BEFORE THE CANTERBURY REGIONAL COUNCIL

UNDER The Resource Management Act 1991

AND

IN THE MATTER OF Application CRC210042 by Waimate District Council for a discharge permit to discharge stormwater onto land and into water from the Waimate reticulated network.

DECISION OF HEARING COMMISSIONER

BIANCA SULLIVAN

Dated 21 December 2022

BACKGROUND AND PROCEDURAL MATTERS

1. This is the decision of independent hearing commissioner Bianca Sullivan. I was appointed by the Canterbury Regional Council (CRC) to hear and decide this consent application by Waimate District Council (WDC or the applicant) pursuant to the Resource Management Act 1991 (RMA or 'the Act'). The application seeks to discharge stormwater onto land and into water from the Waimate reticulated network.

2. The application was lodged on 30 June 2020 and the accompanying AEE was prepared by Mr Brent Hamilton of WSP Consultancy Limited. An interim Stormwater Management Plan (SMP) was submitted with the application. Further information was requested under section 92 of the RMA; specifically, an assessment against the National Environmental Standards for Freshwater 2020 (NESF) and a receiving environment monitoring program or justification for no monitoring. This information was provided, and a monitoring programme refined with the input of Council staff.

3. The application was limited notified on Wednesday 1 June 2022 and one submission in opposition was received (from Mr Grant Croft). Following a pre-hearing meeting on 8 September 2022, a condition was proffered to address Mr Croft's concerns. He subsequently withdrew his right to be heard.

4. The section 42A report was prepared by Ms Emily Reid and dated 17 November2022. Supporting technical reports were prepared by Dr Hannah Mirabueno (contaminated land), Ms Michele Stevenson (surface water) and Ms Kate Brailue (groundwater).

5. Given that there were no parties to be heard, this decision is prepared based on the papers only. I have not visited the site but am familiar with both the area and the operation of this type of activity. I have read the supporting information provided by the applicant including the assessment of environmental effects (AEE) and section 92 response, the submission and the section 42A report.

THE APPLICATION

6. The application is described in detail in Section 2 of the AEE and is summarised in Ms Reid's section 42A report at paragraphs 31 to 51. I consider this summary to be an accurate description of the application and adopt it for the purposes of this decision.

7. As a very brief summary, a discharge permit (CRC210042) is sought to discharge stormwater onto land and into water from the Waimate reticulated stormwater network. The application covers stormwater generated from roofs, roads, hardstanding areas and impervious areas that discharge to the reticulated network. It includes both existing developed areas and new developments once they are vested to WDC following an initial 2-year maintenance period.

8. Stormwater mostly follows the 76.5 kilometres of reticulated network to discharge into Maytown Creek and Waimate Creek, which are both ephemeral tributaries of Wainono Lagoon. Some stormwater also discharges to land, including to private property. Overland flow paths are poorly defined. The total stormwater catchment area is approximately 600 hectares, of which 255 hectares is developed urban area and a further 10 hectares is proposed for high density urban development.

9. A range of contaminants are likely to be present in the stormwater, including microbiological species, nutrients, hydrocarbons, sediment, heavy metals (including zinc and copper), toxic organic compounds, organic matter and litter. Contaminant load modelling was undertaken and presented in

the AEE. There are no formal stormwater treatment systems in Waimate and the contaminant load modelling assumed no reduction in contaminant load.

10. A lack of digital terrain data has meant that stormwater catchments are not well understood. Water quantity was assessed using rainfall data from the Waimate weather station.

11. The interim SMP was appended to the AEE and is intended to be a live online document. The SMP provides objectives for stormwater management, identifies issues and details how these will be managed, monitored and reported. A condition is proposed to address stormwater flow at 41 Park Road, the property of submitter Mr Croft.

12. The applicant seeks a 35-year duration.

SUBMISSIONS

13. As stated above, the application was limited notified on Wednesday 1 June 2022. Notice was served on landowners onto whose land stormwater was proposed to be discharged. These parties are listed in the table in paragraph 111 of the section 42A report. No submissions were received prior to the initial closing date but Council granted an extension to Mr Croft. Mr Croft lodged a submission opposing the proposed activity and requested to be heard.

14. I have read Mr Croft's submission and consider that Ms Reid's summary in paragraph 114 of her section 42A report is complete and accurate. I adopt it for the purposes of this decision. Mr Croft's property has an open stormwater channel which is part of WDC's stormwater infrastructure. His property is identified as flood prone and Mr Croft expressed concern that flooding could increase.

15. A pre-hearing meeting was held on 8 September 2022 and the parties reached provisional agreement on a consent condition to address Mr Croft's concerns. This condition was drafted, reviewed and agreed on, with Mr Croft subsequently withdrawing his right to be heard. This condition was recommended in the section 42A report.

CONSIDERING THE APPLICATION

16. For the purposes of my assessment in the following sections, and for my final decision, I have considered all relevant documentation that applies to these applications. This includes the application, AEE, the submission and the section 42A report.

Status of the application

17. Rule 5.93 of the Canterbury Land and Water Regional Plan (LWRP) classifies discharges from reticulated stormwater systems as a restricted discretionary activity. Condition 3 of this rule states that *"the discharge will not cause a limit in Schedule 8 to be exceeded"*. Ms Reid in her s42A report considers that the applicant hasn't adequately demonstrated that this condition can be met and considers that the Schedule 8 water quality limits would apply at the point of entry to groundwater. She therefore considers that the application is a non-complying activity under rule 5.94 of the LWRP.

18. The AEE considers that the discharge will meet the requirements of condition 3 of rule 5.93, therefore assessed the application as a restricted discretionary activity.

19. I have considered compliance with condition 3 of rule 5.93 and do not accept Ms Reid's view that this condition will not be complied with. Applying the schedule 8 limits at the point of entry implies that

the discharge itself must meet the Schedule 8 limits. This does not align with the causation required in condition 3, which to me must provide for a level of mixing with the receiving groundwater.

Statutory considerations

20. Sections 104, 104C, 105 and 107 of the RMA dictate the matters which I must consider in making this decision.

21. Section 104(1) lists the matters that I must have regard to in considering the application, stating that:

When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to–

(a) any actual and potential effects on the environment of allowing the activity; and
(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and
(b) any relevant provisions of—
(i) a national environmental standard:
(ii) other regulations:
(iii) a national policy statement:
(iv) a New Zealand coastal policy statement:
(v) a regional policy statement or proposed regional policy statement:
(vi) a plan or proposed plan; and
(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

22. Section 104C applies to the determination of restricted discretionary activities, stating that:

(1) When considering an application for a resource consent for a restricted discretionary activity, a consent authority must consider only those matters over which—
(a) a discretion is restricted in national environmental standards or other regulations:
(b) it has restricted the exercise of its discretion in its plan or proposed plan.
(2) The consent authority may grant or refuse the application.
(3) However, if it grants the application, the consent authority may impose conditions under section 108 only for those matters over which—
(a) a discretion is restricted in national environmental standards or other regulations:
(b) it has restricted the exercise of its discretion in its plan or proposed plan.

23. Section 105 applies to discharge permits and requires that, in addition to the matters in section 104(1), I must have regard to

(a) The nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
(b) The applicant's reason for the proposed choice; and
(c) Any possible alternative methods of discharge, including discharge to any other receiving environment.

24. Section 107(1) also applies to applications for discharge permits, and precludes me from granting a permit to discharge contaminants to land in circumstances which may result in contaminants entering water if, after reasonable mixing, it is likely to result in any of the following:

"(c) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:
(d) any conspicuous change in the colour or visual clarity:
(e) any emission of objectionable odour:
(f) the rendering of fresh water unsuitable for consumption by farm animals:
(g) any significant adverse effects on aquatic life."

Exceptions to this are provided in section 107(2) and I will refer to these later in my decision if needed.

25. These sections of the RMA are considered in turn below.

SECTION 104(1)(a) – ACTUAL AND POTENTIAL EFFECTS ON THE ENVIRONMENT

The existing environment

26. Before addressing the actual and potential effects of the proposed activity, I must consider the environment against which the effects are assessed. This includes lawful existing activities, consented activities and permitted activities.

27. The affected environment is described in section 4 of the AEE, and this is audited and summarised in paragraphs 52 to 88 of the s42A report.

28. There appears to be general agreement as to the existing environment to be considered for this application. I consider that the receiving environment is moderately sensitive to the discharge of stormwater. The ultimate receiving environment for the discharge is Wainono Lagoon, which has significant cultural and ecological values. I accept that stormwater discharges will only reach Wainono Lagoon directly during flood flows, with stormwater from small to average rain events discharging to ground. Shallow groundwater is used for drinking water supply and is therefore susceptible to microbiological contamination. Waimate's community supply is from deep groundwater.

29. No information was provided to suggest that the permitted baseline, as provided for by section 104(2), should apply in this case.

