

## **CRC190445 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 Water Issues Management (**WIM**) Group 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 being equalled or exceeded in any 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.

**Banks Peninsula** means the area within Banks Peninsula as defined by the operative Christchurch District Plan (or successor).

**Best Practicable Option** is as defined under the Resource Management Act 1991.

**Christchurch Contaminant Load Model (C-CLM)** means the Golder Associates (NZ) Ltd 2018 Christchurch Contaminant Load Model (C-CLM). The C-CLM report is attached to these conditions as Schedule 5.

**critical duration** means the time taken during a storm event for peak water levels to be reached in the receiving waters.

**design storm** is the theoretical rainfall event that an 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 site** 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 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% AEP design storm event.

**facility** means a constructed method of holding or attenuating stormwater, at a larger scale than a device, for the purpose of reducing discharge rates or removing contaminants. Examples include a sedimentation basin, a constructed wetland, a wet pond, an attenuation basin and/or 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 that is to be used for urban purposes, for example 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.

**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 land under agricultural production.

**Industry Liaison Group** means a group of representatives from various industries, which will include the Oil Industry Environmental Working Group, Lyttelton Port Company and

Ravensdown Limited, invited by Christchurch City Council to attend an annual meeting to discuss stormwater discharges under this resource consent.

**LWRP** means Canterbury Land and Water Regional Plan.

**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, as represented by Mahaanui Kurataiao Ltd or its successor organisation.

**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% AEP design storm event.

**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 has the potential to increase the scale, intensity or contaminant content of the discharge that existed prior to the commencement of this resource consent.

**River Care Liaison Group** means a group of representatives from organisations with a particular interest in the protection and restoration of the natural environment of the Christchurch rivers and their tributaries including wetlands, and that are invited by Christchurch City Council to attend an annual meeting to discuss stormwater discharges under this resource consent.

**Settlement Areas of Banks Peninsula** means those areas within Banks Peninsula that are within the following zones, or equivalent zones if they are renamed, under the Christchurch District Plan:

- Residential Banks Peninsula
- Residential Small Settlement
- Residential Large Lot
- Commercial Banks Peninsula
- Open Space Metropolitan Facilities
- Specific Purpose (Lyttleton Port)
- Industrial General
- Specific Purpose (School)
- Specific Purpose (Cemetery)
- Open Space Community Parks.

**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 Management 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 water and entrained contaminants arising from precipitation on the external surface of any structure or any land modified by human action, and that has been channelled, diverted, intensified or accelerated by human intervention. Stormwater excludes discharges of groundwater, spilled or deliberately released hazardous substances and/or washdown activities.

**stormwater network** means a network owned or operated by the Christchurch City Council of pipes, swales, drains, kerbs and channels that collects stormwater, and includes any device or facility owned or operated by the Christchurch City Council for the treatment of stormwater, prior to a discharge to land, groundwater or surface water. Stormwater network excludes any system that has been constructed for the primary purpose of collection, conveyance or discharge of groundwater.

**Sub-catchment** means part of a catchment.

**surface water** means water in rivers, watercourses and artificial waterbodies, lakes, wetlands, springs, or coastal waters, but excludes groundwater and atmospheric water.

**TSS** means Total Suspended Solids.

**WIM** means the Water Issues Management Group, or its successor. The WIM 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 'Joint Christchurch City Council and Environment Canterbury Stormwater Management Protocol (March 2006, Revised September 2008 and November 2010)'.

## **ACTIVITY**

### **Purpose and Location**

1. Except where excluded under Condition 2, this consent authorises the discharge of stormwater onto or into land or into surface water which:
  - (a) is generated from within the territorial boundaries of Christchurch City Council; or
  - (b) enters the stormwater network from outside the Christchurch City Council boundary.

### **Exclusions**

2. This consent excludes discharges:
  - (a) Emanating from land within Banks Peninsula that is outside the Settlement Areas of Banks Peninsula; and
  - (b) From private stormwater systems that bypass the stormwater network (owned and operated by Christchurch City Council) and discharge into the Coastal Marine Area; and
  - (c) Emanating from hardstand areas of non-residential existing sites discharging onto or into land via private networks unless the discharge has been previously authorised by the Christchurch City Council; and

- (d) From any activity not existing at the commencement of this resource consent, re-development, or development site on the Canterbury Regional Council's Listed Land Use Register that is considered by the Christchurch City Council to pose an unacceptably high risk of surface water or groundwater contamination; and

*Advice Note: The identification of unacceptable high risk will be in the manner required by the Memorandum of Understanding for Stormwater Discharges in Christchurch City (2014), or successor document, between the Christchurch City Council and Canterbury Regional Council until a risk matrix is finalised under Condition 3 below.*

- (e) Emanating from any stage of a development site with a total area of disturbance exceeding 5 hectares on flat land or 1 hectare on hill land; and
- (f) From any site listed on the attached Schedule 1 'Sites excluded from the Christchurch City Council Comprehensive Stormwater Network Discharge Consent'
  - (i) at commencement of this resource consent; or
  - (ii) as a result of the process set out in Condition 3 below; or
  - (iii) as a result of the process set out in Condition 47.

### **Transitional Arrangements**

- 3. Discharge into the stormwater network from the sites excluded by Conditions 2(d), 2(e) or 2(f) are authorised under this consent on 1 January 2025, or when current discharge permits expire or are surrendered for those sites, whichever is the latest, unless through the transitional arrangements set out below, or through the audits described in Condition 47, the Consent Holder determines that the discharge poses an unacceptably high risk of surface water or groundwater contamination. The transitional arrangements are:
  - (a) Within 6 months of the commencement of this resource consent, the Consent Holder shall engage with the Canterbury Regional Council to obtain full details of all of the consented discharges excluded from this consent until 2025, including information on site activities, conditions and compliance records;
  - (b) Within 30 months of the commencement of this resource consent, the Consent Holder shall draft a risk matrix used to identify and rate the risk associated with each of the stormwater discharges where information has been provided under Condition 3(a), and those discharges described in Condition 2(d) and 2(e). The risk matrix shall be developed as follows:
    - (i) Within 18 months of the commencement of this consent, the Consent Holder shall prepare a draft risk matrix and provide it to the Industry Liaison Group for comment;
    - (ii) The Consent Holder shall invite the Industry Liaison Group to provide comment within 2 months of providing the draft risk matrix to them for comment;
    - (iii) Within 3 months of receiving the comment referenced in Condition 3(b)(ii), the Consent Holder shall prepare a memo and/or revised risk matrix

- addressing that comment and circulate it to the Industry Liaison Group along with an invitation to an Industry Liaison Group meeting;
- (iv) Within one month of the meeting held under Condition 3(b)(iii), the Consent Holder shall circulate minutes, including points of agreement and disagreement between the parties;
  - (v) Any changes to the draft risk matrix shall be provided to the Industry Liaison Group for feedback no less than 2 months prior to being submitted to Canterbury Regional Council.
- (c) Within 3 years of the commencement of this consent, the Consent Holder shall provide to the Canterbury Regional Council a Transition Plan for the discharges excluded by Conditions 2(d), 2(e) and 2(f) that includes, but is not limited to:
- (i) a description of the regulatory methods that will be used by the Consent Holder to ensure that previously excluded discharges will be subject to standards that achieve required environmental outcomes as described in Condition 3(e);
  - (ii) the risk matrix prepared under Condition 3(b);
  - (iii) a description of site-specific monitoring plans for particular sites from which the discharge is rated high in the risk matrix;
  - (iv) a description of the process that the Consent Holder will use to determine, in collaboration with Canterbury Regional Council and through engagement with affected site owners and/or operators, whether a site will remain excluded from authorisation under this consent due to its discharge posing an unacceptably high risk of surface water or groundwater contamination;
- (d) if as a result of the risk matrix and process set out in Condition 3(b) it is determined that the discharge poses an unacceptably high risk of surface water or groundwater contamination then that discharge will remain excluded from this consent and listed on the attached Schedule 1;
- (e) the Consent Holder shall ensure that all other sites referred to in Condition 3(a) are, from the date on which the discharges are authorised under this resource consent, subject to standards that result in the same or better environmental outcomes for the quality and quantity of the discharge as those that were in the relevant site specific resource consent issued by the Canterbury Regional Council.

*Advice note: Discharge into the stormwater network will still require approval from Christchurch City Council, as owner and operator of the stormwater network, following the surrender or expiry of discharge permits for the sites noted above, or from 1 January 2025, whichever is the latest.*

#### **Stormwater Management Plans**

4. The Consent Holder shall, in consultation with papatipu rūnanga, Department of Conservation, and the Christchurch-West Melton and Banks Peninsula Zone Committees (or successor organisations), develop, and as necessary update Stormwater Management Plans (SMPs) in accordance with the programme set out in

Table 1 and submit each SMP to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance for certification that it contains the matters required by Condition 7 and is consistent with the purpose of SMPs in Condition 6.

5. SMPs shall be reviewed and submitted for certification to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance every 10 years from the date of the certification of the SMP, except that:
  - (a) the Styx SMP shall be reviewed and submitted by 30 June 2023, and then 10 yearly after its certification; and
  - (b) the Halswell SMP shall be reviewed and submitted by 30 June 2021, and then 10 yearly after its certification.

