26231</td>
<td>Beverley Broad, Charles and Beverley L Broad Family Trusts</td>
<td>212</td>
</tr>
<tr>
<td>26454</td>
<td>Pat Dwyer, New Zealand Steel Ltd</td>
<td>214</td>
</tr>
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</table>
| Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments: | disagree  
Touchstone is not a guiding principle - it cannot assist in decision making; Place-making seems to be several principles that are roughly grouped but not adequately defined; Flood management is not a guiding principle, it is one area of the subject matter; International Best Practice is a poor guiding principle. It is a reasonable tactical approach to meeting the strategic objectives but not a guiding principle (that this strategy is well below even national best practice is disappointing). Efficiency is also poorly expressed as a guiding principle. A guiding principle along the lines of using resources in the most economically effective manner would be better. |
|---|---|
| Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? Comments: | disagree  
The description of the issue that there are different perceptions of 'value' is ambiguous and poorly defined. It is unclear both what the actual issue is and why it is important. As the central issue in the strategy, this is extremely poor. In particular you need to define the term "value" in this strategy! Infrastructure Efficiency and Resilience is a "how" not a "what" so it doesn't belong in the strategic issues section. |
| Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? Comments: | disagree  
Goal 1 is vague and ambiguous. Again, the word value has not been defined. Maybe this goal is another "how" rather than "why"? Are you wanting to create a consistent value framework for water? Certainly possible. The suggested measurements for the objectives do not relate to the vision. Measurement must be related back to the value framework or it will give inappropriate signals. |
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<td>The &quot;proactive risk-based asset renewals&quot; approach suggested looks to be the bottom up approach proving too difficult for water engineers currently. This is at odds with international best practice which is to use a top-down approach to optimal asset replacement. The key advantage of the top down optimisation under uncertainty approach is that it starts by making the best decisions based on the current state of knowledge / uncertainty and identifies the value of further data gathering. Also, this is where the strategy loses its integration. Unless the decision making framework for the three waters is integrated then the strategy is not integrated.</td>
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**CHRISTCHURCH CITY COUNCIL**

**Te Wai Ora o Tāne Draft Integrated Water Strategy**

*Received via Have Your Say -*

*Submissions close Sunday, 21 July 2019*

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| Full Name: | Pat Dwyer |
| Submitted Date: | 7/23/2019 9:56:14 AM |
| Name of Organisation: | New Zealand Steel |
| Role in Organisation and No. of people represented: | Technical Market Manager |
| Would you like to attend the hearings for this consultation? | Yes |
| Attachments: | Yes |

| Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments: | This submission on the Draft Integrated Water Strategy is made on behalf of New Zealand Steel Limited (NZ Steel). While the Draft Strategy does not specifically refer to NZ Steel's operations or products, we maintain an interest in how the Council intends to manage metals in building products as they relate to water quality. NZ Steel submitted on the CCC Stormwater Network Discharge Consent, and presented at the hearing, regarding the potential effect on those provisions on its products. NZ Steel remains concerned that it is unclear how the granted consent conditions regarding zinc management may affect the use of its products. The consent also contains an uncertain process for stakeholders such as NZ Steel to be involved in developing catchment management plans that could influence how its products are used. NZ Steel is a key player in the Christchurch regional economy as a valuable supplier to markets such as construction, manufacturing and infrastructure. NZ Steel is committed to the future economic success of the Canterbury region and New Zealand, the sustainable development of the steel manufacturing industry, regulatory compliance and the protection and enhancement of the environment. The Company has actively worked to undertake good quality research into the effects of its products on water quality and has introduced innovations into the market that are specifically designed to reduce environmental effects. NZ Steel's building products currently include well established New Zealand brands ZINCALUME® (a zinc aluminium alloy coated product), COLORSTEEL® (pre-painted product on a ZINCALUME® substrate) and GALVSTEEL® (galvanised steel). In addition, a wide range of other products are produced by NZ Steel, such as hot rolled coil, cold rolled coil, pipe, heavy and light plate/sheet and structural beams, for downstream manufacturing into a range of industrial and agricultural products. The ZINCALUME® steel product was launched in New Zealand in 1994 to replace galvanised steel as cladding material for residential, commercial and industrial buildings. The principal advantage of ZINCALUME® is its longer lifetime, with the concurrent benefit of significantly reduce zinc discharge. NZ Steel has been working closely with Auckland Council and the former Auckland Regional Council for more than 15 years on the specific topic of water quality. The Company has been actively monitoring statutory planning provisions and processes, water quality standards and guidelines and other relevant advancements, throughout New Zealand, for many years. It is for this reason the NZ Steel is interested in the Draft Integrated Water Strategy ('the Draft Strategy'). |

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**Attachment B**

**Item 5**
| Item No.: 5 | Page 215 |

**Do you agree or disagree with the key issues facing management of the ‘three waters’ in Christchurch?**

**Comments:**

In particular, the Company is interested in how the Draft Strategy may be implemented in other Council plans, strategies and associated statutory processes. Of particular interest is how guideline documents (such as the Canadian Environmental Quality Guidelines or the ANZECC Water Quality Guidelines) are used by Councils across the country in the management of environmental effects. NZ Steel has been involved in other statutory processes in relation to the approach some Councils have taken to managing metals in relation to water quality, including instances where guidelines have been proposed to be used in a manner more akin to rules. These have also been some instances where Councils have sought to manage the use of some types of metal building products which has had the potential to lead to unclear policy and rules. The Draft Strategy sets out high level guidance around improving water quality and stormwater discharge standards. Sections 5.6 and 7.3 recommend the enhancement of water quality, including through initiatives such as ‘source control’. NZ Steel is supportive of this general direction however seeks that, should more specific regulations be proposed or developed to achieve these outcomes, NZ Steel is involved and provided with the opportunity to be consulted with on any such regulations.

| Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? |

**Comments:**

Of particular interest to NZ Steel are sections 7.3 (‘Development of Stormwater Discharge Standards’), which sets strategies for improving stormwater discharges (including the potential for setting maximum concentrations for dissolved copper, lead and zinc in sediment and surface water), as well as section 10, which states that implementation plans will be developed following the adoption of this strategy. As noted above, NZ Steel seek to be consulted on any such proposals and would welcome the opportunity to discuss these with Christchurch City Council in due course.

| Overall, do you support the direction of the Draft Integrated Water Strategy? |

| Any other comments: |

Page 3 of the Draft Strategy states that public consultation and hearings will take place as part of the development of a final Integrated Water Strategy. We support Christchurch City Council’s intent to engage with public and stakeholders and NZ Steel confirm our wish to be heard at any hearing relating to the finalisation of the Draft Strategy. NZ Steel would also be happy to meet with Christchurch City Council at any time to discuss any specifics relating to this submission and look forward to continuing to engage with the Council through the ongoing Integrated Water Strategy process.
July 19, 2019

Christchurch City Council
Public Information and Participation Unit

To: Christchurch City Council
Submission on: Te Wai Ora o Tāne – Draft Integrated Water Strategy
Name of submitter: New Zealand Steel Limited (NZ Steel)
Address:

Contact Person: Pat Dwyer

This submission on the Draft Integrated Water Strategy is made on behalf of New Zealand Steel Limited (NZ Steel). While the Draft Strategy does not specifically refer to NZ Steel’s operations or products, we maintain an interest in how the Council intends to manage metals in building products as they relate to water quality.

NZ Steel submitted on the CCC Stormwater Network Discharge Consent, and presented at the hearing, regarding the potential effect of those provisions on its products. NZ Steel remains concerned that it is unclear how the granted consent conditions regarding zinc management may affect the use of its products. The consent also contains an uncertain process for stakeholders such as NZ Steel to be involved in developing catchment management plans that could influence how its products are used.

NZ Steel is a key player in the Christchurch regional economy as a valuable supplier to markets such as construction, manufacturing and infrastructure. NZ Steel is committed to the future economic success of the Canterbury region and New Zealand, the sustainable development of the steel manufacturing industry, regulatory compliance and the protection and enhancement of the environment. The Company has actively worked to undertake good quality research into the effects of its products on water quality and has introduced innovations into the market that are specifically designed to reduce environmental effects.

NZ Steel’s building products currently include well established New Zealand brands ZINCALUME® (a zinc aluminium alloy coated product), COLORSTEEL® (pre-painted product on a ZINCALUME® substrate) and GALVSTEEL® (galvanised steel). In addition, a wide range of other products are
produced by NZ Steel, such as hot rolled coil, cold rolled coil, pipe, heavy and light plate/sheet and structural beams, for downstream manufacturing into a range of industrial and agricultural products.

The ZINCALUME® steel product was launched in New Zealand in 1994 to replace galvanised steel as cladding material for residential, commercial and industrial buildings. The principal advantage of ZINCALUME® is its longer lifetime, with the concurrent benefit of significantly reduced zinc discharge.