Considering the effects

30. The section 42A report considers the application to be non-complying and therefore considers all effects potentially associated with the activity. I concluded above that the proposed discharge is a restricted discretionary activity under rule 5.93 of the LWRP. In accordance with section 104C of the RMA, my discretion is limited to the matters provided for in Rule 5.93, which are:

    1. *The quality of, compliance with and monitoring of the stormwater management plan prepared to address the management of stormwater in the catchment and matters set out in guidance documents prepared by the CRC; and*

    2. *The rate and volume of discharge and the changes to the flow regime of a river or artificial watercourse, flood frequency, including flooding of land or dwellings, erosion of river bank and channels; and*

    3. *The concentration of contaminants and resulting actual and potential adverse environmental effects, including cumulative effects on the receiving water quality of surface*

and groundwater, aquatic ecosystems, Ngāi Tahu cultural values and other existing uses and users of the water, including takes and discharges; and

4. *Measures to:*

   (a) reduce the volume and concentration of contaminants in the discharge; and

   (b) ensure the volume and rate of discharge do not exceed:

      (i) the capability of the soil and subsoil layers at the site to reduce contaminant concentrations in the discharge; and

      (ii) the infiltration capacity of the soil and subsoil layers at the site; and

   (c) avoid the accumulation of toxic or persistent contaminants in the soil or subsoil layers; and

   (d) minimise suspended sediment in stormwater from activities involving earthworks; and

5. *The potential benefits of the activity to the applicant, the community and the environment; and*

6. *The need for measures to protect any human or animal drinking-water sources.*

31. I have considered the matters listed above. The application has been thoroughly audited with input from CRC scientists where needed. Additional assessment by the applicant and discussion with the Council's processing team has resulted in amendments to strengthen the SMP and proposed consent conditions. In particular, I note:

    a. The SMP appears comprehensive and the proposed conditions require scheduled reviews and reviews in response to specified triggers (proposed conditions 9 and 10). Revisions are required to respond to, among other things, new technologies, results of receiving environment monitoring, changes to planning documents, and feedback from Te Rūnanga o Waihao and Te Rūnanga o Arowhenua.

    b. The s42A report considers effects on surface water and groundwater quality to be minor and acceptable. Discharges will only occur to ephemeral reaches of Waimate and Maytown Creeks which have low ecological values, and Ms Stevenson accepts the applicant's assessment that contaminant loads reaching Wainono Lagoon will be small. A schedule of water quality objectives is appended to the SMP and to the proposed conditions as Schedule 2.

    c. The applicant has committed to mitigation measures to reduce the impact of flooding on private properties, including upgrades to the Park Road catchment to reduce stormwater impacts on Mr Croft's property, and SMP objectives to protect private property from flooding and ensure there are no increases in peak flows resulting from new developments.

    d. The section 42A report does not address the benefits of the proposed activity (matter of discretion number 5), but these are addressed in section 7.2 of the AEE. I accept this assessment and consider that more integrated management will result in greater efficiency for the applicant, consistent and improved stormwater design for new developments and better stormwater management for the community.

    e. The AEE and section 42A report conclude that potential risks to groundwater users is low, given the location of active wells and the distance from stormwater discharge locations.

32. Considering the matters listed in rule 5.93, I conclude that the effects of the proposed activity are minor and acknowledge the positive effects of a more integrated approach to stormwater management.

SECTION 104(1)(b) – RELEVANT PLANNING PROVISIONS

33. Section 104(1)(b) requires me to have regard to any relevant provisions of statutory planning documents. Ms Reid's section 42A report at paragraphs 226 to 261 contains what I consider to be a complete record of the relevant documents and provisions, assessing the application against the relevant provisions of the National Environmental Standard for Sources of Human Drinking Water 2007, the National Policy Statement for Freshwater Management 2020 (NPS-FM), the Water Services Act 2021, the Canterbury Regional Policy Statement (RPS) and the LWRP, including Plan Change 7.

34. I have considered the relevant provisions in the above-mentioned planning documents and agree with Ms Reid's assessment that the proposal is consistent with these.

SECTION 104(1)(c) – OTHER MATTERS

35. Ms Reid lists the Iwi Management Plans, Te Rūnanga o Ngāi Tahu Freshwater Management Policy, the Iwi Management Plan of Kati Huirapa 1992, and the Canterbury Water Management Strategy (CWMS) as matters to be considered under section 104(1)(c) of the RMA. I consider that these documents are relevant and have had regard to them in making my decision.

SECTIONS 105 AND 107

36. The matters listed in section 105(1) of the RMA are additional requirements for discharge permits which I must have regard to:

    (a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
    (b) the applicant's reasons for the proposed choice; and
    (c) any possible alternative methods of discharge, including discharge into any other receiving environment.

37. I have considered section 105(1)(a) in my consideration of effects. In relation to sections 105(1)(b) and (c), the AEE considers the reasons for the proposal and alternatives in section 8. Ms Reid provides comment in her paragraphs 276 to 279. The proposal before me appears to be the most viable option for the Council.

38. I have evaluated the proposed discharges against the requirements of section 107, and I do not consider that the discharge will give rise to the listed effects in the receiving waters.

PART 2 OF THE RMA

39. Section 104(1) of the RMA states that the matters to be considered must be done so subject to Part 2. The Court of Appeal's decision in *RJ Davidson v Marlborough District Council*[1] was referred to by Ms

[1] [2018] NZCA 316

Reid in her section 42A report. This decision clarifies how to approach the directive by section 104(1) to consider provisions subject to Part 2.

40. I have accepted that the proposal meets the objectives and policies of the RPS and LWRP, and that it is consistent with the NPS-FM and, in particular, Te Mana o Te Wai. These documents have been prepared to give effect to Part 2 and there is no conflict between the relevant objectives or policies that would benefit from consideration against Part 2. With reference to *Davidson*, I therefore find that there would be no benefit to my evaluation of the proposal from consideration of Part 2.

TERM AND CONDITIONS

41. Policy 4.11 of the LWRP provides guidance on consent duration and I have considered this when determining an appropriate duration. The applicant has applied for a 35-year duration, with section 3.6 of the AEE providing the reasons for this. Ms Reid discusses duration at paragraphs 300 to 304 of the s42A report and recommends a duration of 20 years.

42. I agree with Ms Reid that a 20-year duration is appropriate for this consent. I acknowledge the level of investment required to prepare the application and the relatively minor nature of the effects. However, I do not consider that this warrants the consent being granted for 35 years. The CRC is currently preparing a new plan to implement the NPS-FM, and a new planning approach will then be required to implement the replacement legislation for the RMA. I consider that a 20-year duration provides WDC and Waimate developers with sufficient certainty to implement and progress stormwater management under the proposed integrated approach.

43. I have considered the conditions attached to Ms Reid's s42A report which were agreed to by the applicant and submitter. Ms Reid recommends amendments to conditions 16, 17 and 20 (at paragraphs 297-298) which relate to the Park Road upgrade agreed to with Mr Croft. Mr Hamilton did not agree to the proposed changes to these conditions as they had not been seen by Mr Croft. I consider the changes no not alter the intent of the conditions and provide additional clarity that will make the conditions easier to monitor. For these reasons, I have adopted the amendments. Subject to some minor corrections, I consider that the remaining conditions are appropriate for the proposed activity.

DECISION

44. Under the powers delegated to me by the Canterbury Regional Council, for the reasons given above, pursuant to sections 104, 104C, 105 and 107, and subject to Part 2 of the Resource Management Act 1991, I GRANT the application by Waimate District Council for discharge permit CRC210042 to discharge stormwater onto land and into water from a reticulated network in the town of Waimate.

Dated at Christchurch this 21st day of December 2022

Bianca Sullivan
Independent Hearing Commissioner

Conditions for consent CRC210042

	Proposed Definitions and Conditions
	For the purpose of this consent the following definitions and abbreviations apply to all conditions: a. **ANZG** refers to the Australian & New Zealand Guidelines for Fresh & Marine Water Quality 2018 or any successor to this document. b. **Industrial site** means: i. Any premises used for any industrial or trade purposes; or ii. 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 iii. Any other premises from which a contaminant is discharged in connection with any industrial or trade process— a. but does not include any production land. c. **Attenuated** means capturing stormwater generated from a site or multiple sites, and releasing it slowly such that the post development discharge is no more than the pre development discharge for a given storm event d. **HAIL** means the Ministry for the Environment's Hazardous Activities and Industries List) October 2011 or any update to this list or successor document. e. **Piece of land** is defined by section 7 of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011. f. **Reticulated stormwater system** means drains, the reticulated piped network, earth channels, kerb and channel, sumps, pipes, manholes, soakage chambers and any stormwater conveyance and mitigation facilities, for which the Consent Holder are responsible for the operation, maintenance and upgrade. g. **Site** means

	i. An area of land or volume of space with defined boundaries, whether legally or otherwise described, comprised in a single allotment or any other legally defined parcel of land: 1. Held in a single certificate of title; or 2. For which a separate certificate of title could be issued without further consent; and or 3. Reserve land without title; and ii. In the case of land subdivided under the cross lease or company lease systems, site shall mean an area of land exclusively restricted to the control of users of that land; and iii. In the case of land subdivided under the Unit Titles Act 2010, site shall mean an area of land or volume of space containing a principal unit or a proposed unit in a unit plan, together with its accessory units. iv. "Site" shall also include the access to the site. h. **SMP** means a stormwater management plan for Waimate township. i. **Stormwater** means runoff that has been channeled, diverted, intensified or accelerated by human modification of the land surface or runoff from the external surface of any structure as a result of precipitation and may contain contaminants. This definition excludes discharges of spilled or deliberately released hazardous substances and/or washdown activities, construction phase stormwater, and land drainage water (including drainage of water from soil profile, excess surface water from agricultural or rural land, and groundwater taken for the purpose of land drainage).
	Description
1)	The discharge shall be only existing and future developed urban stormwater from within the SMP Area as shown on Plan CRC210042 attached to and forming part of this resource consent, that enters the reticulated stormwater system and is subsequently discharged to surface water, or onto or into land where it may enter groundwater.
2)	The existing urban development includes any roading, residential, educational and business activities that existed at the time of the commencement of this consent.
3)	The future developed site is limited to: a. Any redevelopment of existing developed site activities;