**Table 1: SMP Programme**

<b>SMP Area</b>	<b>Date SMP Operative</b>	<b>Date Submitted to Canterbury Regional Council</b>
Ōtākaro/ Avon River Area Christchurch		Within 36 months of the commencement of this consent
Pūharakekenui/ Styx River Area Christchurch	30 June 2014	
Huritini / Halswell River Area Christchurch	30 June 2016	
Ōpāwaho/ Heathcote River Area Christchurch		Within 18 months of the commencement of this consent
Estuary and Coastal Area Christchurch		Within 24 months of the commencement of this consent
Outer Area Christchurch		Within 30 months of the commencement of this consent
Te Pātaka o Rākaihautū / Banks Peninsula Settlements		Within 36 months of the commencement of this consent

6. The purpose of the SMPs is to:
  - (a) Contribute to meeting the overall contaminant load reduction standards set in Condition 19 and 20;
  - (b) Set a contaminant load reduction target(s), for each catchment in that SMP area in order to demonstrate the commitment of the Consent Holder to the improvement of stormwater discharge quality over time;
  - (c) Demonstrate the means by which the quality of stormwater discharges will be progressively improved towards meeting the Receiving Environment Objectives and Attribute Target Levels for waterways, coastal waters, groundwater and springs, and water quantity, set out in the conditions of this consent and in Schedules 7 to 10;

- (d) Provide for discharge of stormwater to land infiltration systems where reasonably practicable as the means to demonstrate that stormwater contribution to groundwater and spring-fed stream flows will be maintained;
  - (e) Demonstrate the means by which Christchurch City Council stormwater infiltration facilities constructed by, or on behalf of, the Consent Holder, after the commencement of this consent will be designed, located and operated to avoid, remedy or mitigate adverse effects of groundwater mounding on other land in anything more frequent than the critical 2% AEP Event;
  - (f) Plan the works required to mitigate the effects of stormwater discharges to the extent required by this resource consent;
  - (g) Implement the conditions of this consent as they apply to each catchment, including the best practicable option for weed management in the Pūharakekenui/Styx River as determined under Schedule 4(x).
7. SMPs submitted to Canterbury Regional Council after the commencement of this resource consent shall include but not be limited to the information set out in Schedule 2.
8. Prior to submitting a SMP or any reviewed SMP, or amendment to a SMP to the Canterbury Regional Council, other than one agreed with Canterbury Regional Council as making minor changes and corrections, the Consent Holder shall:
- (a) In early development stages for a possible SMP, provide a briefing to and invite comments from:
    - (i) papatipu rūnanga;
    - (ii) The relevant Zone Committee(s) (or successor organisation);
    - (iii) The relevant Community Board(s) (or successor organisation); and
    - (iv) The Department of Conservation.
  - (b) Following completion of a draft SMP, provide a draft copy to the following parties inviting feedback within a timeframe of not less than 40 working days:
    - (i) papatipu rūnanga;
    - (ii) The relevant Zone Committee(s) (or successor organisation);
    - (iii) The relevant Community Board(s) (or successor organisation); and
    - (iv) The Department of Conservation.
9. The Consent Holder shall amend the SMPs as it considers necessary to respond to:
- (a) the results of the Christchurch Contaminant Load Model (C-CLM) and contaminant load reduction targets set within the SMPs, or any revisions thereof;
  - (b) The results of monitoring, including any investigations or outcomes in relation to the responses to modelling and monitoring under Conditions 56-59;



- (c) Outcomes of investigations and trials carried out under Conditions 39 and 40 and Schedules 3 and 4;
  - (d) Any changes to relevant national, and/or regional planning documents including those that result from the LWRP sub-regional chapter development process;
  - (e) The use of new technologies, new opportunities for additional mitigation (such as for infill areas or retro-fit) or new constraints on the implementation of mitigation due to changes in developer plans; and
  - (f) New environmental data and research including updated international and national best practice technologies.
10. Any amendments to SMPs, other than those agreed with Canterbury Regional Council as making minor changes and corrections, shall not replace the previous version until the amendments have been certified by the Canterbury Regional Council as containing the matters required by Condition 7 and as being consistent with the purpose of SMPs in Condition 6.

### **Implementation Plan**

11. The purpose of an Implementation Plan is to give effect to certified SMPs and to include the matters set out in Condition 12. An Implementation Plan shall be:
- (a) Prepared by the Consent Holder, through engagement with papatipu rūnanga under Condition 13(a), and with the Department of Conservation, within 18 months after the commencement of this resource consent;
  - (b) Updated to give effect to new, reviewed or amended SMPs within 12 months of SMPs being certified;
  - (c) Reviewed by the Consent Holder every 3 years, with reference to the Christchurch City Council Long Term Plan; and
  - (d) Made available to Canterbury Regional Council and papatipu rūnanga on request.
12. The Implementation Plan shall include but not be limited to:
- (a) A list and map of proposed stormwater mitigation methods and devices;
  - (b) A programme of stormwater works for Christchurch City Council and anticipated private development;
  - (c) A plan for regulatory, investigative, educational and preventative activities or programmes relating to stormwater discharges, including activities undertaken under Conditions 39 and 40 and Schedules 3 and 4;
  - (d) Details of budgets for capital works or resourcing that is linked to the Christchurch City Council Long Term Plan.

### **Engagement with Papatipu Rūnanga**

13. The Consent Holder shall engage with papatipu rūnanga:

- (a) In the development and review of the SMPs required under Conditions 4 and 8, and other amendment to SMPs, and the development of the Implementation Plan required under Conditions 11 and 12;
- (b) At concept design stage for the installation of stormwater treatment facilities and devices with regard to wāhi tapu and taonga;
- (c) By providing quarterly reports to Mahaanui Kurataiao Ltd on stormwater developments, projects and monitoring under this resource consent;
- (d) By the engagement required by Conditions 56 to 58 on responses to modelling;
- (e) By providing the investigation report required by Condition 59 on responses to monitoring; and
- (f) By holding an annual meeting with Mahaanui Kurataiao Ltd to discuss stormwater works under this resource consent, and papatipu rūnanga input predicted for the next 12 month period.

*Advice Note: The Christchurch City Council is committed to working in partnership with papatipu rūnanga through the implementation of the resource consent. This is aimed at achieving the goals of the resource 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 resource consent implementation.*

#### **Stormwater Technical Peer Review Panel**

- 14. The Consent Holder shall establish, at its own cost, the Stormwater Technical Review Panel (**Stormwater TPRP**), for the purpose of providing scientific and technical review of:
  - (a) The draft risk matrix required by Condition 3(b) of this resource consent and any subsequent amendments of the risk matrix; and
  - (b) Each Draft SMP, including those being reviewed as required under Condition 4 and 5 of this resource consent or being amended under Condition 9, and provide technical advice to the Consent Holder as to whether it is fit for purpose and meets the requirements of Conditions 6 and 7 of this resource consent; and
  - (c) The scope of the feasibility studies and investigations required by Condition 39 and Schedule 3 (actions a - h) and Condition 40 and Schedule 4 (actions d, e, j, k, r and s) of this resource consent and review the outcomes of the feasibility studies and investigations to ensure that actions arising from them incorporate best practicable options.
  
- 15. The Consent Holder shall:
  - (a) Obtain a review of the draft risk matrix from the Stormwater TPRP, and attach a copy of the review to the draft risk matrix provided to the Canterbury Regional Council; and

- (b) Obtain a review of the draft SMP from the Stormwater TPRP, attach a copy of the review to the draft SMP, and provide a description within the SMP of the Consent Holder's response to that review; and
- (c) Obtain a review of the relevant feasibility study or investigation from the Stormwater TPRP, and attach a copy of the review to the relevant feasibility study or investigation provided to Canterbury Regional Council.

*Advice Note: The technical reviews under Condition 14 shall be provided by the relevant experts from the Stormwater TPRP and not the whole panel.*

16. The Consent Holder shall appoint independent Stormwater TPRP members with expertise which could include but not be limited to the following:
  - (i) Stormwater engineering and hydrological/flood modelling;
  - (ii) Freshwater and coastal water quality and ecology;
  - (iii) Hydrogeology;
  - (iv) Contaminated site/land management;
  - (v) Erosion and sediment control; and
  - (vi) Mātauranga Māori and mahinga kai.
17. If the Stormwater TPRP does not have expertise in any of the areas which it is required to advise the Consent Holder on, it shall inform the Consent Holder who may engage the services of a suitably qualified expert to advise it on the matter.
18. The Consent Holder shall provide any administrative support necessary for the Stormwater TPRP to carry out its functions.

*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 documentation will be submitted to the Canterbury Regional Council.*

## **STANDARDS AND RESTRICTIONS**

### **Stormwater Contaminant Load Modelling**

19. The Consent Holder shall install stormwater mitigation facilities and devices that achieve the contaminant load reduction standards specified in Table 2 below as derived by the *Golder Associates (NZ) Limited 2018 Christchurch Contaminant Load Model (C-CLM)* report which is attached to these conditions as Schedule 5.
20. The Consent Holder shall use best practicable options to achieve the contaminant load reduction targets specified in the SMPs derived from the C-CLM or subsequent improved modelling methods and best available information.

#### **Table 2: Reductions in stormwater contaminant load**

	<b>Contaminant load compared to no treatment as at 2018</b>	<b>5 years from 2018 compared to no treatment (as at 2023)</b>	<b>10 years from 2018 compared to no treatment (as at 2028)</b>	<b>25 years from 2018 compared to no treatment (as at 2043)</b>
<b>TSS</b>	12 %	21 %	25 %	27 %
<b>Total Zinc</b>	10 %	15 %	18 %	20 %
<b>Total Copper</b>	16 %	23 %	28 %	30 %

21. The Consent Holder shall provide a report to the Canterbury Regional Council, Attention: Regional Leader: Monitoring and Compliance at five yearly intervals from commencement of this resource consent on whether the contaminant load reduction standards under Condition 19 and targets developed through the SMPs are being met.