NZ Steel has been working closely with Auckland Council and the former Auckland Regional Council for more than 15 years on the specific topic of water quality. The Company has been actively monitoring statutory planning provisions and processes, water quality standards and guidelines and other relevant advancements, throughout New Zealand, for many years. It is for this reason that NZ Steel is interested in the Draft Integrated Water Strategy (‘the Draft Strategy’).

In particular, the Company is interested in how the Draft Strategy may be implemented in other Council plans, strategies and associated statutory processes. Of particular interest is how guideline documents (such as the Canadian Environmental Quality Guidelines or the ANZECC Water Quality Guidelines) are used by Councils across the country in the management of environmental effects. NZ Steel has been involved in other statutory processes in relation to the approach some Councils have taken to managing metals in relation to water quality, including instances where guidelines have been proposed to be used in a manner more akin to rules. There have also been some instances where Councils have sought to manage the use of some types of metal building products which has had the potential to lead to unclear policy and rules.

The Draft Strategy sets out high level guidance around improving water quality and stormwater discharge standards. Sections such as 5.6 and 7.3 recommend the enhancement of water quality, including through initiatives such as ‘source control’. NZ Steel is supportive of this general direction however seeks that, should more specific regulations be proposed or developed to achieve these outcomes, NZ Steel is involved and provided with the opportunity to be consulted with on any such regulations.

Of particular interest to NZ Steel are sections 7.3 (Point 8 ‘Development of Stormwater Discharge Standards’), which sets strategies for improving stormwater discharges (including the potential for setting maximum concentrations for dissolved copper, lead and zinc in sediment and surface water), as well as section 10, which states that implementation plans will be developed following the adoption of this strategy. As noted above, NZ Steel seek to be consulted on any such proposals and would welcome the opportunity to discuss these with Christchurch City Council in due course.

Page 3 of the Draft Strategy states that public consultation and hearings will take place as part of the development of a final Integrated Water Strategy. We support Christchurch City Council’s intent to engage with public and stakeholders and NZ Steel confirm our wish to be heard at any hearing relating to the finalisation of the Draft Strategy.

NZ Steel would also be happy to meet with Christchurch City Council at any time to discuss any specifics relating to this submission and look forward to continuing to engage with the Council through the ongoing Integrated Water Strategy process.
Item No.: 5

Title and address for service of person making submission:
New Zealand Steel Limited
Attention: Pat Dwyer
Technical Market Manager
Address:

Email:
DDI:
Submissions on the
Te Wai Ora o Tāne Draft Integrated
Water Strategy

Volume 3

Not Heard Submissions
CHRISTCHURCH CITY COUNCIL
Te Wai Ora o Tāne Draft Integrated Water Strategy

SUBMITTERS WHO DO NOT WISH TO BE HEARD

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<thead>
<tr>
<th>Submission Number</th>
<th>Submitter</th>
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<tbody>
<tr>
<td>25589</td>
<td>Patricia Scarlett</td>
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<tr>
<td>25591</td>
<td>Ralph Roden, Cashmere Residents’ Association</td>
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<tr>
<td>25602</td>
<td>Robyn Hewland</td>
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<td>25795</td>
<td>Prue Edmond</td>
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<td>25857</td>
<td>Andrew McKay</td>
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<td>Patricia Blake</td>
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<td>25930</td>
<td>Marilyn Vicary</td>
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<td>Rob Kara</td>
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<td>Marnie Kent</td>
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<td>Anna McClure</td>
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<td>Mike Currie</td>
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<td>Christine McCormack</td>
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<td>Ramzi Addison</td>
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<td>26366</td>
<td>Chris Tyler</td>
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<td>26370</td>
<td>Gareth Taylor, Lyttelton Port Company Ltd</td>
<td>256</td>
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<td>26390</td>
<td>Annette and Michael Hamblett</td>
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<td>26457</td>
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<td>Simon Britten</td>
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**CHRISTCHURCH CITY COUNCIL**

Te Wai Ora o Tāne Draft Integrated Water Strategy

- Received via Have Your Say -

Submissions close Sunday, 21 July 2019

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<td>Would you like to attend the hearings for this consultation?</td>
<td>No</td>
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<td>Attachments:</td>
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**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**

- **Comments:**
  - disagree
  - I want our water system to be left alone. Now all the wells are above ground just leave them alone. No more expenses to be spent on the system and ultimately I am sure prices would be added to the ratepayers if this went ahead

**Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?**

- **Comments:**
  - disagree

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**

- **Comments:**
  - disagree
<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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<td>Do you agree or disagree with the recommendations for achieving the</td>
<td>disagree</td>
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<td>aim and vision for managing the ‘three waters’ in Christchurch?</td>
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<tr>
<td>Comments:</td>
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<td>Overall, do you support the direction of the Draft Integrated Water</td>
<td>No</td>
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<td>Strategy?</td>
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<td>Any other comments:</td>
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## CHRISTCHURCH CITY COUNCIL
Te Wai Ora o Ťane Draft Integrated Water Strategy

- Received via Have Your Say -

**Submission close Sunday, 21 July 2019**

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<th>Full Name:</th>
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<tr>
<td>Name of Organisation:</td>
<td>Cashmere Residents' Association</td>
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<td>Role in Organisation and No. of people represented:</td>
<td>Member and committee member for the last 20 years</td>
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<td>Would you like to attend the hearings for this consultation?</td>
<td>No</td>
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Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments:

<table>
<thead>
<tr>
<th></th>
<th>disagree</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Lots of platitudes towards the Maori and superfluous flowery statements.</td>
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Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? Comments:

<table>
<thead>
<tr>
<th></th>
<th>disagree</th>
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<tbody>
<tr>
<td></td>
<td>You do not mention ECan's policy of supporting the dairy farmers who continue to pour nitrates into our groundwater aquifers.</td>
</tr>
</tbody>
</table>

Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? Comments:

<table>
<thead>
<tr>
<th></th>
<th>disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Still no mention of what ECan are allowing the dairy farmers to do to our aquifers.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>Do you agree or disagree with the recommendations for achieving the aim and vision for managing the ‘three waters’ in Christchurch? Comments:</td>
<td>disagree</td>
</tr>
<tr>
<td></td>
<td>Yes all very nice but still no mention of what ECan are allowing the dairy farmers to do to our aquifers.</td>
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<tr>
<td>Overall, do you support the direction of the Draft Integrated Water Strategy?</td>
<td>No</td>
</tr>
<tr>
<td>Any other comments:</td>
<td>You need to lobby the Government to stop ECan polluting our waters!!</td>
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Experts call for more data on nitrate levels in NZ drinking water, after study links it to cancer

Water ecologist Mike Joy says he wouldn’t drink water from bores in rural Canterbury. Source: Seven Sharp

It is time to act on nitrate levels in drinking water so as not to put New Zealanders at risk. Canterbury medical officer of health Alistair Humphrey says.

His concerns come after a Danish study of 2.5 million people which found a correlation between levels of nitrate in drinking water and rates of colorectal cancer in a population.

Speaking on Morning Report, Dr Humphrey said it was important for New Zealand to replicate the study due to its comparatively higher rates of colorectal cancer and intensive dairy practices.

"We're not at that stage [emergency] right now but as I say, what we need to be doing is thinking decades in advance as to what risks we're facing.

"Let's not put our community at risk by exposing them to nitrates in their drinking water.

"We have the data, we should be doing the research to understand the risk to New Zealanders."

The levels of nitrate in New Zealand drinking water were likely the result of farming run off from between 10 and 20 years ago, he said.

"What we're seeing ... is potentially in an increase in our nitrates for the next 10 or 20 years hence despite the best efforts of farmers to mitigate the run off from their farms."

He said he would not be surprised if the World Health Organisation decreased the allowable maximum of nitrates in drinking water.

In Canterbury, polluting nitrates were on the rise and risk maps the regional council was relying on were out of date.

Forest and Bird said.

Using the council's own data, the environmental group created its own map, which it said showed an increasing number of private wells had nitrate levels above the safe standard for drinking water.

Forest and Bird freshwater advocate Annabeth Cohen said the last time the regional council, Environment Canterbury (ECan), updated its risk map for drinking water wells nearly 1.5 years ago. She said analysis done on test results since then showed an increase in the number of wells where it was unsafe to drink the water due to nitrate levels, in Hurunui, Ashburton and possibly Selwyn.

"Environmental and human health is at a crisis point.

"So the situation is dire and getting worse. And ECan's data shows that the risk to human and environmental health is increasing."

Forest and Bird said they had been unable to get full access to ECan's data, but what they had seen showed some wells that had been classified as safe now exceeded safe limits.

The council was not due to update its risk map until the end of this year, but Ms Cohen said this should be done immediately in order to reassure residents reliant on the wells.

