

CRC160056 A Comprehensive Resource Consent to Discharge Stormwater from within Christchurch City onto or into Land, into Water and into Coastal Environments

Advisory Note: The following conditions for the Christchurch City Comprehensive Stormwater Network Discharge Consent have been prepared according to the agreed practices of the Joint Christchurch City Council & Canterbury Regional Council Stormwater Management Protocol, Report U10/12 (the Protocol). The Protocol establishes how Canterbury Regional Council and Christchurch City Council will work together to achieve integrated catchment wide stormwater management in Christchurch. The Protocol records the understanding between Canterbury Regional Council and Christchurch City Council but does not create legal obligations that are enforceable by either party. Appendix 4 of the Protocol sets out responsibilities pertaining to compliance and operations and notes the role of the SWiM Working Party in any enforcement matters.

For the purpose of this consent the following definitions and abbreviations apply to all conditions:

Annual Exceedance Probability (AEP) is the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, if a peak flood discharge of 40 cubic metres per second has an AEP of 2%, it means there is a 2% chance (i.e. one-in-fifty) of a peak flood discharge of 40 cubic metres a second or larger occurring in any one year. AEP is the inverse of return period expressed as a percentage.

area of disturbance means an area where site clearance or earthworks are actively taking place and where the land has not been stabilised.

critical duration means the time taken during a storm event for peak water levels to be reached in the receiving waters as determined by the most up-to-date information and modelling.

CSNDC means the Comprehensive Stormwater Network Discharge Consent

design storm is the theoretical rainfall event that the analysis is based on for a particular probability. The design storm is based on certain assumptions, including rainfall distribution and intensity, and the storm rainfall profile shape for the critical duration.

development area means any individual area within a site or sites that is undergoing construction and/or earthworks activities but excludes sealed pavement repair where base course is not exposed.

device means a street or property-scale installation for the purpose of removing contaminants from stormwater in a situation where storage capacity is limited. Examples include a rain garden or a proprietary treatment system.

EMP means Environmental Monitoring Programme.

existing site means any site that discharges its stormwater into the CCC stormwater network at the date of commencement of this resource consent.

Extra-Over Detention means attenuating sufficient stormwater to control peak flow rates from a developed site back to pre-developed flow rates for storms up to and including the critical 2 percent annual exceedance probability design storm event.

Comment [NB1]: Definition now needed because it is used in Table 6

facility means a (usually large) constructed means of holding or attenuating stormwater for the purpose of reducing discharge rates or removing contaminants. Examples include a sedimentation basin, a constructed wetland, a wet pond and/or an attenuation basin, an infiltration basin.

first flush means either: a) the stormwater runoff generated from the first 25 millimetres of rain falling on impervious areas of a site, or b) the stormwater flow rate generated from up to 5mm/hr rainfall intensity on impervious areas of a site; or c) the stormwater runoff generated from the first 20 millimetres of rain falling on impervious areas of a site discharging to rain gardens or tree pits.

flat land means any land where the average slope across the site is 5 degrees or less.

greenfield means agricultural, forest or grass land previously undeveloped for urban purposes (construction of residential or industrial subdivision, buildings, roads and associated services).

high-use site means a site that:

- (a) has an expected average daily traffic (ADT) count equal to or greater than 250 vehicles per day; or
- (b) is used for petroleum storage or transfer in excess of 5,000 litres per year, not including delivered heating oil; or
- (c) is used for storage or maintenance of 10 or more heavy vehicles (trucks, buses, trains, heavy equipment, etc.).

hill land means any land where the average slope across the site exceeds 5 degrees.

improvement means, with respect to Receiving Environment Objectives and Attributes, achieving yearly improvement towards the Attribute Target Level, as assessed in each annual monitoring report, using the methodology outlined in the EMP.

industrial site means:

- (a) any premises used for the manufacturing, assembly, wholesaling or storage of products or the processing of raw materials and other ancillary activities; or
- (b) any premises used for the storage, transfer, treatment, or disposal of waste materials or for other waste-management purposes, or used for composting organic materials; or
- (c) any other premises from which a contaminant is discharged in connection with any industrial or trade process—but does not include any production land.

lower Ōpāwaho/ Heathcote River means downstream of the Cashmere Stream confluence. **LWRP** means Land and Water Regional Plan.

maintenance means, with respect to Receiving Environment Objectives and Attributes, achieving at least the baseline Attribute Levels, as assessed in each annual monitoring report, using the methodology outlined in the EMP.

Papatipu Rūnanga means the six Ngāi Tahu Papatipu Rūnanga within the Christchurch area, namely: Te Ngāi Tūāhuriri Rūnanga, Te Hapū o Ngāti Wheke/Rāpaki Rūnanga, Te Rūnanga o Koukourārata, Ōnuku Rūnanga, Wairewa Rūnanga, and Te Taumutu Rūnanga.

Partial Detention means storage within first flush basins plus additional storage through flooding of wetland areas to an average depth of 500mm discharging over a minimum of 96 hours for the critical 2 percent annual exceedance probability design storm event.

Comment [NB2]: Definition now needed because it is used in Table 6

QMCI means Quantitative Macroinvertebrate Community Index.

re-development means a change to a developed site or a site activity that results in a stormwater discharge that is not the same in scale, intensity or character to the discharge that existed prior to the commencement of this consent.

site means an allotment title or other legally defined parcel of land held in a single certificate of title and any balance land or adjacent land with title(s) held by the same owner or ownership with an affiliated interest. In the case of greenfield and re-development, site means the area of land defined by the boundaries of proposed land disturbance.

SMP means ~~stormwater~~ Stormwater management Management plan Plan.

stabilised means an area of land sufficiently covered by erosion-resistant material such as grass, mulch, weed matting, bark, sand/aggregate, or paving by asphalt, concrete, paver blocks, etc., in order to prevent erosion of the underlying soil.

stage of development means a part of a development area which is completed prior to any other stage of that development commencing. A stage of development is deemed to be finished following the completion of construction activities and when the development area has been stabilised.

stormwater means runoff from rainfall that has been collected, channelled, diverted, intensified or accelerated by human modification of the land surface or runoff from the external surface of any structure as a result of precipitation and may contain contaminants. This definition excludes discharges of spilled or deliberately released hazardous substances and/or washdown activities.

stormwater network means waterways identified in a SMP and also includes the reticulated piped network, kerb and channel, sumps, pipes, manholes, rapid soakage chambers and any stormwater conveyance and mitigation system for which Christchurch City Council are responsible for operation and maintenance.

surface water means water in waterways, lakes, wetlands, springs, or the ocean, but excludes groundwater and atmospheric water.

SWiM Working Party means the Joint Storm Water Issues Management Working Party. The SWiM Working Party is a forum of senior managers of Christchurch City Council and Canterbury Regional Council established to meet the outcome of on-going communication as detailed in the “Stormwater Management Protocol¹.”

TSS means Total Suspended Solids.

upper Ōpāwaho/ Heathcote River means upstream of the Cashmere Stream confluence.

Purpose and Location

1. This consent permits the discharge of stormwater onto or into land or into surface water which:
 - a. is generated from existing sites, greenfield development sites and re-development sites within the territorial boundaries of the Christchurch City Council, but excludes those areas outside of Banks Peninsula settlement areas, and is discharged into the Christchurch City Council stormwater network; or
 - b. enters the Christchurch City Council stormwater network from outside of the City boundary; or
 - c. is generated from roofs of individual existing sites, greenfield development sites and re-developments sites and is discharged onto or into land within the site; or
 - d. is generated from hard-standing areas of individual existing residential sites, greenfield development and re-development sites and is discharged onto or into land within the site.