*Advice note: The C-CLM is the primary means of assessing the City-wide standards for the relative reduction in contaminant loads for copper, zinc and TSS which would enter the receiving environment as a result of the structural measures used by the Council.*

### **Water Quality and Quantity Standards**

22. For any development or redevelopment within a catchment which does not have a certified SMP, stormwater quality and quantity mitigation shall meet the General City conditions as specified in Schedule 6.
23. The Consent Holder shall use best practicable options to mitigate the effects of the discharge of stormwater on:
- (a) surface water quality, instream sediment quality, aquatic ecology health and mana whenua values. The extent of mitigation of effects shall be measured by the Receiving Environment Objectives and Attribute Target Levels monitoring described in Schedules 7 and 8;
  - (b) groundwater and spring water quality. The extent of mitigation of effects shall be measured by the Receiving Environment Objectives and Attribute Target Levels monitoring described in Schedule 9; and
  - (c) water quantity. The mitigation of effects shall be measured against achievement of the Receiving Environment Objective and Attribute Target Levels monitoring described in Schedule 10.
24. The Consent Holder shall use reasonably practicable measures to ensure that operational phase stormwater quality and quantity mitigation is implemented for all development and re- development (where required) prior to issuing certification under the relevant legislation.
25. The Consent Holder shall provide retrofit water quality and quantity mitigation for existing development where practicable.

26. Until the commencement of the targeted trial required by Schedule 4(w), when the dry weather base flow water level in the Pūharakekenui/Styx River is at or above Reduced Level 10.1m Christchurch Drainage Datum, as measured at the Lower Pūharakekenui /Styx water level gauge, the Consent Holder shall ensure that the Pūharakekenui /Styx River is the next river from which weed is harvested and that this will commence no later than 40 days following the measurement date.

### **Design of Facilities and Devices**

27. Water quality and quantity mitigation facilities and devices shall be designed in general accordance with:
- (a) The *Christchurch City Council's Waterways, Wetlands and Drainage Guide, Infrastructure Design Standard, Construction Standard Specifications, Christchurch Rain Garden Design Criteria, Christchurch Stormwater Tree Pit Design Criteria and Stormfilter™ Design Rainfall Intensity Criterion Report* or their respective successor document(s); and
  - (b) Other national and international best practice design criteria adopted by the Christchurch City Council over the duration of this resource consent.
28. To ensure the risk of bird strike is minimised, the following design requirements shall apply to facilities within 3 kilometres of Christchurch International Airport:
- (i) Stormwater infiltration basins shall fully drain within 48 hours of the cessation of a 2% AEP stormwater event;
  - (ii) Sufficient rapid soakage overflow capacity shall be provided to minimise the ponding of stormwater outside of the infiltration area(s); and
  - (iii) Landscape design shall limit attractiveness to birds through the use of suitable non-bird attracting species.
29. The Consent Holder shall ensure that all stormwater quality mitigation facilities and devices servicing greenfield development after commencement of this resource consent are designed to treat the first flush.
30. For all water quality mitigation facilities and devices constructed after commencement of this resource consent to service re-development, or retrofit water quality mitigation facilities for existing development, the Consent Holder shall design facilities to treat as much of the first flush as reasonably practicable.
31. All stormwater mitigation facilities and devices constructed after commencement of this consent shall meet any other specific requirements as specified within the Implementation Plan when prepared in accordance with Condition 11.
32. Christchurch City Council stormwater infiltration facilities constructed after the commencement of the resource consent shall be located to maintain the following separation distances from domestic and community drinking water supply wells that exist prior to the construction of the infiltration facility:
- (a) Infiltration devices that only discharge roof water from a single building or that discharge stormwater generated from an impervious area less than 2,000 square metres (including roof area), shall maintain a separation distance from any domestic and community drinking-water supply well outside of a zone equivalent

to the protection areas specified in Table S1A of Schedule 1 of the LWRP, unless, in the case of private drinking water bores, the Consent Holder has made a reticulated water supply available to the property.

- (b) Infiltration devices for larger discharges than those described in (a) above shall maintain a separation distance of 2,000 metres when located up-gradient of domestic and community drinking water supply wells; and infiltration devices shall maintain a separation distance of 500 metres when located down-gradient or cross-gradient of domestic and community drinking water supply wells, unless, in the case of private drinking water bores, the Consent Holder has made a reticulated water supply available to the property.
  - (c) Or as an alternative to (a) and (b), a shorter separation distance may be utilised based on an assessment of site specific information undertaken by the Consent Holder and certified by the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance that it will have a less than minor adverse effect on domestic and community drinking water supply wells.
  - (d) Within 24 months of this resource consent commencing, a site-specific assessment of contamination risk and appropriate mitigation shall also be undertaken for any existing stormwater infiltration basins that do not comply with the separation distances defined in (b) above. This assessment shall be provided to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance for certification that it will have a less than minor adverse effect on domestic and community drinking water supply wells.
33. Christchurch City Council stormwater mitigation facilities constructed after the commencement of this resource consent shall have secondary flow paths to the downstream stormwater network.
34. Christchurch City Council stormwater mitigation facilities constructed after commencement of this resource consent shall include best practice features designed to capture and contain as much as reasonably practicable any spills of contaminants entering the stormwater facility.
35. 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 2% 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.
36. All Christchurch City Council stormwater mitigation facilities and devices constructed after commencement of this resource consent shall have an Operations and Maintenance Manual which shall be made available on request.

### **Stormwater Quality Investigations**

37. The Consent Holder shall investigate and implement methods to improve the management of stormwater quality and assess and reduce stormwater effects on the receiving environment (Stormwater Quality Investigation Programme).
38. The purpose of the Stormwater Quality Investigation Programme is to:
- (a) Monitor the performance of selected stormwater treatment facilities and devices;

- (b) Assess the potential for the application of new technologies and management strategies; and
  - (c) Investigate using various models and techniques of water quality improvement strategies and options.
39. The Consent Holder shall undertake the actions set out in Schedule 3 for the investigation required by Condition 37.

#### **Other Actions**

40. The Consent Holder shall undertake the actions set out in Schedule 4 for the purposes of improved stormwater management through: source control methods; communication, education and awareness; and Pūharakekenui/Styx River channel weed management.

#### **Erosion and Sediment Control**

41. The Consent Holder shall use reasonably practicable measures to ensure that a site specific Erosion and Sediment Control Plan (**ESCP**) be prepared and implemented as a means of ensuring the mitigation of the effects of construction phase stormwater discharge from any development site in accordance with the *Erosion and Sediment Control Toolbox for Canterbury* (or successor document) prior to commencement of stripping of vegetation or earthworks.
42. Copies of ESCPs submitted to or prepared by/for the Consent Holder shall be made available to the Canterbury Regional Council on request.
43. The Consent Holder shall develop a Sediment Discharge Management Plan (**SDMP**) and present it to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance within twelve months of the operative date of this resource consent, for certification that it is consistent with the purpose and required content of the SDMP.
44. The purpose of the SDMP is to manage discharges of stormwater from development sites to mitigate adverse effects on water clarity and aquatic biota as far as is reasonably practicable, which will be measured against the fine sediment and TSS Attribute Target Levels for waterways and coastal areas within Schedules 7 and 8.
45. The required content of the SDMP shall include, but not be limited to, the following means to achieve the purpose:
- (a) A risk matrix to determine TSS limits for the discharge of stormwater into the stormwater network under this resource consent from individual sites, depending on such factors as likely concentrations and volumes of sediment in the discharge, whether the discharge will be treated downstream by a Council treatment facility prior to reaching the receiving environment, and the sensitivity of the receiving environment;
  - (b) A description of the process for how TSS limits will be included in authorisations by the Christchurch City Council for discharges into the network from individual sites;
  - (c) A description of the Consent Holder's process to monitor sites and monitor management of sites to ensure TSS limits are achieved;

- (d) Details of how records will be kept (such as site TSS limits, compliance monitoring and enforcement action), with records made available to the Canterbury Regional Council on request.
46. The Consent Holder may review and amend the SDMP so as to better achieve the purpose of the SDMP and in response to any updates to the relevant Attribute Target Levels. Any amendments to the SDMP shall not replace the previous version until the plan has been certified by the RMA compliance and Enforcement Manager of the Canterbury Regional Council as being consistent with the purpose and required content of the SDMP.

### **Industrial Site Management**

47. The Consent Holder shall, in collaboration with the Canterbury Regional Council:
- (a) Maintain a desktop-based identification of industrial sites, that ranks sites for risk relative to stormwater discharge and identifies the industrial sites that pose the highest risk;
  - (b) Audit at least 15 sites per year, of which at least 10 are sites agreed with the Canterbury Regional Council;
  - (c) Vary the annual number of site audits in Condition 47(b) if agreed by the Canterbury Regional Council under Schedule 4(l);
  - (d) Inform the site owner and operator and notify the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance if the audit process and monitoring of a site determines that the site is presenting an unacceptably high risk to the receiving environment.
48. If the Consent Holder considers, following further engagement with the site operator and the Canterbury Regional Council, that the site is not appropriately mitigating that unacceptably high risk, the Consent Holder may, upon agreement with Canterbury Regional Council, add the site to Schedule 1.

### **MONITORING AND REPORTING**

#### **Environmental Monitoring Programme**

49. The Consent Holder shall implement the EMP attached to this consent, with the purpose of monitoring whether the Receiving Environment Objectives and Attribute Target Levels are being met.
50. The Consent Holder may review and amend the EMP for the purposes of improved monitoring and / or to better determine whether the Receiving Environment Objectives and Attribute Target Levels are being met.
51. Any amendments to the EMP shall not replace the previous version until the EMP has been certified by the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance as complying with the requirements of Condition 49.
52. (a) The Attribute Target Levels in Schedule 7 for hardness modified copper, lead and zinc concentrations in Banks Peninsula surface water shall be calculated for each monitored waterway following the collection of one year of monitoring data.



