SECOND GENERATION DISTRICT PLAN

Proposal to change the activity status of natural hazards sensitive activities in the North Taieri (Gordon Road) Floodway

Section 42A Report

28 July 2023

Primary Authors

Name: Katie Emma Sunley James

Qualifications: BSc (Hons), Masters in Regional and Resource Planning (with Distinction), PhD (University of Otago).

Experience: I have over 17 years of professional planning experience, mainly in local and central government sectors. I have been employed as a policy planner at Dunedin City Council since 2015, primarily working on the 2GP including drafting, s42A report writing, hearings and appeal resolution.

Role in report preparation: DCC reporting officer

Name: Andrew Cameron Maclennan

Qualifications: Bachelor of Science in Land Planning and Development from Otago University and a Master of Resource Management from Massey University

Experience: I have 10 years' planning experience working in both local government and the private sector. During this time, I have worked policy planning roles, consent processing roles, and consent applicant roles. My policy planning experience includes working for a range of Councils drafting provisions for regional policy statements, regional plans, coastal plans, and district plans. I have experience participating in Environment Court processes such as expert conferencing, mediation, and hearings on plans reviews and plan changes.

Role in report preparation: ORC reporting officer

Reviewing author

Name: Paul James Freeland

Qualifications: Masters in Regional and Resource Planning (with Distinction) from the University of Otago.

Experience: I am a Principal Policy Advisor at the Dunedin City Council, and have been employed by the Dunedin City Council for over 20 years in a range of planning positions ranging from Consents Planner to acting Policy Manager. I have primarily worked as a Senior Planner through the 2GP process and undertaken public consultation, s32 assessment, drafting, s42A report preparation and presentation, and appeal resolution.

Role in report preparation: Reviewer

Code of Conduct

We confirm that we have read, and agree to comply with, the Environment Court Code of Conduct for Expert Witnesses (Practice Note 2023).

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1 INTRODUCTION

1.1 Purpose of the Officer's Report

1. This report is prepared under the provisions of section 42A of the Resource Management Act 1991 (RMA) to:

    - Assist the Environment Court in making its decisions on the appeal by Otago Regional Council on the Second Generation District Plan for Dunedin (2GP) to change the activity status for natural hazards sensitive activities to prohibited in the Gordon Road Floodway by applying a Hazard 1A (flood) overlay zone to some or all of the area (proposed change).
    - Provide submitters with information about how their submissions have been evaluated and the recommendations made by officers.

2. The evaluations and recommendations presented in this report are based on available information including information contained in submissions.

3. In evaluating the submissions, the matters considered include:

    - whether a decision requested falls within the functions of Dunedin City Council (DCC) under section 31 of the RMA;
    - the matters to be considered in the preparation of District Plans as outlined in section 74, including:
        - the matters outlined in section 32 of the RMA
        - the provisions of Part 2 of the RMA
        - giving effect to the partially operative Otago Regional Policy Statement and having regard to the proposed Otago Regional Policy Statement
        - having regard to the Dunedin Spatial Plan;
    - the required content of district plans as outlined in section 75, including giving effect to the operative regional policy statement, proposed regional policy statement and any national policy statements;
    - any restrictions on rules as outlined in section 76.

1.2 Scope of Report

4. This report responds to the 30 original submissions received relating to the activity status of natural hazards sensitive activities and the related flood hazard overlay zone in the Gordon Road Floodway area. There were no further submissions.

1.3 Structure of Report

5. This report is structured as follows:

    - Background: the statutory and planning framework for managing natural hazards such as flooding in Dunedin, description of the Gordon Road floodway, the ORC

designation and flood protection management bylaw, the existing land use in the floodway and the ORC submission and appeal.

- Key resource management issue: the history of flooding and flood risk in the area and modelling of the flood risk in the Gordon Road Floodway.
- Proposed change: outline of the proposed change to Hazard 1A (flood) overlay.
- Consultation: description of consultation undertaken with landowners and residents in the Gordon Road floodway.
- Submission analysis: overview and analysis of submissions including assessment and responses to issue raised from reporting officers
- Options evaluation and recommendations: outline of options for assessment and ORC and DCC assessment of options and recommendations including Section 32AA evaluations.
- Appendices: summary of submissions, drafting for proposed changes to the plan and summary of background information.

6. The report is co-authored by the DCC and ORC reporting officers, with the background section in Section 2 and submissions analysis in Section 3 being written by the officer that is most relevant in term of the functions of the ORC and DCC. The options evaluation in Part 4 includes a separate evaluation and recommendations from each of the reporting officers.