Exclusions

2. There shall be no discharge to land or surface water from the following unless expressly authorised by Canterbury Regional Council and Christchurch City Council:
 - a. Any site or development area on the Canterbury Regional Council’s Listed Land Use Register that is considered by Christchurch City Council to pose an unacceptably high risk of surface water or groundwater contamination;
 - b. Any stage of development with a total area of disturbance exceeding 5 hectares on flat land or 1 hectare on hill land; and
 - c. Any site listed on the attached Schedule 1 ‘Sites excluded from the Christchurch City Council Comprehensive Stormwater Network Discharge Consent’.

Stormwater Management Plans

¹ A Joint Christchurch City Council and Environment Canterbury Stormwater Management Protocol (March 2006, Revised September 2008 and November 2010)

3. The consent holder shall, in consultation with Papatipu Rūnanga and the Christchurch-West Melton and Banks Peninsula Zone Committees (or successor organisations), develop, and update as necessary, SMPs to meet the Receiving Environment Objectives and Attribute Levels ~~Targets~~ set out in the conditions of this consent. The purpose of the SMPs shall be to provide:

- a. Specific guidelines for implementation of stormwater management within the catchment to achieve the following objectives:
 - i. Improve ecosystem health
 - ii. Improve water quality
 - iii. Maintain flood storage and flow capacity
 - iv. Enhance mana whenua values;
- b. A description of statutory and non-statutory planning mechanisms to achieve compliance with the conditions of this consent including the Receiving Environment Objectives and Attribute Levels ~~Targets~~. These mechanisms may include (but are not limited to):
 - i. Relevant objectives, policies, standards and rules in the Christchurch District Plan
 - ii. Relevant bylaws
 - iii. Relevant strategies, codes, standards and guidelines;
- c. Mitigation methods to achieve compliance with the conditions of this consent including the Receiving Environment Objectives and Attribute Levels ~~Targets~~. These methods may include (but are not limited to):
 - i. Stormwater mitigation facilities and devices
 - ii. Erosion and sediment control guidelines
 - iii. Education, awareness or site management programmes
 - iv. Source control systems
 - v. Prioritising effective stormwater treatment in catchments that discharge in proximity to inanga spawning sites;
- d. Locations and identification of Christchurch City Council water quality and water quantity mitigation facilities and devices;
- e. Identification of areas earmarked for future development;
- f. Identification of areas subject to known flood hazards;
- g. An interpretation of environmental & cultural monitoring and how this information has been used to develop water quality mitigation methods and practices;
- h. Results from and interpretation of water quantity and quality modelling;
- i. A cultural impact assessment and summary of outcomes resulting from any collaboration with Papatipu Rūnanga on the SMP; and
- j. An assessment of the effectiveness of water quality or quantity mitigation methods established under previous SMPs and identification of any changes in methods or designs resulting from the assessment.

4. Prior to submitting a SMP or any amendment to a SMP to the Canterbury Regional Council as required by Condition 3, the consent holder shall provide a draft copy to the following parties inviting feedback within a timeframe of not less than 20 working days:

- a. Papatipu Rūnanga;
- b. The relevant Zone Committee(s) (or successor organisation); and
- c. The relevant Community Board(s) (or successor organisation)

Advice Note: The Christchurch City Council intend for development of the SMPs to be a collaborative process with input from key stakeholders. During

Comment [NB3]: These name changes are made throughout the document (including the tables) to make the conditions easier to follow. In particular, the word target was confusing for catchments where attribute levels are proposed to be maintained (i.e. levels are not proposed to improve towards a target).

Comment [NB4]: It was agreed with ECan that a condition be added for clarity covering CCC's obligation to consult/engage with key stakeholders on development of SMPs.

development of SMPs, Papatipu Rūnanga, CWMS Zone Committees and Canterbury Regional Council technical staff will be invited to all technical presentations and will have opportunity to review and comment on draft SMP documents. Presentations will be made at public meetings of both the Banks Peninsula and Christchurch-West Melton Zone Committees. Once all documented feedback has been considered and addressed, the finalised SMP documentation will be submitted to the Canterbury Regional Council.

Comment [NB5]: Changed for clarity to cover all SMP documentation

5. The consent holder shall prepare and submit to the Canterbury Regional Council for certification SMPs for each identified city catchment area as specified in Table 1. Any amendments to SMPs may not replace the previous version until the amendments have been certified by the RMA Compliance and Enforcement Manager of the Canterbury Regional Council.

~~*Advice Note: The Christchurch City Council intend for development of the SMPs to be a collaborative process with input from key stakeholders. During development of SMPs, Papatipu Rūnanga, CWMS Zone Committees and Canterbury Regional Council technical staff will be invited to all technical presentations and will have opportunity to review and comment on draft SMP documents. Presentations will be made at public meetings of both the Banks Peninsula and Christchurch-West Melton Zone Committees. Once all documented feedback has been considered and addressed, the finalised SMP along with supporting technical reports and the Cultural Impact Assessment will be submitted to the Canterbury Regional Council.*~~

Comment [NB6]: Advice note moved to Condition 4 as this is the appropriate location for it.

Table 1: SMP Programme

Catchment	Date of Submittal to the Regional Council
Ōtākaro/ Avon River Area Christchurch	30 June 2015
Pūharakekenui/ Styx River Area Christchurch	30 June 2015
Huritini/ Halswell River Area Christchurch	30 June 2015
Ōpāwaho/ Heathcote River Area Christchurch	30 Dec 2016
Estuary and Coastal Area Christchurch	30 Dec 2018
Outer Area Christchurch	30 Dec 2018
Te Pātaka o Pākaihautū/ Banks Peninsula Settlements	30 Dec 2020

6. SMPs shall be reviewed against the requirements of Condition 4.3 by the Christchurch City Council on a 10 yearly basis from the date of certification by the Canterbury Regional Council.

Engagement with Papatipu Rūnanga

7. The consent holder shall engage with Papatipu Rūnanga:
 - a. in the development and review of the SMPs required under Conditions 3, 4 and 5 and the development of the Implementation Plan required under Condition 29; and

- b. at concept design stage with regard to wāhi tapu and taonga.

Advice Note: The Christchurch City Council is committed to working in partnership with Papatipu Rūnanga through the implementation of the CSNDC. This is aimed at achieving the goals of the consent and providing for the ongoing involvement of mana whenua as well as identifying and reflecting mana whenua values and interests in the management of stormwater. While the partnership approach needs to be confirmed with Papatipu Rūnanga, it may involve the establishment and resourcing of a joint CCC/Papatipu Rūnanga Stormwater Working Party along with relevant technical support involving Mahaanui Kurataiao Ltd as well as Te Rūnanga o Ngāi Tahu. It is envisioned that the working party would meet not less than annually and provide a forum for advising on CSNDC implementation.