- (b) Hardness modified values for copper, lead and zinc for all surface water monitoring sites (including Banks Peninsula sites) within the EMP shall be reviewed every five years, with the first review being undertaken within 2 years of the commencement of this resource consent.
  - (c) Hardness modified values shall be calculated using the *ANZECC (2000)* methodology outlined in the EMP. Should a new method of modifying metal concentrations become appropriate, this new methodology and any subsequent change in Attribute Target Levels shall be applied. Updated values shall be incorporated into the certified EMP as an amendment, in accordance with Condition 50.
53. The Attribute Target Levels in Schedules 7 to 8 are taken 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 shall be incorporated into the certified EMP as an amendment, certified in accordance with Condition 51.
54. The Attribute Target Levels in Schedules 7 and 8 for the Waterway Cultural Health Index, Marine Cultural Health Index and State of Takiwā scores, as well as the associated mana whenua values monitoring sites and methodology in the EMP, shall be developed in collaboration with papatipu rūnanga. Updated information shall be incorporated into the EMP and presented by the Consent Holder as an amendment for certification, in accordance with Condition 51 within 24 months of the commencement of this resource consent. Once these scores, sites and monitoring methods are confirmed, monitoring of mana whenua values shall commence.
55. The water quantity/flood model(s) for the Pūharakekenui/ Styx, Ōtākaro/ Avon, Ōpāwaho/ Heathcote and Huritini / Halswell Rivers shall be updated as necessary to reflect changes in development patterns or modelling parameters at least every 5 years following the commencement of this resource consent. The results of model updates and a description of how they demonstrate compliance with Schedule 10 shall be included in the annual report required under Condition 61 on a 5-yearly basis following commencement of this resource consent.

### **Responses to Contaminant Load Modelling**

56. Where the modelling results reported in accordance with Condition 21 show that the percentage contaminant reductions required by the standards in Table 2 in Condition 19, and/or by the targets derived under each catchment-specific SMP are not met, the Consent Holder shall undertake the following:
- (a) Investigate the reasons for not achieving the modelled contaminant load reductions and describe what measures will be implemented (if necessary) to improve stormwater discharge quality;
  - (b) Assess whether best practicable options to mitigate the adverse effects of stormwater have been carried out;
  - (c) If the assessment in (b) determines that best practicable options have not been carried out, assess options for correction / remediation to mitigate any adverse effects, and provide a timeline for the implementation of correction / remediation options (if necessary); and

- (d) Submit a report to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance and papatipu rūnanga (via Mahaanui Kurataiao Ltd), detailing the matters set out in (a) to (c) above.

### **Responses to Flood Modelling**

- 57. Where the flood modelling results show that the attribute target levels in Schedule 10 are not met, the Consent Holder shall:
  - (a) Investigate the reasons for not achieving the attribute target levels within Schedule 10 and describe what measures will be implemented (if necessary) to meet the attribute target levels within Schedule 10;
  - (b) Assess whether best practicable options to mitigate the adverse effects of flooding have been carried out;
  - (c) If the assessment in (b) determines that best practicable options have not been carried out, assess options for correction / remediation to mitigate any adverse effects, and provide a timeline for the implementation of correction / remediation options (if necessary);
  - (d) Submit a report to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, and papatipu rūnanga (via Mahaanui Kurataiao Ltd), detailing the matters set out in (a) to (c) above.
- 58. If, upon submittal of the report, where required by Condition 56 or 57, agreement between Christchurch City Council and Canterbury Regional Council cannot be reached regarding any aspects, the Consent Holder shall consult with the WIM group, or successor group, 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 implement any actions or changes identified as necessary by the WIM group, or successor group, through the consultation.

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

### **Responses to Monitoring**

- 59. If the monitoring results identify that the TSS, copper, lead and zinc Attribute Target Levels in surface water, as set out in Schedules 7 and 8, and Escherichia coli, copper, lead and zinc in groundwater, as set out in Schedule 9, are not being met, the Consent Holder shall:
  - (a) Engage with the Canterbury Regional Council about conducting an investigation into whether this is due to the effects of stormwater discharges authorised under this resource consent, with site investigations prioritised for areas with high levels of contaminants, or with sensitive or high value receiving environments;
  - (b) Carry out an investigation if required under Condition 59(a) and compile the results of such an investigation into a report to be submitted to the Canterbury Regional Council and papatipu rūnanga (via Mahaanui Kurataiao Ltd);

- (c) The report shall include, at a minimum:
  - (i) An evaluation of whether the monitoring results are due to stormwater discharges authorised under this resource consent or not;
  - (ii) An assessment of options for correction/remediation if effects are likely due to stormwater discharges authorised under this resource consent;
  - (iii) A timeline of implementation of corrective action/remediation if effects are a result of discharges authorised under this resource consent;
- (d) 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 (c) above, the Consent Holder Shall consult with the WIM group, or successor group, 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 implement any actions or changes identified as necessary by the WIM group, or successor group, through the consultation;
- (e) The sites triggering an investigation for a given monitoring year shall be identified in the annual report referred to in Condition 61, and the subsequent investigation report shall be provided with the following annual monitoring report twelve months later; and
- (f) Implement any actions or changes identified as necessary by the WIM group, or successor group, through the consultation under (d) above.

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

## **Reporting**

- 60. 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. These records are to be made available to Canterbury Regional Council on request.
- 61. The Consent Holder shall provide an annual report to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, Banks Peninsula and Christchurch-West Melton Zone Committees, and papatipu rūnanga (via Mahaanui Kurataiao Ltd) by 30 June each year following the calendar year reported on. The first annual report shall cover the calendar year following the commencement of this resource consent. This report shall also be made available on the Christchurch City Council website and shall include, where appropriate:
  - (a) A summary of the outcomes of monitoring, investigations and other actions, in accordance with Conditions 23, 39, 40, 49, 54, and the 5-yearly report required under Condition 55. This summary shall be presented in such a way as to assess compliance with the resource consent conditions and trigger the responses required;

- (b) A summary of the C-CLM results and contaminant load reduction targets set within SMPs, including any amendments to the model and consequential changes to expected contaminant load reductions;
- (c) A summary of any discussions, consultation or responses carried out under Conditions 56 - 59;
- (d) A summary of Canterbury Regional Council records of consent compliance and where any non-compliances of this resource consent occurred;
- (e) A summary of flood modelling results (if applicable) for development in greenfield areas;
- (f) The supply of updates to Schedule 1 where required;
- (g) An update on the timetable for construction and activation of Christchurch City Council stormwater mitigation systems for each SMP area, and/or any changes to the implementation of SMP requirements;
- (h) Records of developments authorised under this consent;
- (i) Report on any collaboration with papatipu rūnanga and any activities relating to the protection or enhancement of mana whenua values;
- (j) A summary of the stormwater quality investigations undertaken during the year;
- (k) A summary of any additional monitoring or investigations undertaken beyond those specified in the EMP, including those undertaken on industrial sites in accordance with Condition 47, that have been initiated to inform the Consent Holder on stormwater management effectiveness;
- (l) Reporting of the alignment of the consent with the Christchurch West Melton sub-regional section of the Canterbury LWRP;
- (m) Any changes to the regulatory framework that may warrant changes to the SMPs; and
- (n) Any complaints or observations received by the Consent Holder regarding spring flow and/or quality.

## **ADMINISTRATION**

- 62. The Consent Holder shall engage with papatipu rūnanga to collaboratively consider the Conditions on a 5-yearly basis from the date of granting of this resource consent.
- 63. 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 resource consent for the purposes of:
  - (a) Dealing with any adverse effect on the environment which may arise from the exercise of this resource consent;
  - (b) Complying with the requirements of a relevant rule in an operative regional plan;
  - (c) Achieving consistency of this resource consent in regard to catchment management planning and stormwater management with the provisions of the

Christchurch West Melton Sub-regional Section of the Canterbury LWRP within five years of the notification of the sub-regional section;

- (d) Ensuring that improvements of the quality of the stormwater discharge occur over the duration of this resource consent to reduce any adverse effect on the environment;
  - (e) To provide alternative standards for the expected city-wide percentage contaminant load reductions in Condition 19, or targets for the contaminant load reductions set within SMPs that become apparent through the C-CLM or alternative methods developed by the Consent Holder.
64. Prior to the exercise of this resource consent, the following resource consents shall be surrendered:
- (a) CRC120223
  - (b) CRC131249.
65. If this resource consent is not given effect to before 30 June 2024, then it shall lapse in accordance with Section 125 of the Resource Management Act 1991.