2 BACKGROUND

2.1.1 Resource Management Act 1991

7. Under section 6(h) of the RMA the management of significant risks from natural hazards is a matter of national importance and under s7(i) particular regard shall be had to the effects of climate change. ORC and DCC both have functions in this regard.
8. Under section 30(1) of the Act the functions of the ORC include:

"(c) the control of the use of land for the purpose of—…

(iv) the avoidance or mitigation of natural hazards:"

9. Under section 31(1) of the Act the functions of the DCC include:

"(b) the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of—

(i) the avoidance or mitigation of natural hazards; and"

10. Under section 62 of the Act the RPS must state which local authority is responsible for the control of the use of land to avoid or mitigate natural hazards or any group of hazards.
11. Part C of RPS 2019 gives these functions to territorial authorities except in the beds of lakes, rivers and wetlands and in the CMA.

2.1.2 Dunedin Spatial Plan

12. Dunedin Towards 2050 – A Spatial Plan for Dunedin provides a strategic direction for Council. Objective ESR 5 (relating to an environmentally sustainable and resilient city) is that:

    The threats posed by natural disasters and climate change are reduced.

13. Policy (a) under this strategic objective is to 'Discourage development in areas subject to, or potentially subject to instability, severe flooding or tidal inundation in future'.

2.1.3 Management of natural hazards in the Otago Regional Policy Statement

14. Both the Partially Operative Regional Policy Statement 2019 (PORPS19) and the Proposed Regional Policy Statement 2021 (pRPS21) adopt a risk-based approach to natural hazard management, which aims to ensure that the risk to people, communities and property from natural hazards do not exceed a tolerable risk, and that people, communities and property are prepared for and able to adapt to the effects of natural hazards, including climate change.

15. The natural hazard provisions within the PORPS19 can be summarised into four key areas:

    - The identification of natural hazard risk[1] which requires an assessment of the natural hazard, the likelihood of an event, the consequence of an event and finally the risk to people, property and communities.
    - The management of natural risks[2], which includes the requirement to manage natural hazards having particular regard to the likelihood and consequences of natural hazard risk[3], and also avoiding activities that result in significant risk from natural hazard[4]. It also includes a requirement to reduce existing natural hazard risk through a variety of different approaches.[5]
    - A requirement to adopt a precautionary approach where the natural hazard risk to people and communities is uncertain or unknown, but potentially significant or irreversible[6] (Policy 4.1.8)
    - Direction on use of hazard mitigation structures[7].

16. These four themes are largely replicated within the pRPS21. However, within the pRPS21 the process for identifying and managing natural hazards risk is more prescriptive. The pRPS21 includes Appendix APP6 – Methodology for natural hazard risk assessment. APP6 requires an assessment of the likelihood and consequences of a natural hazard event. This assessment is used to determine whether the natural hazard risk of a particular event is 'significant'

[1] Policies 4.1.1, 4.1.2, 4.1.3, and 4.1.4
[2] Policies 4.1.5, 4.1.6, and 4.1.7
[3] Policy 4.1.5
[4] Policy 4.1.6(a)
[5] Policy 4.1.7
[6] Policy 4.1.8
[7] Policies 4.1.9, 4.1.10, and 4.1.11

'tolerable' or 'acceptable'. Once the level of natural hazard risk is identified, for new activities Policy HAZ-NH-P3 requires that:

- Significant natural hazard risk is avoided.
- Tolerable natural hazard risk is managed so that it does not become significant.
- Acceptable natural hazard risk is maintained.

17. Submissions have been received on the pRPS21 and the hearing has begun but no decision have yet been made by the hearing panel.

2.1.4 Management of natural hazards in the 2GP

18. Dunedin is vulnerable to a range of natural hazards including flooding from rivers, resulting from extreme weather events. The 2GP sets up a framework for managing activities based on their sensitivity to hazards, with consideration of the likelihood and consequences of natural hazards and identification of areas that are at risk from different natural hazards.

2.1.4.1 *Natural hazards strategic objective and policies*

19. The strategic direction for managing natural hazards in Dunedin is set out in Objective 2.2.1, which seeks that the risk to people, communities, and property from natural hazards, and from the potential effects of climate change on natural hazards, is no more than low.
20. The 2GP takes a risk based approach to the management of natural hazards including flooding. Policy 2.2.1.3(a) and (b) require that areas with risk from flooding are identified and included in the Plan as follows:

    - in the Hazard 1A (flood) Overlay Zone, include areas that are part of a flood protection scheme which have a crucial role in the conveyance or storage of floodwater where there may be a high risk to people and property and of transference or exacerbation of risk elsewhere
    - in the Hazard 1 (flood) Overlay Zone, include areas that have a crucial role in the conveyance or storage of floodwater where there may be a high risk to people and property and of transference or exacerbation of risk elsewhere, but where prohibited activity status is not seen as appropriate.

21. Policy 2.2.1.6 requires that the risk posed by natural hazards is managed, so that it is no more than low, including through rules that:

    - change the activity status based on the sensitivity of the activity and the level of risk associated with an identified hazard over time
    - use performance standards on permitted and restricted discretionary activities, wherever appropriate
    - provide for natural hazard mitigation activities where appropriate
    - manage subdivision in a way that considers future land use and development.