"Updating the risk map is a start. The major focus though should be on turning this dire situation around. And that has to do with cutting cow numbers, reducing fertiliser use and and seriously curbing the use of irrigation in the area."

Mr Humphrey said the risk maps were used by midwives to inform new mothers if their drinking water had dangerously high nitrate levels that might cause the potentially fatal blue baby syndrome.

He would prefer to wait until the council released its risk map at the end of the year before unnecessarily alarming new mothers.

However, he agreed that nitrate levels across the region were increasing.

Even with new measures being introduced to restrict cow numbers, the benefits would take a long time to show up due to the 10 to 20-year lag time between when cow urine hit the ground and when it showed up as nitrates in drinking water.

This meant things were going to get a lot worse before they got better, Mr Humphrey said.

"We have now more than 1.3 million dairy cattle in Canterbury alone. It's one of the densest dairy agro industrial plants in the world," he said.

Mr Humphrey recently spoke to the authors of a Danish study showing a link between very low nitrate levels and colorectal cancer, and said they were keen to see the same study carried out here.

"We should be looking to do our own studies in New Zealand of nitrates and colorectal cancer. For two important reasons. One, we have high and increasing levels of nitrates in this country. And two, we have relatively high rates of colorectal cancer."

Some people were already having to install private nitrate removal systems and internationally there were entire communities having to do so at the cost of up to $2000 per person.

ECan groundwater science manager Carl Hanson said Forest and Bird's analysis was not as thorough as the one the council did, and it would not be until the end of the year before people could see if there was a heightened risk for private wells.

However, Mr Hanson said the overall trend did show increasing nitrate levels across the region.

"That is something that I'm afraid to say we expect to continue for a while yet. And it is the reason that we have spent on a lot of effort over the last number of years developing limits on discharges from farming and other land use activities."

In reference to the Danish study, Mr Hanson said the levels attributed to an increased risk of cancer were often naturally occurring in waterways.
CHRISTCHURCH CITY COUNCIL  
Te Wai Ora o Tāne Draft Integrated Water Strategy  
*Received via Have Your Say -  
Submissions close Sunday, 21 July 2019*

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Robyn Hewland</th>
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<td>Role in Organisation and No. of people represented:</td>
<td>1, so far, in 86 Apartments</td>
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<tr>
<td>Would you like to attend the hearings for this consultation?</td>
<td>No</td>
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**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**

Neither agree nor disagree

*Parkstone Apartments, for aged 75+, are one's home with paid entry for Licence to Occupy, and weekly fees. Our fees include rates, outside maintenance, Building Insurance, security alarm in own Apartment, hot water (gas), and a few social events. The weekly fees, now $160, can not increase by % more than when and same % of NZ Super increases. I am concerned that CCC or Bupa may request individual Apartment meters, and charge us extra, like they do for power. I would want water and waste charged to whole Village in their rates!*

**Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?**

Neither agree nor disagree

*I will discuss wider needs at next meeting of Illam Upper Riccarton Residents Committee, as I am a Member of that.*

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**

Neither agree nor disagree
<p>| Item 5 |
|------------------|---------------------------------|
| <strong>Do you agree or disagree with the recommendations for achieving the aim and vision for managing the ‘three waters’ in Christchurch?</strong> |
| Comments: | I am responding only from own interests as a Supergold retiree, needing to use Savings in addition to NZ Super that pays half of total needs. In ChCh, I heard that if a female lives to 80, they will live an average of another 12.7 years. If require individual apartment meters in Retirement Villages, costs will lead to earlier &quot;qualification&quot; for Govt subsidies. Water costs will also add to current $1400/week charges in some 24/7 Care Homes, and earlier need for subsidies. |
| <strong>Overall, do you support the direction of the Draft Integrated Water Strategy?</strong> |
| <strong>Any other comments:</strong> |</p>
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<tr>
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<th>Prue Edmond</th>
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<td>Agree</td>
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<td><strong>Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch?</strong></td>
<td>Agree</td>
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<tr>
<td>Comments:</td>
<td>Particularly Objective 9 No.s 4,5,7 It is vital that excavation and filling below groundwater level is RESTRICTED across Canterbury plains. Use of nitrates must be RESTRICTED across Canterbury plains.</td>
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| **Overall, do you support the direction of the Draft Integrated Water Strategy?** | Yes |

| **Any other comments:** | No one should be allowed to take water for commercial purposes in the Canterbury area. All consents should be withdrawn. |
| Item 5 |

**CHRISTCHURCH CITY COUNCIL**

Te Wai Ora o Tāne Draft Integrated Water Strategy

- Received via Have Your Say -

*Submissions close Sunday, 21 July 2019*

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<tr>
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<th>Andrew McKay</th>
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**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**

| Comments: | Agree |

Stupidist question ever. This is core infrastructure and your core role. For council to say how bad it is is to admit gross council failings and incompetence over decades. An integrated approach is core business or do you think the alternative of a fragment uncoordinated approach is acceptable? STUPID. Get on with it protecting what we have and improving it. No wastewater should go to sea, it is not a sewer. Nor should our rivers be treated as such. Ps, stop giving away money and stop stupid spending, focus on core infrastructure and rates increases limited to inflation. This city is becoming too expensive to live in.

**Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?**

| Comments: | Agree |

Once again, core council role. You stuffed it, you fix it. I am pissed I have paid rates for decades to have council waste the money while ignoring core infrastructure and allowing pollution to rivers and sea. Core role failed by council. Sack the incompetent CCC staff, tender all work with strict measurable standards of work, and ENFORCE those standards.

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**

<p>| Comments: | Agree |</p>
<table>
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<tr>
<td>Overall, do you support the direction of the Draft Integrated Water Strategy?</td>
<td>Yes</td>
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<tr>
<td>Any other comments:</td>
<td>Fuck me CCC, core role! If ECAN was competent you would have been forced to fix this years ago and not allowed to pollute rivers and sea, not allowed to have such leaky infrastructure. Incompetence and here you are voting to confirm you should being doing this role. What next, ask if you should manage rubbish disposal. Ps, the answer is not how you have been. Digging a hole is kicking the can to future generations to fix it. Sad you are just now developing a plan. Too many seat warmers at council with pet projects.</td>
</tr>
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CHRISTCHURCH CITY COUNCIL
Te Wai Ora o Tāne Draft Integrated Water Strategy

- Received via Have Your Say -

Submissions close Sunday, 21 July 2019

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<td>Would you like to attend the hearings for this consultation?:</td>
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Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments: disagree

- there is insufficient detail in 3 and 4 - they need to be in plain english so all ratepayers can understand
- however this documentation is too long and requires an executive summary - the average ratepayer does not have the time resource to read and comprehend the entire report - make it easy to submit please

Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? Comments: disagree

- no clear direction what three waters means - see above - make it easy for ratepayers to submit on this proposal - or is that the intent to receive few submissions ?

Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? Comments: disagree

- see 1
<table>
<thead>
<tr>
<th>Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch? Comments:</th>
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<tbody>
<tr>
<td>disagree</td>
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<tr>
<td>see above</td>
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<tr>
<td>Overall, do you support the direction of the Draft Integrated Water Strategy?</td>
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<td>No</td>
</tr>
<tr>
<td>Any other comments:</td>
</tr>
</tbody>
</table>
| Main requirements of ratepayers for our elected council in relation to the management of our water: -
- re-instate water quality to previous levels- no chlorine - people have become sick and have suffered detrimental health effects from chlorine - this is a cost to the taxpayer
- plan, plan, plan for the future to prevent a recurrence of a similar issue - maintenance of infrastructure is key
- much tougher penalties for discharge into waterways
- no water rates - with a proposed 10% increase in rates, the CCC needs to review internal structures for future savings -audit recommendations? The ratepayer cannot sustain such increases and the CCC cannot be guaranteed confidence of the ratepayer if this goes ahead - rates rebates for a few is an equitable solution
- listen to the people regarding water bottling - allowing this wholesale theft of our most precious resource is inexcusable and seriously denigrates the integrity of the CCC/Environment Canty - ratepayers needs must be the priority
- consider the needs of the people of ChCh/ratepayers at all costs
- plan, do check,act, review the strategy regularly - an internal process that is accountable to the ratepayers of ChCh -we do not expect budget over runs at all - act like a private entity and spend every dollar as if it is your own - be accountable

This submission has been submitted from a family of 4 - 3 full time working adults (2 of which have paid rates for over 40 years work) who are committed to protecting our resources for the use and enjoyment of Kiwis - not to be given away to off shore organisations - this includes protecting waterways for recreation/lakes for fishing - not for farmers to waste on irrigating their paddocks during a north' wester where the water is wasted on evaporation, nor on dairy farms that are polluting the aquafars and leeching nitrates into the soil, only to return to pollute our water - user pays for commercial use at an equitable rate that reflects the scarcity of this resource.
| Item 5
| --- |