Receiving Environment Objectives and Attribute LevelsTargets

Waterways, Coastal Waters and Groundwater Quality

8. The consent holder shall use reasonable endeavours to mitigate the effects of stormwater on surface water quality, instream sediment quality, aquatic ecology health and mana whenua values. The extent of mitigation of effects shall be measured as per the requirements below, at the monitoring sites identified in the EMP, in reference to the attributes set out in Tables 3 and 4:
- a. For the Ōtākaro/ Avon River, lower Ōpāwaho/ Heathcote River, Ōtūkaikino River, Te Pātaka o Pākaihautū/ Banks Peninsula and Coastal Waters catchments, the **maintenance** of current Attribute Levels; and
- b. For the upper Ōpāwaho/ Heathcote River, Huritini/ Halswell River and Pūharakekenui/ Styx River catchments, **improvement** of attributes towards the Attribute Target Levels.

Comment [MB7]: The conditions under this section, as well as the associated tables, have been amended to make the conditions easier to understand. This is further clarified in our response document.

~~The consent holder shall use reasonable endeavours to mitigate the effects of stormwater, as measured by the achievement of the surface water quality, instream sediment quality, aquatic ecology health, and mana whenua Receiving Environment Targets set out in Tables 3 and 4, at the monitoring sites identified in the EMP. For the purposes of this assessment, **maintenance** of current target levels shall be required for the Ōtākaro/ Avon River, lower Ōpāwaho/ Heathcote River, Ōtūkaikino River, Te Pātaka o Pākaihautū/ Banks Peninsula and Coastal Waters catchments, and **improvement** of current target values shall be required for the upper Ōpāwaho/ Heathcote River, Huritini/ Halswell River and Pūharakekenui/ Styx River catchments..~~

9. The consent holder shall use reasonable endeavours to mitigate the effects of stormwater on groundwater quality. **The extent of mitigation of effects shall be measured by the **maintenance** of the current levels of the Receiving Environment ~~Targets-Attributes~~** set out in Table 5, at the monitoring sites identified in the EMP.
10. Prior to submission to the Canterbury Regional Council of the SMP for a particular catchment, greenfield development and re-development shall meet the

General City conditions for water quality mitigation as specified in Table 2 of this consent.

11. The consent holder shall identify any active water supply wells within 500 metres downgradient (or 200 metres otherwise) of any new CCC stormwater infiltration facility, assess the likelihood of adverse water quality effects and mitigate as necessary.
12. The Attribute Target Levels in Table 3 for hardness modified copper, lead and zinc in Banks Peninsula surface water shall be calculated for each monitored waterway following the collection of one year of monitoring data. Hardness modified values for copper, lead and zinc for all sites within the EMP shall also be reviewed every five years, with the first review being undertaken in 2017. Hardness modified values shall be calculated using the ANZECC (2000) methodology, as outlined in the EMP. Updated values will be incorporated into the EMP as an amendment to this document, in accordance with Condition 33.
13. The Attribute Target Levels in Tables 3 to 5 are from relevant regional and national guideline levels. Should these guideline levels be updated, the Attribute Target Levels shall be updated to reflect this. Updated values will be incorporated into the EMP as an amendment, certified in accordance with Condition 33.
14. The Attribute Target Levels in Tables 3 and 4 for the Waterway Cultural Health Index, Marine Cultural Health Index and State of Takiwā scores, as well as the associated mana whenua monitoring sites and methodology in the EMP, shall be developed in collaboration with Papatipu Rūnanga. Once these scores, sites and monitoring methods are confirmed, monitoring for these mana whenua objectives shall commence. Updated information will be incorporated into the EMP as an amendment to this document, in accordance with Condition 33.

Comment [MB8]: To be included with response: This addition reflects previous discussions with ECan regarding this issue

Water Quantity

- ~~9.~~15. The consent holder shall use reasonable endeavours to mitigate the effects of stormwater on water quantity, through achieving the flood mitigation targets Attribute Target Levels set out in Table 6, the purpose of which are to maintain flood storage and flow capacity, by:
 - a. Providing stormwater quantity mitigation as outlined in each individual SMP for all greenfield development, and re-development over the duration of this consent; and
 - b. Providing retrofit water quantity mitigation for existing development where practicable.
- ~~40.~~16. The water quantity/flood model(s) for the Pūharakekenui-/ Styx, Ōtakaro/ Avon, Ōpāwaho/ Heathcote River and Huritini/ Halswell Rivers shall be updated to inform any necessary as necessary to reflect changes to in the relevant SMPs during their 10-yearly review. development patterns or modelling parameters every 5 years starting with the 2019 annual report. The results of model updates and a description of how they demonstrate compliance with Condition 15 shall be included in the annual report required under Condition 35.

Comment [MB9]: This is to improve the consistency of wording

Comment [NB10]: Added pursuant to request from ECan to provide interim compliance updates on stormwater quantity modelling

- | ~~44.17.~~ Prior to submission to the Canterbury Regional Council of the SMP for a particular catchment, greenfield development and re-development shall meet the General City conditions for water quantity mitigation as specified in Table 2 of this consent.

Design of Facilities and Devices

- | ~~42.18.~~ Water quality and quantity mitigation facilities and devices shall be designed in general accordance with the Christchurch City Council's Waterways and Wetlands Drainage Guide, Infrastructure Design Standard, Construction Standard Specifications, Christchurch Rain Garden Design Criteria, Christchurch Stormwater Tree Pit Design Criteria and StormfilterTM Design Rainfall Intensity Criterion Report or their respective successor document(s).
- | ~~43.19.~~ All Christchurch City Council stormwater network water quality mitigation facilities and devices constructed for greenfield development after commencement of this consent shall be designed to treat the first flush.
- | ~~44.20.~~ For all other water quality mitigation facilities and devices constructed after commencement of this consent, reasonable endeavours shall be taken to treat the first flush.
- | ~~45.21.~~ All stormwater mitigation facilities and devices constructed after commencement of this consent shall meet any other specific requirements within their respective catchment SMP.
- | ~~46.22.~~ Christchurch City Council stormwater mitigation facilities constructed after the commencement of this consent shall have secondary flow paths to the downstream stormwater network.
- | ~~47.23.~~ Christchurch City Council stormwater mitigation facilities constructed after commencement of this consent shall include best practice features designed to capture and contain as much as reasonably practicable any spills of contaminants entering the stormwater facility.
- | ~~48.24.~~ Design of stormwater mitigation facilities serving sub-catchments greater than 20 hectares shall include computer modelling for detailed hydraulic analysis. The outlet hydrograph for the two percent AEP critical duration design storm generated by modelling of the final design for these facilities shall then be used in the water quantity model for the corresponding river catchment to demonstrate consistency with water quantity objectives in the SMP.
- | ~~49.25.~~ All Christchurch City Council stormwater mitigation facilities and devices constructed after commencement of this consent shall be accompanied by an Operations and Maintenance Manual which shall be made available on request.

Erosion and Sediment Control

- | ~~20.26.~~ An Erosion and Sediment Control Plan (ESCP) shall be prepared and implemented for the construction discharge from any development area in general accordance with Canterbury Regional Council's *Erosion and Sediment*

Control Guidelines for the Canterbury Region, 2007 (Report R06/23 or successor document).

- | ~~24-27.~~ Copies of ESCPs submitted to or prepared by/for the consent holder shall be made available on request.

Industrial Site Management

- | ~~22-28.~~ The consent holder shall, in collaboration with the Canterbury Regional Council:
 - a. Undertake a desktop based identification of industrial sites, ranking sites for risk relative to stormwater discharge and identify the industrial sites that pose the highest risk;
 - b. Audit a rolling list of at least 10 of the highest risk sites in the city and report progress on an annual basis; and
 - c. Identify any industrial sites that pose an unacceptably high risk and add them to Schedule 1 of this consent.

