

**BEFORE THE CANTERBURY REGIONAL COUNCIL**

**UNDER THE**

Resource Management Act 1991

**AND**

**IN THE MATTER**

of application CRC190445 by the Christchurch City Council for a comprehensive resource consent to discharge stormwater from within the Christchurch City area and Banks Peninsula settlements on or into land, into water and into coastal environments.

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**SUMMARY OF EVIDENCE OF  
ROBERT BRIAN NORTON FOR CHRISTCHURCH CITY COUNCIL**

**Dated 5 November 2018**

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**TABLED AT HEARING**

Application: ....*CRC190445*.....

.....  
Date: ....*6 Nov. 2018*.....

CHRISTCHURCH CITY COUNCIL  
PO BOX 73015  
Christchurch 8154  
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## **INTRODUCTION**

1. My full name is Robert Brian Norton. I provided evidence in relation to the application for the Christchurch City Council's comprehensive stormwater network discharge consent.
2. I have read the Section 42A report, some of the evidence of experts provided on behalf of Environment Canterbury, relevant submissions, and the evidence provided by submitters.

## **CORRECTIONS**

3. In paragraph 85 of my evidence in chief, second sentence should read "Condition ~~37~~ **38** has been developed..."

## **SUMMARY OF EVIDENCE**

4. The Council stormwater network is made up of pipes, drains, streams and rivers. It includes only those parts of the network for which Christchurch City Council are responsible for operation and maintenance. The Council network excludes:
  - The Coastal Marine Area;
  - Drainage Water, as defined in the Canterbury Land and Water Regional Plan, and;
  - waterways and networks systems outside of Banks Peninsula settlement zones.
5. When it rains, the stormwater network collects surface water generated from sealed and unsealed surfaces and conveys it to rivers and the coast, or infiltrates it to ground. Consequently, the stormwater network also collects and conveys contaminants that build up on these surfaces including sediment, metals and other organic and inorganic materials. These contaminants can have adverse effects on water quality and the environment.

6. The Council proposes a variety of measures to reduce the load of contaminants in stormwater in order to improve the quality of its stormwater discharges. The specific measures for each catchment are laid out in Stormwater Management Plans, some of which have been written and others of which are still to be developed. The proposed conditions of this consent place requirements on the content, objectives and delivery of Stormwater Management Plans.
7. Stormwater management plans demonstrate the means by which the quality of stormwater discharges will be progressively improved to meet receiving environment objectives and targets, primarily through the delivery of engineered mitigation facilities such as treatment basins, detention ponds, wetlands and rain gardens.
8. Three SMPs have been completed to date; for the Styx, Halswell and Avon river catchments. The SMP for the Heathcote is in draft form, however the upper half of Heathcote catchment was addressed as part of the South West Area Christchurch SMP completed in 2011.
9. SMPs for the Outer Christchurch/Otukaikino and Estuary & Coastal catchments are in preparation. A SMP for Banks Peninsula Settlements is due for completion in December 2020. The timetable for completion and updates of SMPs is in proposed Condition 4.
10. The required content of SMPs is outlined in Condition 6. I consider this list of required content to be reasonable, complete and appropriate. In response to submissions from Christchurch International Airport Limited, I have recommended inclusion in Condition 6 a requirement for the consent holder to consider the issue of birdstrike risk through the design and location of stormwater facilities within 3km of the Christchurch International Airport.
11. The applicant recognises that SMPs for the Styx, Halswell and Avon catchments were developed prior to the final drafting of Condition 6. In response to concerns raised in the Section 42A report about the content of these older SMPs, the applicant proposes to advance updates of these SMPs,

bringing them into alignment with Condition 6 in accordance with the proposed revision dates shown in the timetable in Condition 4.

