BEFORE THE VARIATION 2 HEARING PANEL

IN THE MATTER	of the Resource Management Act 1991
AND	Variation 2 to the proposed Second Generation Dunedin City District Plan (2GP)

STATEMENT OF EVIDENCE OF JARED OLIVER FOR DUNEDIN CITY COUNCIL
Dated 23 November 2021

QUALIFICATIONS AND EXPERIENCE

1. My name is Jared Oliver.

2. I am employed by the Dunedin City Council ("the Council") as the Engineering Services Team Leader with the 3 Waters Group. In my current role I am responsible for leading a team that provides technical support and direction at a long-term strategic level to support investment in 3 Waters infrastructure, through strategic planning, engineering, condition assessments, hydraulic modelling and coastal expertise.

3. I hold a Bachelor of Technology Degree majoring in Chemical Technology and a Masters of Technology majoring in Energy Management, both from Massey University. I am a member of the Engineering New Zealand (ENZ) and have been a Chartered Professional Engineer (CPEng) since 2011. I am a member of the New Zealand Water & Wastes Association (Water NZ) and the Institute of Public Works Engineering Australasia (IPWEA). I have over sixteen years' experience in the 3 Water's industry both within New Zealand and abroad in the public and private sectors. My experience has included the design, operation, maintenance and asset management of water and wastewater treatment systems and 3 Waters reticulation networks.

4. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note. This evidence has been prepared in accordance with it and I agree to comply with it. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE AND OVERVIEW

5. My evidence relates to submissions that require water, wastewater and stormwater services and has been prepared by myself and another member of the 3 Waters Group, Jacinda Baker, Policy Analyst. At times we have sought input from other 3 Waters staff.

6. A consultant, AR & Associates has also supported the 3 Waters Group with work on Variation 2 and in particular, Andres Roa, of AR & Associates in advising on certain aspects.

CONCLUSION

7. It is my opinion that the information within the memo is correct.

DATED this 23rd day of November 2021

Jared Oliver

BEFORE THE VARIATION 2 HEARING PANEL

IN THE MATTER	of the Resource Management Act 1991
AND	Variation 2 to the proposed Second Generation Dunedin City District Plan (2GP)

STATEMENT OF EVIDENCE OF JACINDA BAKER FOR DUNEDIN CITY COUNCIL
Dated 23 November 2021

QUALIFICATIONS AND EXPERIENCE

1. My name is Jacinda Baker.

2. I am employed by the Dunedin City Council ("the Council") as a Policy Analyst with the 3 Waters Group. In my current role I am responsible for providing advice on: the 3 Waters Group's strategic, policy, and regulatory planning framework; subdivision and development issues for 3 Waters (particularly stormwater); connections to 3 Waters services; and district plan provisions.

3. I hold a Bachelor of Science majoring in zoology and botany from Canterbury University, and a Diploma in Resource Management Law from Lincoln University. I have over two years experience in the Three Water's industry and 13 years experience prior to this working as a Policy Planner at the Council, involved with the review of the district plan and development of the 2GP, and review of development contributions policy and processes.

4. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note. This evidence has been prepared in accordance with it and I agree to comply with it. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE AND OVERVIEW

5. My evidence relates to submissions related to water, wastewater and stormwater services and has been prepared by myself and another member of the 3 Waters Group, Jared Oliver, Engineering Services Team Leader.

CONCLUSION

6. It is my opinion that the information within the memo is correct.

DATED this 23rd day of November 2021

Jacinda Baker

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Memorandum

TO:	Emily McEwan, Policy Planner, City Development
FROM:	Jared Oliver, Jacinda Baker, DCC 3 Waters
DATE:	23 November 2021
SUBJECT:	**VARIATION 2: RESPONSE TO REQUEST FOR COMMENTS ON SUBMISSIONS ON 3 WATERS PROVISIONS (HEARING 2B)**

INTRODUCTION

1. The 3 Waters department received a memo from you dated 22 June 2021 requesting comments on Variation 2 in relation to 3 waters and specific questions you have raised as a result of reviewing submissions.

2. We have considered the relevant submissions on the topics/issues you highlighted and your specific questions.

3. Please find below our response on these topics/questions in the grouping that you posed these requests.

3 WATERS PROVISIONS

Council funding processes for infrastructure

4. You have requested comments on council process for getting funding approved for infrastructure upgrades and what is programmed in terms of infrastructure in the LTP.

5. Several submitters suggest DCC should install infrastructure on demand to facilitate growth when developers advise they are ready to develop a site or for development permitted through Variation 2. This approach is not feasible as DCC undertakes long-term strategic planning to determine infrastructure programmes and secure funding for programmed works on a cyclical basis aligned with DCC's 10-year plan process.

6. The Council 10-year plan outlines the services and activities the DCC aims to provide, how much projects are expected to cost and how they will be paid for. The 10-year plan looks a decade ahead but is reviewed and consulted on every three years and the annual plan is prepared for the years in between. One of the key strategic priorities for 3 Waters is to ensure that, as a minimum, key service levels are maintained into the future. This priority will be supported by the major projects identified in the 2021-31 10-year Plan for: growth; water supply and wastewater supply resilience; rural wastewater schemes; stormwater hydraulic models; and Mosgiel stormwater pump stations and networks. The growth projects included in the plan provide for projects needed to support the 2GP and Variation 2. The 10-year plan is also developed to allow strategic planning for water, wastewater and stormwater, to ensure the 3 Waters key strategic priorities of meeting water needs for the next 50 years from existing sources and improving the quality of our discharges to minimise the impact on the environment are achieved. Strategic planning will look at best practicable long-term options to ensure water supply and wastewater resilience, as well as stormwater management and ownership. Over $77 million has been budgeted in the 10-year plan 2021-2031, to plan and provide for the 3 Waters

infrastructure required to support growth. The majority of this is recouped through development contributions.

7. The strategic planning for water, wastewater and stormwater is undertaken in the form of system planning and looks at the future needs of the city over a longer period than the 10-year plan. Once 3 Waters have undertaken strategic planning and determined what projects are required, the projects and projected costs are submitted for approval as part of the 10-year plan process. If approved by the Council, the projects are included in the 10-year plan and the work can be programmed into that period. The process of preparing the 10-year plan typically takes over a year from starting to be written, to Council approval and adoption.

8. A programme of work has been initiated which aims to service growth, with the early programming of capital and dedicated 2GP appeals support, plus the design and implementation of a programme of policy work to ensure an appropriate DCC policy framework in place to support growth-related infrastructure development. The timeframe from identifying projects, having them approved through the 10-year plan, programmed, designed and constructed can take several years. Hence, facilitating growth on demand is not feasible. One submission pointed out that DCC has access to central government funding for infrastructure projects and that this and other similar funding should be used to resolve existing infrastructure network constraints. Funding obtained from such sources to date is minor relative to 3W capital budgets and has been used to target priority projects, only some of which have a growth component. The impact of this funding on resolving existing infrastructure network constraints is minor.

Development Contributions

9. You have requested comments on the development contributions policy for infrastructure, the process for collecting development contributions currently for infrastructure and what this money goes towards.

10. Development contributions (DCs) are collected to contribute to the cost of some upgrades or new infrastructure that may be required to address capacity or servicing issues resulting from growth.

11. DCs for stormwater are levied at the same rate across the city as all growth-related projects and costs have been combined for the whole city. DCs for water and wastewater vary across the city for different areas of benefit. The DCs collected will be spent on scheduled projects throughout the city, not necessarily on projects in the neighbourhood they are collected from.

12. DCs can only be used to address growth related issues in the public infrastructure networks. DCs can cover network extensions required to bring services to the boundary of development/subdivision areas and for upgrades of existing networks, to create capacity for growth. For stormwater, upsizing public stormwater infrastructure alone will not address all capacity issues. On-site stormwater management may be required to minimise the impact of stormwater flows through private properties and the public network.

13. DCs may not necessarily result in capacity issues for a development/subdivision being addressed, as works required to address capacity issues in the networks in response to growth:
    - may not have been scheduled for upgrade and factored into the DCs being charged
    - may not have been scheduled to occur before development/subdivision occurs and there could be delays in capacity being available
    - may be delayed to allow upgrades of higher priority growth related infrastructure
    - capacity issues may exist in private open or piped watercourses that service development/subdivision areas

14. Several submitters suggested a "clawback mechanism" be used for developers to recover the costs of infrastructure and for DCC to recover these costs through DCs. For DCC to be able to charge DCs, the projects must be planned as part of strategic planning and approved through the 10-year plan and incorporated into the DCs policy as a specific project or as part of the overall growth projects used to determine DCs.

15. While DCs are a good option for recovering costs for DCC growth projects, they do not generally provide an option for use for private projects that are not part of DCCs network strategic planning.

16. If, as proposed by Variation 2, developers manage stormwater on-site at their cost, DCC will have more time to get all the required infrastructure upgrades planned and carried out, or some upgrades may not be needed as quickly as they otherwise would. If developers don't manage stormwater on-site, DCC will need to do more, bigger and expensive upgrades, therefore DCs will need to be significantly higher to cover these costs. There would need to be restrictions on when rezonings or intensification can occur until infrastructure capacity is available. Flood risk from stormwater also increases if stormwater is not managed on-site, placing the network, other properties and the environment at greater risk. Either way, the developer has to pay for the costs associated with growth and there isn't necessarily anything to clawback, as suggested by the submitters.

Agreements for infrastructure construction

17. You have requested comments on what type of private agreements between Council and developers for infrastructure currently take place.

18. Where in the DCC's opinion it is in the best interests of all parties, the DCC reserves the discretion to enter into a development agreement with a developer for the provision of infrastructure to meet the special needs of a development. An example is where a development requires a special level of service or is of a type or scale which is not readily assessed in terms of units of demand (used for assessing DCs), or where a developer is ready to develop their site, but the DCC infrastructure required is not constructed or not planned to be constructed within the timeframes the developer is proposing development. Development agreements would only be entered into when the infrastructure should, and will, be owned and operated by DCC once completed.

19. Development agreements can be used in situations where significant developments occur or are proposed and require new capital expenditure to cater for growth, but no budgeted capital expenditure has been programmed and no DCs have been set. This situation is likely to occur where a plan change has resulted in the rezoning of an area, greenfield sites are to be developed, a structure plan has been prepared in anticipation of development of an area, or a resource consent is issued which would result in additional pressures on services or the requirement of upgraded or additional services. Development agreements could also be used in situations where alternative technologies or on-site management may provide acceptable solutions to manage issues.

20. Development agreements can specify works that a developer will undertake, such as extending the DCC network to get infrastructure to the development site or upgrading existing infrastructure if there is not capacity for the development that is proposed. These development agreements would indicate if any cost sharing between the DCC and developer was to occur or if works to be carried out would be instead of development contributions for that infrastructure.

21. The "clawback" approach suggested by submitters would result in DCC having to fund future development capacity in new infrastructure and get agreement with future developers to

recover those costs. As outlined above in relation to the DCs policy, the policy provides a way to recover growth costs for DCC strategic projects but is not as appropriate for other projects.

22. Other less formal agreements for work needing to be carried out may also be reached and, in some cases, may be included as conditions of resource consent.

23. Private Development Agreements are being used as part of the resolution of appeals on the 2GP to ensure appropriate infrastructure for management of stormwater or wastewater will occur if DCC supports the rezoning of land. If agreement could not be reached the areas would be unable to be rezoned for development due to a lack of infrastructure capacity or services.

Background on the Water Bylaw

24. You have requested comments on the obligations on Council to provide water supply connections under the Water Bylaw 2011 (the Bylaw).