Implementation Plan and Records

- | ~~23-29.~~ An Implementation Plan shall be prepared by the consent holder and made available to Canterbury Regional Council and Papatipu Rūnanga on request within 12 months of granting of this consent. This plan shall be reviewed by Christchurch City Council every 3 years, concurrent with the Christchurch City Council Long Term Plan. The Implementation Plan shall include, but not be limited to:
 - a. A list of accepted stormwater mitigation methods and devices that are specific to active SMPs;
 - b. Details of maximum stormwater contaminant concentrations that will be accepted into the Christchurch City Council network;
 - c. A programme of stormwater works for Christchurch City Council and private development;
 - d. A plan for regulatory, investigative, educational and preventative activities or programmes relating to stormwater discharges;
 - e. Details of budgets for capital works or resourcing that is linked to the Christchurch City Council Long Term Plan; and
 - f. Reporting on any testing or water quality monitoring undertaken that is used to check the performance of facilities or to inform prioritisation of areas for mitigation.
- | ~~24-30.~~ The consent holder shall maintain records of developments authorised under this consent. These records shall be submitted to Canterbury Regional Council annually.
- | ~~25-31.~~ The consent holder shall maintain relevant records including, but not limited to, detailed design drawings and reports, details of site specific assessments undertaken, maps and any engineering design and construction certificates issued for any water quality or quantity mitigation facilities constructed.

Monitoring

Environmental Monitoring Programme

~~26-32.~~ The consent holder shall implement the EMP attached to this consent, with the purpose of assessing compliance against the Receiving Environment Objectives and Attribute Levels referred to Targets in Conditions 7-8, 9 and 15 of this consent so as to achieve the purpose of SMPs set out in Condition 3(a) and (c).

~~27-33.~~ Any amendments to the EMP may not replace the previous version until the EMP has been certified by the RMA Compliance and Enforcement Manager of the Canterbury Regional Council as complying with the requirements of Condition ~~27-32.~~

Responses to Monitoring

~~28-34.~~ If the monitoring results identify that ~~the Attribute Levels are not being maintained or improved in the manner required by referred to in Conditions 8, 9 and 15, and Receiving Environment Targets~~ set out in Tables 3, 4, 5 and 6, are not being met, the consent holder shall:

Comment [MB11]: To be included with response: Added as clarification.

- a. Perform an investigation to identify whether this is due to the effects of stormwater network discharges;
- b. Compile the results of such investigation into a report to be submitted to the Canterbury Regional Council. The report shall include, at a minimum:
 - i. A description of the investigation methodology
 - ii. An evaluation of whether not meeting Attribute Levels is likely the monitoring results are due to stormwater network discharges or not
 - iii. An assessment of whether not meeting these Attribute Levels is likely to mean that the associated Receiving Environment Objective is not being met
 - ii-iv. An assessment of whether reasonable endeavours to mitigate stormwater effects has been carried out
 - iii-v. An assessment of options for correction/remediation (if Receiving Environment Objectives are likely not being met effects are likely due to stormwater network discharges and reasonable endeavours have not been carried out to mitigate these effects)
 - iv-vi. A timeline of implementation of corrective action/remediation (if necessary)
- c. If, upon submittal of the above report, agreement between Christchurch City Council and Canterbury Regional Council cannot be reached regarding any aspects of the report referenced in Condition (~~29b34b~~), the consent holder shall consult with the SWiM Working Party in accordance with the Joint Christchurch City Council and Canterbury Regional Council Stormwater Management Protocol or subsequent revisions to the Protocol, and in accordance with any agreements entered into between the consent holder and Papatipu Rūnanga; and
- d. Implement any actions or changes identified as necessary by SWiM through the consultation under Condition (~~29c34c~~).

Comment [MB12]: To be included with response: This condition has been amended to link better with the Receiving Environment conditions and to ensure effects are related to stormwater discharges.

Advice Note: Discussions should be undertaken with the Canterbury Regional Council prior to and following investigations, to try and establish agreed approaches prior to submitting the report.

Comment [MB13]: To be included with response: This is added at the request of ECan during discussions regarding the response.

Reporting

~~29.~~^{35.} The consent holder shall provide an annual report to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, Banks Peninsula and Christchurch-West Melton Zone Committees, and Papatipu Rūnanga (via Mahaanui Kurataiao Ltd) by 30 June each year. This report will also be made available on the Christchurch City Council website. The report shall include, where appropriate:

Comment [MB14]: To be included with response: This is added at the request of ECan during discussions regarding the response.

a. A summary of the outcomes of monitoring, in accordance with Conditions 8, 9 and 15, and the EMP;

Comment [MB15]: To be included with response: This is added at the request of ECan during discussions regarding the response.

b. A summary of records of consent compliance and flood modelling results (if applicable) for development in greenfield areas;

Comment [MB16]: To be included with response: This is added to link back to the Receiving Environment Objectives.

~~a.c.~~ A summary of any discussions, or consultation or responses carried out in accordance with Condition (27) and any responses carried out under Condition (2934);

Comment [MB17]: To be included with response: Added for clarity

~~b.d.~~ The supply of an updated Schedule 1;

~~e.e.~~ An update on the timetable for construction and activation of Christchurch City Council stormwater mitigation systems for each SMP area;

~~d.f.~~ Report on any collaboration with Papatipu Rūnanga and any activities relating to the protection or enhancement of cultural values;

~~e.g.~~ Any additional monitoring or investigations undertaken beyond those specified in the Monitoring Programme, including those undertaken on industrial sites, that have been initiated to inform the consent holder on stormwater management effectiveness.

Administrative

~~30.~~^{36.} The consent holder shall engage with Papatipu Rūnanga to review the Conditions on a 10 yearly basis from the date of granting of this consent.

~~31.~~^{37.} The Canterbury Regional Council may, on any of the last five days of March or September each year, serve notice of its intention to review the conditions of this consent for the purposes of:

- a. Dealing with any adverse effect on the environment which may arise from the exercise of this consent;
- b. Complying with the requirements of a relevant rule in an operative regional plan.

Attachments

Table 2: General City Conditions – Water Quality and Quantity

| **Table 3: Receiving Environment Objectives and Attribute Levels ~~Targets~~ for Waterways**

| **Table 4: Receiving Environment Objectives and Attribute Levels ~~Targets~~ for Coastal Waters**

| **Table 5: Receiving Environment Objectives and Attribute Levels ~~Targets~~ for Groundwater and Springs**

| **Table 6: Water Quantity ~~Targets~~ Attribute Levels**

Schedule 1: Sites excluded from the Christchurch City Council Comprehensive Discharge Consent

Table 2: General City Conditions – Water Quality and Quantity

This table indicates minimum requirements to enable discharges under this consent from greenfield developments and re-developments in areas not yet covered by a Stormwater Management Plan. For any development where the Christchurch City Council (CCC) considers there are factors that require Canterbury Regional Council input it can choose to not accept a proposed discharge to its network, and therefore a consent from the Regional Council would be required. The CCC may also require a higher standard than is represented in the table below in order to mitigate effects on the network or if any special conditions exist.