## **Attachments**

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

**Schedule 2: Condition 7 - Matters to be included within SMPs**

**Schedule 3: Stormwater Quality Investigation Programme**

**Schedule 4: Other Actions by Consent Holder**

**Schedule 5: Christchurch Contaminant Load Model**

**Schedule 6: General City Conditions – Water Quality and Quantity**

**Schedule 7: Receiving Environment Objectives and Attribute Target Levels for Waterways**

**Schedule 8: Receiving Environment Objectives and Attribute Target Levels for Coastal Waters**

**Schedule 9: Receiving Environment Objectives and Attribute Target Levels for Groundwater and Springs**

**Schedule 10: Receiving Environment Objectives and Attribute Target Levels for Water Quantity**

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

### Sites excluded from the South West SMP Area

Street Address	Street Number	Legal Description	CCC Prupi
Alloy Street	2	Lot 2 DP 64248	704537
Ballarat Way	2	Lot 1 DP 466471	618251
Ballarat Way	10	Lot 2 DP 466471	618252
Blenheim Road	412	Part Lot 3 DP 15178	466207
Blenheim Road	4/455	Lot 1 DP 489573	923053
Branston Street	96	Lot 2 DP 352288	587825
Canterbury Street	7	Lot 10 DP 2899, Lot 9 DP 2899, Lot 11 DP 2899, Lot 12 DP 2899, Lot 1 DP 21916	716119
Carmen Road	106G	Lot 3 DP 338441	582584
Chappie Place	17	Lot 1 DP 443257	908779
Halswell Junction Road	515	Lot 2 DP 358423, Lot 3 DP 358423	587860, 587861
Hayton Road	115	Lot 3 DP 353897	585855
Hayton Road	137	Lot 2 DP 343321	584430
Hayton Road	79 & 79A	Lot 1 DP 481286, Lot 2 DP 481286	924341, 924342
Main South Road	222	Lot 1 DP 14716, Lot 1 DP 51993	750576
Main South Road	243 & 245	Pt Lot 2 DP 6604, RS 39034, Lot 1 DP 78344, Lot 2 DP 78344	516213, 520964, 408547, 510731
McAlpine Street	18	Lot 8 DP 36831	429004
McAlpine Street	67	Lot 9 DP 30936	428578
Parkhouse Road	59	Lot 1 DP 25818	485608
Springs Road	254	Lot 1 DP 358423	587859
Waterloo Road	60	Lot 1 DP 80063	407540
Wigram Close	15	Lot 1 DP 51889, Lot 2 DP 324467	504628, 579847
Wigram Road	120	Lot 2 DP 493335	625647
Wigram Road	122	Lot 4 DP 475888	621028
Wigram Road	120A	Lot 1 DP 493335	625646
Wilmers Road	10	Lot 4 DP 20669	817675
Wilmers Road	50	Lot 5 DP 447519	615860
<b>Partial Site Exclusions</b>			
Street Address	Street Number	Legal Description	CCC Prupi
Carmen Road	112	Section 27 SO 459717	629404
Halswell Junction Road	600	Lot 7 DP 404845	609872
Harvard Avenue	45	Lot 1 DP 81480	565026
Main South Road	282	Lot 10 DP 1391	750597

## Sites excluded from the Pūharakekenui/Styx SMP Area

Street Address	Street Number	Legal Description	CCC Prupi
Barnes Road	79-87	Lot 1 DP 346683	586324
Belfast Road	30	Lot 2 DP 37063	425217
Broughs Road	6	LOT 15 DP 36871	814749
Broughs Road	7	LOT 2 DP 36871	714473
Broughs Road	15	LOT 3 DP 36871	804901
Broughs Road	23	LOT 4 DP 36871	874832
Cavendish Road	150	Lot 2 DP 401108	609557
Cavendish Road	158	Lot 1 DP 360822	587685
Dickeys Road	13	Pt Lot 1 DP 23890, Lot 1 DP 25116	437651, 438723
Export Avenue	1	LOT 6 DP 83863	861839
Export Avenue	2	LOT 2 DP 304904	861835
Export Avenue	3	LOT 5 DP 83863	861838
Export Avenue	6	LOT 3 DP 83863	861836
Export Avenue	8	LOT 4 DP 83863	861837
Johns Road	480	Sec 62 SO 460822	620075
Johns Road	530	PT LOT 1 DP 51000	870081
Johns Road	544	PT LOT 1 DP 23615	857821
Johns Road	550	Sec 8 SO 494743, Sec 21 SO 494743	628638, 628647
Johns Road	568	LOT 2 DP 51000	832492
Johns Road	600	PT RS 40862	870083
Logistic Drive	10	LOT 10 DP 375764	891559
Logistic Drive	11	LOT 9 DP 375764	891558
Logistic Drive	12	LOT 1 DP 412022	900821
Logistic Drive	14	LOT 12 DP 375764, LOT 2	900822
Logistic Drive	15	LOT 8 DP 375764	891557
Logistic Drive	16	LOT 13 DP 375764	891562
Logistic Drive	17	LOT 7 DP 375764	891556
Logistic Drive	18	LOT 100 DP 412877	900774
Logistic Drive	19	LOT 6 DP 375764	891555
Logistic Drive	20	LOT 101 DP 412877	900775
Logistic Drive	21	LOT 5 DP 375764	891554
Logistic Drive	23	LOT 4 DP 375764	891553
Logistic Drive	24	LOT 102 DP 412877	900776
Logistic Drive	25	LOT 3 DP 375764	891552
Logistic Drive	26	LOT 103 DP 412877	900777
Logistic Drive	27	LOT 2 DP 375764	891551
Logistic Drive	28	LOT 104 DP 412877	900778
Logistic Drive	29	LOT 1 DP 375764	891550
Logistic Drive	31	LOT 17 DP 375764	891566
Logistic Drive	15L	LOT 19 DP 375764	891573
Logistic Drive	29L	LOT 20 DP 375764	891574
Lower Styx Road	361	Lot 1 DP 508689	629529
Mcleans Island Road	2	LOT 16 DP 375764	891565
Mcleans Island Road	12	LOT 15 DP 375764	891564
Mcleans Island Road	14	LOT 1 DP 304904	865337

Mcleans Island Road	16	LOT 2 DP 79639	754142
Nathan Place	1	PT LOT 2 DP 55072	870082
Nathan Place	7	LOT 3 DP 55072	864585
Nathan Place	11	LOT 1 DP 70619	864584
Radcliffe Road	301	Lot 4 DP 313448	584569
Sawyers Arms Road	527	LOT 1 DP 55072	836526
Sawyers Arms Road	530	PT LOT 1 DP 51000	870081
Sawyers Arms Road	533	LOT 1 DP 45800	858525
Sawyers Arms Road	540	LOT 1 DP 36870	817420
Sawyers Arms Road	565	LOT 2 DP 64781	771301
Sawyers Arms Road	575	LOT 1 DP 64781	771302
Spencerville Road	25	Lot 2 DP 53987	419068
Turners Road	50	Lot 3 DP 83312	568085
Wairakei Road	656	Lot 1 DP 6411	414964



## **Schedule 2: Condition 7 - Matters to be included within SMPs**

- (a) Specific guidelines for implementation of stormwater management to achieve the purpose of SMPs;
- (b) A definition of the extent of the stormwater infrastructure, that forms the stormwater network within the SMP area for the purposes of this consent;
- (c) A contaminant load reduction target(s) for each catchment within that SMP area and a description of the process and considerations used in setting the contaminant load reduction target(s) required by Condition 6(b) using the best reasonably practicable model or method and input data;
- (d) A description of statutory and non-statutory planning mechanisms being used by the Consent Holder to achieve compliance with the conditions of this consent including the requirement to improve discharge water quality. These mechanisms shall include:
  - (i) Relevant objectives, policies, standards and rules in the Christchurch District Plan;
  - (ii) Relevant bylaws; and
  - (iii) Relevant strategies, codes, standards and guidelines;
- (e) Mitigation methods to achieve compliance with the conditions of this resource consent including the requirement to improve discharge water quality under Condition 23, and to meet the contaminant load reduction targets for each catchment as determined through the SMPs and the standards for the whole of Christchurch set in Condition 19. These methods shall include:
  - (i) Stormwater mitigation facilities and devices;
  - (ii) Erosion and sediment control guidelines;
  - (iii) Education and awareness initiatives on source control systems and site management programmes;
  - (iv) Support for third party initiatives on source control reduction methods;
  - (v) Prioritising stormwater treatment in catchments: that discharge in proximity to areas of high ecological or cultural value, such as habitat for threatened species or Areas of Significant Natural Value under the Regional Coastal Environment Plan (Canterbury Regional Council, 2012); and areas with high contaminant loads;
- (f) Locations and identification of Christchurch City Council water quality and water quantity mitigation facilities and devices; including a description and justification for separation distances between mitigation facilities or devices and any contaminated land;
- (g) Identification of areas planned for future development and a description of the Consent Holder's consideration to retrofit water quality and quantity mitigation for existing catchments through these developments where reasonably practicable;

- (h) Identification of areas subject to known flood hazards;
- (i) A description of how environmental monitoring and assessment of tangata whenua values have been used to develop water quality mitigation methods and practices;
- (j) Results from and interpretation of water quantity and quality modelling, including identification of sub-catchments with high levels of contaminants;
- (k) Mapping of existing information from Canterbury Regional Council and the Consent Holder showing locations where discrete spring vents occur;
- (l) Consideration of any effects of the diversion and discharge of stormwater on baseflow in waterways and springs and details of monitoring that will be undertaken of any waterways and springs that could be affected by stormwater management changes anticipated within the life of the SMP;
- (m) A cultural impact assessment;
- (n) A summary of outcomes resulting from any collaboration with papatipu rūnanga on SMP development;
- (o) 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;
- (p) Assessment and description of any additional or new modelling, monitoring and mitigation methods being implemented by the Consent Holder;
- (q) A summary of feedback obtained in accordance with Condition 8 and if / how that feedback has been incorporated into the SMP;
- (r) If the Consent Holder intends to use land not owned or managed by the Consent Holder for stormwater management, a description of the specific consultation undertaken with the affected land owner;
- (s) Identification of key locations in addition to those identified in Schedule 10 where modelled assessments of water levels and/or volumes shall be made for the critical 2% AEP event and any other relevant return interval. For each additional key location, appropriate water level reductions or tolerances for increases shall be set according to the SMP objectives and shall be reported with the model update results required under Condition 55;
- (t) Procedures, to be developed in consultation with Christchurch International Airport Limited, for the management of the risk of bird strike for any facility owned or managed by the Christchurch City Council within 3 kilometres of the airport;
- (u) A description of any relevant options assessments undertaken to identify the drivers behind mitigation measures selected; and
- (v) An assessment of the potential change to the overall water balance for the SMP area arising from the change in pervious area and the stormwater management systems proposed.