25. The Bylaw outlines the Council's urban and rural water supply area boundaries. The urban water supply areas primarily include residential zoned areas where water is supplied (some Township and Settlement and Large Lot Residential zones may not be supplied with water) but may also include areas with non-residential zoning. Depending on the water supply area, water will be supplied as either on-demand supply or restricted flow supply. Most rural environments and rural townships within a rural water supply area boundary will be serviced with a restricted flow supply where the volume of water provided to customers is restricted to a certain amount per day which is trickle fed to the property and customer water tanks are required for storage. Most urban areas within an urban water supply area are serviced with an on-demand water supply.

26. The Bylaw outlines which activities should be supplied with water within and outside the water supply area boundary. For residential activities within the water supply area, water connection is anticipated and provided for. Outside the water supply area, properties are not entitled to connection, and approval from the Council is required in most cases. Water connections to residential activities in rural environments or rural townships outside the water supply area are granted infrequently.

Submissions on policies 9.2.1.1.A and 9.2.1.4.A (part of Change F1-2)

27. You have requested comments on the submissions by Retirement Villages Association NZ (s205) and Ryman Health Care (s189) that seek clarification about how an agreement is reached with the DCC in relation to the changes to policies under Objective 9.2.1.

28. Submissions by the Retirement Villages Association NZ (s205. 014 and s205.016) and Ryman Health Care (s189.014 and s189.016) have requested that policies 9.2.1.1.A and 9.2.1.4.A be amended to ensure agreement from Council will not be unreasonably withheld.

29. Policy 9.2.1.1.A(c) and 9.2.1.4.A(b) allow for a developer to offer to undertake works to upgrade at their cost (or cover costs to upgrade if DCC did the work) the public wastewater or water networks to remove capacity constraints which would otherwise prevent their development from being able to be undertaken in accordance with the 2GP. It would be anticipated that discussions between the developer and DCC 3 Waters staff would begin early in the planning process to identify capacity constraints in the wastewater or water networks and options to address them. DCC would need to consider if there were implications on or from other projects that were planned or occurring and whether the proposed works or development would have

wider implications for the wastewater or water networks, impacts on other properties, and other strategic considerations.

30. Any works proposed to be undertaken by the developer would need to meet DCC standards and requirements. If works were to be planned and carried out by DCC, and costs paid for by the developer, availability of staff to manage such a project and implications on workloads and other projects, would also need to be considered. If developers sought contribution from DCC toward infrastructure, then this matter would need to be considered through appropriate processes.

31. DCC would not unreasonably withhold agreement, but the DCC and developers view of what is reasonable or not, may vary greatly.

Explanation of assessments undertaken to determine infrastructure capacity (3 Waters) and where the gaps are

32. You have requested comments on why it is/is not feasible to undertake more detailed wastewater and stormwater studies of the areas to be rezoned or infrastructure controls applied, prior to rezoning and where the current modelling gaps are. In addition to the information included in the s32 report, the following comments are provided.

33. Firstly, it is important to point out that the entirety of Dunedin's wastewater network is modelled, however the level of detail of that modelling varies for different areas.

34. DCC recognise that there is a need to continue to undertake modelling and assessment to assist with setting more targeted stormwater management rules in the 2GP. DCC has catchment management plans for some areas of the city but has not yet prepared these for the entire city. As catchment management plans are not available for the whole city, DCC was unable to developed targeted rules for each catchment within the Variation 2 timeframes.

35. The issue is not that the work is not feasible to be done, but that it takes a lot of time and money to do it. To undertake modelling of the whole stormwater network, DCC must not only look at the public network but also private watercourses and infrastructure. DCC is working on completing modelling, but significant time is needed to undertake this project.

36. Steps involved to assess the entire stormwater network include:
    a) Rapid flood hazard assessment – high level modelling over all urban areas to identify problem areas (that aren't currently modelled) for prioritisation
    b) Prioritisation of areas for more detailed model development
    c) Initial model development using existing data
    d) Flow monitoring and calibration of models – there are limited flow monitoring contractors nationally
    e) Hydraulic performance assessment and identification of options for catchment management
    f) Assessment and selection of preferred catchment management options

37. It is expected to be approximately 3 years before the catchment assessment process is worked through. Over $4 million of funding has been allocated over this timeframe. It is possible, once initial catchment assessment work is complete, that lower priority areas will not warrant full model development.

38. The time constraints of the housing situation in Dunedin, and the requirements of the National Policy Statement on Urban Development are such that DCC is having to propose rezoning of areas for development without having done more detailed studies for stormwater management. The situation of not having areas for development fully modelled is not inconsistent with many

other local authorities in New Zealand, where all catchments are not yet modelled. Stormwater management rules within district plans are applied and the onus is on the developer to demonstrate that development will not result in adverse effects. Of the $77 million budgeted in the 10-year plan 2021-2031 to provide for 3 Waters infrastructure to support growth, over $27 million is for stormwater infrastructure, of which over $9 million is for stormwater infrastructure in greenfields areas.

39. Legislation at a national and regional level is changing the requirements for management of stormwater discharges to natural waterways from both a quality and quantity perspective. Greater emphasis is being placed on protection of the environment and management of contaminants (including sediment) that may enter waterways in stormwater discharges. DCC is required to make changes to the 2GP and approaches to management of stormwater to implement the requirements of national and regional legislation. In order to implement the changes that are underway at a national and regional level and to address issues that have been identified in Dunedin, DCC needs to set rules in the 2GP to ensure that stormwater discharges are managed and impacts on the environment and other properties are minimised. If rules are not included there is the risk that stormwater discharges will continue to have effects on the environment or other properties.

40. DCC could delay the rezoning of new residential areas until stormwater catchment information is available. However, this will not assist the DCC to meet its obligations to provide for growth in the city and is unlikely to be palatable for landowners wishing to rezone and develop their sites.

Alternative solutions for stormwater management in greenfield areas (Change F2-2)

Rule 9.3.7.AA

41. You have requested comments on the submissions regarding Rule 9.3.7.AA and the requirement to connect to a communal stormwater system, application of the rules, and alternative solutions.

42. The ORC (s271.005) seek amendment of Rule 9.3.7.AA so that reserves, access, network utilities and roads are included in stormwater management plans and systems required by Variation 2. The submitter is concerned that Rule 9.3.7.2 (service connections) excludes reserves, access, network utilities and roads for subdivision activities, and therefore these are not required to connect to the communal stormwater management system.

43. Rule 9.3.7.AA refers to 'development'. Roads are created as part of subdivision and don't fit in the definition of 'development activities' in the 2GP. The definition of 'development activities' in the 2GP includes site development activities (including parking, loading, and access), therefore these aspects are captured. Amendments may be required to address the issue of roads being excluded.

44. The ORC (s271.012) request a variety of changes to the wording of Rule 9.3.7.AA and its associated note (Note 9.3.7.AAA).

45. In response to the submitters concerns, the following comments are provided:
    - The submitters suggested amendment to Rule 9.3.7.AA to read "in a new development mapped area with more than 60m^2 of impermeable surface in total, all development must connect ..." would result in any NDMA area with more than 60m^2 of hard surface across the whole area to force all new development to connect to the stormwater management system. The requested amendment would make the rule very different to the proposed rule which allows each development creating less than 60m^2 to not have to connect to the system if the

system has not yet been installed. The requested amendment would place unfair requirements on developers to have the stormwater management system installed very early on in their project and to connect everything to it.

- The submitter requests deletion of 'communal'. The submitter has misinterpreted the use of the term 'communal' to mean 'private' communal stormwater management systems. It is not generally the DCC's intention to have private stormwater management systems. The proposed inclusion of provisions in the 2GP requiring a communal system in a NDMA seeks to have all landowners in the NDMA using one stormwater management system that would be vested in DCC once completed. There is, however, the potential that some communal stormwater management systems could remain in private ownership and management if not suitable for vesting in DCC.

- The submitter prefers the use of the term 'integrated' in preference to 'communal' and requests the inclusion of 'integrated' before 'stormwater management system'. The DCC want communal stormwater management systems not individual ones. Specifying only 'integrated' opens the rule up to developers wanting individual ones as these could still be integrated into the wider stormwater management system. We suggest that the submission should be rejected in its request to refer only to 'integrated stormwater management systems', however referring to 'integrated communal stormwater management systems' is appropriate and would be acceptable.

- The submitter requests that the rule cover development without subdivision. As currently worded, Rule 9.3.7.AA does cover development without requiring subdivision, and in fact, as noted above does not strictly apply to subdivision activities.

- The submitter requests that a stormwater management plan be mandatory for new development mapped areas. Rule 9.9.X already requires applications for subdivision in a NDMA to include a stormwater management plan and allows for these to be required in other locations for certain types of development.

- The submitter requests that a restricted discretionary activity consent be required for any development creating an impermeable surface area greater than 60m^2. The rule sets the requirements the developers must comply with and already has a restricted discretionary resource consent requirement for any activities that contravene the rule. The requested amendment would go straight to requiring a resource consent for development over 60m^2 without having the requirement for these activities to connect to the stormwater management system as is required by the proposed rule. The requested amendment would basically allow no development to occur without a resource consent. We do not consider allowing no development without consent to be reasonable or necessary, as rules included in the 2GP can manage stormwater issues.

- The submission requests the addition after "stormwater management system" of the words "installed in accordance with a subdivision consent for the new development mapped area". This amendment is acceptable.

46. The other submitters sought amendment to Rule 9.3.7.AA to include options for suitable alternative servicing arrangements for stormwater, with suggestions of this being done through an assessment matter for the applicant to demonstrate that the alternative solution will achieve a particular standard. The submitters suggest it should be recognised that a number of these alternative solutions are better implemented at the time of building (rather than at the time of subdivision). Accordingly, they request the inclusion of a provision that recognises the use of a consent notice to require installation of service connections as part of the building process rather than requiring these to be installed at the time of subdivision.

47. Generally, alternatives that relate to building consent processes will be private stormwater systems on individual lots (e.g. rainwater detention tanks). When such assets are in private ownership it is more difficult to ensure the ongoing performance and functioning of the stormwater management system over the long term. If systems are not maintained there is an increased risk of the system failing over time and resulting in adverse effects. Where sites are small and the number of properties is low, this may be acceptable, because in time, DCC can plan and programme for public infrastructure works to create capacity and manage potential future adverse effects. However, where sites are large (such as for the large greenfield sites where NDMA is proposed and Rule 9.3.7.AA applies), communal stormwater systems will tend to be more reliable when vested in DCC and ongoing performance can be monitored and maintained through appropriate operation and maintenance activities. Communal stormwater systems can often negate the need for future public infrastructure works. As such, we consider communal systems to be a more efficient and effective approach to stormwater management. Allowing alternatives for smaller sites is something that we are considering.

48. Concern has been raised through submissions about the requirement for landowners to work together to achieve one communal stormwater management system for each NDMA. We acknowledge the difficulties that may arise but consider the benefits of communal systems to be sufficient to warrant pursing the approach as notified. Rather than remove the requirement for landowners to reach agreement, DCC could facilitate discussions between landowners where needed to achieve the best outcomes for effective stormwater management in the long-term. Currently the 3 Waters group has insufficient staff resourcing for such a facilitation role and additional staff resource would likely be required.

Downstream effects and new performance standard for detention of roof water (Alternative F2-Alt2)

49. You have requested comments on the practicality of DCC assessing downstream effects of future development of greenfield sites and whether a new performance standard for detention of roof water is an appropriate measure for developments that are found to not have any downstream effects.

50. DCC will continue to do stormwater modelling and catchment assessment work and make this data available to developers to assist them with their evaluation of potential effects which is required when lodging resource consents. The evaluation of potential effects needs to include the potential downstream impacts of stormwater on the environment, other properties and infrastructure. The requirements for stormwater management plans to be provided in certain circumstances, that have been proposed through Variation 2, will require developers to undertake this assessment to determine the stormwater management that will be required to minimise downstream impacts. These assessments will be important for greenfield sites as the impermeable surface levels will significantly increase with development of these areas and post-development flows and volumes are likely to be significantly higher than pre-development levels.