	b. An additional maximum of ten hectares of new high density urban development outside the extent of existing development area shown on Plan CRC210042 relating to any business subdivision, or residential subdivision that results in a lot(s) of 3,000 square meters (m^2) or less; and c. Any new low density residential subdivision with lot(s) greater than 3,000 m^2. ***Advice Note:*** *For any new urban development, or redevelopment, that discharges developed site stormwater to land via soakage on-site or off-site, and the system is not a 'reticulated stormwater system' as defined under this consent these discharges are not covered by this discharge permit. Individual's discharges to land within the site is expected to be either authorised by a rule in the regional plan as well as a proposed regional plan (if there is one) or authorised by a separate discharge permit (resource consent).*
	Exclusions
4)	There shall be no discharges of stormwater to the permanently flowing reach of Waimate Creek as shown in Plan CRC210042.
5)	There shall be no discharge of stormwater onto or into land or to surface water from any development area or mitigation facility where HAIL activities have occurred (a piece of land) unless either: a. The soil has been analysed for the appropriate contaminants as determined by Canterbury Regional Council and has been shown to be below the ANZG sediment quality guideline value - high (GV-high) or any updates or successors to these guidelines; or. b. The risk associated with the discharge has been agreed by the Consent Holder and the Canterbury Regional Council to be acceptable based on factors including, but not limited to: i. Contaminant characteristics or known concentrations on a site; ii. The likelihood of contaminated sediment becoming entrained in stormwater and migrating off-site or into groundwater; iii. Site management practices and treatment systems; iv. The degree of separation between a HAIL site and an ecological receptor and drinking supply well.
6)	Any site that represents an unacceptable risk to achieving the receiving environment objectives set out in Condition (7) and its associated Schedule may also be excluded. The exclusion of these sites from this resource consent can occur via either of the following processes in consultation with the Canterbury Regional Council: a. Written disconnection of a site by the Consent Holder via a Local Government Act process; or

	b. The surrendering of a site(s) respective land parcels from this consent by the Consent Holder and the Canterbury Regional Council issues a notice of acceptance of that partial surrender pursuant to 138 of the Resource Management Act 1991; or c. Another mechanism agreed between the Consent Holder and the Canterbury Regional Council. d. The consent holder shall maintain a Schedule 1 titled "Sites excluded from the Waimate Township SMP Consent" which forms part of this consent. ***Advice Note:*** *The purpose of Condition (6) is to identify sites that have poor stormwater quality or other discharges entering the reticulated stormwater system that may compromise the outcomes that this consent seeks to achieve and, where feasible, discourage such discharges. If such discharges cannot be avoided and a separate consent is required and sought, the consent process provides the applicants with the opportunity to demonstrate that their discharge will not compromise the objectives of this consent.*
	Level of Service and Receiving Environment Objectives
7)	The consent holder shall use best practicable options to achieve the level of service and receiving environment objectives set out in the attached Schedule 2 which forms part of this consent, with respect to effects arising from exercising this consent.
	Stormwater Management Plan
8)	The SMP shall be maintained for the duration of this consent. The purpose of the SMP is to detail the options to manage the stormwater discharges authorised by this consent so that the receiving environment objectives and targets set out in Schedule 2 of this consent will be met. The SMP shall include but not be limited to: a. Details of measures that will be used to manage discharges of stormwater authorised by this consent; and b. How the discharges of stormwater authorised by this consent will meet the receiving environment targets and objectives required by this consent; and c. Details of the management of stormwater from sites involving the use, storage or disposal of hazardous substances; and d. Demonstration of a commitment to progressively improve the quality of the discharges to meet the receiving environment objectives and targets required by this consent.
9)	The SMP shall be reviewed at least once every five years, and revised, if required, to respond to:

	a. Any feedback from Te Runanga o Waihao and Te Rūnanga o Arowhenua sought in accordance with Condition (13); b. Any changes to relevant national and/or regional planning documents, including those that result from the Canterbury Land and Water Regional Plan sub-regional chapter development process; c. New technologies or changes in good practice stormwater treatment; d. The concentration of contaminants in soils causing an exceedance of the trigger and/or actions levels under the Agricultural Soil Monitoring Programme for Waimate Township Stormwater Version 1.0 ('ASMP'); and e. The stormwater discharge causing an exceedance of the parameters under the Stormwater Quality Monitoring Programme for Waimate Township Stormwater Version 1.0 ('SQMP').
10)	In addition to the revisions required in accordance with Condition (9), the SMP shall be revised at other times if requested by the Canterbury Regional Council under the following conditions: a. Any changes to relevant national, and/or regional planning documents including those that result of the Canterbury Land and Water Regional Plan sub-regional chapter development process; or b. The results of monitoring, including any investigations or outcomes in relation to the responses to modelling and monitoring; or c. The use of proven new technologies, new opportunities for mitigation treatment and source control; or d. Upon the release of any amendment to the Resource Management Act 1991, or any document accepted as a New Zealand Guideline or Standard, which addresses stormwater management requirements set out in this consent.
11)	Within one month of the adoption of the revisions to the SMP prepared in accordance with Conditions (9) or (10), the SMP shall be submitted to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring, along with an explanation of the changes that have been made, for certification that it contains the matters required by Condition (8) and complies with the conditions of this consent.
12)	Any amendments to the SMP, other than those agreed with the 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 (8). For the avoidance of doubt, any amendments shall not reduce the likelihood of meeting the receiving environment objectives and targets set out in Condition (7).

	Rūnanga Engagement
13)	Te Rūnanga o Waihao and Te Rūnanga o Arowhenua shall be provided with an opportunity to contribute to each review of the SMP and any periodic reviews undertaken of the monitoring programme. The following process shall be followed: a. The revisions to the SMP required by Condition (9), and any periodic review of the monitoring programme and associated proposals shall be provided to Te Rūnanga o Waihao and Te Rūnanga o Arowhenua for comment; b. Te Rūnanga o Waihao and Te Rūnanga o Arowhenua shall be provided at least 60 working days to provide feedback, and the timeframe for comments shall be communicated at the start of the process; and c. The consent holder shall provide a written response to Te Rūnanga o Waihao, Te Rūnanga o Arowhenua and the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring within 20 working days of receiving feedback on the SMP or monitoring programme.
	Design
14)	As far as practicable infilling, existing urban re-development, and future development that contributes stormwater up to and including two percent Annual Exceedance Probability durations shall discharge stormwater into land on-site (utilise soakage) where site conditions allow.
15)	Where discharges into land cannot be fully or partially achieved for high density (lots greater than or equal to 3,000 m^2) subdivisions of three or more lots, or a business development or redevelopment that increases impervious area, discharges to the reticulated stormwater system as far as practicable shall be attenuated to pre-developed rates in accordance with the SMP. .
	Park Road Catchment Upgrade
16)	Within three years of the commencement of this consent, the consent holder shall investigate, design and implement the Park Road Catchment Upgrade to reduce flooding in urban areas of a major catchment and downstream where it flows through the property at 41 Park Road, Waimate (Park Road Catchment), legally described as SUB SEC 28-29 TN WAIMATE via a natural watercourse / network channel.
17)	The purpose of the Park Road Catchment Upgrade is to: a. Identify the upstream rural and existing catchment contributing to the reticulated stormwater network that flows through the 41 Park Road property. b. Investigate and design the option(s) using the most up to date methods and local or national best practice design criteria.

	c. Implement mitigation or a solution using the best practicable option(s) to achieve the following stormwater quantity objectives: i. For the urban area a reduction in flooding to improve the level of service; and ii. For 41 Park Road property: 1. A reduction of at least 10 per cent of the critical duration two percent Annual Exceedance Probability event (2 per cent AEP or 1 in 50 year) stormwater flows and volumes through the 41 Park Road property; and 2. An adequate uninhibited flow path land downstream of the 41 Park Road property, to reduce flows backing up and as far as practicable stormwater not ponding on the 41 Park Road property for more than 48 hours after the cessation of a storm event. ***Advice Note:*** *The mitigation may include but not be limited to use of soakage devices in Council land including road reserves however this still has to comply with Conditions (22) and (23) or otherwise would be excluded from this consent under Condition (6) of this consent if applicable.*
18)	Within one year of the commencement of the consent and prior to the construction of the Park Road Catchment Upgrade, the following documents shall be submitted to the Canterbury Regional Council Attention: Regional Leader - Monitoring and Compliance: a. Methods to be used to delineate the rural and urban areas of the Park Road Catchment. b. Design plans of the stormwater system to be constructed and the supporting calculations that demonstrate the achievement of the upgrade benefits specified in Condition (17)(c). c. A programme for the construction that meets the requirements of Condition (16). d. An Inspection and Maintenance Plan for the downstream flow path. e. A certificate signed by a Chartered Professional Engineer (CPEng) with stormwater system design experience to certify that the upgrade has been designed to achieve the upgrade objectives specified in Condition (17)(c). This CPEng shall also sign a statement confirming that they are competent to certify the design work.
19)	Works shall not proceed until the Park Road Catchment Upgrade documents and certification described in Condition (18) have been received and certified in writing by Canterbury Regional Council: Regional