### Schedule 3 - Stormwater Quality Investigation Programme

<b><u>Stormwater Quality Investigation Actions</u></b>	Action Start Date	Action Completion Date
<p>a. Investigate the feasibility of developing an instream contaminant concentration model.</p> <p>Consideration shall be given to:</p> <p>(i) How applicable the model will be to -</p> <ul style="list-style-type: none"> <li>• Water quality management generally</li> <li>• The resource consent specifically</li> </ul> <p>(ii) Timelines</p> <p>(iii) Costs</p> <p>(iv) What data CCC would need to collect</p>	<p>Within 6 months of the commencement of the resource consent</p>	<p>Within 18 months of the commencement of the resource consent</p>
<p>b. Develop instream contaminant concentration model if the Consent Holder feasibility study in (a) provides sufficient merit.</p>	<p>Within 2 years of the commencement of the resource consent</p>	<p>Within 3 years of the commencement of the resource consent</p>
<p>c. If the instream contaminant concentration model is developed, carry out investigations and monitoring to validate and refine assumptions within the model, to improve the accuracy of model predictions.</p>	<p>Within 4 years of the commencement of the resource consent</p>	<p>Ongoing</p>
<p>d. Conduct a feasibility study to establish the existing knowledge base and investigate the feasibility of robustly predicting the responses of the receiving environment to changes in network contaminant loads and resulting in-stream concentrations.</p> <p>Consideration shall be given to how and when the receiving environment might respond to changes in contaminant concentrations, how much work would be involved to predict results, what sort of models are possible, how would monitoring to obtain real world results be carried out, how long would it take the biological community to respond (i.e. lag effects), and gaps of knowledge.</p>	<p>Within 12 months of the commencement of the resource consent</p>	<p>Within 3 years of the commencement of the resource consent</p>
<p>e. If the Consent Holder considers that the feasibility study under (d) shows sufficient merit, and the Council considers it warranted, instigate a programme of research, monitoring and/or modelling to quantify expected responses in the receiving environment. For example: Undertake selected monitoring of discharges at “end of pipe”,</p>	<p>Within 3 years of the commencement of the resource consent</p>	<p>Ongoing</p>

<p>into the receiving environment to assist model development and calibration.</p>		
<p>f. Investigate the impacts of applying alternative modelling tools (including 'deterministic' models) to characterise the relationship between contaminant loads, concentrations and the receiving environment, and the processes which influence that relationship. Such tools may include the MEDUSA and MUSIC modelling tools.</p>	<p>Within 1 year of the commencement of the resource consent</p>	<p>Ongoing</p>
<p>g. Investigate the feasibility of techniques for remediating adverse effects of stormwater sediment discharges on receiving environments. This shall include consideration of sediment cover of the bed, and copper, lead, zinc and PAHs contamination.</p>	<p>Within 1 year of the commencement of the resource consent</p>	<p>Within 3 years of the commencement of the resource consent</p>
<p>h. If the Consent Holder determines that it is feasible, instigate an instream sediment remediation programme.</p>	<p>Within 3 years of the commencement of the resource consent</p>	<p>Ongoing</p>
<p>i. Monitor the actual TSS, zinc and copper reduction performance of selected stormwater treatment facilities and devices in order to improve certainty of performance values relating to TSS, zinc and copper in contaminant load modelling. Report findings and outcomes in annual report to CRC.</p>	<p>Within 6 months of the commencement of the resource consent</p>	<p>Ongoing</p>
<p>j. Apply the monitoring output, along with other stormwater modelling and monitoring data being gathered, to inform the planning and design of stormwater systems and facilities, including in the development of Implementation Plans and reviews of SMPs, IDS and WWDG.</p>		
<p>k. Carry out targeted wet weather monitoring of surface water in selected receiving environments, to improve knowledge of the state of the receiving environment, contaminant inputs and treatment efficiency, and to inform mitigation options under the SMPs. Selected areas may include new stormwater developments and retrofits and known existing hotspots of contaminants. Sampling shall focus on detailed methods to characterise inputs, such as the use of auto-sampling, rather than grab sampling.</p>	<p>Within 6 months of the commencement of the resource consent</p>	<p>Ongoing</p>

#### Schedule 4: Other Actions by Consent Holder

<b>Other Actions</b>	Activity Start Date	Activity Completion Date
<b>Source Control</b>		
a. Lodge a submission to central government seeking national measures and industry standards to reduce the discharge of contaminants including zinc and copper from metal roofs, car tyres and brake linings.	Within 6 months of the commencement of the resource consent	Within 1 year of the commencement of the resource consent
b. Conduct a cost/benefit analysis of options for carrying out a targeted trial for contaminant reduction from increased level of selective street sweeping and sump cleaning (For consideration as part of Council Annual Planning process).	Within 6 months of the commencement of the resource consent	Within 1 year of the commencement of the resource consent
c. If the Consent Holder Determines that the cost/benefit analysis under Item (b) above shows that it is warranted, carry out trials for increased targeted/selective street sweeping and sump cleaning.	Within 1 year of the commencement of the resource consent	Within 3 years of the commencement of the resource consent
d. Conduct a cost/benefit analysis of options of alternate methods of stormwater treatment and discharge including consideration of redirection to sewer and Managed Aquifer Recharge/Discharge (For consideration as part of Council Annual Planning process).	Within 6 months of the commencement of the resource consent	Within 18 months of the commencement of the resource consent
e. If the Consent Holder determines that the cost/benefit analysis under Item (d) above shows that it is warranted, carry out trials for alternate methods of stormwater treatment and discharge.	Within 2 years of the commencement of the resource consent	Within 4 years of the commencement of the resource consent
f. Apply the results of trials on street sweeping, sump cleaning and alternate methods of stormwater treatment (actions b and c above), along with results from other stormwater modelling and monitoring data being gathered, to the planning and design of stormwater systems and facilities, including in the development and review of SMPs, IDS and WWDC.		
g. If the Consent Holder determines it warranted as a result of the trials in Item (c) above, increased frequency of street sweeping of selected areas.	Within 2 years of the commencement of the resource consent	Ongoing
h. If the Consent Holder determines it warranted as a result of the trials in Item (c) above, increased frequency of sump cleaning at selected locations.	Within 2 years of the commencement of the resource	Ongoing
i. Instigate, in the building consent approval and inspection process, a requirement for and process for approval and inspection of erosion and sediment control measures prior to site clearances	Within 6 months of the commencement of	Ongoing

commencing and throughout the construction process.	the resource consent	
j. Develop a programme for operational inspection of a sample of private stormwater treatment and/or retention devices on non-industrial sites for the purposes of ensuring proper function and maintenance.	Within 2 years of the commencement of the resource consent	Ongoing
k. Conduct a cost/benefit analysis of options to further improve source control that considers: (i) allocation of staff/resources to undertake industrial site audits; (ii) expected contamination risk and possible risk reduction of industrial sites; and (iii) other source control measures in Schedule 3 as required by Condition 39.	Within 6 months of the commencement of the resource consent	Within 18 months of the commencement of the resource consent
l. Apply, through agreement between the Consent Holder and Canterbury Regional Council, the results of the cost/benefit analysis under Item (k) above to prioritise source control measures in SMPs and the Implementation Plan and to determine the number of audits conducted under Condition 47(b).	Within 2 years of the commencement of the resource consent	Ongoing
<b>Communication, Education and Awareness</b>		
m. Make reasonable endeavours to establish a community water engagement programme involving Council, Canterbury Regional Council, Ngai Tahu, DoC, MfE, Universities, industry representatives and Community Groups with the objective of encouraging awareness and community actions to reduce stormwater contaminant discharges and improve waterways through source control and behaviour change.  Possible initiatives of the community water engagement programme are:  (i) Providing information for property owners on quick actions that they can undertake around the home to stop contaminants from entering stormwater (based on 2017 Community Waterway Survey findings conducted by Christchurch City Council). (ii) Implement a sustainable behaviour change programme. Actions aimed at stopping contaminants getting into the stormwater network, such as: sediment, litter, bacterial contaminants. (iii) Undertaking a wider educational programme for schools. (iv) Educating dog owners about effects of faecal matter. (v) Seeking industry behaviour change.	Within 6 months of the commencement of the resource consent	Ongoing
n. The Consent Holder shall convene the River Care Liaison Group meeting at least once annually. At	Within 1 year of the	Ongoing