51. Other local authorities that use a performance standard approach to require on-site attenuation of stormwater typically only do this for smaller scale sites up to a certain size or number of lots. For example:
    a) Wellington Water
        - Has a performance standard for smaller residential developments, 10 properties or less which specifies “It may be considered as part of a wider solution to managing stormwater runoff in developments greater than 10 buildings, though full hydrological analyses of the development will be necessary.”
    b) Hamilton City Council
        - Where there are less than 4 residential units or less than 1 hectare of land and no Council Integrated Catchment Management Plan (ICMP), run-off must be 80% of pre-development flows or impermeable surfaces 20% less than the maximum allowable.

- Where there are more than 4 but less than 40 residential units, or more than 1 hectare but less than 3 hectares proposed and no Council ICMP, a 'Water Impact Assessment' must be provided.
- Where there are more than 40 residential units proposed or the site is more than 3 hectares a "developer-led integrated catchment management plan" is required.

52. A similar approach to that used in Wellington and Hamilton is something that we are considering. The DCC approach is likely to be consistent with other local authorities in that above a certain number of lots or area of land the developer will need to carry out their own assessment, consistent with the rules being proposed in Variation 2.

53. Our current thinking is that if a similar approach were to be adopted it would set an 'approved solution' for all development where up to 6 lots or dwellings are created.
    - A 'Practice Note' to guide sizing of rainwater tanks providing detention and optional retention would be provided by DCC.
    - Sufficient information would need to be provided to DCC to demonstrate that the 'approved solution' has been complied with. Information requirements would be less than for a stormwater management plan.
    - A provision that recognises the use of a consent notice to require installation of the approved solution at the time of building consent would be acceptable.
    - An approved solution could be considered as part of a wider solution to managing stormwater runoff in developments greater than 6 lots or dwellings, though a full stormwater management plan would be necessary and our preference is for integrated communal stormwater management systems.

Policy 2.2.5.2 (Change F2-2 and Change F1-6)

54. You have requested comments on 3 Waters position on Policy 2.2.5.2 in terms of whether the adverse effect on groundwater should be considered.

55. The submission by the ORC (S271.008) seeks retention of Policy 2.2.5.2 to recognise that development can have an adverse effect on groundwater and public infrastructure.

56. We agree that protection of groundwater is important, however, protection and monitoring of groundwater is a regional council responsibility. ORC have provisions relating to protection of groundwater in its regional policies. ORC is responsible for discharge consents for private wastewater services and ensuring that discharges from these will not impact on groundwater. DCC has no responsibility for these private discharges and it is inappropriate for inclusion of provisions managing these discharges within the 2GP.

Policy 9.2.1.X (Change F2-2)

57. You have requested comments on submissions on Policy 9.2.1.X.

58. In response to the ORC (S271.011) concerns, the following comments are provided:

    - The submitter seeks amendment to the policy to read "only allow..." rather than "require…", effectively requiring all development to require a resource consent with stormwater management being assessed for each individual development, although the submitters reasoning is for the whole development to be considered. The use of "only allow" changes the activity status of development in a NDMA, and development would no longer be permitted without resource consent. The provisions proposed through Variation 2 aim to assess stormwater for the entire development at the time of subdivision. While this approach is

reliant on subdivision occurring before development, the amendment requested by the submitter would not drive the entire development to be considered collectively. It should also be noted that Policy 9.1.2.X is only dealing with connection to the stormwater management system and not about the requirement to create the system. We recommend that the submitters request be rejected.

- The submitter seeks clarification of the differences in wording between 9.2.1.Y and 9.2.1.Z to avoid confusion. We recommend the use of the term 'integrated communal stormwater management system' in both policies as it would provide consistency and clarity requested by the submitter.
- The submitter requests the deletion of 'communal'. The submitter has misinterpreted the use of the term 'communal' to mean 'private' communal stormwater management systems. This is not generally the DCC's intention. The proposed inclusion of provisions in the 2GP requiring a communal system in a NDMA seeks to have all landowners in the NDMA using one stormwater management system that would be vested in DCC once completed. There is, however, the potential that some communal stormwater management systems could remain in private ownership and management if not suitable for vesting in DCC.
- The submitter requests the deletion of 'on-site'. Our preference is for on-site communal stormwater management system but the policy also provides flexibility for where this is not possible or better alternatives are available.

59. Other submissions received considered it is unclear what Policy 9.2.1.X is trying to achieve, suggesting it is probably unnecessary and could be deleted.

60. Policy 9.2.1.X requires development in a NDMA to be connected to the integrated communal on-site stormwater management system. The intention is to ensure that impermeable surfaces are connected to the integrated communal on-site stormwater management system as these surfaces will generate the highest stormwater quantities and contaminants.

ORC submission on Policy 9.2.1.Y (Change F2-2)

61. You have requested comments on the ORC submission (s271.010) on Policy 9.2.1.Y and what the 3 Waters position on including consideration of run off, duration and time of concentration factors as well as pre and post development flows.

62. In response to the submitters concerns, the following comments are provided:

- The submitter requests removal of the limitation of 'on-site'. Our preference is for on-site communal stormwater management system but the policy also provides flexibility for where this is not possible or better alternatives are available.
- The submitter requests that the policy provides for "no change in hydrological effect from the subdivision", suggesting other factors such as volume of runoff, duration, and time of concentration must be included.

  Providing wording around run-off, duration and time of concentration factors would be too detailed to be included in policy wording. The purpose of the policy wording is to set out the goal – that there is no increase in pre-development peak stormwater discharge rate from the site as a result of the development. How this is done, which involves considering run-off, duration and time of concentration factors, is contained in Rule 9.9.X.

  It is not possible to achieve "no change in hydrological effect from the subdivision" as development by its very nature results in increased impervious surfaces which results in an increase in stormwater volumes in any rainfall event. As there is more stormwater volume, the hydrological effect is changed, even when there is no increase in pre-development peak stormwater discharge rate from the site.

- The submitter prefers the use of the term 'integrated' in preference to 'communal'. The DCC want communal stormwater management systems not individual ones. Specifying only 'integrated' opens it up to developers wanting individual ones as these could still be integrated into the wider stormwater management system. Addition of 'integrated communal' before stormwater management systems is appropriate and would be acceptable.

- The submission seeks the deletion of clause (b). Clause (b) allows a level of flexibility and acknowledges that on-site stormwater management is not always possible or desirable on the site, where other alternatives may be available. We recommend that (b) is retained.

Policy 9.2.1.Y and Rule 9.9.X.3.c (Change F2-2)

63. You have requested comments on submissions on Policy 9.2.1.Y and Rule 9.9.X.3.c.

64. Several submitters suggested DCC pay the developer for infrastructure they develop and vest in DCC and that DCC have a "clawback mechanism" to recover the costs of infrastructure from other landowners through development contributions (DCs).

65. For DCC to be able to charge DCs, the projects must be planned through strategic planning and approved through the 10-year plan and incorporated into the DCs policy as a specific project or as part of the overall growth projects used to determine DCs.

66. While DCs are a good option for recovering costs for DCC growth projects, they do not generally provide an option for use for private projects that are not part of DCCs network strategic planning.

67. If, as proposed by Variation 2, developers manage stormwater on-site at their cost, DCC will have more time to get all the required infrastructure upgrades planned and carried out, or some upgrades may not be needed as quickly as they otherwise would. If developers don't manage stormwater associated with their development, DCC will need to do more, bigger and expensive upgrades, and DCs would need to reflect these costs. There would also need to be restrictions on when rezonings or intensification could occur until infrastructure capacity is available. Flood risk from stormwater also increases, placing the network, other properties and the environment at greater risk. Either way, the developer must pay for the costs associated with growth and there isn't necessarily anything to clawback as suggested by the submitters.

68. Submitters also suggested DCC acquire easements in NDMA for new infrastructure and remove requirements for communal stormwater management systems to be installed prior to subdivision consent. It is unclear what easements submitters are suggesting DCC acquire. When developers install infrastructure that will be vested in DCC, any easements needed would be recorded on survey plans and titles. If the submitter is meaning easements needed across other properties, for example for stormwater discharges or pipes, this would also be done as part of subdivisions and would normally be secured by developers as part of the subdivision process.

69. Submissions comment that an on-site management system should only be required for greenfield sites where DCCs modelling demonstrates development is likely to lead to unacceptable adverse effects downstream. For all other greenfield sites, submissions request that these should be required to meet a performance standard such as roof detention tanks per site.

70. Newly rezoned greenfield areas along with some areas of the city may not have been modelled. Lack of DCC modelling of an area does not mean that there are no risks of adverse effects as a result of development. Potential effects need to be assessed as part of the resource consent application. It is the developer's responsibility to prove that their development will not have downstream effects.

71. Development in greenfield areas increases the impermeable surfaces in the area, potentially resulting in significantly more run-off than was occurring pre-development. The discharge of stormwater potentially traverses through public infrastructure, private watercourses or drains, and into waterways or the coastal environment. New development increases the volume of stormwater flowing through the stormwater network and this could result in the capacity of public or private watercourses or infrastructure being exceeded and possibly contribute to increased flood risks or exacerbate any existing flooding issues.

72. Good management of stormwater to minimise potential effects is generally required throughout the urban area but is more important in greenfield areas due to the significant change in flow and volume of stormwater between pre and post development. It is important that potential effects on the environment and other properties or infrastructure are minimised through appropriate management of stormwater.

73. Stormwater discharges not only rely on capacity being available in the public stormwater system but in the private watercourses and infrastructure that exists throughout the city as well. DCC has no responsibilities for private stormwater watercourses or infrastructure and therefore has no control over ongoing required maintenance or clearing of watercourses or the size of pipes that are installed on private property. New development increases the volume of stormwater flowing through the network and this could result in the capacity of public or private watercourses or infrastructure being exceeded and possibly contribute to increased stormwater flood risks or exacerbate any existing flooding issues. Downstream landowners have little say in what areas are being developed that may result in additional flows through their properties. 3 Waters endeavours to minimise impacts of development on other properties by trying to ensure stormwater is managed appropriately. This is difficult to do if there is no requirement for on-site management of stormwater to regulate flows from a site, especially during high rainfall events. If comprehensive provisions are not included in the 2GP for managing stormwater discharges in greenfield areas, there is the potential for downstream effects to occur.

74. The Resource Management Act 1991 (s88 and Schedule 4) requires an application to include an assessment of actual or potential effects on the environment and that this information must be provided in sufficient detail to satisfy the purpose for which it is required. Information needs to be provided by applicants with resource consent applications (in the form of a Storm Water Management Plan) so 3 Waters can consider the actual and potential effects from a proposed development/subdivision/activity on stormwater networks, including effects on neighbouring or downstream private landowners that may be impacted by the stormwater from that development/subdivision/activity, and ensure effects are appropriately managed.

75. When considering an application for a resource consent, Section 104(1)(b) of the RMA requires the consent authority to have regard to any actual and potential effects of the activity, as well as various planning documents, including National Policy Statements. The fundamental concept of the National Policy Statement for Freshwater Management 2020 (NPSFM) is 'Te Mana o te Wai', a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. The NPSFM applies to all freshwater and therefore stormwater management is important as it often discharges to freshwater.

76. DCC has role to implement and give effect to the NPSFM - local authorities must –

> *manage freshwater, and land use and development, in catchments in an integrated and sustainable way to avoid, remedy, or mitigate adverse effects, including cumulative effects, on the health and well-being of water bodies, freshwater ecosystems, and receiving environments*.

77. Consideration and implementation of national and regional planning documents is essential when DCC is considering consent applications and how stormwater should be managed.