	Leader- Monitoring and Compliance. If correspondence is not provided by the Canterbury Regional Council within 30 working days of the consent holder sending the certification, the certification shall be deemed to be confirmed.
20)	Within three years of commencement and within 20 working days after the construction of the Park Road Catchment Upgrade, the consent holder shall submit to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring: a. A certificate signed by a CPEng with stormwater system design and construction experience confirming that confirming that the Park Road Catchment Upgrade: i. Has been installed in accordance with the conditions of this resource consent; ii. Has been constructed in general accordance with the design plans submitted; iii. Any soakage tests for a rapid soakage disposal system undertaken were in general accordance with a recognised guideline or standard; and iv. The constructed design meets the upgrade objectives specified in Condition (17)(c). b. A statement signed by the CPEng confirming that they are competent to certify the engineering work.
21)	Inspection and maintenance of the downstream flow path shall occur in accordance with the Inspection and Maintenance Plan submitted under Condition (18)(d) or any further revisions to the Inspection and Maintenance Plan submitted to the Canterbury Regional Council. Records of inspection and maintenance shall be kept and made available on request to the Canterbury Regional Council, Attention: Regional Leader - Monitoring and Compliance.
	Drinking-water Supply Protection
22)	The exercising of this consent shall not result in the Maximum Acceptable Values under the Schedule of the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 or any revisions or successors to this document being exceeded in drinking-water supply wells.
23)	No new soakage facilities that are designed to discharge to land for the existing reticulated stormwater network, or for a new development discharging via a reticulated stormwater network, shall be located within a Group or Community drinking water supply well's protection zone, or a domestic water supply capture zone equivalent to the areas specified in Figure CRC210042 and Table CRC210042, unless a. In the case of domestic drinking water supply, a reticulated water supply is made available to the property prior to the discharge commencing; or b. An assessment of site-specific information undertaken by the Consent Holder, and certified by the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance,

demonstrates that the ability of the domestic and/or group or community drinking water supplier to meet the water quality standards for drinking water set out in the Drinking-Water Standards for New Zealand 2005 (Revised 2018) or any successor document is not compromised as a result of the stormwater discharge.

Advice Note: *Group or community supply protection zones are available on Canterbury Maps*

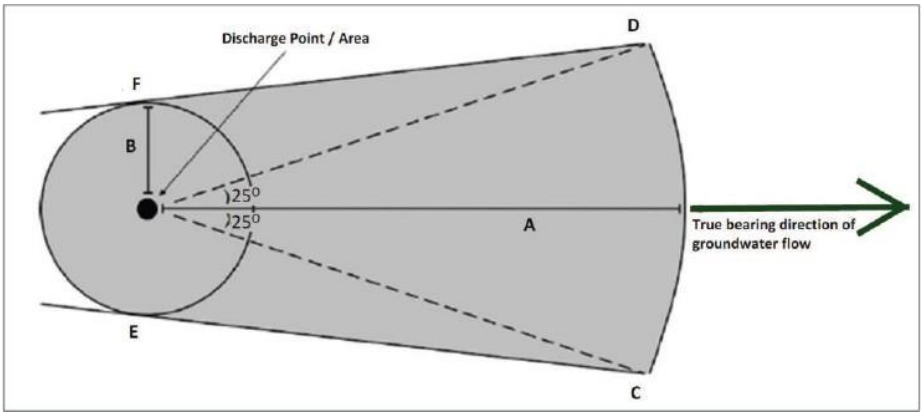


Figure CRC210042 – Method for calculating the area of a well capture zone

Table CRC210042 – Capture zone delineation for domestic supply wells around soakage facilities for hardstand and roading

Soakage Facility	Assumed concentration to groundwater (microbe /100 ml)	Distance (A) m #	Radius (B) m *
Soil lined basin(s) with 50 year capacity	14.5	200	50
Swale / basin / raingarden with overflow to soakage pit	145	385	50
Soakage pit only	8,000	657	100

Table Notes:

Distance to reach 1 microbe/100 ml using removal rates for a shallow Canterbury course gravel aquifer from Pang (2009)

* Degree of potential mounding for worst case scenario of groundwater being 5m below ground level

Industrial Site Management

24) Within two years of commencement of this consent, the consent holder shall undertake, and report on the outcomes of, identification of existing operational industrial sites that discharge under the consent. The following minimum requirements shall apply:

a. The identification of sites shall include:

i. Review of Waimate District Council and Canterbury Regional Council databases for listing of HAIL activities;

ii. Review of trade waste permits issued by the Consent Holder;

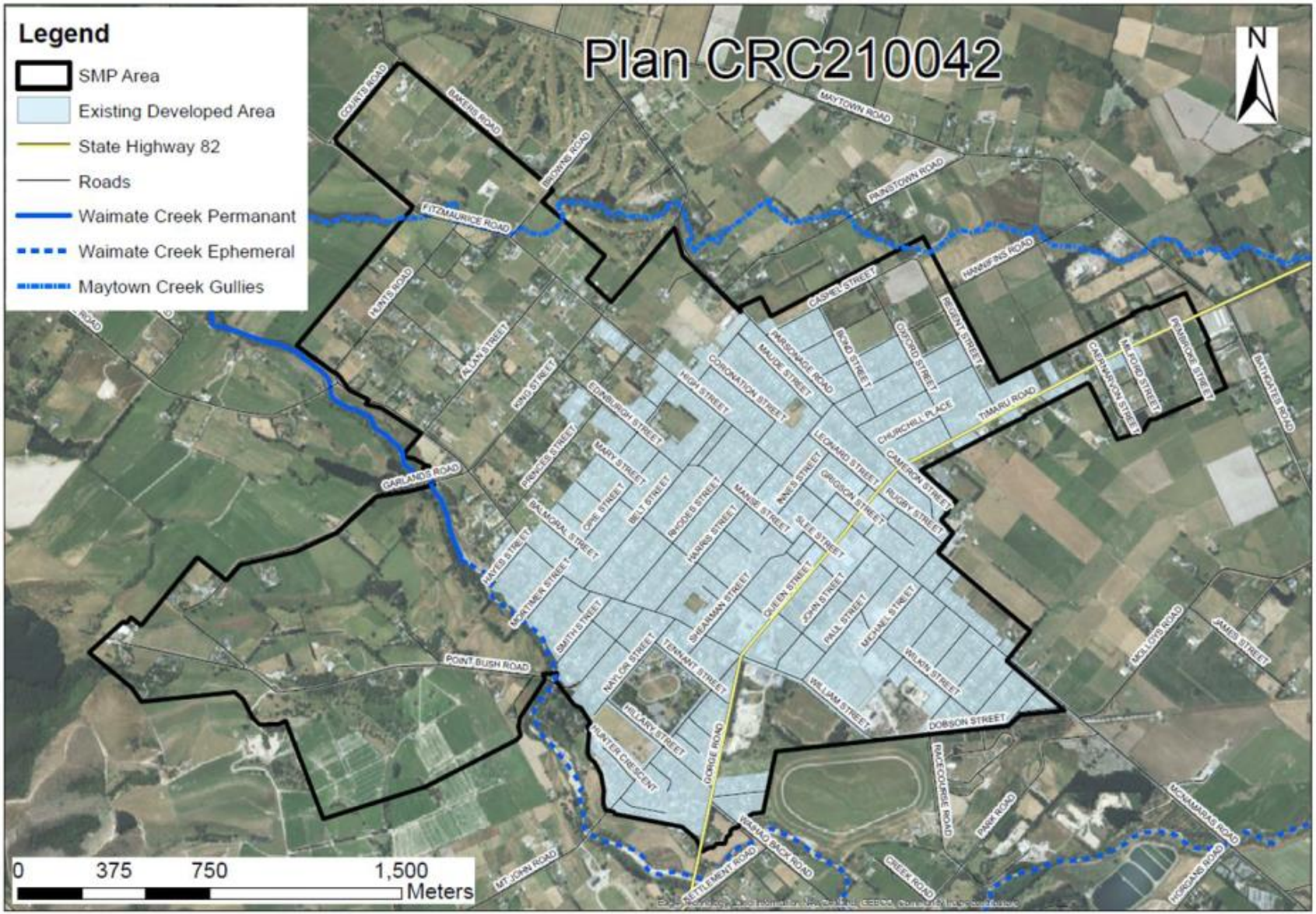
	iii. Review of applicable and current resource consents issued by the Waimate District Council and Canterbury Regional Council; and iv. A site visit if lawfully allowed. b. A report shall be prepared and submitted to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance that sets out the process used to identify all industrial sites and include a discussion of the parameters used to rank sites for risk relative to stormwater discharge and identify the industrial sites that pose the highest risk to surface water, groundwater and/or soil quality. c. The report shall also include a programme for prioritisation and scheduling for auditing the industrial sites that pose the highest risk identified during the identification study. This shall include: i. A process to maintain an up to date, risk-ranked inventory of industrial sites as changes in land use occurs; ii. A process and schedule for periodically re-auditing and re-evaluating the identification of high-risk sites for compliance with the consent holder's stormwater monitoring and on-site contaminant isolation, treatment and maintenance requirements; iii. A process for consulting with the Canterbury Regional Council as necessary to address difficult sites; and iv. A process for periodic review of this programme by the consent holder.
25)	The site auditing of industrial sites under Condition (24) shall identify: a. Site environmental practices, including spill prevention/control, minimisation or elimination of contaminants at source; b. Any data on discharge quality, or on the need for the site owner (and/or site occupier) to carry out monitoring of their stormwater discharge; and c. Adequacy of the site's stormwater system including stormwater treatment. d. The time frames available for the site occupier and/or landowner to undertake site improvements if required.
26)	The site auditing of industrial sites under Condition (24) shall be undertaken as follows: a. As a minimum, within three years of the commencement of this consent, a suitably qualified person with experience in assessing