<p>each meeting the Consent Holder shall update the River Care Liaison Group and receive feedback on matters relating to the exercise of this resource consent, including but not limited to:</p> <ul style="list-style-type: none"> <li>(i) Relevant capital and maintenance works completed in the past year and currently programmed by the Consent Holder;</li> <li>(ii) Development and refinement of the C-CLM and flood modelling;</li> <li>(iii) Any new technologies in stormwater contaminant reduction or preventative measures; and</li> <li>(iv) Compliance and monitoring results as reported under Condition 61.</li> </ul>	commencement of the resource consent	
<p>o. Minutes of the River Care Liaison Group Meeting shall be circulated by the Consent Holder to the River Care Liaison Group within four weeks of the meeting.</p>		
<p>p. The Consent Holder shall convene the Industry Liaison Group meeting at least once annually. At each meeting the Consent Holder shall update the Industry Liaison Group and receive feedback on matters relating to the exercise of this resource consent, including but not limited to:</p> <ul style="list-style-type: none"> <li>(i) development of the risk matrix required under Condition 3(b) (ii);</li> <li>(ii) implementation of the industrial site audit process under Condition 47;</li> <li>(iii) any new technologies in stormwater contaminant reduction or preventative measures; and</li> <li>(iv) Compliance and monitoring results as reported under Condition 61.</li> </ul>	Within 1 year of the commencement of the resource consent	Ongoing
<p>q. Minutes of the Industry Liaison Group Meeting shall be circulated by the Consent Holder to the Industry Liaison Group within four weeks of the meeting.</p>		
<b>Puharakekenui/Styx River Weed Management</b>		
<p>r. Investigate the degree to which various options in river channel weed (macrophyte) management practices mitigate flood effects on the Pūharakekenui/Styx River under a range of river flow scenarios. Factors to be considered shall include:</p> <ul style="list-style-type: none"> <li>(i) International weed management practices in similar settings; and</li> <li>(ii) the factors which promote or suppress growth of the specific prolific weed species in the Pūharakekenui/Styx River, including sediments, dry weather flows, stormwater discharges covered by the resource consent, other discharges, shading and climatic factors.</li> </ul>	Within 6 months of the commencement of the resource consent	Within 18 months of the commencement of the resource consent
<p>s. Based on the results of the investigation under Item (r) above, and through engagement with Canterbury Regional Council, the Consent Holder shall identify</p>	Within 2 years of the commencement of	Within 3 years of the commencement of

<p>the best practicable options for mitigating flooding through river channel weed management. Factors to be considered shall include:</p> <ul style="list-style-type: none"> <li>(i) A range of river flow scenarios including dry weather (spring-fed) flows and storm flows where operational/maintenance management will be beneficial;</li> <li>(ii) A range of river channel operational/maintenance management scenarios;</li> <li>(iii) Flooding effects including level, extent and duration;</li> <li>(iv) Available technical knowledge;</li> <li>(v) Potential for practical implementation of options;</li> <li>(vi) Costs for implementing options;</li> <li>(vii) Available regulatory mechanisms;</li> <li>(viii) Consideration of ecological effects; and</li> <li>(ix) Consideration of overlapping powers and responsibilities between Canterbury Regional Council and Christchurch City Council under other legislation.</li> </ul>	<p>the resource consent</p>	<p>the resource consent</p>
<p>t. Conduct a cost/benefit analysis of the identified best practicable options for carrying out a targeted trial for achieving reduced flooding from changes in the weed management of the Pūharakekenui/Styx River.</p>	<p>Within 3 years of the commencement of the resource consent</p>	<p>Within 4 years of the commencement of the resource consent</p>
<p>u. Determine the best approach to incorporating the variable weed condition within the Pūharakekenui/Styx River hydraulic model and resulting design flood scenarios.</p>	<p>Within 3 years of the commencement of the resource consent</p>	<p>Within 4 years of the commencement of the resource consent</p>
<p>v. Test the Pūharakekenui/Styx River model calibration against other storm events, as they arise, to calibrate/validate model sensitivity to varying weed conditions.</p>	<p>Within 3 years of the commencement of the resource consent</p>	<p>Within 4 years of the commencement of the resource consent</p>
<p>w. Apply, through engagement with the Canterbury Regional Council, the results of the cost/benefit analysis in a targeted trial for the selected best practicable options for weed management of the Pūharakekenui/Styx River river channel.</p>	<p>Within 4 years of the commencement of the resource consent</p>	<p>Within 5 years of the commencement of the resource consent</p>
<p>x. If the Consent Holder determines it warranted as a result of the trials in Item (w) above, implement the selected best practicable option within the Pūharakekenui/Styx River Area SMP.</p>	<p>Within 5.5 years of the commencement of the resource consent</p>	<p>ongoing</p>



## Schedule 5: Christchurch Contaminant Load Model Report



C-CLM Modelling  
Report 2018 - Best P

## Schedule 6: 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. Until 1 January 2025, 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 <sup>2</sup>	LARGE SITES Total area of disturbance equals, or is greater than 1,000m <sup>2</sup>
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	<p>No discharge onto or into land where average site slope exceeds 5 degrees</p> <p>Sumps collecting runoff from new hardstand areas shall be fitted with submerged or trapped outlets wherever practicable</p> <p>An assessment of water quantity effects and provision of on-site stormwater storage or network upgrade may be required for sites in the flat**</p> <p>On-site rain water storage is required for new and redevelopment sites on the hills</p>	<p>No discharge onto or into land where average site slope exceeds 5 degrees</p> <p>First flush treatment is required for stormwater runoff from new hardstand areas in excess of 150m<sup>2</sup> and buildings with copper or uncoated galvanised metal roofs or guttering/spouting*</p> <p>An assessment of water quantity effects and provision of on-site stormwater storage or network upgrade may be required for sites in the flat**</p> <p>On-site rain water storage is required for new and redevelopment sites on the hills</p>
From new / re-development non-residential roof and hardstand areas	<p>No discharge onto or into land where average site slope exceeds 5 degrees</p> <p>First flush treatment is required for stormwater runoff from new hardstand areas in excess of 150m<sup>2</sup>, buildings with copper or uncoated galvanised roofs or guttering/spouting and high-use sites</p> <p>An assessment of water quantity effects and provision of on-site stormwater storage or network upgrade may be required**</p> <p>Site management and spill procedures required for sites that engage in hazardous activities***</p>	<p>No discharge onto or into land where average site slope exceeds 5 degrees</p> <p>First flush treatment is required for stormwater runoff from new hardstand areas in excess of 150m<sup>2</sup>, buildings with copper or uncoated galvanised roofs or guttering/spouting and high-use sites</p> <p>An assessment of water quantity effects and provision of on-site stormwater storage or network upgrade may be required**</p> <p>Site management and spill procedures required for sites that engage in hazardous activities***</p>

\* 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 the 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 the Christchurch City Council Planning Engineer.

\*\*\* 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.

## Schedule 7: Receiving Environment Objectives and Attribute Target Levels for Waterways

- The EMP outlines the methodology for the monitoring of Attributes and how these will be compared against Attribute Target Levels.
- TBC-A = To Be Confirmed once a full year of monitoring allows hardness modified values to be calculated, in accordance with Condition 52(a).
- TBC-B = To Be Confirmed following engagement with papatipu rūnanga, through an update to the EMP, in accordance with Condition 54.

Objective	Attribute	Attribute Target Level	Basis for Target
Adverse effects on ecological values do not occur due to stormwater inputs	QMCI	Lower limit QMCI scores: <ul style="list-style-type: none"> <li>• Spring-fed – plains – urban waterways: 3.5</li> <li>• Spring-fed – plains waterways: 5</li> <li>• Banks Peninsula waterways: 5</li> </ul>	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, 2018). This metric is designed for wadeable sites and should therefore be used with caution for non-wadeable sites. These targets can be achieved through reducing contaminant loads and waterway restoration.
Adverse effects on water clarity and aquatic biota do not occur due to sediment inputs	Fine sediment (<2 mm diameter) percent cover of stream bed  TSS concentrations in surface water	Upper limit fine sediment percent cover of stream bed: <ul style="list-style-type: none"> <li>• Spring-fed – plains – urban waterways: 30%</li> <li>• Spring-fed – plains waterways: 20%</li> <li>• Banks Peninsula waterways: 20%</li> </ul> Upper limit concentration of TSS in surface water: 25 mg/L  No statistically significant increase in TSS concentrations in surface water	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. The sediment cover Target Levels 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, 2018). These targets should be used with caution at sites that 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.
Adverse effects on aquatic biota do not occur due to copper, lead and zinc inputs in surface water	Zinc, copper and lead concentrations in surface water	Upper limit concentration of dissolved zinc: <ul style="list-style-type: none"> <li>• Ōtākaro/ Avon River catchment: 0.0297 mg/L</li> <li>• Ōpāwaho/ Heathcote River catchment: 0.04526 mg/L</li> <li>• Cashmere Stream: 0.00724 mg/L</li> <li>• Huriitini / Halswell River catchment: 0.01919 mg/L</li> <li>• Pūharakekenui/ Styx River catchment: 0.01214 mg/L</li> <li>• Ōtūkaikino River catchment: 0.00868 mg/L</li> <li>• Linwood Canal: 0.146 mg/L</li> <li>• Banks Peninsula catchments: TBC-A</li> </ul>	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 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, 2017). This calculation document can be provided on request. These targets can be achieved primarily through reducing contaminant loads.