78. DCC has Catchment Management Plans for some areas of the city but has not yet prepared these for the entire city. As DCC does not have catchment management information for all areas targeted rules for each catchment cannot be developed within the Variation 2 timeframes. While DCC does have work in progress to address this, the time constraints of the housing situation in Dunedin, and the requirements of the National Policy Statement on Urban Development, are such that DCC is having to propose rezoning of areas for development without having done more detailed studies for stormwater management.

79. The situation of not having areas for development fully modelled is not inconsistent with many other local authorities in New Zealand, where all catchments are not yet modelled. Stormwater management rules within district plans are applied and the onus is on the developer to demonstrate that development will not result in adverse effects. Other local authorities that use a performance standard for stormwater storage tanks typically only do this for smaller scale sites up to a certain size or number of lots. A similar approach is something that we are considering, however, it is likely to be consistent with other local authorities in that above a certain number of lots or area of land the developer will need to carry out their own assessment, consistent with the rules being proposed in Variation 2. Detail of the potential approach that could be taken by DCC is discussed in more detail above.

80. Submitters requested amendment to Rule 9.9.X.3.c to remove the requirement for landowners to collaborate and approve the stormwater management plan submitted for the new development mapped area, as follows: "for a new development mapped area (NDMA), address the whole NDMA area"

81. In some cases, there may be difficulties within a NDMA to achieve all the rules proposed through Variation 2. We acknowledge the difficulties that may arise but consider the benefits of communal systems to be sufficient to warrant pursing the approach as notified. Rather than remove the requirement for landowners to reach agreement, DCC 3 Waters could facilitate discussions between landowners where needed to achieve the best outcomes for effective stormwater management in the long-term.

Change F2-3 Rules for residential stormwater management other than in large greenfield areas

82. You have requested comments on the submissions on change F2-3 from a 3 Waters perspective.

83. The submission from Penny Turner (s107.005) requests Rule 15.6.10 (Maximum Building Site Coverage and Impermeable Surfaces) be amended from 40% to 45% for buildings and structures and from 70% to 75% for impermeable surfaces (including buildings and structures) in the General Residential 1 Zone. We recommend declining this request and not increasing permitted coverage due to the existing issues occurring with stormwater discharges in the city and the need for better management of stormwater, as reflected by the changes proposed through Variation 2. Such a change as requested by the submitter is in effect a change to levels of service, as infrastructure would then need to be sized and upgraded with capacity for the additional stormwater flows resulting from the submitters proposed change. The cost implications of such a change are unknown at this time and would require significant work to assess. Data the DCC holds suggests that Maximum Building Site Coverage and Impermeable Surfaces limits are reasonable, not onerously restrictive and provide substantial scope for development activity.

84. The submission from Gisela Sole (S208.002) requests amendment of the notified Change F2-3 (Rules for residential stormwater management other than in large greenfield areas) to consider effects of increased stormwater runoff in the gully between Prestwick Street and Monro Street. Variation 2 proposes stormwater provisions to manage effects from subdivision and specified

development activities. The laws of natural servitude allow for stormwater run-off from properties to flow downhill following natural overland flow paths, such as into the gully at this location. It is the responsibility of property owners to ensure watercourses on their property are functioning correctly and allow water to pass unimpeded through their properties. The DCC is unable to put a rule in the 2GP that would prevent any pooling of stormwater at this location. The provisions included through Variation 2 attempt to improve stormwater management to minimise downstream effects, however these will not improve existing issues on private property.

Policy 9.2.1.Z(b) (Change F2-3)

85. The submission from ORC (s271.021) requests amendment of Policy 9.2.1.Z(b) to provide that if the stormwater flows into any ORC drain or any part of the ORC flood management protection scheme, there must be capacity and no adverse effect on the drain or scheme. The submission also requests that if the stormwater discharges into any river, there must be no change in flows or levels as a result of the discharge.

86. The policy already requires there to be adequate capacity to absorb additional stormwater in relation to ORC systems. Our recommended amendment (outlined below) to specifically refer to ORC drains should address the submitters concerns.

87. The policy allows for there to be "no more than minor effects". We do not consider it appropriate to require that there are "no effects", as requested by the submitter. DCC has focused its approach to management of stormwater and 2GP provisions on having no increase in peak flows and water levels, but it is impossible to have no change in any water flows or levels when stormwater is being discharged into a river.

88. The words 'drainage system' and references to the flood system could be added to (b) to address the submitters concerns as shown below:

Policy 9.2.1.Z.b

"Only allow multi-unit development; supported living facilities; subdivision; or development that contravenes the impermeable surfaces performance standard, where:

a) for stormwater generated by the activity (or future development enabled by a subdivision) that will flow through DCC stormwater public infrastructure at any point:
   i. there is adequate capacity in the stormwater public infrastructure; or
   ii. any adverse effects from an increase in discharge on the stormwater public infrastructure are no more than minor; and
b) for stormwater generated by the activity (or future development enabled by a subdivision) that will flow through a private, Otago Regional Council, or natural/informal stormwater <u>or drainage</u> system<u>, or flood management protection scheme</u> at any point, that stormwater <u>or drainage</u> system<u>, or flood scheme</u> has the capacity to absorb the additional stormwater with no more than minor adverse effects on <u>the system or</u> other sites (public or private), including but not limited to, adverse effects from an increase in overland flow or ponding."

89. The submission from Peter Dowden (S122.003) requests the addition of a provision so all development must have the same or better stormwater run-off rate per unit of area as it had before development began.

90. The submitter's requested approach is being applied to NDMAs (Policy 9.2.1.Y). DCC already require this approach where there is an identified lack of capacity or known flood hazard issues.

91. We do not consider it appropriate to include such a provision covering all development because in some instances there will be no adverse effects from stormwater run-off as a result of the

development. Requiring such a provision could be detrimental to the viability of development in these areas.

92. Several submitters request that the assessment of effects of stormwater is limited to a nominated distance from the point of development discharge and to clarify 9.2.1.Z.b to ensure that it does not always trigger the need for an assessment.

93. It is not reasonable or practical to specify a distance beyond which effects will not occur and should not be considered. The nature of the catchment, the location of the site within the catchment, and the nature of the stormwater network itself, will all influence potential downstream effects.

94. The policy allows for the listed activities to occur and discharge into the stormwater network where the network has the capacity to absorb the additional stormwater with "no more than minor adverse effects". The policy does not prevent activities occurring, it merely requires that potential effects be assessed and considered, and that stormwater is managed to not cause more than minor effects on the downstream catchment. As acknowledged by the submitters, all flows are likely to eventually end up in a river, lake, harbour, or ocean. Provided the effects are no more than minor, discharge can occur.

95. The submitters express concern about how the policy will be interpreted. The submitters alternative interpretation is correct. The policy lists four activities, being multi-unit development, supported living facilities, subdivision, and development that contravenes the impermeable surfaces performance standard. These are separate activities. Multi-unit development, supported living facilities, and subdivision, are restricted discretionary activities to which this policy applies, along with development that becomes a restricted discretionary activity if it contravenes the impermeable surface performance standard.

Current issues of using permitted baseline for stormwater management (Change F2-5)

96. You have requested comments on any examples of issues that have arisen due to applications using the impermeable surfaces rule as a permitted baseline argument in terms of stormwater management and assessment of effects.

97. The impervious surface rules, together with the density rules which permit houses to be built on sites, have been suggested, and used, as a way of not having to comply with stormwater management requirements applied to subdivision applications, by taking the approach that building could occur as of right (permitted activity), and therefore developers should not have to meet stormwater requirements. This permitted base line approach has been taken by some members of the development community even where DCC has identified downstream stormwater issues and sought on-site management of stormwater to minimise risks of increased stormwater flooding of downstream properties.

98. The permitted baseline rule has been used by some members of the development community to justify proposing a development (and subdivision of the site) that exceeds the impermeable surface rules because the rules are not contravened for the overall site. Developers have proposed to develop first and subdivide later to avoid any requirements for a stormwater management plan for the site that contravenes the rules, or may use the permitted baseline rule to attempt to justify the subdivision being acceptable and not needing to provide a stormwater management plan required by consent conditions. This occurred recently so a developer could avoid stormwater requirements attached to a subdivision consent.

99. There have been examples of subdivisions that exceed density limits in the 2GP and the permitted baseline for impermeable surfaces has been used as justification by the developers for why a stormwater management plan should not be required.

100. Subdivision and development have occurred without adequate stormwater management and significant adverse effects have occurred downstream, with private watercourses or infrastructure being overwhelmed by the increased flows and volumes of stormwater being discharged. A lack of stormwater management plans or consideration of downstream effects has resulted in stormwater flooding and damage to downstream properties.

101. Based on comments made by developers and surveyors during meetings where stormwater provisions or issues have been discussed, it is apparent that there is a misconception in the development community that impermeable surface levels have been set at a level for which there is capacity in the stormwater network to accept all stormwater produced on a site through development. This is not the case. The impermeable surface levels have been set as a blanket rule regardless of location. The current limits for impermeable surfaces aim to provide a fair balance between urban land use needs, existing site coverage trends and manageable stormwater volume and intensity. They do not account for the reality that different areas of the stormwater network, both private and public infrastructure, has varying capacity levels, and that stormwater flooding issues vary in their location as a result of the varying capacity of the infrastructure. The impermeable surface levels were designed to work in tandem with a requirement for stormwater management plans for subdivisions and on-site management of stormwater. As such, most developments (at least during initial development) do not contravene impermeable surface limits. Just because impermeable limits are not always contravened does not mean that consideration of effects and on-site stormwater management are not required where there may be potential downstream effects.

Alternative F2-Alt2 option for alternative methods for on-site stormwater detention

102. You have requested comment on the submissions on Alternative option F2-Alt2 and 3 Waters position on the suitability of alternative methods for stormwater management.

103. The submissions seek the addition of rules in the 2GP for on-site stormwater management in the form of stormwater tanks instead of the provisions currently proposed in the F2 changes.

104. The approaches to stormwater management used by Hamilton and Wellington, suggested in the submission by Survey and Spatial NZ (Coastal Otago Branch), have been summarised and assessed below.

105. Other local authorities that use a performance standard approach to allow independent on-site stormwater attenuation typically only do this for smaller scale sites up to a certain size or number of lots. For example:

Wellington Water

- Has a performance standard for stormwater attenuation for smaller residential developments 10 properties or less, which states "It may be considered as part of a wider solution to managing stormwater runoff in developments greater than 10 buildings, though full hydrological analyses of the development will be necessary."

Hamilton City Council

- Where there are less than 4 residential units or less than 1 hectare of land and no Council Integrated Catchment Management Plan (ICMP), run-off must be 80% of pre-development flows or impermeable surfaces 20% less than the maximum allowable.
- Where there are more than 4 but less than 40 residential units, or more than 1 hectare but less than 3 hectares proposed and no Council ICMP a 'Water Impact Assessment' must be provided.
- Where there are more than 40 residential units proposed or the site is more than 3 hectares a 'developer-led integrated catchment management plan' is required.

106. A similar approach is something that we will consider. However, it is likely to be consistent with other local authorities in that above a certain number of lots or area of land the developer will need to carry out their own assessment, consistent with the rules being proposed in Variation 2.

107. Our current thinking is that if a similar approach were to be adopted it would set an 'approved solution' for all development where up to 4 lots or dwellings are created. Potential approach could be:
    - A Practice Note to guide sizing of rainwater tanks providing detention and optional retention would be provided by DCC.
    - Sufficient information would need to be provided to DCC to demonstrate that the 'approved solution' has been complied with. Information requirements would be less than for a stormwater management plan.
    - A provision that recognises the use of a consent notice to require installation of the approved solution at the time of building consent would be acceptable (if this practically works).
    - An approved solution could be considered as part of a wider solution to managing stormwater run-off in developments greater than 4 lots or dwellings, though a full stormwater management plan would be necessary and our preference is for integrated communal stormwater management systems.