Source of Stormwater Discharge(s)	SMALL SITES Total area of disturbance does not exceed 1,000m ²	LARGE SITES Total area of disturbance equals, or is greater than 1,000m ²
From/during land disturbance activities	Erosion and Sediment Control Plan is required	Erosion and Sediment Control Plan is required
From new / re-development residential roof and hardstand areas	No discharge onto or into land where average site slope exceeds 5 degrees Sumps collecting runoff from new hardstand areas shall be fitted with submerged or trapped outlets An assessment of water quantity effects and provision of on-site stormwater storage or network upgrade may be required for sites in the flat** On-site rain water storage is required for new and redevelopment sites on the hills	No discharge onto or into land where average site slope exceeds 5 degrees First flush treatment is required for stormwater runoff from new hardstand areas in excess of 150m ² and buildings with copper or uncoated galvanised metal roofs or guttering/spouting* An assessment of water quantity effects and provision of on-site stormwater storage or network upgrade may be required for sites in the flat** On-site rain water storage is required for new and redevelopment sites on the hills
From new / re-development non-residential roof and hardstand areas	No discharge onto or into land where average site slope exceeds 5 degrees First flush treatment is required for stormwater runoff from new hardstand areas in excess of 150m ² , buildings with copper or uncoated galvanised roofs or guttering/spouting and high-use sites An assessment of water quantity effects and provision of on-site stormwater storage or network upgrade may be required** Site management and spill procedures required for sites that engage in hazardous activities***	No discharge onto or into land where average site slope exceeds 5 degrees First flush treatment is required for stormwater runoff from new hardstand areas in excess of 150m ² , buildings with copper or uncoated galvanised roofs or guttering/spouting and high-use sites An assessment of water quantity effects and provision of on-site stormwater storage or network upgrade may be required** Site management and spill procedures required for sites that engage in hazardous activities***

* CCC has discretion to waive the requirement for first flush treatment of hardstand areas on large residential sites where the amount of pollution-generating hardstand being added is considered to have less than minor effect. **["Uncoated" means without a painted or enamelled coating.]**

** Quantity assessment and mitigation - The effects of the discharge on CCC stormwater network capacity and/or the extent or duration of flooding on downstream properties are to be assessed. Where CCC considers an increase (including cumulative increases) has a more than minor effect, onsite stormwater attenuation or stormwater network upgrade shall be provided. The details of storage volume and peak discharges or network capacity required to mitigate effects on flooding or network capacity constraints shall be determined by Christchurch City Council engineers.

*** Site management and spill procedures – Procedures are to be implemented to prevent the discharge of hazardous substances or spilled contaminants discharging into any land or surface waters via any conveyance path.

Comment [NB18]: To clarify the meaning of uncoated in the context of Table 2.

Table 3: Receiving Environment Objectives and Attribute Levels Targets for Waterways

Advice Notes:

- Monitoring sites and their LWRP classifications ('spring-fed—plains—urban', 'spring-fed—plains' and Banks Peninsula; Canterbury Regional Council, 2012a) are detailed in the EMP, attached to this consent.
- Assessments are to be undertaken for each target at each site.
- Level 1 Assessment = requires a comparison of the given target at each site to the best value recorded during either the baseline or preceding survey (to ensure continual improvement over time, not just compared to the baseline). This assessment is a numerical comparison only, not a statistical comparison. No assessment of decline, maintenance or improvement is required for compliance purposes, but sites potentially showing a decline shall be highlighted in the monitoring report and the management of these sites discussed with the SWiM Working Party.
- Level 2 Assessment = requires a statistical comparison of the given target at each site to the best value recorded during either the baseline or preceding survey (to ensure continual improvement over time, not just compared to the baseline). Assessments of improvement, maintenance and decline, as per the catchment requirements of Condition 7, shall be carried out. The exception to this being sites that already meet the target (as determined by median levels for the monitoring year for each site), where maintenance is only required to be achieved, given that these sites are not considered to be negatively affected by stormwater discharges (i.e. the effects are mitigated). The level of significance for statistical tests shall be 5% (i.e. $p < 0.05$). A minimum of three years is required before time trends analysis can be undertaken (NIWA, 2014). Until that time, data will be presented as a Level 1 assessment only. Improvements and declines are defined as a statistically significant decrease or increase (depending on the target and the direction of change required), and maintenance is defined as no statistically significant change.
- TBC = To Be Confirmed once a full year of monitoring allows hardness modified values to be calculated; these values will be calculated for each waterway using the ANZECC (2000) methodology outlined in the EMP. These targets will be provided as a revision of the EMP and will then become a requirement of consent (i.e. a change of conditions will not be required). TBC-A = To Be Confirmed once a full year of monitoring allows hardness modified values to be calculated, in accordance with Condition 12.
- TBC-B = To Be Confirmed following consultation/engagement with Papatipu Rūnanga, through an update to the EMP, in accordance with Condition 14.
- The method for determining compliance against these objectives is set out in the EMP within Sections 5.4, 6.4, 7.4 and 8.4.

Comment [MB19]: To be included with response: The info contained within the advice note, and the Level 1 and 2 columns, have been moved to the EMP to make the tables easier to follow – the reasoning is outlined in the response document

Objective	Attribute	Attribute Target Level	Basis for Target	Source of Baseline Studies For Comparison
Enhance ecological values	QMCI	Lower limit Quantitative Macroinvertebrate Community Index (QMCI) scores: <ul style="list-style-type: none"> Spring-fed – plains – urban waterways: 3.5 Spring-fed – plains waterways: 5 Banks Peninsula waterways: 5 	QMCI is an indicator of aquatic ecological health, with higher numbers indicative of better quality habitats, due to a higher abundance of more sensitive species. QMCI scores are taken from the guidelines in Table 1a of the LWRP (Canterbury Regional Council, 2012a). This metric is designed for wadeable sites and should therefore be used with caution for non-wadeable sites. These	Five-yearly monitoring: <ul style="list-style-type: none"> Otukaikino = 2012 (James, 2012) Styx = 2013 (James, 2013) Avon = 2013 (Blakely, 2014) Heathcote = 2015 (Blakely, 2015) Halswell = 2016 (Blakely, 2016) (survey yet to be undertaken) Banks Peninsula = 2016 2017 (or first survey thereafter) survey yet to be undertaken)

Comment [MB20]: BP throughout this table has been bumped a year, due to the consent process being delayed and monitoring not previously been undertaken in this catchment