12. The SMPs guide the Council in determining future capital budget requirements. The details that coordinate implementation of the SMP with the Council's Long Term Plan will form the Implementation Plan required under proposed Condition 12 of the consent.
13. The SMPs for South West Area Christchurch and the Styx River catchment focus broadly on strategic, large-scale collective stormwater facilities to treat, store and dispose of stormwater generated from existing and future development areas.
14. The Avon and Heathcote catchment SMPs cover areas which are already highly built-out and will focus more on retrofit mitigation, managing infill and intensification, and source control, particularly for industrial and commercial sites.
15. With the exception of potential Red Zone mitigation opportunities, these highly-urbanised areas will require smaller, individual site-scale, sometimes private or shared stormwater mitigation systems.
16. Implementation of the South West Area SMP is well advanced, with 27 of 31 proposed mitigation facilities in the Southwest completed, under construction or in detailed design phase.
17. Implementation of the Styx SMP is also progressing, with 10 of 22 proposed mitigation facilities completed, under construction or in detailed design phase.
18. In all, the Council has earmarked \$163M for the South West, Styx and Avon SMPs over the course of the 10 year Long Term Plan.
19. The Council recognises that stormwater treatment facilities are capable of only removing a portion of the contaminants generated by urbanisation. Therefore, if only new greenfields developments are mitigated, the load of

contaminants discharged from the stormwater networks would increase slowly with new development.

20. In order to improve stormwater discharges in the face of expanding urban areas, the Council must provide retrofit treatment for existing unmitigated development areas and engage in other methods of reducing contaminant discharges at source. I have described in my evidence how I consider retrofit treatment of existing development areas and control of contaminants at source, by various means, will achieve the overall stormwater quality improvement sought by the Council in this Application
21. A significant proportion of the operative SMP programmes and associated spending includes retrofit mitigation and demonstrates the Council's commitment to providing retrofit mitigation "where reasonably practicable" as required by Condition 25 the consent. I consider further conditions requiring retrofit treatment to be unnecessary and redundant.
22. The Council proposes to use a Contaminant Load Model to demonstrate the positive effects of its stormwater treatment systems. Assumptions about the contaminant removal efficiency of stormwater treatment systems are inputs into the model. The contaminant load model and its key parameters are described in Mr. Van Nieuwkerk's evidence.
23. The average efficiencies used in the model align with the range of typical performance efficiencies reported in the International Best Management Practice Database and with data obtained by Council through testing its own facilities' performance. A programme of ongoing testing of facility performance is required under Condition 37 and Table 3 of the consent.
24. In addition to the catchment-specific Stormwater Management Plans, the Council proposes other measures that it believes will improve the quality of stormwater discharges citywide. These measures include source control, research programmes, and education and awareness programmes. These measures are required under Conditions 35-38 of the consent.

25. Source control can be effective on a city-wide scale and is achieved by stopping contaminant emissions or by exposing only contaminant-free surfaces to the environment. Examples of source control include the phasing out of copper in brake linings, restricting the use of copper roofing and spouting materials, replacement or painting of older zinc treated roofing, and sweeping of streets.
26. The Council recognises that implementation of source controls may not be achievable or may be out of the Council's immediate control. Because of the uncertainty of success, source control measures have not been included in the contaminant load model and are not reflected in the contaminant reduction targets listed in Table 2 of the consent.
27. The consent also contains conditions around flood control and Council has standards and guidelines for flood control and the design of mitigation systems including detention and retention systems, and rapid soakage systems. The Council's catchment-scale flood control systems are designed to manage storms up to the 2% annual exceedance probability event, also referred to as the "50-year" storm.
28. The Council has long maintained an extensive programme of flood modelling which has informed development of the Natural Hazards Chapter of the Replacement Christchurch District Plan and all of the various flood mitigation, development planning and land drainage recovery programmes currently underway. The evidence of Mr. Parsons and Mr. Harrington discuss the Council's flood modelling programme in more detail.
29. The flood control targets in Schedule 7 of the proposed conditions contain some targets set under operative SMPs and covered under previous discharge consents and some new targets to be set under forthcoming SMPs. Mr. Parsons has recommended some changes to improve the clarity of Schedule 7 and Mr. Harrington has proposed adding a requirement to model additional points of compliance through development of SMPs. I agree that these proposed changes provide greater clarity and certainty with regard to flood mitigation outcomes.