22. Policy 2.2.1.8 directs that where there is incomplete or uncertain information about natural hazards a precautionary approach is taken and applicants are required to demonstrate that risk will be no more than low.

2.1.4.2 *Determining risk*

23. The 2GP provisions for natural hazards are contained in the Natural Hazards section (Section 11) which is one of the 'city wide provisions'[8] sections in the plan. Section 11.1.2 – Guidance on Risk outlines the approach taken in the 2GP, which aims to achieve a balance between enabling people to use their property without putting themselves at risk.

24. Risk is defined in the 2GP as meaning the likelihood of a natural hazard event occurring, in combination with the potential adverse consequences of that event. Table 11.1.2A shown below sets out how the combination of likelihood and consequence is used to produce a risk assessment of low, moderate, or high risk.

Table 11.1.2A Risk Guidance

Likelihood	Minor consequences	Moderate consequences	Major consequences
Very likely (less than 1:50 (1 in 50 year event) or annual exceedance probability (AEP) 2% or more)	Low to Moderate risk	Moderate to High risk	High risk
Moderately likely[1] (1:50 - 1:200 or AEP range 0.5% to 2%)	Low risk	Moderate risk	High risk
Unlikely (1:200 - 1:500 or AEP range 0.2% to 0.5%)	Low risk	Low risk	Moderate risk
Very unlikely (1:500 to 1:2500 or AEP range 0.04% to 0.2%)	Very low risk	Low risk	Moderate risk
Extremely unlikely (more than 1: 2500 or AEP 0.04% or less)	Very low risk	Very low risk	Low risk

[1] *Where likelihood is unknown or poorly established, use 'moderately likely'.*

25. 'Minor consequence' is defined as:

    For the purposes of the natural hazards provisions, minor consequences as a result of a natural hazard event include:

    - limited property damage that may be repairable without access to insurance, such as cracks in walls or wet foundations
    - minor, non-life threatening injuries
    - localised (rather than district-wide) economic impact; and
    - restricted site access to a site for no more than 2 days due to flood waters, but where safe access is still possible on foot.

26. 'Moderate consequence' is defined as:

    For the purposes of the natural hazards provisions, moderate consequences means having at least 2 of the following outcomes as a result of a natural hazard event:

    - serious structural damage to property which is costly, but still repairable, where access to insurance is almost always necessary to fix damage
    - a potential for significant injury

[8] City wide provisions relate to specific topics managed at a city-wide scale; they are not stand along and must be read alongside the zone rules that link to them.

- physical isolation on-site for more than 2 days at a time
- potential for economic impact that may be felt at a district-wide scale; and
- some reliance on civil defence.

27. 'Major consequence' is defined as

> For the purposes of the natural hazards provisions, major consequence means having at least 2 of the following outcomes as a result of a natural hazard event:
>
> - significant property or asset damage or loss, including structural damage that is extensive and so severe that it may lead to a property being abandoned or an asset requiring complete replacement
> - a likely potential for long term displacement, deaths or serious injuries
> - potential for significant effects to be felt over a wider area, including public health issues
> - potential for economic impact to be felt at a regional scale; and
> - significant civil defence assistance being required, including temporary shelter or evacuation.

28. Areas in Dunedin identified as being at risk of natural hazards are managed through different overlay zones representing the type of hazard and level of risk. Four of the overlay zones identified in the 2GP relate to flooding, with Hazard 1A and Hazard 1 (flood) overlay zones indicating that an area is considered to be high risk. A Hazard 2 (flood) overlay zone is considered a moderate risk.

29. Section 11.1.2 also provides guidance on quantifying the potential risk associated with a consent application. It states that:

> *Site specific investigation will identify local variation in the risk level specified in this Plan. Risk can also be reduced through mitigation measures including site design and layout, material used, and the design of buildings and structures. This means that while in a certain area there is a potential for a high risk (for example on a site in a Hazard 1 Overlay Zone), this risk can sometimes be reduced to a low risk, under the right circumstances. The resource consent process is used to determine the actual risk of a particular proposal at a specific location, and whether it can meet the policy test of being 'no more than low'. This assessment will also include the potential off-site risks (e.g. diversion of floodwater creating or exacerbating risk). It will also consider the residual risk in the event any proposed mitigation measures should fail.*

2.1.4.3 *Managing land use and development activities in flood hazard overlay zones*

30. Objective 11.2.1 is:

> Land use and development is located and designed in a way that ensures that the risk from natural hazards, and from the potential effects of climate change on natural hazards, is no more than low, in the short to long term.

31. The three most relevant policies to the proposed change are policies 11.2.1.1, 11.2.1.2 and 11.2.1.4.

32. Policy 11.2.1.1 directs that:

> In the Hazard 1 (flood) Overlay Zone, avoid natural hazards sensitive activities and natural hazards potentially sensitive activities unless:

a. the risk from natural hazards is avoided, or is no more than low; and

b. the activity has a critical operational[9] need to locate within the Hazard 1 (flood) Overlay Zone and locating outside it is not practicable.