			targets can be achieved through reducing contaminant loads and waterway restoration.	Annual monitoring: <ul style="list-style-type: none"> 2012 or first survey thereafter
Decrease sediment input to prevent adverse effects on water clarity and aquatic biota	<p><u>Fine sediment (<2 mm diameter) percent cover of stream bed</u></p> <p><u>TSS concentrations in surface water</u></p>	<p>Upper limit fine sediment (<2 mm diameter) percent cover of stream bed:</p> <ul style="list-style-type: none"> Spring-fed – plains – urban waterways: 30% Spring-fed – plains waterways: 20% <u>Banks Peninsula waterways: 20%</u> <p><u>Upper limit concentration of TSS in surface water: 25 mg/L</u></p>	<p>Sediment (particularly from construction) can decrease the clarity of the water, and can negatively affect the photosynthesis of plants and therefore primary productivity within streams, interfere with feeding through the smothering of food supply, and can clog suitable habitat for species. These target values<u>Sediment over Target Levels</u> are taken from the standards for the original Styx and South-West Stormwater Management Plan consents, and are based on Table 1a of the LWRP (Canterbury Regional Council, 2012a). This<u>These targets</u> should be used with caution in at non-wadeable sites that can likely naturally have soft-bottom channels. These targets can be achieved through reducing contaminant loads (particularly using erosion and sediment control) and instream sediment removal.</p>	<p>Five-yearly <u>sediment cover</u> monitoring:</p> <ul style="list-style-type: none"> Otukaikino = 2012 (James, 2012) Styx = 2013 (James, 2013) Avon = 2013 (Blakely, 2014) Heathcote = 2015 (Blakely, 2015) Halswell = 2016 (<u>Blakely, 2016</u>) (survey yet to be undertaken) Banks Peninsula = 2016 <u>2017 (or first survey thereafter)</u>, survey yet to be undertaken) <p>Monthly <u>sediment cover and TSS</u> monitoring:</p> <ul style="list-style-type: none"> Beginning of dataset
Reduce copper, lead and zinc levels in surface water to prevent adverse	<u>Zinc, copper and lead concentrations in surface water</u>	<p>Upper limit concentration of dissolved zinc:</p> <ul style="list-style-type: none"> Avon River catchment: 0.0297 mg/L Heathcote River catchment: 0.04526 mg/L 	<p>These metals can be toxic to aquatic organisms, negatively affecting such things as fecundity, maturation, respiration, physical structure and behaviour. The CCC has developed these hardness</p>	<p>Monthly monitoring:</p> <ul style="list-style-type: none"> Number of exceedances = 2012 Time trends analysis = beginning of dataset

<p>effects on aquatic biota</p>		<ul style="list-style-type: none"> • Halswell River catchment: 0.01919 mg/L • Styx River catchment: 0.01214 mg/L • Otukaikino River catchment: 0.00868 mg/L • Linwood Canal: 0.146 mg/L • Banks Peninsula catchments: TBC-A <p>Upper limit concentration of dissolved copper:</p> <ul style="list-style-type: none"> • Avon River catchment: 0.00356 mg/L • Heathcote River catchment: 0.00543 mg/L • Halswell River catchment: 0.00336 mg/L • Styx River catchment: 0.00212 mg/L • Otukaikino River catchment: 0.00152 mg/L • Linwood Canal: 0.0175 mg/L • Banks Peninsula catchments: TBC-A <p>Upper limit concentration of dissolved lead:</p> <ul style="list-style-type: none"> • Avon River catchment: 0.01554 mg/L • Heathcote River catchment: 0.02916 	<p>modified trigger values in accordance with the methodology in the 'Australian and New Zealand Environment and Conservation Council, and Agriculture and Resource Management Council of Australia and New Zealand' (ANZECC, 2000) guidelines, and the species protection level relevant to each waterway in the LWRP (Canterbury Regional Council, 2012a). This calculation document can be provided on request. These targets can be achieved primarily through reducing contaminant loads.</p>	
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		<ul style="list-style-type: none"> mg/L Halswell River catchment: 0.01257 mg/L Styx River catchment: 0.00634 mg/L Otukaikino River catchment: 0.00384 mg/L Linwood Canal: 0.167 mg/L Banks Peninsula catchments: TBC-<u>A</u> 		
Reduce nutrient levels to limit excessive growth of macrophytes and filamentous algae	<u>Total macrophyte and filamentous algae (>20 mm length) cover of stream bed</u>	<p>Upper limit total macrophyte cover of the stream bed:</p> <ul style="list-style-type: none"> Spring-fed – plains – urban waterways: 60% Spring-fed – plains waterways: 50% Banks Peninsula waterways: 30% <p>Upper limit filamentous algae (>20 mm length) cover of the stream bed:</p> <ul style="list-style-type: none"> Spring-fed – plains – urban waterways: 30% Spring-fed – plains waterways: 30% Banks Peninsula waterways: 20% 	Macrophyte and algae cover are indicators of the quality of aquatic habitat. Targets are taken from Table 1a of the LWRP (Canterbury Regional Council, 2012a). Improvement towards these targets can be achieved by reduction in nutrient concentrations and riparian planting to shade the waterways.	<p>Five-yearly data:</p> <ul style="list-style-type: none"> Otukaikino = 2012 (James, 2012) Styx = 2013 (James, 2013) Avon = 2013 (Blakely, 2014) Heathcote = 2015 (Blakely, 2015) Halswell = 2016 (<u>Blakely, 2016</u>)(survey yet to be undertaken) Banks Peninsula = <u>2016 2017 (or first survey thereafter)</u>; survey yet to be undertaken) <p>Annual monitoring:</p> <ul style="list-style-type: none"> 2012 or first survey thereafter
Improve instream sediment quality to prevent adverse effects on	<u>Zinc, copper and lead concentrations in instream sediment</u>	<p>Upper limit concentration of <u>total recoverable</u> metals for all classifications:</p> <ul style="list-style-type: none"> Copper = 65 mg/kg dry weight Lead = 50 mg/kg dry weight 	Metals can bind to sediment and remain in waterways, potentially negatively affecting biota. These trigger values are based on ISQG-low ANZECC (2000) guidelines. These targets	<p>Five-yearly data:</p> <ul style="list-style-type: none"> Avon = 2013 (Gadd & Sykes, 2014) Styx = 2014 (Whyte, 2014) Heathcote = 2015 (Gadd & Sykes, 2015)

aquatic biota		<ul style="list-style-type: none"> • Zinc = 200 mg/kg dry weight • Total PAHs = 4 mg/kg dry weight 	can be achieved through reducing contaminant loads and instream sediment removal.	<ul style="list-style-type: none"> • Halswell = 2016 (Blakely, 2016) (survey yet to be undertaken) • Banks Peninsula = 2016 2017 (or first survey thereafter, survey yet to be undertaken) • Otukaikino = 2017-2018 (survey yet to be undertaken)
<p>Enhance mana whenua freshwater values</p> <p>ADVICE NOTE: <i>Papatipu Rūnanga have yet to be consulted with on this objective and target, and so they may be subject to change prior to the hearing</i></p>	<p>Waterway Cultural Health Index and State of Takiwā scores</p>	<p>Lower limit averaged Waterway Cultural Health Index and State of Takiwā scores for all classifications:</p> <ul style="list-style-type: none"> • Spring-fed – plains – urban waterways: TBC-B • Spring-fed – plains waterways: TBC-B 4 • Banks Peninsula waterways: TBC-B4 	<p>The Waterway Cultural Health Index assesses cultural values and indicators of environmental health, such as mahinga kai (food gathering). These indices are on a scale of 1 - 5, with higher scores indicative of greater cultural values. No guidelines are available currently for the different types of waterways, so these targets are developed specifically for this consent, with higher targets for waterways with higher values. These targets can be achieved through reducing contaminant loads and habitat restoration.</p>	<p>Five-yearly data:</p> <ul style="list-style-type: none"> • Avon = 2012 (Lang <i>et al</i>, 2012) • Heathcote = 2012 (Lang <i>et al</i>, 2012) • Styx = 2012 (Orchard S. & Lobb, 2013) • Halswell = 2016 (survey yet to be undertaken) first year of survey • Banks Peninsula = first year of survey -2016-2017 (survey yet to be undertaken) or first survey thereafter • Otukaikino = first year of survey -2017-2018 (survey yet to be undertaken)