30. The Council recognises that the effects of development in areas of the city that do not yet have an operative SMP still need to be managed. I have recommended inclusion of a table of Best Practice for water quality and quantity mitigation which will direct individual sites to mitigate their effects of development. This table is Schedule 3 of the consent and is imposed via Condition 19 of the consent. The requirements in Schedule 3 reflect Best Practice and provide for appropriate mitigation of the effects of small scale development.
31. Overall, I consider that what Council is proposing through this application is a balanced approach to mitigating the effects of its stormwater discharges, consisting of treatment of new urban areas, retrofitting existing priority areas, improved erosion and sediment control practices, flood mitigation and source control of contaminants. This strategy will enable water quality to be improved over time while balancing growth of the city.
32. The Council has not historically set water quality trigger values or maximum contaminant loadings for individual site discharges when new connections are applied for, however the Council could do so through conditions of resource consent for land-use or subdivision, or by setting standards for approval to connect to the network under building consent using its Water Supply, Wastewater and Stormwater Bylaw. Those standards would be set when the discharger applies to the Council for an authorisation to connect to the CCC stormwater network.
33. For existing discharges, setting water quality standards will likely require changes to the Bylaw. The Council proposes to progress and report on those Bylaw changes in the Transition Plan required under Condition 3 of the consent.
34. Another option being investigated to manage existing discharges involves delegation of Environment Canterbury's RMA powers or warrants to the Christchurch City Council. I understand officers from both Council's wish to continue exploring this option.

35. Mr. Freeman and Mr. Reuther have queried what the benchmark would be for onsite pre-treatment of stormwater from individual industrial sites. I consider that, in addition to requiring best practice mitigation for water quantity and flood control, the Council could require certain measurable standards in stormwater discharges from individual sites and monitoring of those discharges to ensure that its objectives under this consent are not compromised.
36. Proposed Condition 2 of the Application excludes discharges from some sites into land or surface water "unless expressly authorised by Canterbury Regional Council and Christchurch City Council".
37. These 'high risk' sites are sites that are contaminated or engage in activities considered hazardous to the environment. There has been substantial discussion between the applicant and Environment Canterbury with regard to high risk sites. The Council proposes to exclude coverage of discharges generated from sites it considers to pose an unacceptably high risk to ground or surface water.
38. In order to clarify for submitters that their existing discharges (whatever the risk) will not be automatically excluded by Condition 2 once the consent is operative, I have recommended changes to this condition to specify that only discharges from new or re-development sites may be excluded under the condition. I consider this provides certainty for operators of sites with existing discharges that their business may continue uninterrupted. Council will address existing industrial discharges through its Industrial Site Audit Programme, which is covered under evidence from Dr. Valigore.
39. Pursuant to Policy 4.16A, the Council is to implement methods to manage all stormwater directed to, and conveyed by, its reticulated stormwater system as of 1 January 2025. Proposed Condition 3 of this application has been drafted to give effect to Policy 4.16A.
40. The Council will need to work closely with Environment Canterbury with regard to information gathering and development of a strategy for the



transition of high risk sites whose Environment Canterbury consents expire after 1 January 2025, and the process under which sites with expired or surrendered consents will obtain authorisation for discharge under this consent.

41. Since its original drafting, I have recommended changes to Condition 3 to clarify that the exclusions listed in Condition 2 that fall away on January 1 2025 only apply to those discharges into the Council stormwater network, not discharges into land on private sites, which are not covered under Policy 4.16A.
42. Subsequent to filing evidence, to ensure a successful transition process, and to ensure that the effects on the environment from high risk sites remain the same (or better) under Council control, additional changes have been proposed to Condition 3 to further refine the transition process and to include provisions in response to suggestions in the Section 42A report that the consent holder may continue to exclude particularly high risk sites even after 2025.
43. Construction phase discharges are discharges of stormwater from sites that are under development. Generally, construction phase stormwater has a higher probability of containing sediment due to rainfall coming in contact with exposed soils during site clearance and earthworks. Construction phase discharges and their effects have been a topic of discussion between the applicant and Environment Canterbury.
44. Under this application, the Council proposes to control the discharge of sediment from construction sites in Conditions 39 and 40, which requires that Erosion and Sediment Control plans are prepared and implemented for all development sites.
45. In addition, the applicant has proposed to add a condition that requires development of a Sediment Discharge Management Plan within 12 months of granting of this consent and submittal to Environment Canterbury for

certification. A critical component of the SDMP is a risk matrix to set site-appropriate limits on total suspended solids, or TSS, concentrations.