33. Policy 11.2.1.2 requires that:

> In the Hazard 1A (flood) Overlay Zone, avoid natural hazards sensitive activities.

34. Policy 11.2.1.4 is:

> In the hazard 1, hazard 1A and hazard 2 (flood) overlay zones, only allow new buildings and additions and alterations to buildings, where the scale, location and design of the building or other factors mean risk is avoided, or is no more than low.

35. Natural hazards sensitive activities[10] and natural hazards potentially sensitive activities[11] are managed through rules that apply in these flood hazard overlay zones, the sensitivity of each land use activity in the plan having been classified according to likely health and safety consequences. Natural hazards sensitive activities include residential activities, hospitals, schools, landfills and cemeteries. Natural hazards potentially sensitive activities include various commercial, industrial, community and leisure and major facilities activities.

36. The rules that implement these policies are found in a separate activity status table after the main activity status tables in all zone sections where these overlays are present. In the case of the Gordon Road floodway, which is in the Taieri Plain Rural zone, this is Rule 16.3.6 which is shown below.

16.3.6 Activity Status in Hazard 1 (Flood), Hazard 1A (Flood) and Hazard 2 (Flood) Overlay Zones

Activity		Activity status		
		a. Haz1A (flood)	b. Haz1 (flood)	c. Haz2 (flood)
Land Use Activities				
1.	Natural hazards sensitive activities	Pr	NC	RD
2.	Natural hazards potentially sensitive activities	NC	NC	RD
Development Activities				
3.	New buildings and additions and alterations to buildings that create within any two calendar-year period: more than 36m² of new ground floor area in the **Henley mapped area**, or more than 60m² of new ground floor area outside the **Henley mapped area**	RD	RD	RD

[9] Operational need is defined in the 2GP as 'the need for a proposal or activity to traverse, locate or operate in a particular environment, because of technical, logistical or operational characteristics or constraints'.

[10] Defined as being where people are regularly present and often in a vulnerable state because they sleep there, require medical treatment, or require extra assistance to evacuate; and/or which may create a significant public health issue if damaged as a result of a natural hazard event.

[11] Defined as being where people are regularly present and buildings are routinely required to carry out the activity but people are not usually in a vulnerable state; and which are unlikely to create a significant public health issue in a natural hazard event.

37. The rules for activities in the Hazard 1A, 1 and 2[12] (flood) zones, are in addition to the normal rules that apply in the main activity status tables (16.3.3. to 16.3.5) and where the activity status differs, the most restrictive activity status applies.

38. Section 16.3.2 also explains that for the purposes of the hazards provisions, activities are categorised as natural hazards sensitive activities, natural hazards potentially sensitive activities or natural hazards least sensitive activities (rather than individual activities being listed). As shown in Rule 16.3.6, natural hazards sensitive activities are prohibited in the Hazard 1A (flood) Overlay Zone, and non-complying in the Hazard 1 (flood) Overlay Zone[13]. In both zones, natural hazards potentially sensitive (land use) activities are non-complying. Land use activities must also comply with the performance standards set out in Rule 16.3.3.

39. In the 2GP, land use and development activities[14] are managed separately and activities involving both must comply with both activity status rules. The only development activity that is managed in the Hazard flood overlays[15] is 'new buildings and additions and alterations to buildings which create more than 60m² within any two calendar-year period', which are restricted discretionary activities in both overlays.[16] Development activities must also comply with the performance standards in Rule 16.3.4.

40. The key difference between Hazard 1A and Hazard 1 overlays is if the building is to be used for a new natural hazards sensitive activity or would be considered a change to the scale, character or intensity of effects from the current land use (e.g. existing use rights would not apply), it would also be subject to Rule 16.3.6.1 and therefore be non-complying in Hazard 1 or prohibited in Hazard 1A

41. The assessment rules and guidance for these rules are contained in section 11 of the 2GP.

2.1.5 Gordon Road Floodway

42. The Gordon Road Floodway (floodway) is part of the Lower Taieri Flood Protection Scheme, which includes channels, floodbanks, ponding areas, and spillways. The scheme is designed to mitigate flood risk from the Silver Stream for the Mosgiel urban area by allowing flood water to preferentially flow into the floodway area over the Gordon Road Spillway (spillway), which is a lowered section of the true right bank of Silver Stream. The spillway and floodway are important components of the flood protection scheme. The Lower Taieri Flood Protection Scheme and the operation of the Gordon Road Floodway are described in more detail in the

[12] A Hazard 3 (flood) overlay zone is considered low risk and only affects earthworks thresholds.
[13] Rule 16.3.6(1) and (2), 2GP.
[14] Development activities are a category of activities in the 2GP which includes buildings and structures and site development activities.
[15] There are also rules that manage earthworks, and activities in swale mapped areas. Swale mapped areas form part of the natural drainage system on the Taieri Plain and act to convey floodwater away from development. There are restrictions on buildings and structures within a swale mapped area.
[16] Rule 16.3.6(3), 2GP.

affidavits of Dr Jean-Luc Payan and Michelle Mifflin to the Environment Court detailed at the end of this report.