Special information requirements for stormwater management plans (Change F2-2 and Change F2-3)

Where Stormwater Management Plans should be required

108. You have requested comments on submissions on Rule 9.9.X and where stormwater management plans should be required.

109. Several submitters suggest the information specified by Rule 9.9.X.3 as needing to be provided in a stormwater management plan should only be required in New Development Mapped Areas that comprise greenfield sites and have well understood stormwater constraints.

110. The current and proposed approach is to require Stormwater Management Plans (SWMP) in certain locations or in specific circumstances. The proposed changes through Variation 2 reflect the approach that is already being taken by DCC and seeks to formalise it within the 2GP to provide clarity and certainty around when a SWMP may be required and what information would be expected to be included.

111. The DCC generally requires a SWMP if one or more of the following situations occurs:

    a. Development is breaching any impermeable surface rule in the 2GP.
    b. Development is in Hazard 1 (flood) Overlay Zone, Hazard 1 (land stability) Overlay Zone Hazard 2 (land stability) Overlay Zone, or Hazard 2 (flood) Overlay Zone.
    c. Development is in Hazard 3 (alluvial fan) Overlay Zone combined with any Hazard (flood) Overlay Zone (1, 2 or 3).
    d. Development is in a structure plan area with relevant provisions for stormwater management.
    e. There are documented, known ponding or stormwater flooding issues in the area of development or downstream from development
    f. Development is in an Industrial Zone (where there are no limits for the size/percentage of impermeable surface) and increase in impermeable surface is proposed.

g. Stormwater runoff from the development will not be discharging to DCC owned, piped stormwater infrastructure and the development involves 6 or more units/dwellings.
h. The stormwater secondary flow path is through private property or there is no secondary flow path.

112. The DCC does not currently have stormwater modelling and catchment information for all areas of the city so cannot confidently provide a map of where stormwater management is or isn't required. The proposed provisions of the 2GP provide flexibility for SWMPs to be required in specified circumstances and for case-by-case assessment to determine other circumstances where one is needed.

113. If the need for SWMPs only applied in NDMA areas, as requested by some submitters, an option for achieving adequate stormwater management outside NDMAs would be to manage the need for SWMPs using the impermeable surfaces rule (15.6.10.1.ii)) only. If this were the case, DCC we would need to do a piece of work to confirm the capacity of the city's SW networks and private watercourses and what the associated impermeable surface limits are that meet but don't exceed this capacity. This would result in different areas of the city having different impervious surface limits, regardless of zoning. Significant time and money would be required to develop this information. This approach would also do nothing to manage stormwater quality, it would only address stormwater quantity.

114. Development in greenfield areas increases the impermeable surfaces in the area, resulting in significantly more run-off than was occurring pre-development. The discharge of stormwater potentially traverses through public infrastructure, private watercourses or drains, and into waterways or the coastal environment. New development increases the volume of stormwater flowing through the stormwater network and this could result in the capacity of public or private watercourses or infrastructure being exceeded. Exceedance of capacity in the network could possibly contribute to increased stormwater flood risks or exacerbate any existing stormwater flooding issues.

115. Good management of stormwater to minimise potential effects is generally required throughout the urban area but is more important in greenfield areas due to the significant change in flow and volume of stormwater between pre and post development. It is important that potential effects on other properties are minimised through appropriate management of stormwater.

116. Stormwater discharges not only rely on capacity being available in the public stormwater system but in the private watercourses and infrastructure that exists throughout the city as well. DCC has no responsibilities for private watercourses or infrastructure and therefore has no control over ongoing required maintenance or clearing of watercourses, or the size of pipes that are installed on private property. New development increases the volume of stormwater flowing through the network and this could result in the capacity of public or private watercourses or infrastructure being exceeded and possibly contribute to increased stormwater flood risks or exacerbate any existing stormwater flooding issues. Downstream landowners have little say in what areas are being developed that may result in additional flows through their properties. 3 Waters endeavours to minimise impacts of development on other properties by trying to ensure stormwater is managed appropriately. Minimising impacts on private properties is difficult to do if there is no requirement for on-site management of stormwater to regulate flows from a site, especially during high rainfall events.

117. If comprehensive provisions are not included in the 2GP for managing stormwater discharges in greenfield areas, there is the potential for downstream effects to occur.

118. The Resource Management Act 1991 (s88 and Schedule 4) requires an application to include an assessment of actual or potential effects on the environment and that this information must be provided in sufficient detail to satisfy the purpose for which it is required. Information needs to

be provided by applicants with resource consent applications (in the form of a stormwater management plan) so 3 Waters can consider the actual and potential effects from a proposed development/subdivision/activity on stormwater networks, including effects on neighbouring or downstream private landowners that may be impacted by the stormwater from that development/subdivision/activity, and ensure effects are appropriately managed.

119. When considering an application for a resource consent, Section 104(1)(b) of the RMA requires the consent authority to have regard to any actual and potential effects of the activity, as well as various planning documents, including National Policy Statements. The fundamental concept of the National Policy Statement for Freshwater Management (NPSFM) 2020 is 'Te Mana o te Wai', a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. The NPSFM applies to all freshwater and therefore stormwater management is required as stormwater is often discharged to freshwater.

120. DCC has role to implement and give effect to the NPSFM - local authorities must –

> *manage freshwater, and land use and development, in catchments in an integrated and sustainable way to avoid, remedy, or mitigate adverse effects, including cumulative effects, on the health and well-being of water bodies, freshwater ecosystems, and receiving environments*.

121. Consideration and implementation of these documents is essential when DCC is considering consent applications and how stormwater should be managed.

Rule 9.9.X.3.d

122. You have requested comments on submissions on Rule 9.9.X.3.d.

123. Several submitters requested the following amendments to Rule 9.9.X.3.d:
    i. Clauses (i) and (ii) be amended to require the calculation of pre-development flows at a 10% AEP for the critical storm duration of the development site (i.e. not the critical storm duration of the broader catchment). The critical storm duration of the development site will be equal to the time of concentration (ToC) across the development site. Where the stormwater management plan relates to a greenfields NDMA site, then the critical storm duration of the broader catchment should also be assessed.
    ii. Amend clause (iii) as follows: "...for the purposes of this requirement 'critical storm duration' means the duration of rainfall event likely to cause the highest peak flows ~~or water levels~~"

124. Clause (i) – the wording of clause (i) was considered during the mediation of 2GP appeals. To be consistent with wording agreed as part of mediation, we suggest the wording be modified such that the assessment of pre-development and post-development flows and detention volumes can exclude the critical duration of the catchment upstream of the point of discharge where agreed to by DCC. An example of when this might be appropriate is where direct discharge to the coastal environment is feasible.

125. Clause (iii) - the requested change was considered during mediation on 2GP appeal sites and no change was proposed. Where water levels are known or able to be assessed these can also be used to determine the critical duration.

Rule 9.9.X.3.e

126. You have requested comments on submissions on Rule 9.9.X.3.e.

127. Several submitters request amendment to Rule 9.9.X.3.e to allow for consideration of alternatives if justification is provided and to apply the rule only to the subdivision area, rather than the whole NDMA.

128. Clause e. describes what must be considered in assessing the difference between pre-development flows and post-development flows. It is necessary for the assessment to compare the difference between pre-development flows and the maximum impermeable surfaces permitted in the underlying zone to ensure the assessment takes into account the maximum possible development, its impact on impermeable surfaces and stormwater run-off, and that the stormwater management system is designed and constructed such that it can accommodate the maximum permitted development. Failure to do so increases the risk of the development causing adverse effects because, if not assessed in this way, the stormwater management system may be undersized for the development and result in stormwater flooding problems within or outside of the development.

129. We do not consider there are appropriate alternatives.

130. The intention of the provisions is that stormwater management for the entire NDMA is considered as a whole system. This means that the stormwater management plan does need to consider the whole site. Assessments of the whole NDMA will provide the information needed to determine the appropriate management system needed or may provide information that would support stormwater management in a different format, not for the whole NDMA. We acknowledge that one system to manage stormwater across the entire NDMA may not always be the most appropriate option, but where appropriate, is preferable. We are considering criteria for where one stormwater management system for the entire NDMA may not be appropriate and these could be added as assessment matters. Where this approach was determined by DCC to be appropriate, multiple stormwater management plans may be necessary for the NDMA. Consideration of pre and post flows for the area covered by the management plan would still be required so an appropriate stormwater management system can be designed. Criteria under consideration for where one stormwater management system for the entire NDMA may not be appropriate include:

- Where the land contours or existing watercourses are such that different landowners sites drain to different catchments or watercourses within the NDMA making a single stormwater management system for the whole NDMA impractical.

An assessment of the whole NDMA would still be required, to provide the information needed to determine the appropriate management system and provide information that would support stormwater management in a different format. As outlined earlier, the presence of multiple landowners within an NDMA should not be used as a lone reason to pursue multiple stormwater management systems. DCC is prepared to facilitate discussions between landowners to achieve the best stormwater management outcome for the long-term. Currently the 3 Waters group has insufficient staff resourcing for such a facilitation role and additional staff resource would likely be required.

Rule 9.9.X.3.i and 9.9.X.3.k

131. You have requested comments on submissions on Rules 9.9.X.3.i and 9.9.X.3.k

132. Several submitters request Rule 9.9.X.3.i and 9.9.X.3.k be amended by providing examples of methods for stormwater quality treatment and clarify expected degree of success.

133. To be consistent with wording agreed as part of mediation of 2GP appeals, we suggest that (k) be amended to read "*include the design and location of stormwater quality treatment that demonstrates the expected quality of stormwater leaving the specified system and its treatment of at least the 'first flush' volume (90th percentile daily rainfall depth) or flow rate (90th percentile rainfall intensity) in accordance with best practice techniques for at least 75% Total Suspended Solids (TSS) removal on a long-term average basis.*"

134. In response to the submitters request for examples of acceptable stormwater treatment, it is recommended that Note 9.9.XA be amended to include reference to design guides that indicate stormwater treatment devices that can achieve the required performance objective. As DCC has not yet produced its own guidance, guidelines provided by other councils can be used to guide development.

135. Guidelines considered appropriate to guide stormwater management are:

Design guideline manual stormwater treatment devices, Technical Publication (TP) 010, Auckland Regional Council, 2003.
http://www.aucklandcity.govt.nz/council/documents/technicalpublications/TP10%20Stormwater%20management%20devices%20design%20guideline%20manual%202003.pdf

Stormwater Management Devices in the Auckland Region, Guideline Document (GD) 01, Auckland Council, 2017.
https://content.aucklanddesignmanual.co.nz/regulations/technical-guidance/Documents/GD01%20SWMD%20(Amendment%202).pdf

ORC submission

136. You have requested comments on ORC submission (s271.015) on Rule 9.9.X.

137. The submitter requests that the matters in Rule 9.9.X be addressed through resource consent for all activities listed in policies 9.2.1.Z, 9.2.1.Y and 9.2.1.X and that activity status be at least restricted discretionary. As noted earlier in response to submission on Policy 9.2.1.X, it is unreasonable and unnecessary to require a stormwater management plan in all instances.

138. The submitter also seeks to be recognised as an affected party to any consent application requiring a stormwater management plan. The rules included in the 2GP should provide an adequate framework for DCC to assess resource consent applications and ensure adequate management of stormwater. Furthermore, as the proposed rules have flexibility in some circumstances for where DCC may ask for a SWMP after the consent has been received (outside an NDMA), it would be impossible for affected party approval to be sought at that time. However, within an NDMA when a stormwater management plan is required, it may be appropriate for ORC to be considered an affected person in acknowledgement of their joint responsibility with DCC to manage natural hazards.