**CHRISTCHURCH CITY COUNCIL**  
Te Wai Ora o Tāne Draft Integrated Water Strategy  
- Received via Have Your Say -  
*Submissions close Sunday, 21 July 2019*

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Marilyn Vicary</th>
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</thead>
<tbody>
<tr>
<td>Submitted Date:</td>
<td>6/27/2019 12:32:21 PM</td>
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<tr>
<td>Role in Organisation and No. of people represented:</td>
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<tr>
<td>Would you like to attend the hearings for this consultation?</td>
<td>No</td>
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<tr>
<td>Attachments:</td>
<td>No</td>
</tr>
</tbody>
</table>

| Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? | Agree |

| Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? | Neither agree nor disagree |

| Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? | disagree |

My huge concern is the lack of comment and/or plans for the problem that exists with the foreign ownership of the bottling plant of fresh water. I do not accept that any decision re this business was given by the Regional Council. The ChCh City Council in partnership with Ngai Tahu whom it is stated have a huge cultural interest in the preservation of all waters including potable should at the very least be seen to be pursuing this matter both locally and nationally. This non action is unacceptable considering the plans that the Council are putting forward. I realize that there are legal issues involved but this is no excuse for non action. This matter will not go away and will become more important for Christchurch and beyond if the weather continues to be hotter.
<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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</thead>
<tbody>
<tr>
<td>Do you agree or disagree with the recommendations for achieving the</td>
<td>Neither</td>
</tr>
<tr>
<td>aim and vision for managing the 'three waters' in Christchurch?</td>
<td>agree nor</td>
</tr>
<tr>
<td>Comments:</td>
<td>disagree</td>
</tr>
<tr>
<td>Overall, do you support the direction of the Draft Integrated Water</td>
<td></td>
</tr>
<tr>
<td>Strategy?</td>
<td></td>
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<tr>
<td>Any other comments:</td>
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<tr>
<td>Question</td>
<td>Answer</td>
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<tr>
<td>-------------------------------------------------------------------------</td>
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<tr>
<td>Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?</td>
<td>disagree</td>
</tr>
<tr>
<td>Comments:</td>
<td>I disagree with the vision and guiding principles, because it doesn't scale to include all resources or services available in the world, such as food, housing, healthcare, etc. Self-sustainability, is sustainability of all of the world's resources or services, as a single event or circumstance, not apparently separate resources or separate events. The vision should be: Resources for life. Valuing resources and resource services for people and the environment.</td>
</tr>
<tr>
<td>Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?</td>
<td>disagree</td>
</tr>
<tr>
<td>Comments:</td>
<td>I disagree, with these strategies, because the main issue, regarding the management of water or human resources, isn't being mentioned, in the draft. And that is, that water is a global human resource, that is being managed by all nation-states or private enterprises in the world. The strategy does not provide a platform for other nation-states or private enterprises to participate in the integrated water strategy. Water can be managed by all beings (human and non-human), provided that the right system was put in place. A system that can scale human requests, so that more than one service, can serve the request at a time.</td>
</tr>
<tr>
<td>Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?</td>
<td>disagree</td>
</tr>
<tr>
<td>Comments:</td>
<td>I disagree, with these strategies outlined, because its not self-sustainable. Nobody but the people from New Zealand can participate or benefit from this resource or request being put forward. We are a global nation of 9 billion people or services operating on this planet. Everybody needs an opportunity to not only serve the request, but to benefit from it.</td>
</tr>
</tbody>
</table>
### Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch?

**Comments:**

| disagree |

Water, is a global human resource, and must be managed by all humans or non-humans here on earth. The objectives outline in this strategy do not involve all stakeholders or beneficiaries, i.e. humankind, both humans and non-humans.

### Overall, do you support the direction of the Draft Integrated Water Strategy?

| No |

### Any other comments:

A global cooperative forum is necessary, to include all nation-states or private enterprises in the request or strategy you are putting forward. Right now, only a few people or stakeholders will benefit, Christchurch City Council, Ngai Tahu, Environment Canterbury etc.

A global cooperative forum ensures that all human beings (human or non-human) can benefit from this resource not just a few humans.
<table>
<thead>
<tr>
<th>Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Although I find the document broad (by design of course) which means that priority between goals is undefined and my support for that may differ.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
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<tr>
<th>Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?</th>
<th>Agree</th>
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<tbody>
<tr>
<td>Although I do not have the expertise to determine if any of these are actually necessary or sufficient. I cannot know if additional things should be added, but the ones here do seem to be a good swathe.</td>
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<td>Yes</td>
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<tr>
<td>Any other comments:</td>
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## CHRISTCHURCH CITY COUNCIL

**Te Wai Ora o Tāne Draft Integrated Water Strategy**

- Received via Have Your Say -

**Submissions close Sunday, 21 July 2019**

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Marnie Kent</th>
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<td>7/6/2019 7:35:08 AM</td>
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<td>Role in Organisation and No. of people represented:</td>
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<tr>
<td>Would you like to attend the hearings for this consultation?</td>
<td>No</td>
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<td>Attachments:</td>
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### Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments:

**Agree**

- Keep drinking water as pure as possible with NO additives.
- Look into homes recycling water where possible.
- Look into homes collecting rain water for all purposes.
- Install nets at drain outlets into waterways to collect debris.
- Plant up banks on waterways to help filter and oxygenate. Create aquatic breeding habitats.
- Look into homes installing biocycle systems.
- Look into home installing compostable toilets.
- Better management of industry by product and wastewater entering waterways. Do away with consents to discharge. Industry needs to clean up their act. Polluters pay hefty fines when caught, no more warnings. Get tough!!
- If you eat fish, then guess what the fish eat! It's time we clean up our act and say no more pollution.
- And please no more selling off water. It's a resource we need to protect for future needs. Future wars will be over water.

### Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? Comments:

**Agree**

### Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? Comments:

**Agree**
<table>
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<td>Any other comments:</td>
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**CHRISTCHURCH CITY COUNCIL**  
*Te Wai Ora o Tāne Draft Integrated Water Strategy*  
- Received via Have Your Say -  
*Submissions close Sunday, 21 July 2019*

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<thead>
<tr>
<th>Full Name:</th>
<th>Anna McClure</th>
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<td>Submitted Date:</td>
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</table>

**Do you agree or disagree with the vision and guiding principles for managing the ‘three waters’ (water supply, wastewater, and stormwater) in Christchurch?**  
**Comments:**  
Agree  
Thank you for the mahi putting the draft Te Wai Ora o Tane draft Integrated Water Strategy together for the people of and visitors to Ōtautahi Christchurch as well as the precious ecology and biodiversity of the area. Much has already been achieved to improve the infrastructure and water service as part of the post-earthquake recovery activities and this strategy reflects the importance of fresh water and the need for effective natural capital management for future generations.

**Do you agree or disagree with the key issues facing management of the ‘three waters’ in Christchurch?**  
**Comments:**  
Agree  
The issues that are most concerning to me are:  
5.3 - Contamination of our freshwater from land-based activities needs to be more closely monitored to protect the aquifer system. Nitrate contamination is dangerous for human health and degrades ecosystems. Until such time as evidence is available to the contrary, I recommend the acceptable level of nitrate needs to be set at the lowest precautionary limit until consequences are fully understood and it can be adequately managed.  
5.8 - Adaptation to climate change and the need for agility is noted. Forecasts are likely to be only useful as a guide so being well prepared and having the ability to respond quickly will be hugely beneficial to communities that are most vulnerable. Strong collaboration between community, council, Maori and central government will be required to manage this extensive issue and plan for climate change resilience.