43. The Gordon Road Floodway is a generally flat area with a slight gradient from the north-east to the south-west, with the Silver Stream running along its southern boundary. As shown in Figure 1, at the western boundary there is a cut-off stop bank which is the boundary of the East Taieri Upper Pond, an area designed to fill when the Taieri River overflows. The floodway boundaries to the north and east have been calculated by modelling and observed flood events to predict the likely extent of flood waters.

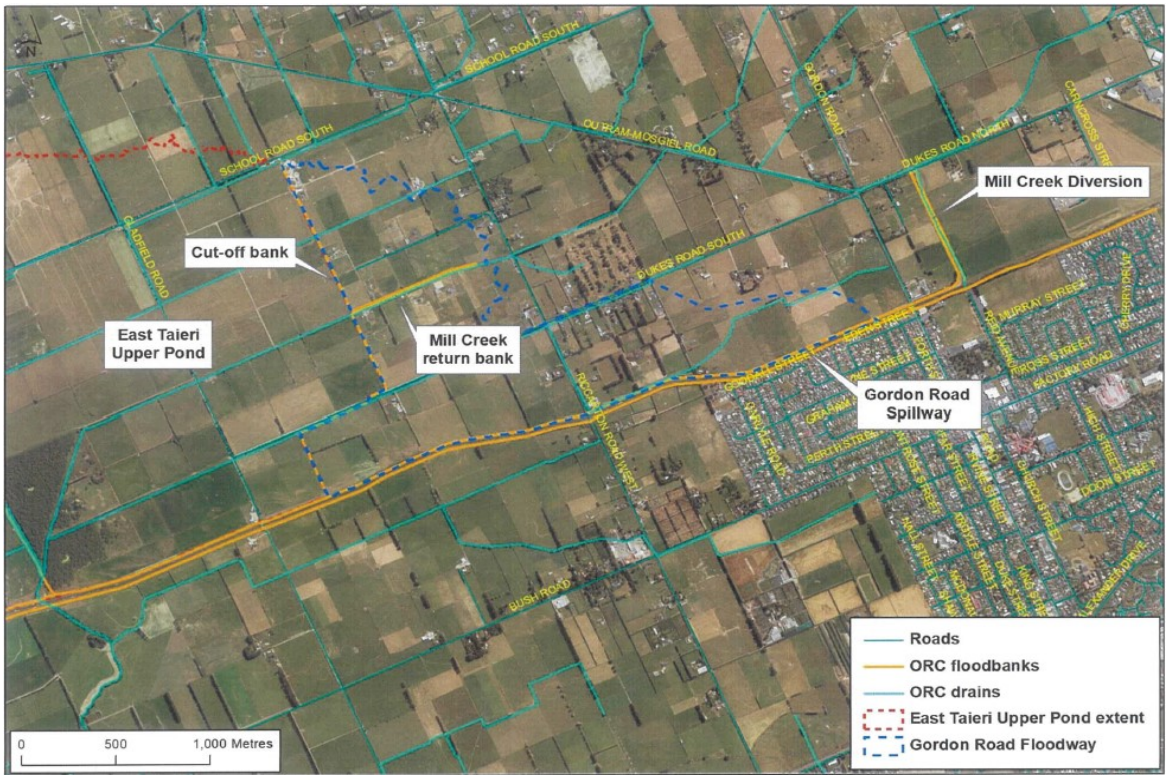

Figure 1: Lower Taieri Flood Protection Scheme in the vicinity of the Gordon Road Floodway

44. Properties in the floodway flood if there are heavy rain events or if the East Taieri Upper Pond and M4 drain[17] are at capacity. There are culverts in the cut-off bank through to the East Taieri Upper Pond that close once a certain level of water is reached in the East Taieri Upper Pond. Floodwaters from the Silver Stream then pond in the floodway, behind the cut-off bank.

[17] The M4 drain is part of the ORC's scheduled drainage network. It feeds into the Silver Stream in the eastern part of the Gordon Road Floodway. See the affidavit of Michelle Mifflin for further details 06.-ENV-2018-CHC-290-Affidavit-of-M-Mifflin-sworn.pdf (dunedin.govt.nz).

2.1.6 ORC designation

45. The floodway is within the designation for the Otago Regional Council – Lower Taieri Flood Protection Scheme (D217) in the 2GP.

46. The designation is described in the 2GP (Appendix A1.4.18) as:

> Lower Taieri Flood Protection Scheme - includes all works, structures, facilities, devices and appliances associated with the scheme and all activities relating to the scheme including construction, operation, maintenance, repair, reconstruction, extension modification and replacement.