46. The reason Council does not support a fixed numerical limit for TSS to be set as suggested in the Section 42A Report is that there is currently a gap of knowledge and no guideline that informs us as to what that limit should be for all sites in order to achieve the environmental objectives, given that each site's discharge and receiving environment are different. Therefore a fixed numerical limit for TSS would need to be set very conservatively.
47. There is a gap of knowledge which the proposed conditions are intended to address through a site specific TSS determination using standardised criteria. Setting site specific TSS limits through consistent application of the matrix means less chance of sites under or over-mitigating their discharges, unnecessarily triggering enforcement action and provides assurance that adequate protection is provided for sensitive receiving environments. It will help to avoid wasting resources on materials, equipment, reports or supervisory costs that may be redundant or unnecessary.
48. I consider that through provision of additional evidence and the proposed changes to conditions of the consent, the majority of matters raised by the Reporting Officer in the Section 42A report have been addressed.
49. In response to Mr. Freeman's evidence I have recommended minor changes to Part 2 of the Environmental Monitoring Plan. These changes clarify the standards against which contaminants in soil test results from infiltration basins will be compared. In most cases, the Council proposes to remediate stormwater basins when levels of contamination reach or exceed Recreational guideline values in the National Environmental Standard, with the provision to further refine triggers for contaminants to maintain groundwater protection.