Table 4: Receiving Environment Objectives and Attribute Levels Targets for Coastal Waters

Advice Note:

- Monitoring sites and their Regional Coastal Environment Plan for the Canterbury Region (RCEP) classifications (Canterbury Regional Council, 2012b) are detailed in the EMP, attached to this consent.
- Assessments are to be undertaken for each target at each site.
- Level 1 Assessment – requires a comparison of the given target at each site to the best value recorded during either the baseline or preceding survey (to ensure continual improvement over time, not just compared to the baseline). This assessment is a numerical comparison only, not a statistical comparison. No assessment of decline, maintenance or improvement is required for compliance purposes, but sites potentially showing a decline shall be highlighted in the monitoring report and the management of these sites discussed with the SWiM Working Party.
- Level 2 Assessment – requires a statistical comparison of the given target at each site to the best value recorded during either the baseline or preceding survey (to ensure continual improvement over time, not just compared to the baseline). Assessments of improvement, maintenance and decline, as per the catchment requirements of Condition 7, shall be carried out. The exception to this being sites that already meet the target, where maintenance is only required to be achieved (as determined by median levels for the monitoring year for each site), given that these sites are not considered to be negatively affected by stormwater discharges (i.e. the effects are mitigated). The level of significance for statistical tests shall be 5% (i.e. $p < 0.05$). A minimum of three years is required before time trends analysis can be undertaken (NWA, 2014). Until that time, data will be presented as a Level 1 assessment only. Improvements and declines are defined as a statistically significant decrease or increase (depending on the target and the direction of change required), and maintenance is defined as no statistically significant change.
- TBC – To Be Confirmed once a full year of monitoring has been carried out, in consultation with ECan. This target will be provided as a revision of the EMP and will then become a requirement of consent (i.e. a change of conditions will not be required). TBC-B = To Be Confirmed following consultation with Papatipu Rūnanga.
- The method for determining compliance against these objectives is set out in the EMP within Sections 5.4 and 8.4.

Comment [MB21]: To be included with response: The info contained within the advice note, and the Level 1 and 2 columns, has been moved to the EMP to make the tables easier to follow – the reasoning is outlined in the response document

Objective	Attribute	Attribute Target Level	Basis for Target	Source of Baseline Studies For Comparison
Reduce sediment input to prevent adverse effects on water clarity and aquatic biota	TSS concentrations in surface water	No statistically significant increase in TSS concentrationsMaximum Total Suspended Solids (TSS) concentrations for all classes: <ul style="list-style-type: none"> TBC 	Elevated levels of TSS in the water column decrease the clarity of the water and can adversely affect aquatic plants, invertebrates and fish (Crowe & Hay, 2004; Ryan, 1991). For example, sediment can affect photosynthesis of plants and therefore primary productivity, interfere with feeding through the smothering of food supply, and can clog suitable habitat for species (Crowe & Hay, 2004; Ryan, 1991). The target will be achieved by	Annual data (monthly sampling): <ul style="list-style-type: none"> Beginning of dataset2016 (monitoring yet to be started)

			reducing contaminant loads (particularly using erosion and sediment control measures).	
Decrease copper, lead and zinc levels in water to prevent adverse effects on aquatic biota	Copper, lead and zinc concentrations in surface water	Maximum dissolved metal concentrations for all classes (with the exception of the Operational Area of the Port of Lyttelton): <ul style="list-style-type: none"> • Copper: 0.005 mg/L • Lead: 0.005 mg/L • Zinc: 0.05 mg/L 	Metals, in particular, copper, lead and zinc, can be toxic to aquatic organisms, negatively affecting such things as fecundity, maturation, respiration, physical structure and behaviour (Harding, 2005). Site specific criteria are set out in the RCEP for the Canterbury Region. The plan specifically details that this guideline is not relevant for the Operational Area of the Port of Lyttelton. This area is affected by direct discharges from boats that will make monitoring of the effects of stormwater difficult. These targets will be achieved by reducing contaminant loads.	Annual data (monthly sampling): <ul style="list-style-type: none"> • Beginning of dataset 2016 (monitoring yet to be started)
Enhance mana whenua coastal values ADVICE NOTE: <i>Papatipu Rūnanga have yet to be consulted with on this</i>	Marine Cultural Health Index and State of Takiwā scores	Minimum averaged Marine Cultural Health Index and State of Takiwā scores for all classes: <ul style="list-style-type: none"> • TBC-B4 	The Marine Cultural Health Index and State of Takiwā scores assesses cultural values and indicators of environmental health, such as mahinga kai (food gathering). These indices are on a scale of 1 - 5, with higher scores indicative of greater cultural values. No guidelines are available currently for coastal areas, so this target is developed specifically for this consent. These targets can be	Five-yearly monitoring: <ul style="list-style-type: none"> • 2018 (survey yet to be undertaken) First year of survey

*objective
and target,
and so they
may be
subject to
change
prior to the
hearing*

achieved through reducing
contaminant loads.

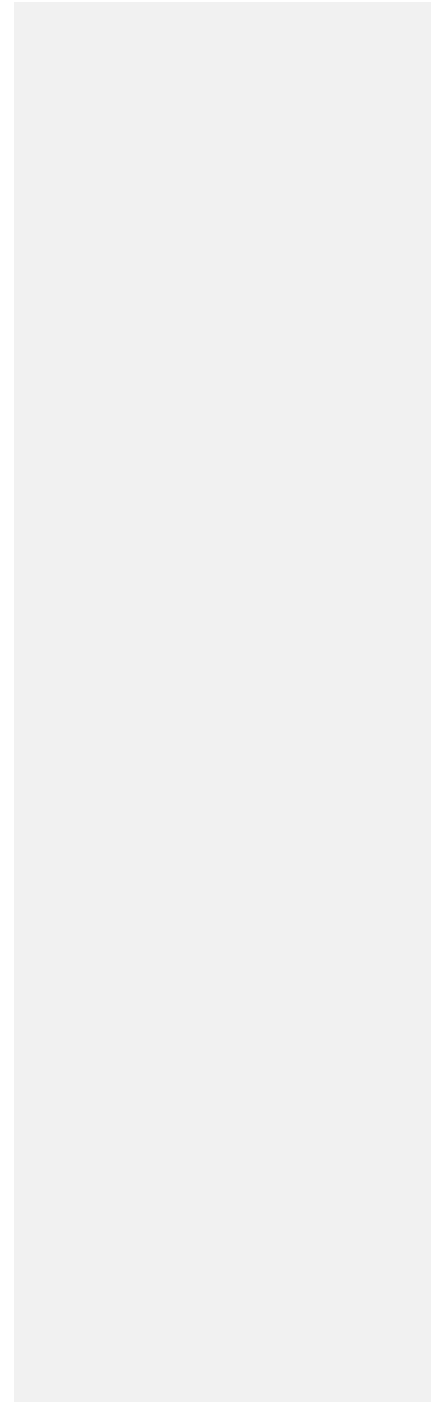


Table 5: Receiving Environment Objectives and Attribute Levels Targets for Groundwater and Springs

Advice Note:

- ~~Groundwater monitoring wells are detailed in the EMP attached to this consent, which will allow assessment against the receiving environment targets below~~
- ~~Due to the influence of other land use activities on groundwater (e.g. agricultural land use and industrial activities,) poor values against the targets below may not be a result of stormwater discharges, and further analysis and investigations may be required to determine the extent that stormwater is impacting on groundwater quality. The method for determining compliance against these objectives is set out in the EMP within Section 3.3.~~