47. A map of the designation is included within Figure 2 below.

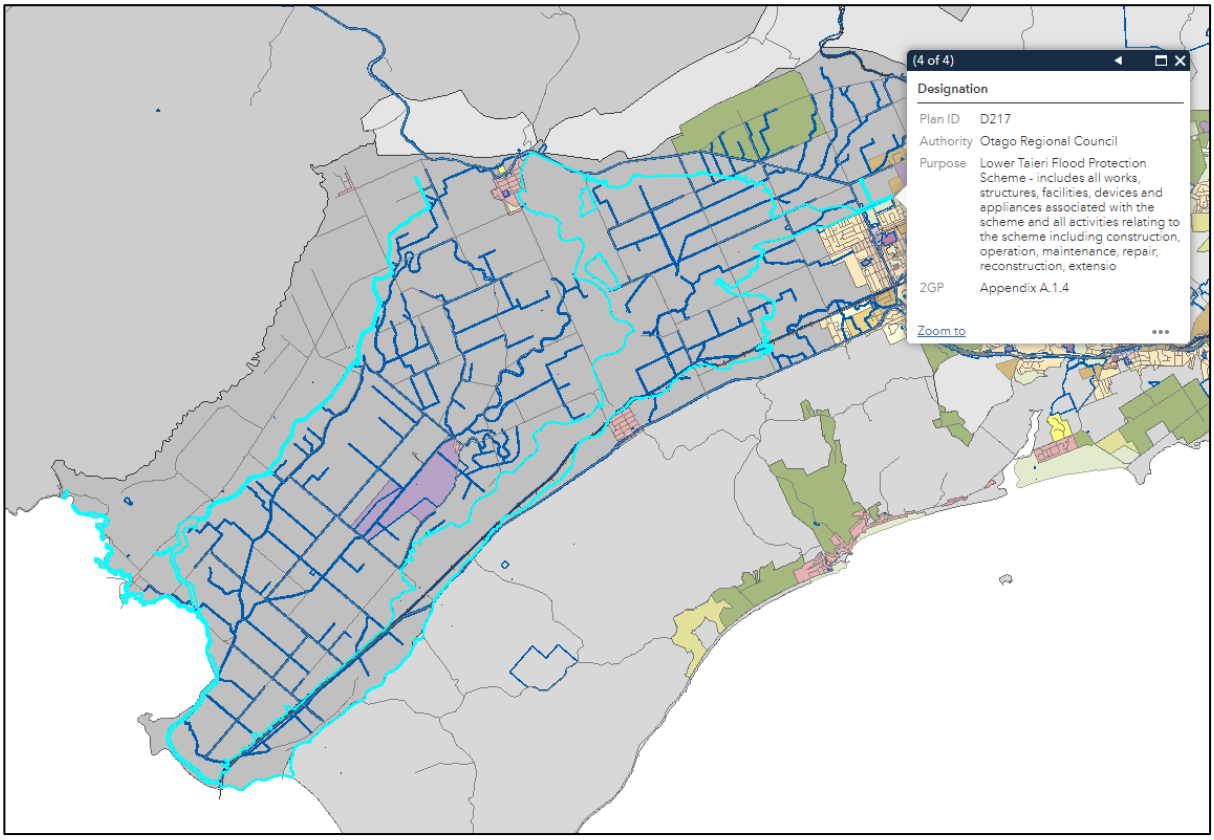

Figure 2: Map from 2GP showing Lower Taieri Flood Protection Scheme (D217)

48. The designation enables the ORC to undertake the work outlined above. It also requires a person to obtain the written consent of ORC prior to undertaking any activity that would prevent or hinder work to which the designation relates.[18]

49. Applications to undertake activities (i.e. construction of new dwellings) are assessed by ORC staff to determine whether the proposed activity will impact on the effective operation and

[18] Section 176(b) of the Resource Management Act 1991

integrity of the flood protection and drainage infrastructure. Applications are assessed against assessment guidelines which take into account the following matters[19]:

- Hydraulic capacity of drains, channels, culverts, bridges, outlets structures, pump stations, weirs, spillways and floodways
- Damming and diverting water
- Storing capacity of ponding areas
- Stability and integrity of floodbanks, bank protection structures and concrete walls
- Capacity of debris and boulder traps
- Increased scouring
- Access to ORC infrastructure including during emergencies
- Maintenance including emergency repairs
- Monitoring of ORC infrastructure and their operation
- Directly or indirectly or otherwise interfering with the works serving its intended purpose
- Placement of additional moral or legal responsibilities on the Council
- Obstruction rafting and effect of movement of material in collapse/damage
- Safe (for ORC staff, public, animals, buildings and equipment) operation of all ORC structures and features within the designated areas.

50. When assessing these criteria the ORC staff get advice from a number of teams within ORC including natural hazards, infrastructure engineering, and operations and maintenance (i.e. the drainage network). These comments are included in a report which includes a recommendation as to whether the designation application is approved with conditions or declined. This is signed off by the Manager of Engineering in conjunction with General Manager Operations as required.