Brian Norton

**5 November 2018**

## Labels

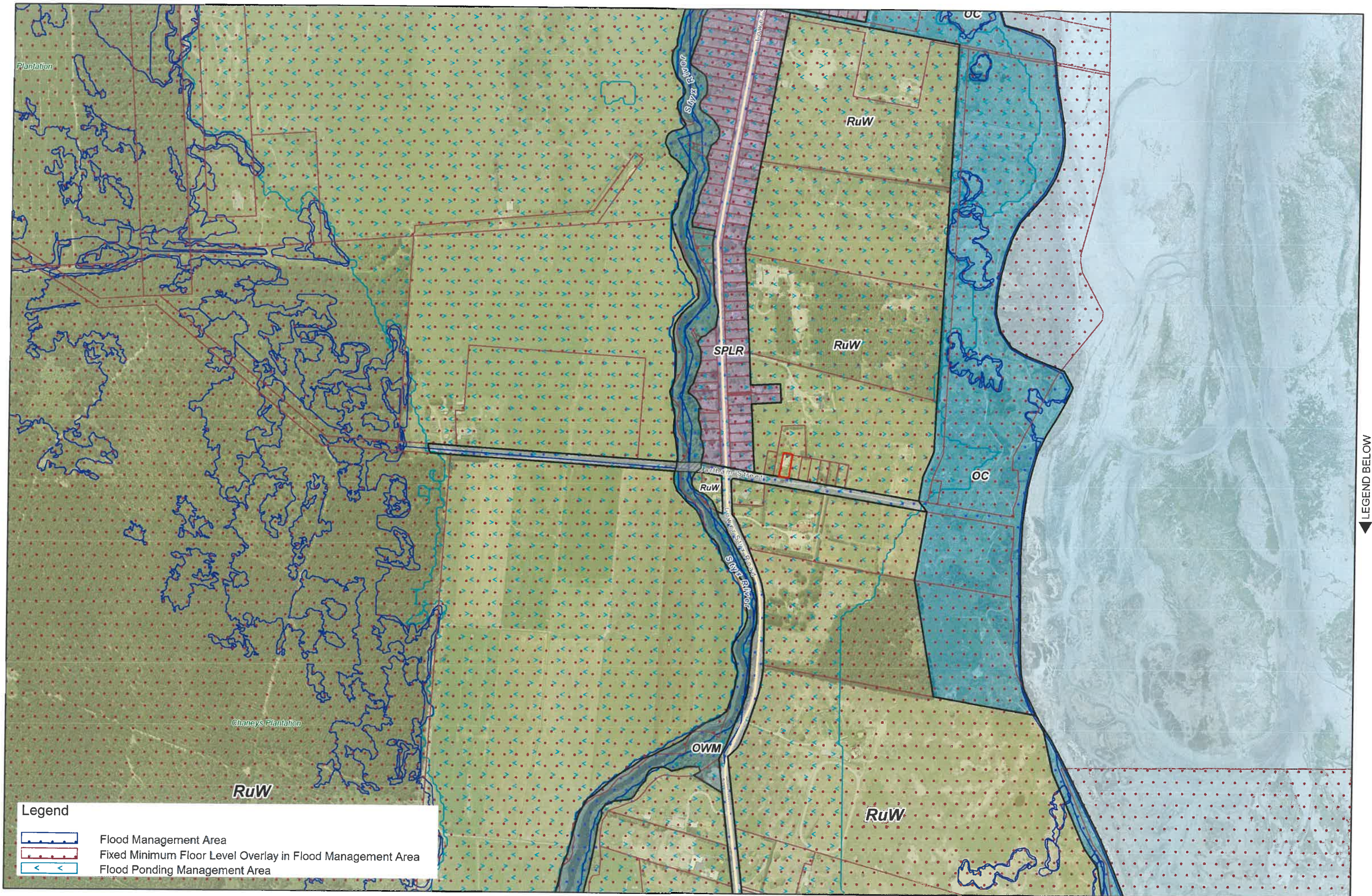
### Zone Labels

## Zone

<b>CC</b>	Commercial Core Zone
<b>CL</b>	Commercial Local Zone
<b>IG</b>	Industrial General Zone
<b>IH</b>	Industrial Heavy Zone
<b>OC</b>	Open Space Coastal Zone
<b>OCP</b>	Open Space Community Parks Zone
<b>ON</b>	Open Space Natural Zone
<b>OWM</b>	Open Space Water and Margins Zone
<b>RNN</b>	Residential New Neighbourhood Zone
<b>RSS</b>	Residential Small Settlement Zone
<b>RS</b>	Residential Suburban Zone
<b>RuUF</b>	Rural Urban Fringe Zone
<b>RuW</b>	Rural Waimakariri Zone
<b>SPB</b>	Specific Purpose (Burwood Landfill & Resource Recovery Park) Zone
<b>SPC</b>	Specific Purpose (Cemetery) Zone
<b>SPLR</b>	Specific Purpose (Flat Land Recovery) Zone
<b>SPR</b>	Specific Purpose (Golf Resort) Zone
<b>SPS</b>	Specific Purpose (School) Zone
	Transport Zone