	contamination risk shall undertake the auditing of the top 10 highest risk operational industrial sites within the SMP Area; b. The remainder shall be completed within ten years of the commencement of this consent; and c. Include repetition of the audits regularly to ensure that any changes to the risk posed by the stormwater discharges on surface water, groundwater and/or soil quality are captured. ***Advice Note:*** *A trade waste officer would be a suitably qualified person under the above conditions requirements.*
27)	If at any stage during a site visit, audit or monitoring of a site it is determined that a site is presenting an unacceptable risk to achieving the receiving environment objectives, the consent holder shall notify the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, within 20 working days for confirmation that the site can be excluded in accordance with Condition (6).
	Implementation Records
28)	The consent holder shall: a. Notify the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance within one month of a high density urban development site that will contribute to the 10 hectare limit in Condition (3)(b), being issued an authorisation from the Consent Holder under this consent. b. Maintain an up to date record of the total of the high density urban development that is contributing to the 10 hectare limit in Condition (3)(b) and provide this to the Canterbury Regional Council on request.
29)	The consent holder shall maintain records including, but not limited to, detailed design drawings, calculation 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 shall be made available to Canterbury Regional Council on request.
	Agricultural Soil Quality Monitoring
30)	The consent holder shall undertake soil quality monitoring in accordance with the attached Agricultural Soil Monitoring Programme (ASMP) or any subsequent certified revisions to the ASMP.
31)	The purpose of the ASMP is to investigate the effects of the reticulated stormwater system discharges on soil quality. The ASMP or any revisions to the ASMP shall also: a. Apply the most up to date and relevant soil quality guidelines available in relation to rural land use or agricultural land use.

	b. Be sufficient to detect any trends in soil quality.
32)	Within three months of the commencement of this consent, the ASMP shall be updated to include 42 Naylor Street (legally described as LOT 2 DP 43004 RS 9559 BLK XIV WAIMATE SD). The trigger levels shall be based on the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 residential 10 per cent produce limits and the action levels shall be two times the trigger levels for the following parameters: a. Copper; b. Lead; c. Benzo[a]pyrene; and d. Fluoranthene.
33)	Any amendments to the ASMP shall not replace the previous version until they have been certified by the Regional Leader – Monitoring and Compliance of the Canterbury Regional Council as complying with the requirements of Condition (32).
34)	If the monitoring results identify that the trigger limits are exceeded, the consent holder shall: a. Undertake the further assessments, mitigation and remedial actions required in the ASMP; and b. Provide a report on 30 June the following year to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, that includes, but is not limited to, the following: i. The actions or mitigation or remediation undertaken. ii. Measures undertaken or to be undertaken to prevent reoccurrence.
	Stormwater Quality Monitoring
35)	The consent holder shall undertake stormwater quality monitoring in accordance with the attached Stormwater Quality Monitoring Programme (SQMP).
36)	Where groundwater quality receiving environment objectives as set out in the attached Schedule 2 are not being meet as a result of the discharge authorised by this consent, the consent holder shall review the SQMP and submit it to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, for certification that the SQMP has adequate monitoring, triggers for actions and responses.
	Responses to Monitoring

37)	If the monitoring undertaken under the SQMP identifies that the stormwater quality has higher contaminant concentrations than expected under the SQMP, the consent holder shall undertake the following actions: a. Engage with the Canterbury Regional Council about conducting an investigation into whether this is due to the stormwater discharges authorised under this resource consent, with site investigations prioritised for areas with likely high levels of contaminants. b. If the investigation determines that the unexpected high concentrations are a result of the stormwater discharges authorised by this consent: i. Consider all reasonably practicable options to reduce the contaminant loads being discharged to the receiving environment, including but not limited to source controls, education initiatives, installation of mitigation facilities and removal of contaminated sediment from drainage paths where sediment can be easily mobilised into the receiving waterway; ii. Select the contaminant load reduction option(s) that will be implemented and provide a timeline for implementation to the Canterbury Regional Council; iii. Review and revise the SMP in accordance with Conditions (9) to (13) so that the stormwater discharge concentrations are progressively reduced to those values expected as described in the SQMP; iv. Submit a report that sets out the actions taken in accordance with Condition (b)(ii) to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, Te Rūnanga o Waihao and Te Rūnanga o Arowhenua within three months of identification of the exceedance; and v. After the report and the revised SMP have been confirmed by the Canterbury Regional Council to meet the conditions of this consent in accordance with Conditions (9) to (13), implement the selected contaminant load reduction option(s) in accordance with the timeline identified in the certified SMP.
	Reporting
38)	The consent holder shall provide an annual report to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, Te Rūnanga o Waihao and Te Rūnanga o Arowhenua, by 30 June each year. The report shall include, where appropriate: a. A summary of the results of any agricultural soil monitoring carried out during the preceding 12 months and after 10 years of monitoring any comments on trends if any developing. b. A summary of the results of the stormwater quality monitoring carried out during the preceding 12 months and recommendations

	for investigating any material exceedances of expected stormwater quality and actions undertaken in accordance with Condition (37). c. An update on the remedial action progress, required by Condition (34)(b)(ii). d. An update on progress with the high-risk industrial site audit programme under Conditions (24) and (27), including an updated Schedule 1 of excluded sites pursuant Condition (6). An update on the timetable for construction and commissioning of any Consent Holder funded mitigation facilities or works. e. Any additional monitoring or investigations undertaken beyond those specified in the ASMP, and including those undertaken on industrial sites, that have been initiated to inform stormwater management effectiveness. f. Any other significant matters which may have a positive or negative impact on the receiving environment in the future.
	Administration
39)	If this consent is not exercised before 19 December 2027 it shall lapse in accordance with Section 125 of the Resource Management Act 1991.
40)	The Canterbury Regional Council may, on any of the last five days of March or September each year, serve notice of its intention to review the conditions of this consent for the purposes of: a. Dealing with any adverse effect on the environment which may arise from the exercise of this consent and which it is appropriate to deal with at a later stage; or b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment.


Plan CRC210042
Legend
SMP Area
Existing Developed Area
State Highway 82
Roads
Waimate Creek Permanant
Waimate Creek Ephemeral
Maytown Creek Gullies
N
0
375
750
1,500
Meters
MAYTOWN ROAD
PAINSTOWN ROAD
HANNINS ROAD
FITZMAURICE ROAD
GARLANDS ROAD
POINT BUSH ROAD
MT JOHN ROAD
SETTLEMENT ROAD
TIMARU ROAD
CHURCHILL PLACE
CAMERON STREET
RUGBY STREET
DOBSON STREET
WILLIAM STREET
WILKIN STREET
MICHAEL STREET
PALL STREET
JOHN STREET
QUEEN STREET
SLEE STREET
INNES STREET
GRIDSON STREET
LEONARD STREET
CASPELL STREET
REGENT STREET
OXFORD STREET
BOND STREET
PARSONAGE ROAD
MAUDE STREET
CORONATION STREET
HIGH STREET
EDINBURGH STREET
PRINCES STREET
MARY STREET
KING STREET
ALLAN STREET
HUNTS ROAD
BROOMS ROAD
BAKERS ROAD
COUNTS ROAD
PEMBROKE STREET
CANTERBURY STREET
MILFORD STREET
BATHGATES ROAD
JAMES STREET
MCILORS ROAD
MCNAMARAS ROAD
MORGANS ROAD
RACECOURSE ROAD
PARK ROAD
CREEK ROAD
GORGE ROAD
HUNTER CRESCENT
HILLARY STREET
TENNANT STREET
NAYLOR STREET
SMITH STREET
SHEARMAN STREET
MORTIMER STREET
HAYES STREET
BALMORAL STREET
CPE STREET
BELT STREET
RHODES STREET
HARRIS STREET
MANSE STREET

Schedule 1 – Sites excluded from the Waimate Township SMP Consent

Schedule 2: Objectives for water quantity, water quality, agricultural soil quality, social and cultural impacts