139. The submitter seeks there be an objective of no change in hydrological characteristics of the site (including peak flow, volume of runoff, duration, and time of concentration) in all situations (not limited to the 1% AEP event). The submitter considers there should be no impact on the receiving environment, in particular people, property, river levels and flows, drainage schemes and flood protection schemes.

140. The provisions proposed through Variation 2 seek to manage stormwater discharge to minimise the potential downstream impacts. It is not possible to achieve development with no change in

hydrological characteristics of the site, particularly in regard to volume of run-off. New impervious surfaces resulting from urbanisation will inevitably result in increased run-off volumes. These volume increases cannot be avoided. Instead, objectives should be focussed on mitigating potential negative impacts resulting from development. Rather than adding an objective as requested by the submitter, other changes could be made to other provisions, such as the assessment rules.

141. The submitter requires that where the discharge will affect, directly or indirectly, ORC infrastructure, the 2GP must ensure its capacity will not be exceeded and that the ORC assets can operate effectively and efficiently in all situations, not just 1% AEP events. The amendments recommended above to Policy 9.2.1.Z.b specifically include reference to ORC infrastructure and the need for discharges to not have more than minor effects on the capacity of these.

142. The submitter requests allowance is made for climate change. We agree with the submitters request as climate change is a factor that should be considered when SWMPs are being prepared. We recommend that Rule 9.9.X.3 be amended so that climate change is a factor that is considered when SWMPs are being prepared. Wording to be consistent with agreements reached as part of the mediation on appeals on the 2GP would be appropriate.

143. The submitter requests the stormwater system provides for stormwater run-off from all impermeable and semi-impermeable surfaces including roads, vehicle parks, access lots, driveways and the like. The provisions proposed through Variation 2 generally do not exclude these aspects from stormwater management requirements. Some amendments recommended to rule 9.3.7.2 and 9.3.7.AA in response to other submission points may broaden requirements for these aspects to be connected to stormwater systems where they are required.

144. The submitters support of the requirement for the SWMP to be prepared by a chartered engineer is noted. The submitter suggests additional wording to read "…chartered engineer with qualifications and experience in hydrology, hydraulics, and stormwater management, design and construction". The SWMPs required for different subdivisions/developments/activities will need varying levels of detail required relative to their scale and potential effects. For example, a large greenfield subdivision will require more detail and complex assessment than a two-lot subdivision breaching the impermeable surface rules. The complexity of the stormwater assessment and management needed will influence the level of experience of the chartered engineer (or other suitable qualified person) needed. The rule allows for the skill level needed to assess different scenarios, whereas the submitters request would require a highly qualified professional to undertake the assessment even for very small scale, low impact resource consents. It should be noted that the wording currently in the provision aims to give the flexibility to allow people with differing levels of expertise to provide stormwater information and assessment of appropriate systems to reflect the complexity and scale of the subdivision/development and therefore the stormwater management system needed. This means that for large, complex subdivisions/developments the stormwater management plan would be prepared by someone with a high level of relevant qualifications and experience, however for very small, simple applications, information could be prepared by a surveyor with appropriate stormwater management experience.

145. Agreements reached as a result of mediation on 2GP appeals address some aspects requested by the submitter. It is recommended that the following wording agreed through the mediation process be used: "chartered engineer or other suitably qualified person who has (or can call on) experience in hydrology, hydraulics, stormwater design, flood risk management and construction management".

146. The submitter suggests that existing stormwater on the site should be accommodated in any new stormwater management systems installed. This is contrary to the submitter's requests for "no change in hydrological characteristics of the site". While managing existing stormwater

flowing onto, or ponding on the site might be desirable in many situations there are no requirements for this to occur. Just as there can be environmental implications of too much stormwater being discharged from a site, the reverse could also have implications, with the potential for not enough water to continue to be in natural environments such as lakes or rivers, or to impact on the flow of smaller waterways that could dry up if existing flows were no longer released from the site.

147. The submitter requests that stormwater quality is, as a minimum, no worse post development than pre-development. Rules 9.9.X.3.i, 9.9.X.3.j, and 9.9.X.3.k address stormwater quality. Compliance with rules needs to be measurable and practicable. Being able to quantify and measure to confirm that post development water quality is no worse than pre-development water quality is challenging and time consuming. Stormwater quality samples would have to be collected and analysed for a range of parameters over a range of different rainfall events and seasonal periods to develop a full picture of a sites pre-development stormwater quality, all of this would involve significant time and expense and would have to be repeated post-development, to compare the differences and provide confirmation.

148. If stormwater quality was worse post-development it could be difficult to implement further work to address shortcomings and such work may be at DCCs expense if assets have already been vested to DCC. Instead, a more practicable approach to stormwater quality management is to specify targets for contaminants that are recognised as being necessary to prevent or minimise adverse effects to the health of the receiving ecosystem.

149. The submitter requests that stormwater assets be vested in DCC. The DCC's intention is that communal stormwater management systems, such as stormwater ponds, will be vested in DCC. Provisions proposed through Variation 2 have been designed to facilitate this approach. However, there is the potential for some stormwater management systems to remain in private ownership if they are not suitable for vesting in DCC. Individual on-site stormwater management systems and private piped or open water courses that are not communal or integrated will remain in private ownership.

150. The submitter requests that the 2GP provides for a contingency, in the event that the stormwater management system fails to achieve the submitters requested objective of ensuring that there is no change in the hydrological characteristics of the site. It was unclear whether when referring to failure, the submission is referring to physical failure of the stormwater management system or failure of the stormwater management system to achieve the requested objective of ensuring that there is no change in the hydrological characteristics of the site. As such we have responded to both interpretations.

151. Firstly, physical failure of the stormwater management system. It is not possible to ensure there is a contingency option in place for every stormwater management system, should the system ever physically fail. Systems are designed to operate successfully, and with appropriate maintenance and operation, it should not be assumed that every system may fail. While failure of any system is possible, the aim is to avoid this situation. Having to design an alternate system will place additional costs on developers and may require additional land to be set aside for such purposes. This may impact the viability of developments and compromise the city's ability to provide for growth. As part of mediation of 2GP appeals wording has been agreed to ensure that stormwater management systems will operate safely (without catastrophic, rapid or structural failure) up rainfall events up to 0.5% Annual Exceedance Probability (AEP). This is to ensure that the stormwater management infrastructure will have a fail-safe mechanism.

152. Secondly, failure of the stormwater management system to achieve the requested objective of ensuring that there is no change in the hydrological characteristics of the site. As indicated earlier in this document, it is not possible to achieve development with no change in hydrological characteristics of the site and so we do not consider this to be an objective of the stormwater

management system. New impervious surfaces resulting from urbanisation will inevitably result in increased run-off volumes. Run-off volume increases cannot be avoided. Instead, objectives should be focussed on mitigating potential negative impacts resulting from development.

Wastewater Package (Change F3-2)

Policy 9.2.1.BB and the capacity of the wastewater public infrastructure network

153. You have requested comment on Policy 9.2.1.BB and the capacity of the wastewater public infrastructure network.

154. Several submitters supported retention of Policy 9.2.1.BB provided that the new development mapped areas have been correctly assessed by DCC in respect of wastewater requirements.

155. 3 Waters holds calibrated hydraulic models of the wastewater network and uses the modelling to assess network capacity. The wastewater network includes constructed wastewater overflows which discharge diluted wastewater in moderate to significant rainfall events, to reduce the risk of wastewater flooding into properties. These constructed overflows were consented in 2017 on the basis that DCC would seek to reduce or eliminate wastewater overflows. The overflows are monitored and the frequency and volume of wastewater discharges from these overflows is recorded. Wastewater overflows can also occur from manholes and private property connections.

156. Where evaluation of the models and wastewater overflow information indicates that a new development could exacerbate existing issues, DCC has considered allowing a communal wastewater detention system for the development, so that it can go ahead without adverse impact on wastewater issues.

157. The communal wastewater detention system will allow storage of the wastewater from the development for a period of up to 12-24 hours and release it into the public wastewater network at a time when wastewater flows are low and there is capacity in the network. During significant rainfall events when stormwater may infiltrate into the wastewater network and reduce capacity in the network, wastewater from the development is stored for later release. The release of wastewater from the detention tank to the network is automated through the DCC system that monitors flows within the network and can release wastewater from the tank when there is capacity in the network.

158. We consider the modelling and assessments undertaken provide sufficient information to determine appropriate wastewater management.

NDMAs already zoned for residential development, with existing connection rights

159. You have requested comment on the submissions on NDMAs already zoned for residential development, with existing wastewater connection rights.

160. Several submitters seek amendment to Rule 9.9.Y to only refer to NDMAs that do not have existing connection rights (at the density currently allowed).

161. Most areas that are already zoned residential in the 2GP are considered to have a right to expect to be able to be serviced, at the density provided by the current zoning. Some residential zones (unserviced Township and Settlement or Large Lot Residential zones) are not provided with servicing or may have a 'no DCC reticulated wastewater mapped area' overlay. DCC endeavours

to provide servicing, however, if capacity is not currently available in the wastewater network, as is the case for some undeveloped residential areas, on-site wastewater management may be required to facilitate the development occurring in the timeframes desired by the developer. The requirement for wastewater detention tanks to facilitate some developments is an interim measure until infrastructure can be upgraded to provide the required capacity. Permitting detention tanks allows planning for upgrades in the medium to long term, while still allowing growth to be provided in the short term.

162. Areas that have a transitional zoning or are being rezoned through Variation 2 or appeal processes are being considered for rezoning on the basis that on-site wastewater detention tanks are necessary to address capacity issues in the wastewater network. Without agreement and requirements for on-site detention tanks, DCC would not support the rezoning of these areas as they would not satisfy the criteria for release of land in the RTZ (Rule 12.3.1.2.b.i.3).

163. The alternative approach would be that development of these areas does not occur until capacity is available. This could result in significant delays for some developers, as DCC cannot upgrade wastewater capacity across the whole city to facilitate growth in the short term.

Alternative options for wastewater servicing on large greenfield sites

164. You have requested comment on the submissions on alternative options for wastewater servicing on large greenfield sites.

165. Several submitters seek amendment to 9.9.Y.3 to allow alternative options for wastewater servicing on large greenfield sites if the written approval of all adjoining landowners within the NDMA cannot be obtained. Submitters suggest alternative on-site solutions or for DCC to acquire land for infrastructure.

166. Possible alternatives may include:

On-site individual wastewater treatment systems

167. We are not in favour of on-site individual wastewater treatment systems in most residential zones, except where wastewater services are not provided (i.e. unserviced Township and Settlement and Large Lot residential zones). In these unserviced residential zones, individual septic tanks and disposal areas are anticipated, and the zoning and associated site sizes specified in the 2GP have been set to allow for this to occur.

168. In other residential zones on-site servicing is not anticipated or readily provided for. Future landowners may not be in favour of having on-site wastewater treatment systems and may seek connection to public infrastructure, given that such a service is anticipated to be associated with the residential zoning. Future connection can then be problematic as retrospectively installing infrastructure to connect already developed properties and areas to the network can have issues with location of new infrastructure into established areas. Providing servicing to one-off properties within an area that is currently self-serviced or asking all properties to connect to the network can be a costly exercise, and one that many landowners may not find acceptable or feasible.

169. There is also a reliance on individual landowners to ensure that their systems are maintained and functioning correctly.

On-site individual wastewater detention systems

170. Examples of such systems in Dunedin are the Allanton wastewater scheme. We are not in favour of on-site individual wastewater detention systems when gravity options are available. On-site individual wastewater detention systems typically require small pump stations for each

property. These systems have increased operating and maintenance requirements and costs and increased carbon footprint compared to gravity sewer networks.