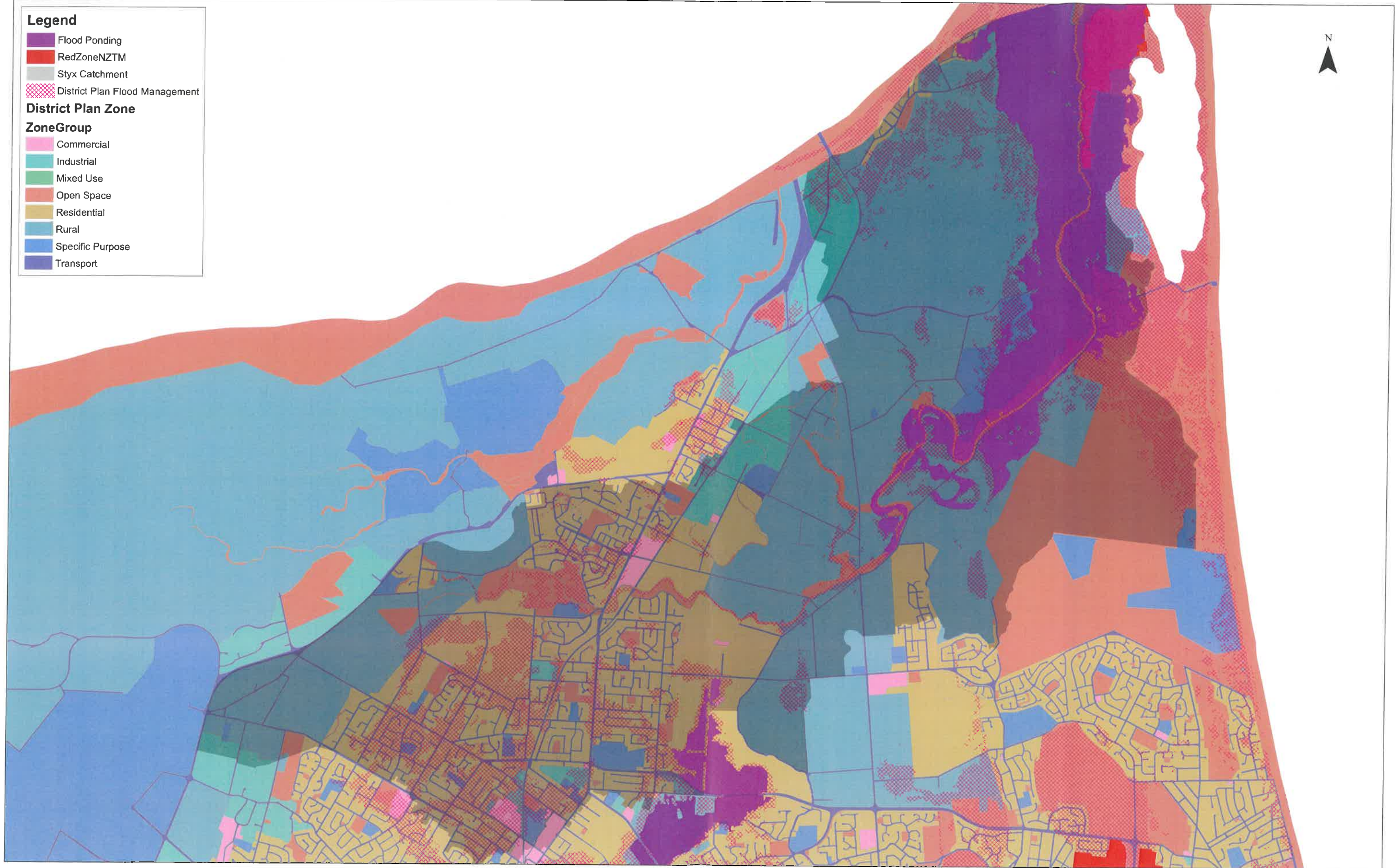






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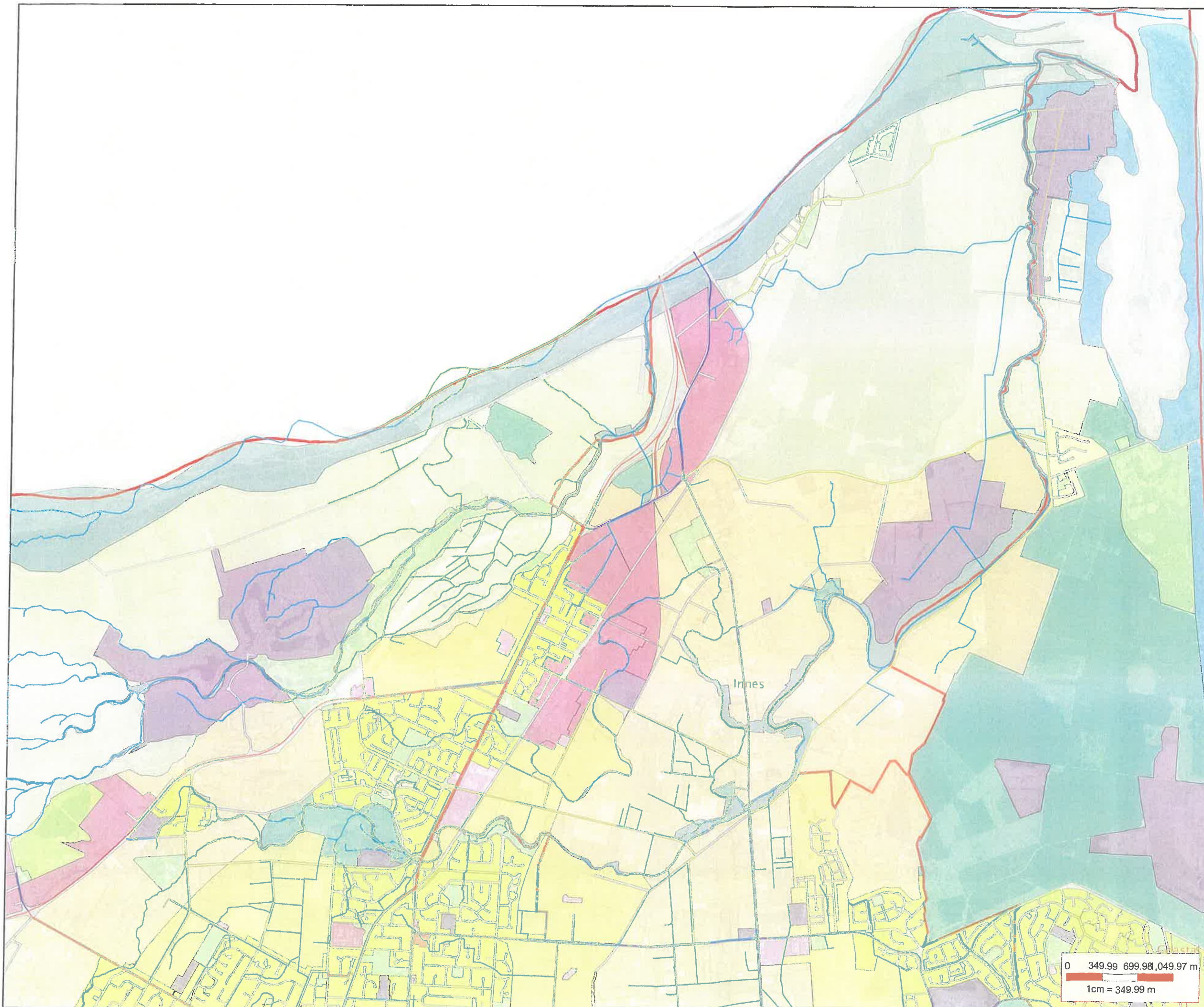