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**  
**Comments:**  
Agree  
Freshwater is abundant in Ōtautahi Christchurch and the goals are aligned with sustainable use to ensure this is the case for future generations. Restoring waterways to encourage interaction helps people value water and I am aware much mahi has already been done with the 4 rivers catchments. Source to sea is a concept that many people understand and could be used as a method of raising awareness of what impacts behaviours have on the quality of water resources.
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<td>Agree</td>
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<tr>
<td>Comments:</td>
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<tr>
<td>The objectives are comprehensive and note the need for reducing the use of freshwater resources, improving storage and raising awareness of the value of water.</td>
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</tr>
<tr>
<td>Overall, do you support the direction of the Draft Integrated Water Strategy?</td>
<td>Yes</td>
</tr>
<tr>
<td>Any other comments:</td>
<td>I support the direction of the draft Integrated Water Strategy as it is an ambitious overarching strategy for the sustainable management of water resources. A healthy environment is beneficial to people and all other species and freshwater is a taonga. The sustainable and integrated management of water in Ōtautahi Christchurch will no doubt enable its future success as a vibrant and healthy city.</td>
</tr>
</tbody>
</table>
| **CHRISTCHURCH CITY COUNCIL**  
| **Te Wai Ora o Tāne Draft Integrated Water Strategy**  
| **- Received via Have Your Say -**  
| **Submissions close Sunday, 21 July 2019** |

<table>
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<tr>
<th>Full Name:</th>
<th>Mike Currie</th>
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<td>Submitted Date:</td>
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<td>Agree</td>
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</table>

Objective 6 and Objective 7: Flood risk and flood management and adaptation  
4. Implement options tailored to address flood management in specific circumstances  
I fully support the "Development of multi-use areas - where appropriately sited public open space can be used as flood detention areas and to reduce the effects of downstream flooding. The Residential Red Zone in the Ōtākaro Avon catchment is an opportunity to 'make room for the river', by re-aligning the stopbanks onto a more stable foundation away from the present water edge". In particular I agree that the Residential Red Zone in the Ōtākaro Avon catchment is an opportunity to 'make room for the river'. However, the Residential Red Zone must be allowed to form natural wetlands/ponds/detention basins without the construction of artificial stopbanks/paths/tracks that will inhibit their effectiveness, especially given the increased storm events and sea level rise associated with the climate crisis.  
Objective 9 and Objective 10: Groundwater protection and improvement in understanding of aquifer system  
2. Source protection of drinking water supplies
With respect to Nitrate-Nitrogen levels Council should advocate for no more than 0.55 mg/L nitrate-nitrogen as the appropriate level as found to protect stygofauna in the groundwater at Te Waikoropupu Springs. With respect to human health, while the New Zealand Drinking Water Standard is 11.3 mg/L nitrate-Nitrogen, this will also protect against the recent Danish study finding of an increased risk of colorectal cancer at nitrate-Nitrogen levels as low as 0.67 mg/L.

Objective 11: Sustainable water supply

Current Situation

As noted in the draft strategy, "An untreated public water supply for the Christchurch metropolitan area is embedded in Christchurch's social and cultural identity. We remain committed to providing demonstrably safe drinking water without the need for residual disinfection." I am in full agreement with this statement and Council must be prepared to resist all attempts by Central Government to institute any form of water treatment in the Christchurch domestic water supply (including fluoridation).

4. Improve understanding of groundwater sources and levels

As noted in the Draft Strategy, "The Christchurch aquifers are abundant, but have an unknown overall capacity and availability. In addition to the Council wells for the urban Christchurch water supply, other users including individual commercial and industrial properties have their own private bores, so overall take is also uncertain." Council should collaborate with ECan and undertake a study to

1. Ascertain all the individual unknown takes from residential, commercial (including water bottling) and industrial properties from each confined aquifer in order to determine the total take from each aquifer.

2. Estimate the total sustainable capacity of each aquifer taking into account the effects of climate crisis including sea level rise and future growth (in particular population).

   Once the total take from and total sustainable capacity of each aquifer is known, develop a long term strategy to determine the maximum pumping rate and volume per specified period (I suggest 3-monthly to coincide with the quarterly rates charges) to be taken from each bore in that aquifer along with penalty rates to be charged if the maximum volume is exceeded and possibly water shut-off if the maximum pumping rate is exceeded. It is likely that the maximum pumping rate and volume per specified period will be subject to negotiation for large takes (say greater than 75 l/s pumping rate and/or 6,000 cubic meters per day).

5. Secure access to Christchurch groundwater sources for public drinking water supply

   As water supply worldwide is already under pressure and will become even more so with increasing populations, contamination from intensive agriculture, and sea level rise creating salinity issues in confined aquifers it is important that Council has the power to put an end to all types of water mining for corporate profit such as water bottling and large irrigation schemes. To this end Council should continue to advocate under the OIA that:

1. The city's aquifer waters be treated as a "sensitive asset"

2. Water bottling and large irrigation scheme proposals be assessed as to whether they are in the "national interest", to take into account environmental impacts and economic benefits and for corporate entities to have to pass a "good character test".

Council should also continue investigating the possibility of safeguarding Christchurch's aquifers by applying to the Government for a water conservation order to protect against the bottling industry or those who want to use aquifer water for industrial use.
| Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch? Comments: | Agree  
I suggest that bullet point one should read "Annual total volume of potable water abstracted from each of the confined aquifers for urban supplies in 1. Litres per person per day for residential use, 2. Cubic metres per day for commercial and industrial properties, and 3. Cubic metres per day for aquifer water loss including leakage etc., targeting a decreasing year-on-year trend for these measures" |
| Overall, do you support the direction of the Draft Integrated Water Strategy? | Yes |
| Any other comments: | I commend Council on a very well researched and documented Draft Water Strategy |
| Full Name: | Christine McCormack |
| Submitted Date: | 7/14/2019 6:49:38 AM |
| Name of Organisation: | |
| Role in Organisation and No. of people represented: | |
| Would you like to attend the hearings for this consultation? | No |
| Attachments: | No |
| Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments: | Agree  
Ensuring that everyone values water and water services is key to change |
<p>| Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? Comments: | Agree |
| Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? Comments: | Agree |</p>
<table>
<thead>
<tr>
<th>Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch? Comments:</th>
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<tbody>
<tr>
<td>Overall, do you support the direction of the Draft Integrated Water Strategy?</td>
<td>Yes</td>
</tr>
<tr>
<td>Any other comments:</td>
<td>The Banks Peninsula communities and their three water services are barely mentioned in the draft strategy for consultation. The strategy could be improved to be more inclusive, for example through mention of their water supply needs and issues (which aren't related to the Christchurch aquifers). I am looking forward to seeing the implementation plan for the strategy.</td>
</tr>
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</table>
CHRISTCHURCH CITY COUNCIL
Te Wai Ora o Tāne Draft Integrated Water Strategy

- Received via Have Your Say -

Submissions close Sunday, 21 July 2019

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>patrick Clifford</th>
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<tr>
<td>Name of Organisation:</td>
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<td>Role in Organisation</td>
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<td>for this consultation?</td>
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</table>

Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?

Comments: Neither agree nor disagree

You have referred me to another document. It would have been more helpful to have included these extracts in this document if you wanted feedback. One to have word bullet points does not equal & guiding principles only titles

Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?

Comments: Neither agree nor disagree as above

Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?

Comments: Neither agree nor disagree as above
<table>
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<tbody>
<tr>
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<td></td>
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<tr>
<td>Strategy?</td>
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<tr>
<td>Any other comments:</td>
<td>Not sure. I don't think this document passes the &quot;10 year old reading age test&quot;. Technically</td>
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<td>competent but fails in communicating with residents.</td>
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### CHRISTCHURCH CITY COUNCIL

Te Wai Ora o Tāne Draft Integrated Water Strategy

**- Received via Have Your Say -**

*Submissions close Sunday, 21 July 2019*

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<tr>
<th>Full Name:</th>
<th>Ramzi Addison</th>
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**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**

| Agree |

**Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?**

| Agree |

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**

<p>| Agree |</p>
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### CHRISTCHURCH CITY COUNCIL

**Te Wai Ora o Tāne Draft Integrated Water Strategy**

- Received via Have Your Say -

*Submissions close Sunday, 21 July 2019*

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<td>Because of bottling and nitrates allowed. And the council does what they want to anyway.</td>
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**CHRISTCHURCH CITY COUNCIL**  
Te Wai Ora o Tāne Draft Integrated Water Strategy

*Submission No: 26370*

### Received via Have Your Say -

**Submissions close Sunday, 21 July 2019**

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<td>Name of Organisation:</td>
<td>Lyttelton Port Company Limited</td>
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<td>Role in Organisation and No. of people represented:</td>
<td>Consultant (acting on behalf) Other</td>
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**Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch?**

Comments: As per letter of submission

**Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?**

Comments: As per letter of submission

**Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?**

Comments: As per letter of submission
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19 July 2019

Christchurch City Council
Attention: Tessa Zant
Public Information and Participation Unit

Email:

Dear Tessa,

RE: LPC SUBMISSION: CHRISTCHURCH CITY COUNCIL DRAFT INTEGRATED WATER STRATEGY

1 Hearing
Lyttelton Port Company (LPC) does not wish to be heard in support of this submission.

2 Lyttelton Port Company
Within the greater Christchurch area, LPC operates three key sites – the Port of Lyttelton, City Depot in Woolston, and Midland Port at Rolleston (within Selwyn District so will not be discussed further).

LPC’s landholding at the Port of Lyttelton covers a total area of some 149 ha, extending from Magazine Bay in the west to Gollans Bay in the east. The site includes container terminals, coal and log yards, dry dock and bulk fuel storage.

City Depot located on Chapmans Road, Woolston, provides an inland container storage and repair facility in close proximity to the Port and is the South Island’s largest container facility at 17 ha. It also has a rail siding to allow transfer of cargo.