	Objective	*Source*	*Performance Measure*	*Target to be applied on commencement unless a different duration is specified*
Water Quantity	Provide protection from flooding for private properties	LGA	Number of flooding events resulting from stormwater overflows incidents that enter private property and habitable floor levels	Nil
	Flooding is adequately managed within road reserves	SW AMP	For rainfall with a severity expected to occur once every five years, urban roads are not closed for more than two hours	Urban roads are not closed for more than two hours
	No material increases in peak flows from the reticulated system entering private land from infilling and new development	SMP	New developments, infilling or redevelopments in good to moderate soakage zones direct stormwater to land. New developments, infilling or redevelopments in poor soakage zones with stormwater managed to meet greenfield/pre-developed runoff.	100% new developments in good to moderate soakage zones discharge fully to land; 75% of infilling and redevelopments in good to moderate soakage zones discharge fully to land 75% new developments and redevelopment in poor soakage zones do not exceed pre-developed runoff rates
Water Quality	Avoid sediment accumulation to riparian margins and riverbeds, that can be mobilised to downstream surface water environments		Sediment accumulation (that has contaminants bound to it) within the reticulated system is minimised and in particular the parts of the networks that outlets to the riparian margins and riverbed of Waimate Creek. This is to be achieved by undertaking: • Best practice erosion and sediment control for any Council earthworks, infrastructure renewals and maintenance projects that involve land disturbance. • 6 monthly inspection of sumps and removal of sediment when it is at a level that occupies more than 50% of the capacity below the outlet pipe. • Periodic (preferably following a rainfall event after dry period) but at least annual inspection of outlets directly into Waimate Creek or its riparian margins for obvious discharge related excessive sediment build up, with removal occurring as far as practicable.	Not to be actively monitored, but target is zero recorded incidents of excessive sediment release from a Council project to the environment, and no excessive routine build-up of sediment at outlets directly to Waimate Creek or its margins.
	Avoid widespread adverse effects on shallow groundwater quality and to protect drinking water quality	LWRP	Electrical conductivity is to be used as an indicator for identifying any general changes in groundwater quality related to recharge. Long term groundwater quality at monitoring wells is undertaken by Canterbury Regional Council. Concentrations in groundwater at drinking supply wells are not to: • Exceed 1/2 of a toxicant Maximum Acceptable Value (MAV) and Guideline Value (GV) from the Drinking Water Standards for New Zealand 2005 (revised 2008), or any revisions or successors to this document. • Be equal to or exceed the MAV for Escherichia coli (E.coli). When background concentrations are already exceeding the performance measures the replacement performance measure is to be: No statistically significant increase in the concentrations of toxicants or *E.coli*	No statistically significant increase in electrical conductivity Not to be actively monitored, but target is zero recorded incidents of a drinking supply well exceeding the performance measure.
	Manage more diffuse sources of contaminants that accumulate in the environment	LWRP	Waimate residents are informed of the environmental impacts of toxicants in stormwater and encouraged to replace old roofing materials with pre-painted steel roof materials, or maintain well painted galvanised iron roofs, to minimise zinc leaching into roof stormwater	Education information is available on the Council website ,and it is routinely updated in response to new opportunities for source control funding and any new relevant national measures and industry standards that control cladding to minimise metal leaching
Agricultural Soils Quality	Avoid agricultural soils becoming an animal health risk	SMP	Agricultural soil quality thresholds are not exceeded, and if are, the impacted soils are promptly remediated	Nil reported exceedances from soil sampling, or remediation occurs within 6 months of an exceedance
Social and Cultural Impact	Reduce litter and debris being transported in reticulated stormwater network to private land and waterways	SMP	Landowners, amenity users and local Rūnanga satisfaction	≤5 complaints per year

Source Acronyms:

LGA - Local Government Act 2002: SW AMP- Stormwater Activity Management Plan for Waimate District: LWRP - Canterbury Land and Water Regional Plan,: SMP - Stormwater Management Plan for Waimate Township

Agricultural Soil Monitoring Programme

1 Purpose

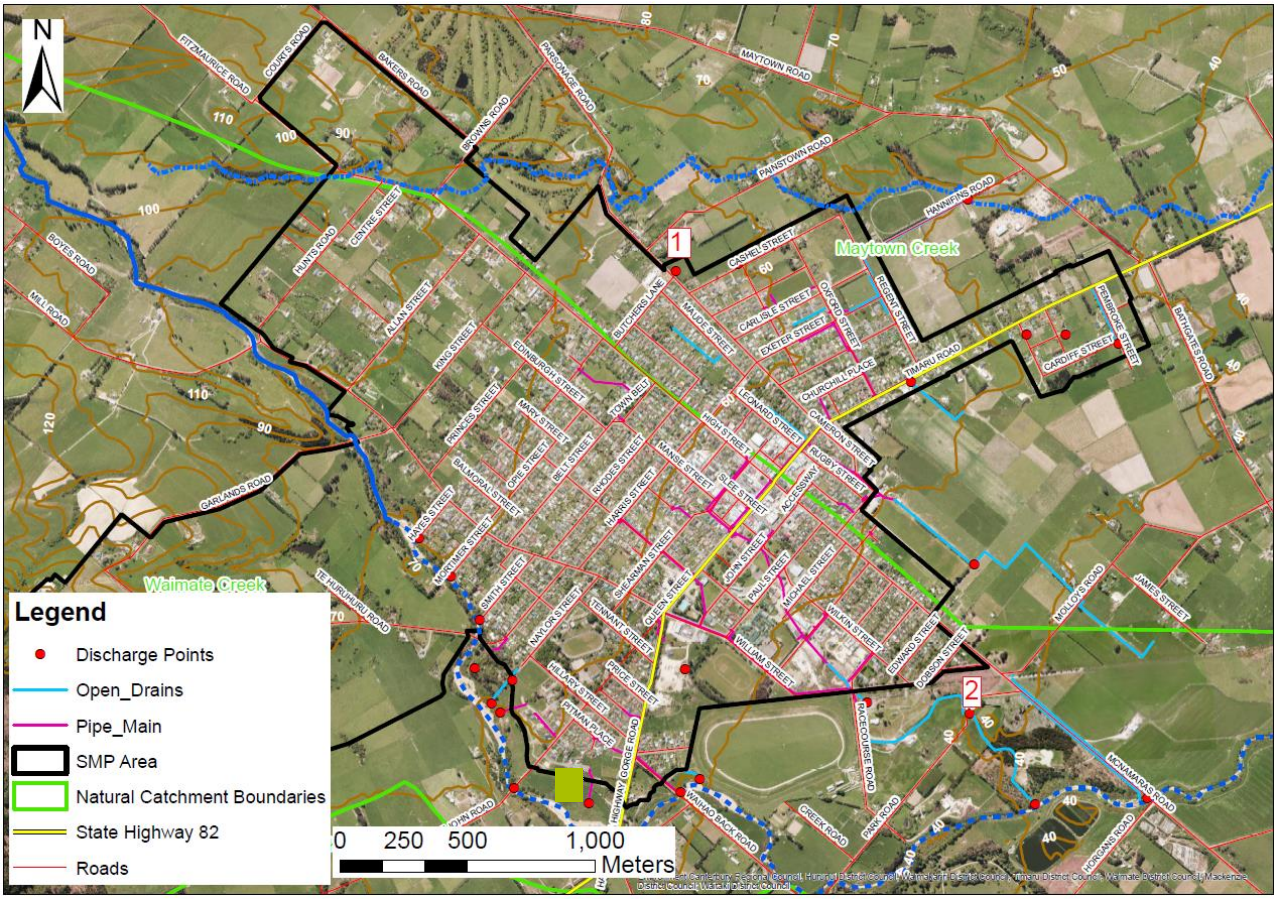
The purpose of the agricultural soil sampling programme is to assess impacts of the Waimate District Council's reticulated network stormwater discharges for Waimate Town to private rural land /properties and where the immediate agricultural land is used for grazing livestock.

2 Sampling Methodology

2.1 Location

Refer to the table and figure below for the general locations of the discharges onto private property on land that is immediately used for grazing of livestock and is to be monitored.

Number	Physical Address	Owner
1	Parsonage Road (near Butchers Lane)	CA & SM Chamberlain
2	41 Park Road	Jonathon Groters



2.2 Frequency

Soil at each discharge location shall be sampled at least once every five years, after the commencement of the consent and for the duration of the consent.

2.3 Sample Collection

At each sample location three discrete soil samples shall be taken below the grass thatch, at the lowest points in the paddocks in a short distance from the stormwater outfall, within the defined channel, or the general low point in the vicinity of the outfalls.

Equipment for sampling should be a stainless steel spade and trowel. Standard decontamination procedures would be required between sampling locations, and samples would be placed into laboratory supplied containers and placed in a chilli bin in a chilled state for courier back to an analytical laboratory, using chain of custody procedures.

3 Sample Preparation and Analysis

The three discrete soils samples obtained are not to be composited, therefore producing a single sample for each of the three locations.

The three samples shall be analysed for at least stormwater specific heavy metals / metalloids zinc, copper and lead (mg/kg dr wt), as well as Polycyclic Aromatic Hydrocarbons (PAH) (mg/kg dry wt). Despite lead no longer being an additive to petrol / diesel the historic impacts should be assessed. Given the lack of industry in Waimate township analysis of other heavy metals are not considered to be necessary.

Soil samples shall be analysed by a laboratory accredited for that method by International Accreditation New Zealand or an equivalent accreditation body for the contaminants and analysis required.

4 Reporting

4.1 Trigger Levels

The results will be reported against the following table containing the parameters trigger and action levels that are based on the Landcare Research (2019) [1] ecological receptors (Eco-SGVs).

[1] Landcare Research 2019 *UPDATED Development of soil guideline values for the protection of ecological receptors (Eco SGVs)*: Technical document. June 2019

Parameter	Trigger Level (mg/kg)	Action Level * (mg/kg)
Metalloid / Metal		
Copper	>110 [A]	>220
Lead	>530 [B]	>1,060
Zinc	>120 [C]	>240
Polycyclic Aromatic Hydrocarbons (PAHs)		
Benzo[a]pyrene	>2.8 [D]	>5.6
Fluoranthene	>27 [D]	>54

[A] agricultural land copper Eco-SGV $_{(EC30)}$ for typical soils – fresh

[B] agricultural land lead Eco-SGV $_{(EC30)}$

[C] agricultural land zinc Eco-SGV $_{(EC30)}$ for tolerant soils - fresh

[D] agricultural land PAH Eco-SGV

*2 x trigger level as considered 'significant exceedance' (Table 3 of Landcare Research (2019))

4.2 Trigger and Action Level Discussion

The Landcare Research 2019 ecological receptors (Eco-SGVs) have been chosen for the basis of the tigger levels, at the time of drafting this report these had not been adopted nationally.