51. If the ORC does not provide written approval for the activity, the applicant can appeal the decision to the Environment Court[20].

2.1.7 ORC Flood Protection Management Bylaw

52. Some properties within the floodway are also subject to the ORC Flood Protection Management Bylaw[21]. The purpose of the bylaw is to manage, regulate and protect the effective operation and integrity of flood protection works owned by or under the control of the Council. It controls activities that may affect the integrity or operation of flood protection works.

[19] These are matters that have been developed internally by ORC staff and are not listed within the designation
[20] Section 179 of the Resource Management Act 1991
[21] https://www.orc.govt.nz/media/13363/flood-protection-mgmt-bylaw-n2022.pdf

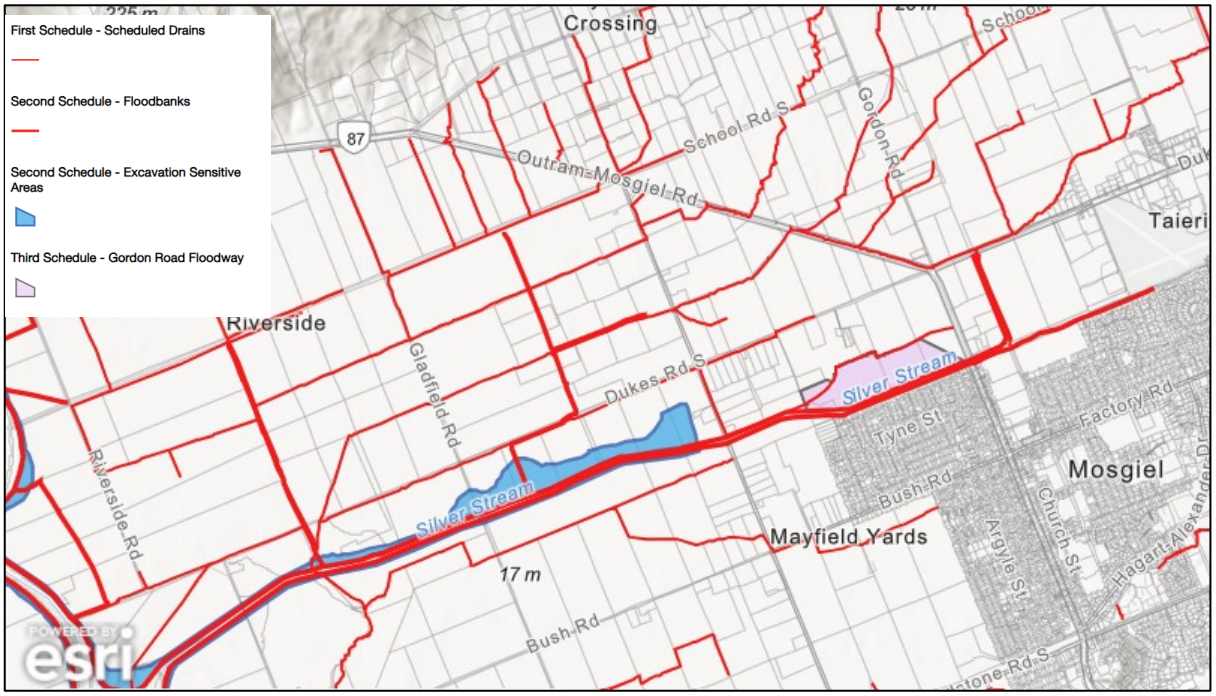

Figure 3: Map showing Flood Protection Bylaw features within the Gordon Road Floodway

53. Parts of 257 Gordon Road, 101 Dukes Road and 115 Dukes Road are subject to the 'Floodways' requirements in section 3.3 of the bylaw. A number of activities require approval from the ORC in these areas, including the construction of any structure, planting of trees and shrubs, earthworks or any other obstruction.

54. Parts of 255 Riccarton Road East, 209 Dukes Rd South and 269 Dukes Rd South are subject to the 'Defences against water and Excavation sensitive areas' requirements in section 3.2 of the bylaw. Approval is required for various activities on or adjacent to a defence against water, and for earthworks involving excavation within an excavation sensitive area.

55. There are also a number of scheduled drains and overland flood paths in the floodway that require approval for activities on or adjacent to them (see section 3.1 of the bylaw).

56. The process of applying for an approval is set out within Section 5.0 of the bylaw. The requirements of the bylaw apply in addition to the requirements of the designation and the regional and district plans.