LPC employs over 550 employees and serves a wide range of importers and exporters at the Port itself with full shipping services 24/7, 365 days a year. LPC own and operate Lyttelton Port,
which is by far the most significant port in the South Island in terms of total tonnages of cargo, number of containers handled, the value of exports and imports. By volume, the Port accounts for 30.7% of all the South Islands seaports' overseas exports and 45.1% of overseas imports. By value the Port handles 35.8% of all the South Island’s seaports’ exports and 70.0% of the South Island’s seaports’ imports. It is recognised as a “lifeline utility” and “significant infrastructure” at the local and national level.

At present, the largest redevelopment in the Port’s history is underway with a major focus on moving a significant part of the operations east, to allow for growth. These developments are enabled by the Lyttelton Port Recovery Plan, a significant document in the recovery of greater Christchurch post the earthquakes. The Port redevelopment will ensure forecasted freight increases are able to be catered for and continue to support customers’ requirements and the growth within the Canterbury region.

LPC relies on provision of water services (water supply, stormwater and wastewater) from Christchurch City Councils (CCC) networks to allow its operation and development to continue in a sustainable manner. Therefore, LPC has particular interest in the CCC Draft Integrated Water Strategy (IWS) due to reliance on services provided by the council and also the crossover between LPC’s own strategies and plans with the Draft IWS. LPC has clear commitments to manage its water resources as demonstrated through key plans such as the following:

- **Sustainability Strategy 2019**: LPC has recently developed and adopted a Sustainability Strategy which applies across all its operations and developments. The Strategy identifies key focus areas of Prosperity, Planet, People and Communities. Within these are areas also addressed in the Draft IWS including water conservation, quality, and climate change.

- **Whaka-Ora Healthy Harbour plan**: This plan was developed with five organisations (Environment Canterbury, Te Hapū o Ngāti Wheke, Te Rūnanga o Ngāi Tahu, Christchurch City Council, and LPC) as part of an agreement reached during development of the Lyttelton Port Recovery Plan. The Plan seeks to manage the harbour catchment as a whole to restore the ecological and cultural health of

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Whakaraupō/Lyttelton Harbour. Within this plan is key considerations for water resources such as addressing water quality in stormwater runoff.

LPC supports the purpose and vision proposed in the Draft IWS, in that it considers water as a key resource to people and the environment; however, we believe the strategy could be broadened to give more opportunity for industry to be a valued contributor to this vision through knowledge sharing and facilitating the growth of communities within Christchurch’s capability to manage water resources. We have provided particular response to questions raised by the council below.

3 Response to CCC’s Questions

1. Do you agree or disagree with the vision and guiding principles for managing the ‘three waters’ (water supply, wastewater, and stormwater) in Christchurch?

Partially agree.

The Vision is holistic which is suitable for an overarching strategy at this level of detail; however, we suggest that the second dot point is revised to include all ecosystems (not just freshwater). All ecosystems require water of sufficient quantity and quality; therefore, it is important this is considered within the strategy. Suggested rewording is below:

- Maintain the integrity of ecosystems (terrestrial, freshwater and coastal)

LPC suggests the guiding principles would benefit from inclusion of communities where appropriate. As the Draft IWS will underpin use of water resources within Christchurch, it is important community (both residential and commercial) are included where appropriate. Without sufficient buy-in from the community, their support may not be obtained; nor the opportunity to share their knowledge and learnings that may contribute to the vision of the Draft IWS.

2. Do you agree or disagree with the key issues facing management of the ‘three waters’ in Christchurch?
Partially agree.

LPC identifies that stakeholders within Christchurch have varying levels of awareness and capability, with respect to water resources and infrastructure. We suggest further interaction and facilitation of knowledge sharing between organisations may provide opportunities to address key issues more efficiently for Christchurch, through increasing capability to manage water resources.

3. Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?

Partially agree.

The goals and objectives are suitably high level and holistic; however, LPC identified that the Draft IWS has no particular mention of commercial or industrial stakeholders, nor opportunities for technical knowledge sharing within the objectives. As a large industrial landowner, LPC has a particular interest in contributing to sustainable water resources.

LPC’s recently adopted Sustainability Strategy demonstrates a commitment to water management, with crossover in areas of water management that have also been described in the Draft IWS. Whilst the Draft IWS addresses additional areas which are not in within LPC’s direct obligation (e.g. water supply source management) there are many shared interests, such as infrastructure resilience, climate change, and environmental management, which are associated with water quality and healthy ecosystems. LPC would appreciate opportunities to contribute, share and receive knowledge with CCC and other industry stakeholders. Doing so would allow LPC to ensure it is aware of further technical developments and implement those accordingly within its operations and developments.

LPC suggests that Objective 1 could be revised as below:
Objective 1  **Awareness, Knowledge and Engagement**
Increase awareness, facilitate sharing of technical knowledge and engage with community (residential & commercial), and mana whenua regarding the multiple uses and values of water.

In addition to this, we expect that goals and suggested approaches may also need a particular section to outline how knowledge sharing would be able to be facilitated through the strategy. This may be best achieved as a specific goal which aims to increase industry capability and engagement through knowledge sharing.

4. **Do you agree or disagree with the recommendations for achieving the aim and vision for managing the ‘three waters’ in Christchurch?**

*Partially agree.*

As identified in our response to question 3, LPC suggest further engagement and facilitation of knowledge sharing would benefit the Draft IWS. An integrated management strategy such as this is unlikely to be achieved without also growing stakeholder capability and awareness. LPC suggests the Draft IWS should seek to do this both for residential and industry. Capability is not just in the form of awareness but also advances in technology and practice.

5. **Overall, do you support the direction of the Draft Integrated Water Strategy?**
Yes.

As LPC is also aware of similar issues for water resources & infrastructure across its operation and developments, we support CCC having a clear and succinct strategy to guide Christchurch going forward. As raised in question 3, we believe the strategy would be improved by identifying commercial and industrial stakeholders within engagement opportunities, along with facilitation of knowledge sharing to allow industry the opportunity to grow its capability with Christchurch City Council in respect to water resource use, land use and infrastructure management.

LPC would welcome the opportunity to discuss any aspects of this submission at an early opportunity should CCC wish to do so.

Kind regards,

Kim Kelleher
Environment & Planning Manager
Lyttelton Port Company
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M:
E:
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<th>Item No.: 5</th>
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**CHRISTCHURCH CITY COUNCIL**  
Te Wai Ora o Tāne Draft Integrated Water Strategy  
- Received via Have Your Say -  
*Submissions close Sunday, 21 July 2019*

| Full Name: | Annette and Michael Hamblett |
| Submitted Date: | 7/21/2019 11:54:21 AM |
| Name of Organisation: | |
| Role in Organisation and No. of people represented: | No |
| Would you like to attend the hearings for this consultation? | No |
| Attachments: | No |

**Do you agree or disagree with the vision and guiding principles for managing the ‘three waters’ (water supply, wastewater, and stormwater) in Christchurch?**  
*Comments:*

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<tr>
<th>Agree</th>
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<tr>
<td>The draft strategy is to be intergenerational. Therefore, it needs to acknowledge that the council will have to address ongoing and increasing managed retreats of residential housing from low-lying area.</td>
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**Do you agree or disagree with the key issues facing management of the ‘three waters’ in Christchurch?**  
*Comments:*

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<tr>
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| Re "treated" water doing into water bodies, is something we should all be working to reduce, e.g. how about encouraging composting toilets. They are very presentable these days. We support requiring a switch to copper-free brake pads.  
Very supportive of encouraging on-site stormwater management. We need to cut back on great swathes of sealed areas and get the rain held in the soil as much as possible. Slow the water down in streams and rivers with barriers and swales. See: [here](https://toolbox.coffeelandclimate.org/tools/use-of-barriers-to-slow-water-runoff/)  
Encourage/require the collection of rainwater and use of grey water on/in all new buildings, and adaptions to existing buildings.  
Very concerned when we found out that groundwater from deeper aquifers north of the Waimakariri River can travel under the river and into the deeper Christchurch aquifers and nitrate risk. We were unconvinced by the recent media spin from Waimakariri Irrigation Ltd.  
Good to see acknowledgement sea-level rise may be greater than predicted.  
Re "multiple paths for beneficial reuse of biosolids". We are opposed to biosolids being used on agricultural land. There are too many concerns. Not only the land but also water bodies may be affected - by runoff. All sewage sludge contains toxic and hazardous materials, including heavy metals, flame retardants, polycyclic aromatic hydrocarbons, phthalates (known endocrine disrupters), dioxins, pharmaceuticals, personal care products. Not all these are regulated. Biosolids may be safe on land used for forestry that won’t be used for agriculture in the future.  
We do not support compulsory fluoridation through the water supply. |

**Do you agree or disagree with the**  

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<td>I very strongly support the Council’s commitment to local control over three waters services integrated with all other community services.</td>
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**CHRISTCHURCH CITY COUNCIL**  
**Te Wai Ora o Tāne Draft Integrated Water Strategy**  

- Received via Have Your Say -  

*Submissions close Sunday, 21 July 2019*

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<th>Ann Kennedy</th>
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Comments:  

Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch?  