These Landcare Research 2019 guidelines have an agricultural land use category Ecological – Soil Guideline Value (Eco- SGV). This is for 95% protection of plants 80% microbes and invertebrates.

Tables 54 of the guidelines for Cu and Zn provides three levels of soil properties Sensitive, Typical and Tolerant. These tables states that the Eco-SGVs should be based on the background concentrations relevant to the site.

However the guidelines have subsequently referred to three reference soil groups as providing the soils properties levels (refer s3.2.5 and Table 8). It is difficult to determine from the guidelines what soil reference group is applicable. The silty loams within the SMP Area are classified by Maanaki Whenua Landcare Research as Typic Argillic Pallic Soils (PJT) and Weathered Orthic Recent Soils (ROW). These have clay percentages of 20-40% and 15-20% respectively.

The soils in the areas discharged to are reported in ECan 2007 as regional soil groups of:

- Yellow Grey Earth (YGE): with and a reported maximum background level without adjustment of 11.5, 18.8 and 62.4 mg/kg for Cu, Pb and Zn respectively [2].
- RECENT: with a reported maximum background level without adjustment of 18.8, 37.4 and 86.5 mg/kg for Cu, Pb and Zn respectively [2]

[2] Environment Canterbury 2007, *Background concentrations of selected trace elements in Canterbury soils. Addendum 1: Additional samples and Timaru specific background levels*. Report R07/1/2. – Table 1

The median background concentrations ranges used to establish the Eco-SGVs were 7-25 mg/kg for Cu, and 24-44 mg/kg for Zn. The Cu ranges fit the ECan 2007 reported background concentrations for YGE and RECENT soils. So the 'Typical' Soils have been selected. The RECENT Zn background maximum for the soils is higher than the median used in the guidelines, and is near the Sensitive "fresh" Eco-SGV value of 95 mg/kg. So the "Tolerant" value has been used for Zn.

The guideline refers to using the 'fresh' values for stormwater discharges. Whilst the stormwater discharges are ongoing the contamination will have been present for decades. Despite the lack of clarity, in the interim the 'fresh' values are to be used, however further information may come to light that the 'aged" values are appropriate.

Further the proposed application of the Eco-SGVs for agricultural land use categories is to trigger further site investigation. In the event soils are greater than (>) 2 times the Eco-SGV over an area of 25 m^2 (refer Table 3) this is defined as a 'significant exceedance'. So this factoring has been used for all parameters to apply as the 'action' level.

5 Response to an Exceedance

The following outline's the response and options to address a trigger or action level exceedance:

- Inform the land owner within 20 working days of receipt of the laboratory results of the exceedance.
- Determine if any other factors, such as landowner or occupier activities have contributed to an exceedance.
- If no other factors are identified, undertake additional sampling to determine the lateral and vertical extent of contamination, with respect only to the contaminant(s) that exceeded a trigger or action concentration, this could include:
  - Extending sampling locations in a radius from an outfall onto flat land or length (if a defined flow path), and
  - Increase the depth of sampling below the ground surface to 100 mm, 200 mm and/or 300 mm
- Determine from the subsequent sampling the spatial and vertical extent of the contamination at or above the action level ,and if area above the action level is greater than 25 m^2 and consult with the landowner about possible remediation or mitigation options. These may include either:
  - Do nothing, with the agreement of the affected landowner
  - Stripping and replacing impacted topsoil
  - Fencing the impacted area
  - Council purchasing the land
  - Or any other option mutually agreeable to both parties
- To prevent contaminant, build up increasing or reoccurring after remediation, if source control is impracticable, works could occur to install a rapid soakage system at the location or upstream in council land (if available) to reduce the contamination of soils used for grazing.
- Report to the Canterbury Regional Council as required outcomes of actions, mitigation and remediation option as required in the resource consent

Stormwater Quality Monitoring Programme - Revision 1

1 Purpose

Waimate District Council's (WDC) reticulated stormwater network for Waimate Town mostly discharges onto land in circumstances that it enters groundwater. There are some discharges occurring into ephemeral waterways and their margins that have no aquatic ecology values due to losing reaches. In large storm events stormwater would be transported in flood flows to valued surface water bodies that have permanent water several kilometres downstream.

WDC have sought a discharge permit for the reticulated stormwater network from urban areas within the Waimate Township Stormwater Management Area (SMA).

The purpose of this stormwater monitoring programme is simply to validate the stormwater quality expected and reported in the application and Assessment of Effects on the Environment(AEE) for the Waimate Town SMA stormwater discharge permit. At the concentrations expected (except for bacteria and pathogens) there is a very low risk to groundwater quality and human health (when used as a drinking water source).

If the validation of the expected concentrations of the key stormwater contaminants such as metals, nutrients, polycyclic aromatic hydrocarbons (PAHs) and *E.coli* occurs, then as per the consent conditions the stormwater monitoring is to cease.

2 Sampling Methodology

2.1 Location and Catchment

Refer to Figure 1 for the location of the stormwater and its contributing catchment.

The location is at a stormwater pipe outfall along Racecourse Road into an open drain within the Council "Bushtown" park reserve (opposite Racecourse Road 65m from intersection with Williams Street). The map reference of the pipe outfall/ sampling location is NZTM 1445778E, 5044021N.

This stormwater catchment was chosen as it is the largest within the SMA, and has the widest range of land uses including most of the commercial and industrial areas in the SMA. Given it is a large (187 ha) and long (3km) catchment, depending on the timing of the sampling for a rainfall event, not all of the northern extent or the rural and lower density residential catchment may yet be contributing to the downstream pipe outlet, however the commercial and industrial will be. Overall it is likely that this catchment will represent the worst case stormwater quality for the SMA.

Also a downstream property - 45 Park Road that the open drain flows through is used in the separate agricultural soil monitoring programme.

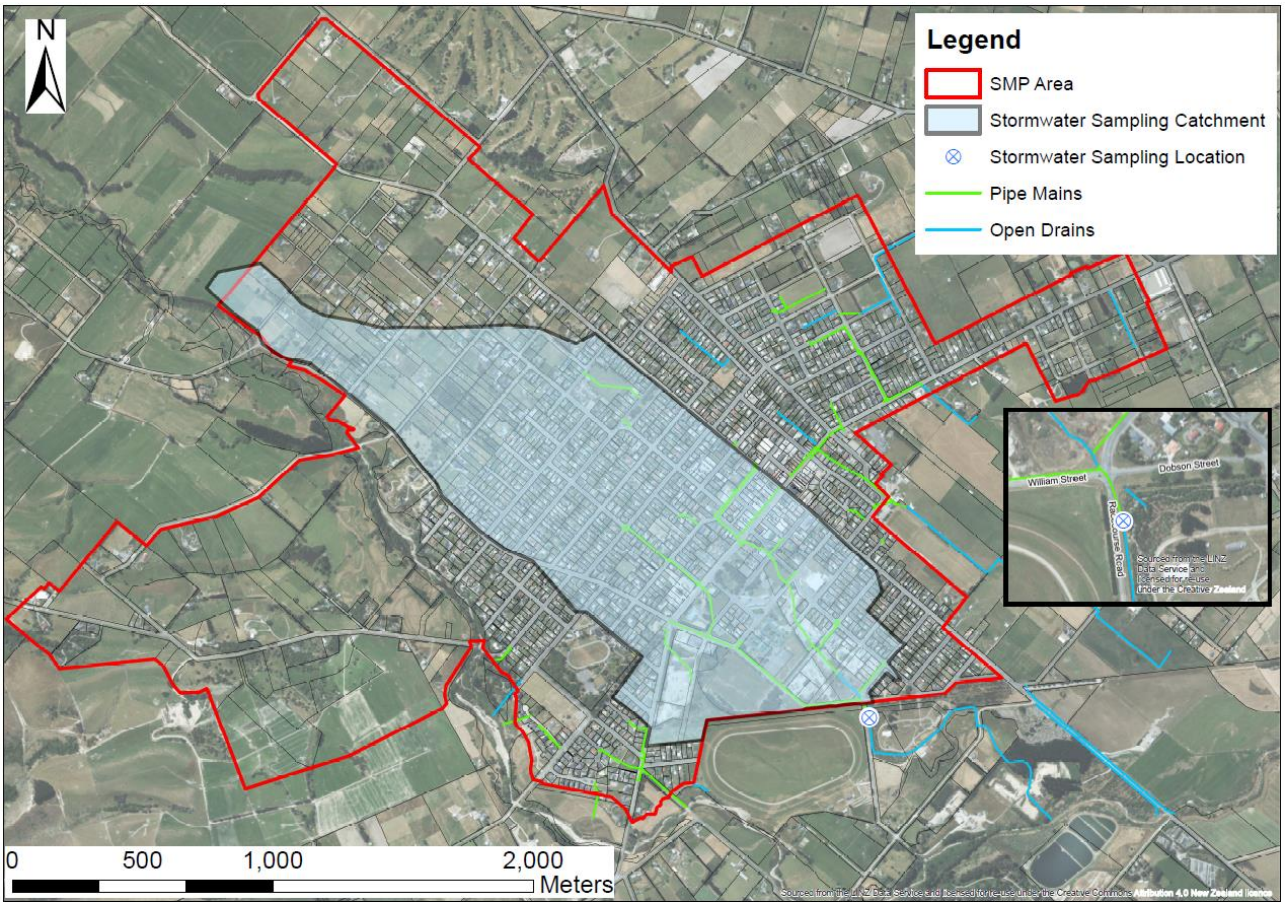


Figure 1: Stormwater catchment and location to be monitored

2.2 Frequency and Timing

Stormwater is inherently "flashy" – not only do flows constantly change, but so do concentrations. Obviously monitoring one rainfall event with just one grab sample will not give a robust understanding of the concentrations variances that will occur for parameters.