- Infrastructure**  
 Water Course  
 Water Course  
**Property Info**  
 District Plan  
**Land Use Zones**  
 DP Zoning  
 Avon River Precinct (Te Papa Otakaro)  
 Com Banks Peninsula  
 Com Central City (South Frame) Mixed Use  
 Com Central City Business  
 Com Central City Mixed Use  
 Com Core  
 Com Local  
 Com Mixed Use  
 Com Office  
 Com Retail Park  
 Ind General  
 Ind Heavy  
 Ind Park  
 OS Coastal  
 OS Community Parks  
 OS Community Parks or RuQ Templeton  
 OS McLeans Island  
 OS Metropolitan Facilities  
 OS Natural  
 OS Water & Margins  
 Papakainga/Kainga Nohoanga  
 Res Banks Peninsula  
 Res Central City  
 Res Guest Accommodation  
 Res Hills  
 Res Large Lot  
 Res Medium Density  
 Res New Neighbourhood  
 Res Small Settlement  
 Res Suburban  
 Res Suburban Density Transition  
 Rural Banks Peninsula  
 Rural Port Hills  
 Rural Quarry  
 Rural Quarry or OCP Templeton  
 Rural Templeton  
 Rural Urban Fringe  
 Rural Waimak  
 SP (Airport)  
 SP (Burwood Landfill & Resource Recovery Park)  
 SP (Cemetery)  
 SP (Defence Wigram)  
 SP (Flat Land Recovery)  
 SP (Golf Resort)  
 SP (Hospital)  
 SP (Lyttelton Port)  
 SP (Nga Hau e Wha)  
 SP (Ruapuna Motorsport)  
 SP (School)  
 SP (Styx Mill Road Transfer Station)  
 SP (Tertiary Education)  
 Transport  
**Landbase**  
 Ward Name  
 Road Hierarchy Overview  
 Central City Local Distributor  
 Central City Main Distributor  
 Collector  
 Major Arterial  
 Minor Arterial  
 Motorway  
 Ward  
**Aerial Photo 2016**  
 Aerial Photo 2016 CC 5  
 Aerial Photo 2016 BP 6  
 Aerial Photo 2016 4  
**WorkingLevel per tool**  
 Measure Results



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**Christchurch**  
 City Council

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 1cm = 349.99 m