Comments:  

Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy?  

Comments:
I support the Draft Integrated Water Strategy and thank you for the opportunity to put forward my comments.

I have three comments to make:

1. **Vision**
   - Maintain the integrity of freshwater ecosystems

**Issue 6**

**Climate Change and Water Quantity**

**Goals**

1, 2, 3, and 4

While the effects of flooding due to climate change are covered in the Draft, the effects of drought due to climate change are not. There is scientific confidence that increased temperatures will lead to more precipitation fall as rain rather than snow, earlier snow melt, and increased evaporation and transpiration. This means that the risk of hydrological drought increases as temperatures rise.

Current responses to drought tend to focus on short-term measures, such as temporary water conservation and increased use of groundwater. With increased drought risk we must incorporate longer-term efforts that increase resilience to more frequent or severe drought conditions.

Increased ground water takes reduce the opportunity for recharge to the natural springs which are the source of the Avon River/Otakaro water and its flow regimes. It has often been recorded that the springs are dry in the main branch of the Avon River/Otakaro. This situation has extreme negative effects on ecosystems and instream values in the catchment and downstream negative effects on flushing.

Is it possible for the longer-term efforts to address this issue to include the scientific setting of minimum/medium flows in the vicinity of the spring?

2. **Issue Wastewater Overflows**
   - Objective - Reduce and work toward eliminating the effects of wastewater overflows.
   - I agree that wastewater overflows are of great concern for the community.
   - I support the suggested approaches listed in the Draft. Within the suggested approaches for Issue 1, Multiple Uses and Values, would it be possible for the Council to conduct workshops/information evenings on ‘Reducing flow and infiltration’ for homeowners?

3. **Development of Stormwater Discharge Standards**

   **Objective 7.3**
   - Objectives 3 and 4
   - Suggested Approaches No. 8
   - I agree that the Council ......
   - ‘Through a regulatory mechanism, such as the Comprehensive Stormwater Network Discharge Consent or section 35 of the Water Supply, Wastewater and Stormwater Bylaw 2014, standards for stormwater discharges could be developed. These standards could aid in limiting the concentration of affected contaminants in stormwater, and thence to receiving surface water bodies.’
   - I do not wish to be heard.

   With thanks,
   - Ann Kennedy
   - TRIM REF 19/831242
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**CHRISTCHURCH CITY COUNCIL**  
Te Wai Ora o Tāne Draft Integrated Water Strategy  

- Received via Have Your Say -  
*Submissions close Sunday, 21 July 2019*

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| Attachments: | No |

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Submission on Te Wai Ora o Tane Draft Integrated Water Strategy
from Paula Smith, Diamond Harbour.

My name is Paula Smith. I am a member of The Banks Peninsula Water Management Zone Joint Committee, however I make this submission as an individual resident and ratepayer.

Congratulations on producing the draft strategy. I appreciate that it is not too long. In general I support the content. I have the following additional comments to make:

I was surprised by the lack of reference to the role of Zone Committees in strategic planning and management of water in our district. When I finally found the entry for the Banks Peninsula Zone Committee on page 47 in Appendix A I realised why. The authors of the report are under the mistaken impression that the zone committees make recommendations only to ECan. In fact the three zone committees in the Christchurch district are formal joint committees of both Christchurch City Council and Environment Canterbury. A zone committee is not just another community groups “with interests” in water and water services infrastructure as suggested on page 41.

The Zone Committee’s role is a governance role, and the purpose of governance is to provide strategic direction to staff. Zone Committees were set up to provide strategic advice to staff of both Christchurch City Council and Environment Canterbury. In my opinion the committees should have been involved in the development of the strategy as stakeholders, at the very least, and preferably have been active participants in the co-design of the strategy throughout its development.

One of the consequences of this omission is that zone committees in Christchurch will have no sense of ownership of your strategy, even though they share responsibility for managing the water resources within the District.

It is therefore critical that zone committees become involved in the development of the implementation plans which are to follow the adoption of Te Wai Ora o Tane. Zone Committee involvement in implementation plans is referred to in just one place. I seek amendments so this is more clearly articulated throughout the Integrated Water Strategy.

The lack of ownership is further exacerbated by the use of language throughout the document draft. Frequent use of the words “our” and “we” generally refer to the council organisation, and does not include the wider communities which depends on the resources and use them. The message this sends is that “we” (the Council staff) are the boss of all the waters, and you (the community) need to let us manage it all the way we think is best. Yet if the aim is to change behaviour, or seek acceptance of provisions in the strategy then the language in the strategy should reflect that we are all in this together. Council staff and communities need to work collaboratively to manage the resources effectively.

Finally, while I commend you on the use of two languages throughout the document, and the inclusion of other tikanga content, the overall impression I have is that mana whenua content is a slightly unwelcome “add on” in this strategic plan. Since the strategic planning staff don’t seem to know much about the zone committees, it may be worth mentioning that all the zone committees have papatapu runanga-appointed representatives who have formal authority to speak on behalf of their runanga about water related matters. Banks Peninsula Zone Committee has four, one from each runanga in our zone. If the strategic plan had been co-designed with the zone committees it is likely the document would have more fairly reflected the treaty partnership.

Detailed submissions are tabled below.

Page Paragraph Amendment sought Rationale
2.1 Waterbodies rather than waterways To include Te Roto o Wairewa Lake Forsyth and other lakes and wetlands as well as waterways.

2. ... (the draft strategy) is a high level overarching strategy developed...

Delete

(makes me think “One ring to rule them all”) Not really true. It is one strategic document in a hierarchy of plans and statutes, as illustrated on page 5.

Somewhere in the strategy there should also be a reference to Whaka Ora, the Integrated Catchment Management Plan for Lyttelton Harbour Whakaraupo, as well as the ZIPS and the ZIP addenda.

8. The actual and potential effects of climate change will... Isn’t there evidence that we are already seeing the effects?

3.3 The draft strategy covers respect and stewardship of water resources... Kaitiakitanga shouldn’t be “covered” by the strategy, it should be the central premise of the strategy, the foundation on which the whole strategy is built. Even though kaitiakitanga is identified as a “Guiding Principle” and a keystone on p9, this doesn’t come through in the draft.

5.1 The following bullet points to be added to the list:

• Banks Peninsula Zone Implementation Plan and Wairewa ZIP Addendum
• Christchurch West Melton Zone Implementation Plan
• Selwyn Waihora Zone Implementation Plan The ZIPS are collaboratively developed strategic planning documents that should have been drivers for the draft strategy. The policy and recommendations they contain are as much for Christchurch City Council as for ECan.

2. Amend to read “The work of the zone committees is directly relevant to the strategy and its implementation” The work of the Zone Committees is not only relevant to the implementation plans it is also relevant to the strategy itself.

8.1 Last bullet point:”...guiding Council decision-making including how we will work with...community interests...”

Delete “Council”

Amend so text implies how we will all work collaboratively in freshwater management and decision-making. It is not clear whether “Council” in this context mean the organisation or elected representatives.

The strategy should guide all decision-making, not just Council’s. Decisions about water are made by everyone, both individuals and groups, including zone committees.

8.3 Amend vision statement This vision statement is practically meaningless. It does not describe what the future looks like at the end of the 100 year (p40) or six year (p42) time frame of the strategy. It does not create an image of where we want to be in the future.

9.3 Delete the bullet point headlined “Longevity” Longevity is redundant if kaitiakitanga is a guiding principle because kaitiakitanga incorporates intergenerational consideration. Also the addition of all those other descriptors creates contradiction and makes the whole “principle” meaningless.

10.4 “...we are committed to working with iwi and hapu to identify...”

Delete “hapu” and replace with “runanga” (or runaka)

As far as I know there are no hapu in Christchurch district. I would have expected the strategy authors to have picked this up when they consulted papatipu runanga during the development of the strategy.

10. Top “Poor State of Waterways”

Replace “Waterways” with “Waterbodies”.

This headline does not include Te Roto o Wairewa or any other lake or wetland which is in a poor state of ecological health.

10.5 “...catchments in the urban area and rural settlements are subject to...”

Delete and replace with “...in both urban and rural areas are subject to...” Places like Lyttelton or Diamond Harbour aren’t really part of the urban area, nor are they rural settlements.

10.6 “...such as Te Ihutahi, Te Wahora, Wairewa and the bays...”

Replace “Wairewa” with “Te Roto o Wairewa”. Te Roto o Wairewa is the name of the lake. Wairewa is the district

10.6 “...and better waterway health is recorded in the rural areas.”