Comment [MB22]: The info contained within the advice note has been moved to the EMP to make the tables easier to follow – the reasoning is outlined in the response document

Objective	Attribute	Attribute Target Level	Basis for Target	Source of Baseline
Protect drinking water quality	<u>Copper, lead, zinc and Escherichia coli concentrations in drinking water</u>	<p>Maximum annual eConcentration to not exceed:</p> <ul style="list-style-type: none"> • Copper: <u>4-0.5</u> mg/L • Lead: <u>0.0050.0025</u> mg/L • Zinc: <u>0.750.375</u> mg/L <p>No <u>statistically significant</u> increase in the concentration of <u>total copper, lead and zinc, and Escherichia coli</u> at drinking water supply wells caused by stormwater discharges.</p>	<p>The most important use of Christchurch groundwater is the supply of the urban reticulated drinking water supply. Contaminants in stormwater that infiltrate into the ground could impact on the quality of water supply wells and/or springs. The compliance criteria for a potable and wholesome water supply are specified in the Drinking-Water Standards for New Zealand 2005 (Revised 2008). Metals and <i>E.coli</i> were chosen for these targets, as these are contaminants present in stormwater. The target values for copper and lead are <u>a quarter of the Maximum Acceptable Value (MAV) or Guideline Value (GV)</u> taken from the <u>Drinking Water Standards for New Zealand 2005 (revised 2008)</u>. <u>This is to ensure investigations occur before the water quality limits in the LWRP are exceeded</u>, which details are that concentrations are not to exceed 50% of the <u>Maximum Acceptable Value (MAV) specified in the New Zealand drinking water standards</u>. An equivalent criteria has also been applied to the zinc target, which is not included in the LWRP <u>water quality limits</u>, but has a guideline in the drinking water standards.</p>	<p>10 years of previous groundwater quality monitoring data from CCC public drinking water supply wells and pumping stations. <u>E. coli = beginning of daily monitoring dataset from pumping stations</u> <u>Metals = not relevant</u></p>

Comment [MB23]: Changed because this doesn't follow the same approach for the other tables – the investigation condition (32) will trigger this type of investigation

<p>Avoid widespread adverse effects on shallow groundwater quality</p>	<p><u>Electrical conductivity in groundwater</u></p>	<p>No <u>statistically</u> significant increase in <u>electrical conductivity concentrations</u> of the following <u>contaminants at quarterly long term monitoring sites, as determined by Time Trends analysis or other robust analysis:</u> <u>Copper</u> <u>Lead</u> <u>Zinc</u></p>	<p>Contaminants in stormwater that infiltrate into the ground could impact on groundwater quality. Long term groundwater quality at monitoring wells is undertaken by CCC and ECan. Those monitoring points that occur within the urban area could be impacted by CCC stormwater management activities. <u>Electrical conductivity is to be used as an indicator for identifying changes in metals (particularly copper, lead, zinc).</u></p>	<p>Data from the previous 10 years of CCC and ECan groundwater quality monitoring. Data collected since 2006 <u>Beginning of regular quarterly monitoring</u></p>
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Comment [MB25]: 10 years previous implied a moving dataset – this gives more clarity of the date of the beginning of the dataset

Comment [MB24]: Compliance methodology moved to EMP

Table 6: Receiving Environment Attribute Levels Targets for Flood Mitigation

Receiving Environment	Attribute Target Level	Basis for Target	Notes	Comment [NB26]: Notes column added for background
Otākaro/ Avon	Flood levels for the 2 percent annual exceedance probability critical duration event shall not increase more than 50 millimetres when compared to the March 2014 modelled 2 percent annual exceedance probability design flood level	As measured in the Otākaro/Avon at Gloucester Street Bridge <u>using the CCC flood model</u>		Comment [NB27]: To be included in response. Added to be clear that compliance is measured in the flood model, not in the rivers.
Pūharakekenui/ Styx	Flood levels for the 2 percent annual exceedance probability critical duration event shall not increase more than 100 millimetres +20% tolerance when compared to with the 2012 impervious surface 2 percent annual exceedance probability design flood level	As measured in the Pūharakekenui/ Styx River at Harbour Road Bridge <u>using the CCC flood model</u>		
Ōpāwaho/ Heathcote	Flood levels for the 2 percent annual exceedance probability critical duration event shall not increase more than 30 millimetres when compared to the 1991 impervious surface 2 percent annual exceedance probability design flood level	As measured in the Ōpāwaho/ Heathcote River at Ferniehurst Street <u>using the CCC flood model</u>		
Huritini/ Halswell	<u>Flood levels for the 2 percent annual exceedance probability critical duration event shall not increase when compared to the March 2016 modelled 2 percent annual exceedance probability design flood level. Specific target for the Huritini/ Halswell to be established within 2 years of granting of this consent based on water level monitoring at Sabys Road and Ryans Bridge</u>	<u>As measured in the Huritini/ Halswell River at the Minsons Drain confluence using the CCC flood model</u>	<u>The Minsons Drain confluence with the Huritini/Halswell River represents the southerly extent of inputs from Christchurch City catchments, but also contains discharges from S District. Inputs from catchment outside of the city can be in the CCC stormwater model compliance assessment purposes.</u>	Comment [NB28]: To be included in response. A flood mitigation target has now been specified for the Halswell River as requested by ECan.
Otukaikino	<u>Discharges from all new greenfield development into the Christchurch City Council network are mitigated using the "Partial Detention" strategy outlined in the Pūharakekenui/ Styx SMP. No Specific Target</u>	<u>Christchurch City Council does not monitor flooding in the Otukaikino River. Discharges from greenfield development and re-development into the Christchurch City Council network are mitigated using the "partial detention" strategy outlined in the Pūharakekenui/ Styx SMPAs measured through the CCC discharge authorisation compliance process for Resource and Building Consents</u>	<u>CCC does not monitor or model flooding in the Otukaikino River. Flooding occurs due to backwater effects in the Waimakariri R. Therefore, a best practice a mitigation of development v implemented.</u>	Comment [NB29]: To be included in response. Flood mitigation for Otukaikino to be measured through implementation of the Partial Detention strategy on greenfields development and compliance to be measured through the discharge authorisation process.

<p>Banks Peninsula (Various)</p>	<p>Discharges from all new greenfield development within settlement areas of Te Pātaka o Pākaihautū/ Banks Peninsula into the Christchurch City Council Network are mitigated using the "Extra-Over Detention" strategy. Specific targets for key receiving environments to be established under the Te Pātaka o Pākaihautū/ Banks Peninsula Settlements SMP.</p>	<p>As measured through the CCC discharge authorisation compliance process for Resource and Building Consents</p>	<p>Receiving environments within Te Pātaka o Pākaihautū/ Banks Peninsula Settlements are primarily coastal. The strategy behind "Extra-Over Detention" is to mitigate peak flows from development sites back to pre-development flow rates in order to mitigate effects of flooding and waterway channel erosion. Therefore, a best practice mitigation of development v implemented.</p>
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Comment [NB30]: To be included in response. Flood mitigation for BP to be measured through implementation of the Extra-Over Detention strategy on greenfields development and compliance to be measured through the discharge authorisation process.

**Schedule 1: Sites Excluded from the Comprehensive Stormwater
Network Discharge Consent**

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