Two rainfall events that generate flows from the pipeline are to be monitored per year for at least three years.

A moderate forecast rainfall event that is preceded by at least 5 days without rainfall should be targeted i.e. forecast for more than 10 mm in depth with intensities of at least 2 mm/ hr.

Sampling of the stormwater will be via grab samples.

At least two, and if possible three grab samples for the stormwater flows for the rainfall event should be taken. Each grab sample should occur at between 20-minute to 60-minute intervals depending on the forecasted duration of the rainfall event. This is to obtain an event mean concentration for the sampling event. Three samples will also provide information on the variation of quality through the rainfall event. Preferably the first sample is within an hour of its onset of flows form the pipe (to capture first flush concentrations).

2.3 Recording Information for Reporting

A standard form should be used to record data during and after the sample collection on each sampling occasion. The following key parameters must be included:

- The name of the site location;
- Any unique sample ID number(s) assigned;
- The name(s) of the field personnel;
- Date and time of field measurements;
- Weather conditions at time of sampling (qualitative indication of rainfall intensity - light, moderate, heavy);
- The type of sampling (i.e., grab of stormwater);
- Flow out of pipe (i.e., 'low', 'moderate', 'high' or estimate of L/s);
- General sample colouration (clear/colourless, turbid, or brown) and if the water has any unusual smell;
- The presence of any scums, foams or floatables; and,
- General notes of any other factors that may influence the data being collected; for example, the days since the last rainfall event. If a large construction activity was known to be present in the catchment etc.
- After collection: Record the preceding period between the last rainfall event. The duration, intensities and depths for the rainfall event sampled from a weather station or a snap shot of a MetService rainfall graph.

2.3 Sample Collection

Containers for the samples storage and analysis (refer Section 3) will be supplied by the laboratory.

Hills will typically have for the analysis required the following environmental waters containers:

Total Suspended Solids (1L), Nutrients	Metals	*E.coli*	Polycyclic aromatic hydrocarbons (PAH)

CODE: UP	CODE: N	CODE: Sterthio	CODE: Org
VOLUME: 100mL, 250mL, 500mL, 1L	VOLUME: 100mL	VOLUME: 400mL, 100mL	VOLUME: 500mL
CONTAINER: Polyethylene	CONTAINER: Polyethylene	CONTAINER: Sterile Plastic	CONTAINER: Amber Glass
PRESERVATIVE: Unpreserved	PRESERVATIVE: Nitric Acid	PRESERVATIVE: Thiosulphate	PRESERVATIVE: Unpreserved
ANALYSIS: Anions, Cations, Nutrients	ANALYSIS: Total Metals ***6 Months** Acid Soluble Metals (250ml) ***6 Months** Total Recoverable Metals ***6 Months**	ANALYSIS: Microbiological Testing *** 24 hrs**	ANALYSIS: Organics ***7 days** before extraction

Use a sharpie to pre-label each lab container before it is used to take or store a sample with a naming protocol consistent with the Chain of Custody (CoC) / Analysis Request Form.

It is important that samples are not contaminated by the sampler during the collection process; therefore, a new set of nitrile gloves are to be worn for the collection of samples at each sampling site. In addition, care should be taken to not touch the inner surface of the sample container or lid, and the sample container lid must be stored away from any sources of contamination (e.g., within a zip-lock bag) throughout the collection process.

If available use a sampling pole water quality sampler (i.e. 'mighty gripper') that can hold tightly a range of bottle sizes, use this to take the stormwater samples directly. Care should also be taken to not scrape the invert of the pipe or open drain during the sample collection.

If a sampling pole is not available then use a sampling jug to pour sampled water into the individual lab containers, if the location and stormwater flows do not present a health and safety risk. Have at least a 2L size sampling jug. This jug should be cleaned and then rinsed with tap water before initial use. Prior to obtaining a 2L + sample rinse out the jug at least 3 times with the stormwater being sampled. Then take a sample to fill each individual container. Repeat rinsing of jug with stormwater 3 times, just prior to taking the later sample.

The containers should be near filled to the brim without overflowing, the metals bottle has an acid preservative so should not be tipped below horizontal and not filled beyond overflowing.

2.4 Storage, Transport and Transfer of Samples

A Chain of Custody (CoC) form must be competed and included with samples upon delivery to the laboratory. Standard format CoC forms are typically available through the laboratory and will be included with the delivery of sample containers. The CoC allows the laboratory to identify what samples have been collected and when, which analyses are required for each sample, and to whom results should be sent following analysis.

A copy of the Hill Laboratories CoC is attached. If an alternate provider is used, a CoC will need to be provided.

After all samples have been collected, it is important that they are stored immediately in a chilled container before proceeding with further sampling. During this process, exposure to direct sunlight must be avoided as far as practicable by the sampler (e.g., UV exposure can substantially impact E. coli counts and skew results). A large, insulated container (e.g., 'chilly bin') is recommended, with sufficient storage capacity for samples from multiple sites, as well as a sufficient number of pre-frozen icepacks or ice-slush to keep the samples chilled for up to 24 hours. Multiple chilly bins can be used if many samples are to be

The request for analysis chain of custody form (in a plastic bag) to be added inside the chilli bin to be couriered to the lab. The chilli bins should be taped shut. The lab address should be on the chilli bin.

It is required that *E.coli* samples are analysed within 24 hours of their collection time. So samples should be couriered the same day / overnight to arrive at the lab within 24 hours for analysis

3 Analysis

The samples will be analysed for the parameters in Table 1.

An International Accreditation New Zealand (IANZ) laboratory must be used for the analysis of samples. It should be indicated to the laboratory that samples are to be filtered by the laboratory. Appropriate sample containers can be sourced from Hill Laboratories.

Metals for all samples are to be reported as total metals (**not** field filtered or filtered in the lab) and the analysis needs only be at a 'screen' level of detection.

To keep analysis costs down perhaps consider getting the lab to composite the PAHs samples so there is only one analysis for the rainfall event. This needs to be clearly explained on the analysis request form.

Table 1: Stormwater quality sampling analysis

Parameter (unit)
Total suspended solids (TSS) (g/m^3)
Heavy metal suite – Total Arsenic (As), Cadmium(Cd), Chromium (Cr), Copper (Cu), Nickel (Ni), Lead (Pb), Zinc (Zn) (g/m^3)
Total Nitrogen (TN) (g/m^3)
Total Phosphorus (TP) (g/m^3)
Polycyclic aromatic hydrocarbons (PAH) (g/m^3)
E. coli (MPN / 100 mL)

4 Reporting

4.1 Annual Reporting

The event mean of the results of two rainfall events annually will be reported against the following table of expected contaminants and concentrations generally taken from the WSP AEE for the application.

Optional reporting at the end of 3 years could be that means from all stormwater events sampled could be used as comparisons, also the first samples mean concentrations could be isolated out and compared to the send and third samples means to see if there is a first flush signature.

Table 2: Expected contaminant concentrations in urban stormwater based on literature

Stormwater Parameter	Literature - Stormwater Quality Units in g/m³ unless stated
Total Suspended Solids (TSS) (range)	50 - 170
PAH (mean)	0.007
Total Nitrogen (range) Total Phosphorus (range)	1 – 2.5 0.2 - 0.4
Total Arsenic (mean) Total Cadmium (mean) Total Copper (range) Total Lead (mean) Total Nickel (mean) Total Zinc (range)	0.024 0.06 0.015 - 0.02 0.01 0.004 0.1 - 0.8
E.coli (median)	8,000 MPN/100ml

4.2 Discussions and Actions

Reporting observed concentrations for other parameters higher than the expected values in Table 2 does not represent a significant adverse effect. It should be noted that removal of bacteria and pathogens, metals and PAHs occurs via adsorption to topsoil's and removal processes in subsoils and aquifers. However consistent unexpected high concentrations above than expected may represent a significant point source of contaminants that should be investigated.

Overall there are objectives in the consent issued to improve the stormwater quality that is discharges via the network to private property, and to ephemeral waterways and their margins.

If after several years of consistent concentrations being above that expected, the annual reporting should provide recommendations for further sampling and source investigation.

There is an industrial site audit programme required in the consent. If there is a high risk problem site identified in this catchment being monitored that has contaminants that match those identified in the stormwater sampling exceeding values in Table 2, this may prompt further investigating and controls being required for this site, if confirmed as the high concentration source.

Examples of other reasons for unexpected higher concentrations could be:

- TSS – construction projects that have land disturbance and these are not properly managed
- Zinc – more than anticipated zinc leaching of the existing unpainted or poorly painted corrugated iron roofs in the catchment.
- Arsenic– could be associated with chromated copper arsenate (CCA) treated timber stockpiles at a particular site.

- *E.coli* may represent the rural catchment contributing to flows in a longer duration event.

If after several years of consistent concentrations being more than two times above that expected, and no specific source is identified and mitigated at the source, the annual reporting should provide recommendations for further effects investigation. If feasible at a location where non stormwater network discharges to land will not be influencing groundwater quality, this could include local groundwater quality monitoring to investigate if the network stormwater discharges to land are causing widespread adverse effects on shallow groundwater quality and a risk to drinking water quality. Refer to the objectives and performance measures in Schedule 2 of the consent.