Delete and replace with “Waterway health is variable throughout the district.”

It is a myth that waterway health is better in rural areas. On Banks Peninsula annual monitoring shows waterway health is highly variable and the trend in many streams is declining ecological health. It is not clear why.
12 3 Add "Sediment pollution is a particular issue in any catchment with highly erodible loess soils. This includes the Port Hills and the rest of Banks Peninsula. Sediment contamination has a major impact on both in-stream and coastal ecology and has resulted in harbour infilling, particularly in Lyttelton Harbour Whakaraupō." Sediment is the most significant issue on Banks Peninsula.

After any storm event large plumes of suspended sediment are visible in most of the bays around Lyttelton Harbour with reticulated stormwater.

14 2 "...low-lying areas in the main Akaroa Harbour Settlements..."

Replace with "...low-lying settlements in all Banks Peninsula bays and harbours, and in Little River."

Flooding is a big deal in Little River as well as in coastal places. The predicted effects of climate change include increasing frequency and intensity of storm events not just sea level rise.

14 5 "...in coastal areas in Christchurch."

Change to "...in coastal areas throughout Christchurch district."

Use language which captures the fact that water services infrastructure in Banks Peninsula is also at risk. "in Christchurch" for most readers means the metropolitan area only.

14 5-6 Add a paragraph at the end which refers to effects other than sea level rise and coastal erosion.

Sea level rise and coastal erosion are not the only climate change effects relevant to future water management. Effects also include increasing frequency and severity of storm events and lower rainfall overall for Banks Peninsula combined with increased evapotranspiration. Much of Banks Peninsula relies entirely on rainfall for water supply, not just as surface water, but also for perched spring recharge and recharge of unconfined aquifers below the valley floors. Decreasing rainfall also increases the tension between permitted use allocation and maintaining minimum environmental flows in streams. These are not just “environmental” issues which are ECan’s problem. All of these effects will require adaptive management involving responses from CCC as well.

14 6-7 Add another paragraph about the effect of increased costs to ratepayers, for example for clean up and repairs after storm events. This is another reason why it is a key issue and resilient infrastructure is required.

15 1 Add: "Most of Banks Peninsula is entirely dependent on rainfall for water supply."

Precipitation in some form is the main water source for both small settlements and individual properties over much of Banks Peninsula.

15 4-5 Add another paragraph: "There is some evidence discharges from underperforming on-site wastewater treatment systems (septic tanks) may be contaminating waterways." Effectively functioning on-site wastewater treatment systems are likely to be a more sustainable wastewater treatment option than CCC built and operated reticulated systems for Banks Peninsula small settlements.

16 2 Relocate paragraph The paragraph is not a statement or description of an issue but rather a list of possible policy responses/solutions.

16 6 Relocate paragraph This paragraph about reticulated water supplies in Banks Peninsula Settlements would be more appropriate under "Issue 5.9 Long term availability of water... supply". It is a clear statement about an issue but the issue is not resilient infrastructure, it is future water supply.

17 1 Relocate paragraph Emerging contaminants is an issue but it is only marginally related to infrastructure resilience and efficiency. Possibly more logically located elsewhere e.g. under Issue 5.2 Poor State of Waterways.

17 3 ‘...challenge for us is to ensure Christchurch’s drinking water is...’

Replace “Christchurch” with “artesian” While much of Christchurch and Banks Peninsulas’ water is sourced from confined aquifers, many Banks Peninsula communities/households source their drinking water from other groundwater sources including perched springs and unconfined aquifers.

18 7 “…and the Christchurch aquifers which supply drinking water to the Christchurch community.”

Amend to “Christchurch communities.” (plural) Aquifers also supply Lyttelton, Diamond Harbour, Charteris Bay Rapaki and Governors Bay. Most people wouldn’t think of these places being the “Christchurch community”.

18 8 Add paragraph: "The large number of smaller discrete catchments on Banks Peninsula has resulted in species-rich biodiversity and a high degree of freshwater endemism." (or something similar) This needs to be stated somewhere in the strategy in relation to biodiversity.
19 6 After paragraph 6 add another bullet point
• On Banks Peninsula more water may be allocated for permitted uses than supports sustainable environmental flows. Maintaining ecosystem health and freshwater biodiversity in streams may require a review of current planning rules.

19 7 “Goal 4: Water is managed in a sustainable and integrated way in line with the principle of kaitakitanga.”
Amend. See rationale This is actually three goals, not one:
• sustainability
• integration, and
• kaitakitanga
The goals are all mixed up.
If kaitakitanga is really such an important principle why is it tacked onto the end of the final goal?
In my opinion Kaitaktanga is the most important “over-arching” goal because it envelopes and integrates inter-generational sustainability, water quality, ecosystem health and everyone valuing water as well as using it. Integration is the second most important goal because it is the main reason this strategy was written, its whole raison d’etre, and the third goal should be Adapting to Climate Change, especially flooding.

20 1 “...where collective stormwater management is not feasible.”
Amend to: “...where collective stormwater management is not efficient or feasible.” Efficiency, including financial efficiency, will also be criteria for decision-making about reticulating stormwater, not just feasibility.

20 2 “…and for disposal of treated wastewater from the Akaroa Harbour communities.”
Amend by adding “…and other Banks Peninsula settlements.” Birdlings Flat, Wainui, and Little River communities have all called on CCC for reticulation and treatment of wastewater. Policy guidance is needed for these and other proposals.

41 8-9 Insert paragraph about the role of the three zone committees in management and decision-making about freshwater, storm water, water supply, wastewater and kaitakitanga in general.

See Zone Committee Terms of Reference:
“The purpose and function of the committee is to:
• Facilitate community involvement in the development, implementation, review and updating of a Zone Implementation Programme that gives effect to the Canterbury Water Management Strategy in Banks Peninsula; and
• Monitor progress of the implementation of the Zone Implementation Programme.”

47 7 “Banks Peninsula Zone Implementation Programme (ZIP)”
Add “and ZIP Addendum” The ZIP Addendum is effectively a catchment management plan for the Wairewa catchment. It forms part of the ZIP.
I submit both these entire documents for their content to be integrated into Te Wai Ora O Tane Integrated Water Strategy.
TRIM REF 19/831134
CHRISTCHURCH CITY COUNCIL
Te Wai Ora o Tāne Draft Integrated Water Strategy

- Received via Have Your Say -

Submissions close Sunday, 21 July 2019

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Simon Britten</th>
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<tbody>
<tr>
<td>Submitted Date:</td>
<td>7/23/2019 11:10:34 AM</td>
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<tr>
<td>Name of Organisation:</td>
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<td>Role in Organisation and No. of people represented:</td>
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<tr>
<td>Would you like to attend the hearings for this consultation?</td>
<td>No</td>
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<td>Attachments:</td>
<td>No</td>
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Do you agree or disagree with the vision and guiding principles for managing the 'three waters' (water supply, wastewater, and stormwater) in Christchurch? Comments:

Do you agree or disagree with the key issues facing management of the 'three waters' in Christchurch? Comments:

Do you agree or disagree with the goals and objectives of the Draft Integrated Water Strategy? Comments:
| **Do you agree or disagree with the recommendations for achieving the aim and vision for managing the 'three waters' in Christchurch?** |
| **Comments:** |
| **Overall, do you support the direction of the Draft Integrated Water Strategy?** |
| **Any other comments:** |

Kia ora,

I'm aware that today is the final day for submissions on the draft Integrated Water Strategy. As at 3pm today I see that the consultation has moved out of the 'open for feedback' section of Council's website. I trust that you can still receive and consider my feedback?

I agree with the vision and guiding principles.

I agree with the key issues, with the further comment that perhaps 'lack of public engagement' could be added as a 12th issue.

I agree with the goals and objectives.

I neither agree nor disagree with the recommendations for managing the three waters, as I'm unsure where that is in the document.

Overall, I support the intent of the draft Integrated Water Strategy. The Strategy as documented, however, is not an easy read for a layperson such as myself. I've also been disappointed to see a very small turnout to the public drop-in sessions - I don't think running this Strategy through the same process as a proposal for a set of traffic lights or a new speed limit has worked. Given the importance of water, and therefore the Water Strategy, to the community, I wonder if the Council needs to press pause and consider coming back to the community with a massively simplified strategy, or perhaps consulting on the component parts, and/or giving it more of a 'what's in it for me' treatment?

I do not wish to speak to the hearings panel. I do however wish to be kept informed as this Strategy progresses through the report/hearing/decision stages.

Kind regards

Simon Britten
6. Hearing of Submissions

Submitters who indicated that they wished to be heard in person will present to the Hearings Panel. A schedule of presenters can be found at the beginning of the volume of “Heard Submissions”.

7. Hearings Panel Consideration and Deliberation