Objective	Attribute	Attribute Target Level	Basis for Target
		<p>Upper limit concentration of dissolved copper:</p> <ul style="list-style-type: none"> <li>• Ōtākaro/ Avon River catchment: 0.00356 mg/L</li> <li>• Ōpāwaho/ Heathcote River catchment: 0.00543 mg/L</li> <li>• Cashmere Stream: 0.00302 mg/L</li> <li>• Huriitini / Halswell River catchment: 0.00336 mg/L</li> <li>• Pūharakekenui/ Styx River catchment: 0.00212 mg/L</li> <li>• Ōtūkaikino River catchment: 0.00152 mg/L</li> <li>• Linwood Canal: 0.0175 mg/L</li> <li>• Banks Peninsula catchments: TBC-A</li> </ul> <p>Upper limit concentration of dissolved lead:</p> <ul style="list-style-type: none"> <li>• Ōtākaro/ Avon River catchment: 0.01554 mg/L</li> <li>• Ōpāwaho/ Heathcote River catchment: 0.02916 mg/L</li> <li>• Cashmere Stream: 0.00521 mg/L</li> <li>• Huriitini / Halswell River catchment: 0.01257 mg/L</li> <li>• Pūharakekenui/ Styx River catchment: 0.00634 mg/L</li> <li>• Ōtūkaikino River catchment: 0.00384 mg/L</li> <li>• Linwood Canal: 0.167 mg/L</li> <li>• Banks Peninsula catchments: TBC-A</li> </ul> <p>No statistically significant increase in copper, lead and zinc concentrations</p>	
Excessive growth of macrophytes and filamentous algae does not occur due to nutrient inputs	Total macrophyte and filamentous algae (>20 mm length) cover of stream bed	<p>Upper limit total macrophyte cover of the stream bed:</p> <ul style="list-style-type: none"> <li>• Spring-fed – plains – urban waterways: 60%</li> <li>• Spring-fed – plains waterways: 50%</li> <li>• Banks Peninsula waterways: 30%</li> </ul> <p>Upper limit filamentous algae cover of the stream bed:</p>	Macrophyte and algae cover are indicators of the quality of aquatic habitat. Targets are taken from Table 1a of the LWRP (Canterbury Regional Council, 2018). Improvement towards these targets can be achieved by reduction in nutrient concentrations and riparian planting to shade the waterways.

Objective	Attribute	Attribute Target Level	Basis for Target
		<ul style="list-style-type: none"> <li>• Spring-fed – plains – urban waterways: 30%</li> <li>• Spring-fed – plains waterways: 30%</li> <li>• Banks Peninsula waterways: 20%</li> </ul>	
Adverse effects on aquatic biota do not occur due to zinc, copper, lead and PAHs in instream sediment	Zinc, copper, lead and PAHs concentrations in instream sediment	<p>Upper limit concentration of total recoverable metals for all classifications:</p> <ul style="list-style-type: none"> <li>• Copper = 65 mg/kg dry weight</li> <li>• Lead = 50 mg/kg dry weight</li> <li>• Zinc = 200 mg/kg dry weight</li> <li>• Total PAHs = 4 10 mg/kg dry weight</li> </ul> <p>No statistically significant increase in copper, lead, zinc and Total PAHs</p>	Meta Metals can bind to sediment and remain in waterways, potentially negatively affecting biota. These trigger values are based on the ANZECC guidelines (ANZECC, 2018). These targets can be achieved through reducing contaminant loads and instream sediment removal.
Adverse effects on Mana Whenua values do not occur due to stormwater inputs	Waterway Cultural Health Index and State of Takiwā scores	<p>Lower limit averaged Waterway Cultural Health Index and State of Takiwā scores for all classifications:</p> <ul style="list-style-type: none"> <li>• Spring-fed – plains – urban waterways: TBC-B</li> <li>• Spring-fed – plains waterways: TBC-B</li> <li>• Banks Peninsula waterways: TBC-B</li> </ul>	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 will be 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.

## Schedule 8: Receiving Environment Objectives and Attribute Target Levels for Coastal Waters

- The EMP outlines the methodology for the monitoring of Attributes and how these will be compared against Attribute Target Levels.
- TBC-B = To Be Confirmed following consultation with papatipu rūnanga, through an update to the EMP, in accordance with Condition 54.

Objective	Attribute	Attribute Target Level	Basis for Target
Adverse effects on water clarity and aquatic biota do not occur due to sediment inputs	TSS concentrations in surface water	No statistically significant increase in TSS concentrations	Elevated levels of TSS in the water column decrease the clarity of the water and can adversely affect aquatic plants, invertebrates and fish. 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. There is no guideline available for this parameter, so no change in concentrations is proposed to be conservative. The target will be achieved by reducing contaminant loads (particularly using erosion and sediment control measures).
Adverse effects on aquatic biota do not occur due to copper, lead and zinc inputs in surface water	Copper, lead and zinc concentrations in surface water	<p>Maximum dissolved metal concentrations for all classes (with the exception of the Operational Area of the Port of Lyttelton):</p> <ul style="list-style-type: none"> <li>• Copper: 0.0013 mg/L</li> <li>• Lead: 0.0044 mg/L</li> <li>• Zinc: 0.015 mg/L</li> </ul> <p>No statistically significant increase in copper, lead and zinc concentrations</p>	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). These targets are taken from the ANZECC (2000) guidelines for the protection of 95% of species. The Operational Area of the Port of Lyttelton is affected by direct discharges from boats that will make monitoring of the effects of stormwater difficult, therefore the targets are not applicable to this area. These targets will be achieved by reducing contaminant loads.
Adverse effects on Mana Whenua values do not occur due to stormwater inputs	Marine Cultural Health Index and State of Takiwā scores	<p>Minimum averaged Marine Cultural Health Index and State of Takiwā scores for all classes:</p> <ul style="list-style-type: none"> <li>• TBC-B</li> </ul>	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 will be developed specifically for this consent. These targets can be achieved through reducing contaminant loads.

## Schedule 9: Receiving Environment Objectives and Attribute Target Levels for Groundwater and Springs

- The EMP outlines the methodology for the monitoring of Attributes and how these will be compared against Attribute Target Levels

Objective	Attribute	Attribute Target Level	Basis for Target
Protect drinking water quality	Copper, lead, zinc and <i>Escherichia coli</i> concentrations in drinking water	<p>Concentration to not exceed:</p> <ul style="list-style-type: none"> <li>Dissolved Copper: 0.5 mg/L</li> <li>Dissolved Lead: 0.0025 mg/L</li> <li>Dissolved Zinc: 0.375 mg/L</li> </ul> <p>No statistically significant increase in the concentration of <i>Escherichia coli</i> at drinking water supply wells</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 a quarter of the Maximum Acceptable Value (MAV) or Guideline Value (GV) taken from the Drinking Water Standards for New Zealand 2005 (revised 2008). This is to ensure investigations occur before the water quality limits in the LWRP are exceeded, which are that concentrations are not to exceed 50% of the MAV. An equivalent criteria has also been applied to the zinc target, which is not included in the LWRP water quality limits, but has a guideline in the drinking water standards.
Avoid widespread adverse effects on shallow groundwater quality	Electrical conductivity in groundwater	<ul style="list-style-type: none"> <li>No statistically significant increase in electrical conductivity</li> </ul>	Contaminants in stormwater that infiltrate into the ground could impact on groundwater quality. Long term groundwater quality at monitoring wells is undertaken by Canterbury Regional Council. Those monitoring points that occur within the urban area could be impacted by CCC stormwater management activities. Electrical conductivity is to be used as an indicator for identifying any general changes in groundwater quality related to recharge.

## Schedule 10: Receiving Environment Attribute Target Levels for Water Quantity

<b>MODELLED CATCHMENTS</b>			
Objective for the management of stormwater quantity:			
To mitigate the risk of inundation, damage to downstream property or infrastructure or human safety through management of stormwater run-off volumes and peak flows. The degree of mitigation will be measured against the attribute target levels for each receiving environment.			
Attribute Target Level: Modelled flood levels for the 2% AEP for the assessment year critical duration event shall not increase more than the Maximum Increase listed below when compared to the modelled 2% AEP for the baseline year impervious scenario critical duration, as determined using CCC flood models. The baseline year scenario and assessment year scenario shall be identical except for changes to the impervious area, mitigation measures and the inclusion of any new network(s) that has arisen between the dates of the two scenarios and within the city limits. All non-variant scenario parameters shall be as at the assessment year scenario. The critical duration shall be assessed at the monitoring location of the attribute target level.			
<b>Receiving Environment</b>	<b>Monitoring Location</b>	<b>Baseline Year</b>	<b>Maximum Increase (mm)</b>
Ōtākaro/ Avon River	Gloucester Street Bridge	2014	50
Pūharakekenui/ Styx River	Harbour Road Bridge	2012	120
Ōpāwaho/ Heathcote River	Ferniehurst Street	1991	30
Huritini/ Halswell River	Minsons Drain confluence*	2016	0
<b>NON-MODELLED CATCHMENTS</b>			
<b>Receiving Environment</b>	<b>Attribute Target Level</b>	<b>Basis for Target</b>	<b>Notes</b>
Ōtūkaikino River	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 until such time as a monitoring location can be set during review of the SMP	As measured through the CCC discharge authorisation compliance process for Resource and Building Consents until such time as a Baseline Year can be set during review of the SMP	CCC has just begun monitoring the Ōtūkaikino at Dickeys Road Bridge. Council does not currently model flooding in the Ōtūkaikino River. Flooding occurs primarily due to backwater effects in the Waimakariri River. Therefore, a best practice approach to mitigation of development will be implemented until such time as Maximum Increase can be set during review of the SMP.



Banks Peninsula (Various)	Discharges from all new greenfield development within settlement areas of Te Pātaka o Rākaihautū/ Banks Peninsula into the Christchurch City Council Network are mitigated using the "Extra-Over Detention" strategy	As measured through the CCC discharge authorisation compliance process for Resource and Building Consents	Receiving environments within Te Pātaka o Rākaihautū/ 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 approach to mitigation of development will be implemented.
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\* The Minsons Drain confluence with the Huritini/Halswell River represents the southerly extent of inputs from Christchurch City catchments, but also contains discharges from Selwyn District. Inputs from catchments outside of the city shall be isolated in the CCC stormwater model for compliance assessment purposes.

## References

ANZECC (Australian and New Zealand Environment and Conservation Council, ANZECC, and Agriculture and Resource Management Council of Australia and New Zealand, ARMCANZ), 2000. Australian and New Zealand guidelines for fresh and marine water quality. Volume 1: The guidelines. ANZECC & ARMCANZ, Artarmon, New South Wales.

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