Private communal wastewater treatment systems

171. We are not in favour of private communal wastewater treatment systems as they are reliant on private individuals to ensure the continued correct functioning of the wastewater treatment system. Reliance on private maintenance can be problematic if issues occur and the private individuals fail to maintain or operate the system correctly. Problems can also occur if the system owner/operator no longer wishes to, or is no longer able to, operate the system.

172. If private treatment systems are installed in new developments where DCC has plans to upgrade infrastructure, DCC strategic planning may have allowed capacity for those developments. Capacity would then be over supplied and DCC would not receive wastewater rates to contribute toward the cost of infrastructure.

Not all landowners in a NDMA agreeing to connect and contribute to costs

173. Where all landowners in a NDMA do not want to develop at the same time and connect, and/or contribute to costs and secure capacity for their development, alternative arrangements should be considered. If multiple landowners within a NDMA with less than 50 residential units each are willing to combine their developments (to reach limit set of more than 50 residential units for wastewater detention tanks to be an acceptable option) and agree to collectively provide the detention tank and land required for it, then development may be able to proceed. Criteria where DCC may consider alternatives are:
    - There must be more than one landowner within the NDMA
    - Where the land contours are such that different landowners' sites drain to different catchments making a single communal wastewater detention system for the whole NDMA impractical.

174. These criteria could be added to the assessment provisions in the 2GP for matters that will be considered when developers seek to contravene these requirements. There also needs to be consideration of the implications of allowing some landowners to connect to the wastewater detention system without requiring all landowners to connect. Assessment on a case-by-case basis is needed.

175. We are concerned that allowing development to proceed without all landowners agreeing (and contributing to costs and securing capacity) could result in the inability for other landowners in the NDMA to develop in the future as they may not have residential unit numbers required to allow the installation of a wastewater detention tank. The intention is also to minimise the number of wastewater detention tanks installed in the city as there are ongoing costs for DCC in managing the tanks and systems. The intention of the requirement for communal systems is to have systems that are effective, efficient, and economical, and avoid the need for multiple tanks within one NDMA.

176. For those landowners within an NDMA who do not enter into an agreement with other landowners in the NDMA, DCC may choose to prevent development to proceed until capacity is available within the wastewater network.

177. Some amendment to Rule 9.9.X.3 and assessment rules will be required to reflect this.

Submission by the ORC (S271.030)

178. You have requested comment on the submission by the ORC (S271.030) on Rule 9.9.Y.

179. The submission requests that "communal" is deleted and replaced with "integrated" in reference to wastewater detention systems, and that wastewater detention systems are vested

with the DCC. The submitter has misinterpreted the use of the term communal to mean private communal wastewater detention systems, this is not the DCC's intention. The detention system and the land where it is located will be vested in DCC. The developer will be required to agree to this for DCC to agree to rezoning and development. We consider the use of the term 'integrated communal' is acceptable and would be consistent with the changes recommended in relation to stormwater provisions. Alternatively, a definition of 'communal wastewater detention system' could be included in the 2GP to provide clarity.

Policy 2.7.1.2.Y

180. You have requested comment on the submissions on Policy 2.7.1.2.Y.

181. Several submitters suggested amendment to Policy 2.7.1.2.Y for a "clawback mechanism" to allow the DCC to pay developers for infrastructure vested in DCC and for DCC to recover costs of infrastructure where a NDMA has multiple landowners.

182. For DCC to be able to recover infrastructure growth costs through development contributions (DCs), the projects have to be planned through strategic planning and approved through the 10-year plan and incorporated into the DC Policy as a specific project or as part of the overall growth projects used to determine DC.

183. While DCs are a good option for recovering costs for DCC growth projects, they do not generally provide an option for use for private projects that are not part of DCCs network strategic planning.

184. If, as proposed by Variation 2, developers are required to install communal wastewater detention systems on-site at their cost, DCC will have more time to get all the infrastructure upgrades required planned and carried out, or some upgrades may not be needed as quickly as they otherwise would. If developers don't install communal wastewater detention systems on-site, DCC will need to do more, bigger and expensive upgrades, therefore DCs would be significantly higher to cover these costs and there would need to be restrictions on when rezonings or intensification could occur as there would be delays in when development could occur until infrastructure capacity was available. Wastewater overflow risk also increases placing the network, other properties, and the environment at greater risk. Either way the developer has to pay for the costs associated with growth and there isn't necessarily anything to clawback, as suggested by the submitters.

185. The submitters also suggested DCC have a mechanism to compulsory acquire easements to provide for infrastructure in NDMAs.

186. It is unclear what easements submitters are suggesting DCC acquire. When developers install infrastructure that will be vested in DCC, any easements needed would be recorded on survey plans and titles. If the submitter is meaning easements needed across other properties, for example for wastewater pipes, this would also be done as part of subdivisions and would normally be secured by developers as part of the subdivision process.

Chartered Engineer – Preparation of Wastewater Management Plans

187. You have requested comments on submissions on Rule 9.9.Y.2 and whether the wastewater management plan must be prepared by a chartered engineer, or whether there are other types of engineers or land development professionals who would be suitably qualified and experienced to prepare them.

188. Several submitters have requested that Rule 9.9.Y.2 be amended to replace the words 'chartered engineer' with 'suitably qualified and experienced engineer or other land development professional'.

189. The wastewater detention tanks are alternative infrastructure. They are not 'normal' infrastructure that land developers routinely design, construct and commission and have good experience with. There are no industry standards for this type of infrastructure. For these reasons we would like the wastewater management plan to be prepared by a chartered engineer to give us the confidence that the system will function as required.

Application of the 'no DCC reticulated wastewater mapped area' – NWRA7 within NDMA03

190. The submission by Michael Ovens (s199.01) commented on the NWRA7 and that the DCC needs to supply services at some stage and the area has a site size limit of 1000m^2.

191. Due to previously identified concerns about known wastewater overflows immediately downstream (corner of Patmos Ave and Malvern St) in wet weather, the area has a 'No DCC reticulated wastewater area overlay' proposed through Variation 2 to minimise the impact of development on this issue.

192. 3 Waters have re-assessed wastewater servicing for the site and determined that although wastewater overflows have been recorded downstream of the site in significant rainfall events, development of the site at the proposed density is unlikely to make these wet weather overflows significantly worse. The 'no DCC reticulated wastewater mapped area' can be removed from the property.

Justification for Wastewater Constraints Mapped Area 4 (WCMA4) (Minor Change)

193. You have requested comments on the submission from Geraldine Ling (s84.001) and an explanation of why the property is included in a Wastewater Constraint Mapped Area (WCMA).

194. The submitter has requested that the WCMA not be applied over the property as it wasn't present on the 2GP map when they purchased the property at the end of last year.

195. The Waverley area proposed for zoning as GR2 in the 2GP was assessed for its wastewater capacity as part of the assessment prior to rezoning as GR2. 3 Waters determined that an Infrastructure Constraint Mapped Area (now WCMA) needed to be applied if it was rezoned GR2 to limit permitted development to the existing GR1 levels and that consent be required for medium density development so that wastewater capacity could be assessed on a case-by-case bases. Assessment of each application allows consideration of any infrastructure upgrades that might have occurred or any differences in wastewater capacity in the relevant parts of the network, relevant to the location of any property being developed.

196. There is a constructed wastewater overflow downstream of the rezoned area (Marne St) that is impacted during high rainfall events. While DCC had thought that renewals carried out in the area had reduced the frequency of wastewater overflows and created capacity for future development, further monitoring has found that this is not the case and that this constructed wastewater overflow continues to be impacted during high rainfall events. Increased development of the area would contribute to making these wet weather overflows worse.

197. While the submitters concern about the wastewater limitations on development potential of the site is understandable, it is noted that the submitter has been granted a resource consent for development of two additional residential units on the site without the wastewater constraints being applied to their development, so have been permitted to undertake higher

density development than would have been permitted if the constraint overlay had been mapped correctly. The submitter is therefore unlikely to be negatively impacted by the addition of the overlay.

Reference to the DCC Water Bylaw (Change F4-1)

198. You have requested comments on the DCC submission (OS187.026) which sought a review of provisions to determine if a note to plan users regarding separate water supply connections, should be added.

199. Rules about connection (point of supply) set-up are outlined in the Water Bylaw 2011. The 2GP does not need to, nor is it appropriate to, contain rules for water connection set-up. However, the inclusion of a note to advise plan users that they need to look at the Water Bylaw for those rules, would be beneficial.

200. Section 7.2 of the Water Bylaw 2011 outlines the requirements and water connection set-ups for individual customers. An individual point of supply is required for each customer. Land with multiple ownership, such as cross lease, leasehold, tenancy in common, strata title, and unit title are required to have individual supply. For rear lots on a right-of-way with three or more customers, or a single property with multiple units on it (e.g. retirement villages) a private shared pipe to service the properties is provided for if a body corporate is set up. The body corporate is the customer and is responsible for maintenance and metering/testing costs. The body corporate may be responsible for the distribution (and charging) of water to properties within the body corporate area.

201. Individual water supply connections are required to ensure that potential water safety issues arising from backflow and issues with water billing of shared connections are appropriately managed. These issues can be compounded when multiple residential units on a site are then subdivided and sold on to separate landowners.

202. DCC has responsibility under the Health Act 1956 to provide wholesome water to its customers and prevent contamination of the network using backflow protection devices. The 'point of supply' is the connection point between the DCC network and the customers private pipework. For most urban properties with individual connections the point of supply is at the property/road boundary where the manifold box is located. The manifold box contains valves, backflow prevention devices, and meters (where required).

203. Properties on shared private water infrastructure are at greater risk of water contamination if a backflow event occurred. Where properties do not have individual connections, backflow prevention devices are at the point of supply (road boundary) to protect the DCC network, however, the properties are less likely to have individual backflow protection. The lack of individual backflow protection means that if a backflow event occurred within the private shared infrastructure, the water supply to the connected properties could be contaminated if contaminants from one of the properties was drawn back into the shared system.

204. Responsibility for maintenance and backflow device testing may not be clear to property owners on private shared infrastructure. Backflow prevention devices at the road boundary connected to shared private infrastructure need to be tested yearly to check they are functioning correctly. Problems occur where shared infrastructure is installed without a body corporate being created as there is no one customer to take responsibility for the cost of yearly testing or maintenance. Recovery of costs can be problematic when there is no clear owner to take responsibility. Responsibilities for maintenance of private infrastructure may not be clear to landowners and therefore leaks may not be fixed.

205. We recommend that a note be included in the 2GP as per the suggested wording below.

Note 9.3.7.YA – General Advice Note
The DCC Water Bylaw outlines the water supply connection setup requirements for customers. See the Water Bylaw for details.

MAPPING NDMA OVER EXISTING GREENFIELD RESIDENTIAL AREAS (NDMA 2-15)

206. You have requested comments on the application of the new development mapped area (NDMA) to areas that are already zoned residential or are subject to a Residential Transition Overlay Zone, with respect to the new stormwater provisions that would apply as part of the NDMA.

Review of areas already zoned residential or Residential Transitional Zone (RTZ)

207. We have reviewed the areas that are already zoned residential or RTZ where it has been proposed to apply the NDMA to determine whether it is necessary to do so from a stormwater management perspective and have made recommendations for each area as to the best method to manage stormwater issues on these areas if different to the proposal. The outcome of that assessment and recommendations are summarized below:

NDMA over existing residential zoned land:

NDMA	Location	Zone	Recommendation for stormwater management (including if need NDMA)	Reason
NDMA 02	Emerson / Blackhead Road, Concord	over General Residential 1 zoned land with a structure plan mapped area	NDMA required	• Majority of downstream network is private. • Unknown capacity of downstream watercourses. • Erosion, flood, damage risks to downstream properties. • Historical flood damage to downstream properties. • Flood hazard to downstream properties identified by ORC flood hazard report. • Further degradation of Kaikorai Stream is counter to principles of Te Mana o te Wai.
NDMA 03	Patmos Ave, Pine Hill	over Large Lot Residential 1 zone with a structure plan mapped area	NDMA required	• No downstream public stormwater network, all private watercourse. • Unknown capacity of downstream watercourses. • Flood hazard to downstream properties identified by ORC flood hazard report. • Potential degradation of Water of Leith is counter to principles of Te Mana o te Wai.

NDMA 05	Dalziel Road, near Taieri Road	over Large Lot Residential 1 zone with a structure plan mapped area	NDMA required	• No downstream public stormwater network, all private watercourse. • Unknown capacity of downstream watercourses. • Flood hazard to downstream properties identified by ORC flood hazard report. • Frasers Creek has high ecological value. • Potential degradation of Frasers Creek is counter to principles of Te Mana o te Wai.

NDMA over existing RTZ areas:

NDMA	Location	Zone	Recommendation for stormwater management (including if need NDMA)	Reason
NDMA 04	Bradford near Glenelg Street	over Rural Residential 2 zone with an RTZ (GR1) and a structure plan mapped area	NDMA required	• No downstream public stormwater network, all private piped and open watercourse. • Unknown capacity of downstream watercourses, but some sections known to have insufficient capacity. • Historical flood damage to downstream properties. • Flood hazard to downstream properties identified by ORC flood hazard report. • Further degradation of Kaikorai Stream is counter to principles of Te Mana o te Wai.
NDMA 06	St Leonards, near Burkes Drive	over Rural Residential 1 zone with an RTZ (GR1)	• NDMA required due to limited information on stormwater behaviour on site.	• No downstream public stormwater network, or private watercourse identified, only overland flow paths. • No known issues with flooding, erosion. • Being at the bottom of the catchment, attenuation to manage stormwater quantity may not be necessary. • Stormwater quality is the primary driver for stormwater management in this case. • Provisions allowing for a SWMP would be adequate.

NDMA 07	Opoho, near Montague Street	over Rural Hill Slopes zone with an RTZ (GR1)	NDMA required	• Majority of downstream network is private. • Unknown capacity of downstream watercourses. • Flood hazard to downstream properties identified by ORC flood hazard report. • Further degradation of Lindsay Creek is counter to principles of Te Mana o te Wai.
NDMA 08	Pine Hill, near Pine Hill Road	over Rural Hill Slopes zone with an RTZ (GR1)	NDMA required	• No downstream public stormwater network, all private watercourse. • Unknown capacity of downstream watercourses. • Flood hazard to downstream properties identified by ORC flood hazard report. • Potential degradation of Water of Leith is counter to principles of Te Mana o te Wai.
NDMA 09	Balmacewen Road, at part of Balmacewen Golf Course	over Rural Hill Slopes with an RTZ (GR1)	NDMA required	• No downstream public stormwater network, all private watercourse. • Unknown capacity of downstream watercourses. • Flood hazard to downstream properties identified by ORC flood hazard report. • Potential degradation of Water of Leith is counter to principles of Te Mana o te Wai.
NDMA 10	Halfway Bush, near Taieri Road	over Rural Residential 1 zone with an RTZ (GR1)	NDMA required	• No downstream public stormwater network, all private watercourse. • Unknown capacity of downstream watercourses. • Flood hazard to downstream properties identified by ORC flood hazard report. • Frasers Creek has high ecological value. • Potential degradation of Frasers Creek is counter to principles of Te Mana o te Wai.
NDMA 12	St Clair Golf Course	over Rural Coastal zone with an RTZ (GR1)	• NDMA for stormwater required over the whole site to ensure the whole area is properly assessed.	• Majority of downstream network is private. • Part of the site discharges to St Clair and South Dunedin catchments where there are known flooding issues. • Other areas discharge to coast via Rural Res 1 and Coastal Rural land

				where provisions allowing for a SWMP would be adequate.
NDMA 13	St Albans Street, Kaikorai Valley	over Rural Hill Slopes zone with and RTZ (GR1) and a structure plan mapped area	NDMA required	• No downstream public stormwater network, all private piped and open watercourse. • Unknown capacity of downstream watercourses. • Flood hazard to downstream properties identified by ORC flood hazard report. • Further degradation of Kaikorai Stream is counter to principles of Te Mana o te Wai.
NDMA 14	Ettrick Street, Kaikorai Valley	over Rural Hill Slopes zone with and RTZ (GR1) and a structure plan mapped area	NDMA required	• No downstream public stormwater network, all private piped and open watercourse. • Unknown capacity of downstream watercourses, but some sections known to have insufficient capacity. • Historical flood damage to downstream properties. • Flood hazard to downstream properties identified by ORC flood hazard report. • Further degradation of Kaikorai Stream is counter to principles of Te Mana o te Wai.
NDMA 15	Salisbury Road, Kaikorai Valley	over Rural Residential 2 zone with an RTZ (GR1).	NDMA required	• No downstream public stormwater network. • Unknown capacity of downstream watercourses. • Flood hazard to downstream properties identified by ORC flood hazard report. • Further degradation of Kaikorai Stream is counter to principles of Te Mana o te Wai.

Why are NDMA needed?

208. Development in greenfield areas increases the impermeable surfaces in the area, resulting in significantly more run-off than was occurring pre-development. The discharge of stormwater potentially traverses through public infrastructure, private waterways or drains, and into waterways or the coastal environment. New development increases the volume of stormwater flowing through the stormwater network and this could result in the capacity of public or private watercourses or infrastructure being exceeded and possibly contribute to increased flood risks or exacerbate any existing flooding issues.

209. Although some existing sites zoned residential or as RTZ in the 2GP are zoned for residential development, this does not mean that the impacts of stormwater should not be appropriately managed. Good management of stormwater to minimise potential effects is generally required throughout the urban area but is more important in greenfield areas due to the significant change in flow and volume of stormwater between pre and post development. It is important

that potential effects on other properties are minimised through appropriate management of stormwater.

210. Stormwater discharges not only rely on capacity being available in the public stormwater system but in the private watercourses and infrastructure that exists throughout the city as well. DCC has no responsibilities for private stormwater watercourses or infrastructure and therefore has no control over ongoing required maintenance, clearing of watercourses, or the size of pipes that are installed on private property. New development increases the volume of stormwater flowing through the network and this could result in the capacity of public or private watercourses or infrastructure being exceeded and possibly contribute to increased flood risks or exacerbate any existing flooding issues. Downstream landowners have little say in what areas are being developed that may result in additional flows through their properties. 3 Waters endeavours to minimise impacts of development on other properties by trying to ensure stormwater is managed appropriately. This is difficult to do if there is no requirement for on-site management of stormwater to regulate flows from a site especially during high rainfall events.

211. If comprehensive provisions are not included in the 2GP for managing stormwater discharges in greenfield areas, there is the potential for downstream effects to occur.

212. The Resource Management Act 1991 (s88 and Schedule 4) requires an application to include an assessment of actual or potential effects on the environment and that this information must be provided in sufficient detail to satisfy the purpose for which it is required. Information needs to be provided by applicants with resource consent applications (in the form of a Stormwater Management Plan) so 3 Waters can consider the actual and potential effects from a proposed development/subdivision/activity on stormwater networks, including effects on neighbouring or downstream private landowners that may be impacted by the stormwater from that development/subdivision/activity, and ensure effects are appropriately managed.

213. When considering an application for a resource consent, Section 104(1)(b) of the RMA requires the consent authority to have regard to any actual and potential effects of the activity, as well as various planning documents, including National Policy Statements.

214. The fundamental concept of the National Policy Statement for Freshwater Management 2020 (NPSFM) is 'Te Mana o te Wai', a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. The NPSFM applies to all freshwater and therefore stormwater management as it frequently discharges to freshwater.

215. DCC has role to implement and give effect to the NPSFM - local authorities must –

> *manage freshwater, and land use and development, in catchments in an integrated and sustainable way to avoid, remedy, or mitigate adverse effects, including cumulative effects, on the health and well-being of water bodies, freshwater ecosystems, and receiving environments*.

216. Consideration and implementation of these documents is essential when DCC is considering consent applications and how stormwater should be managed.

What has changed since these areas were zoned or identified for future rezoning (RTZ)?

217. The DCC has identified that there are issues with stormwater discharges in the city. To address these issues the DCC is requiring new rules (through Variation 2) to improve management of stormwater from subdivisions and large developments to minimise effects on the environment, stormwater network and other properties. It is appropriate that these new provisions are

applied to existing or transitional greenfield areas to ensure stormwater is managed appropriately.

218. Legislation at a national and regional level is also changing the requirements for management of stormwater discharges to natural waterways from both a quality and quantity perspective. Greater emphasis is being placed on protection of the environment and management of contaminants and sediment that may enter waterways in stormwater discharges. DCC is required to make changes to the 2GP and management of stormwater to implement the requirements of national and regional legislation.

Potential effects of changes to GR1 zone rules

219. The anticipated maximum level of impermeable surface and therefore anticipated amount of stormwater is unchanged as a result of Variation 2. The changes to the GR1 rules from Variation 2 is not the reason for the NDMA being added, it is about better managing stormwater effects, especially the increase in flows and volume of stormwater managed as land goes from greenfield to developed, as outlined above.

What will be the implications of not applying a NDMA to these sites?

220. Greenfield sites are generally large, providing for significant amounts of development and have potential to have impacts on the stormwater network, private watercourses or other properties if stormwater is not managed appropriately. Therefore, it is important on greenfield sites that DCC has the opportunity to consider how stormwater is proposed to be managed prior to resource consent being granted, and preferably in the early stages of a subdivision or development proposal, to ensure that appropriate consideration has been given to the potential effects on the stormwater network, private watercourses and other properties, and how stormwater is best managed to minimise those effects.

221. Having the information needed for DCC to be able to assess the resource consent application and include conditions that specify works needed to manage stormwater or for works to be undertaken in accordance with an already agreed SWMP, will provide certainty for both the developer and the DCC about what is required for stormwater management.

222. Without this information being provided with the consent application (as required in NDMA), and potentially relying on a condition of consent (as provided by rules for non-NDMA sites or under operative 2GP provisions), DCC may not be able to adequately assess the potential effects of stormwater discharges from the development and ensure appropriate management of stormwater occurs to minimise effects. Applicants could object to conditions requiring preparation of a SWMP, or the planning for a subdivision or development could be advanced before management of stormwater is fully considered, or issues identified. This may make it more difficult for stormwater management to be appropriately incorporated into the subdivision or development.

223. Without the requirements of the NDMA provisions, there would be no requirement for an integrated communal stormwater management for greenfield sites or for development to connect to that system. This could result in piecemeal or individual site approaches to management of stormwater being proposed. DCC's intention is for large communal stormwater retention areas to vest in DCC so that future maintenance is undertaken to ensure they continue functioning as required.

224. If management of stormwater is proposed on a more individual basis or with facilities to service properties on a smaller scale, then the infrastructure or areas for retention/detention become the responsibility of private landowners. This can result in complicated proposals that have a high potential to not be successful in the long run, such as one person owning land, or multiple

landowners having an interest in land, containing a stormwater pond and being responsible for its future maintenance and successful functioning. Future landowners may not be aware of their responsibilities and associated liabilities or may not carry out maintenance required to ensure correct functioning of the ponds. If stormwater ponds are not appropriately managed there may be risks of flooding adjacent properties during storm events. Issues could also arise with regards to what new developments may be able to discharge to the stormwater pond.

225. Individual on-site stormwater tanks could also be proposed. These would be the responsibility of individual landowners. Depending on the design and location of the tank they may not collect all stormwater run-off from a site and therefore there may be additional stormwater discharging from the site that needs to be managed by other infrastructure.

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