2.1.8 Existing land use in the Floodway

57. The floodway includes approximately 327 ha of privately owned land. There are 41 existing sites (properties) within the floodway area, of which 34 have residential activity established on them. Of the seven properties without established residential activity, two extend outside the floodway into areas subject to a Hazard 2 (flood) overlay, which is a less restrictive

overlay than Hazard 1[22]. There are another two sites with an active resource consent to establish residential activity, which straddle the boundary between the floodway and the Upper Pond area[23]. A third site[24] also straddles the boundary between the floodway and Upper Pond, which is marginally below the minimum site size for a residential activity within the underlying rural zone (25 ha). The remaining two sites are both well below the minimum site size for residential activity[25]. One is part of a larger property which already has an established dwelling[26], while the other is subject to an Airways Corporation of NZ designation (D388)[27]. Residential activity on 'undersized sites' is a non-complying activity, with policies in the 2GP that strongly discourage granting consent except in very narrow circumstances.

58. The land in the floodway is predominantly used for farming, with some rural residential activity. There are approximately 100 buildings, including houses, farm buildings and sheds within the floodway. The area is zoned Taieri Plains Rural in the 2GP.

59. Figure 4 shows existing property boundaries and the location of existing buildings within the floodway; red shapes being residential buildings and blue shapes non-residential buildings.

[22] 101 Dukes Road South, 323 and 383 Riccarton Road West
[23] 351 and 353 Riccarton Road West
[24] 270 Dukes Road South
[25] Rule 16.5.2.1.g
[26] 255 Riccarton Road West
[27] 245 Riccarton Road West

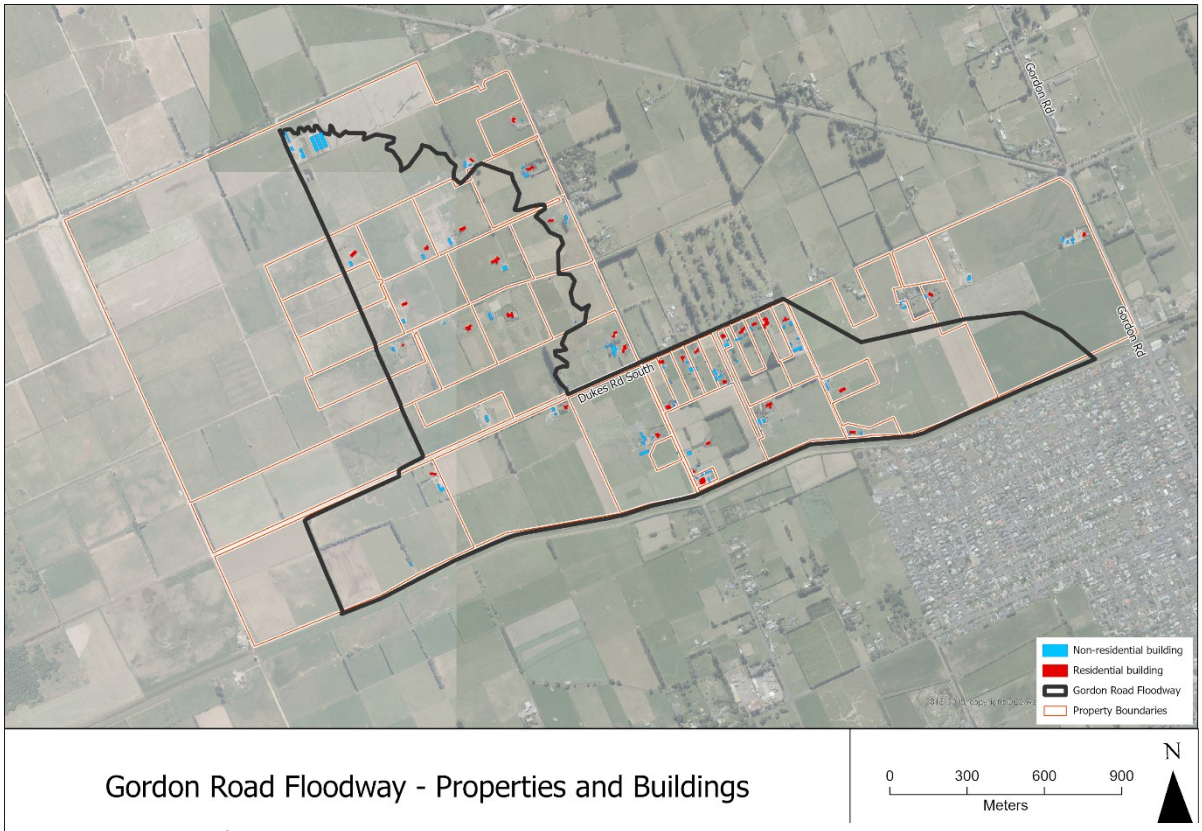

Figure 4: Location of buildings and property boundaries within the Gordon Road Floodway

2.1.9 ORC submission and appeal on the 2GP

60. ORC submitted on the 2GP seeking that sensitive activities be prohibited in part of the Hazard 1 (flood) overlay zone. The Gordon Road floodway was included in this request.

61. The 2GP Natural Hazards Hearing Panel directed the ORC and DCC to undertake expert witness conferencing to discuss the activity status for particular areas of the Hazard 1 (flood) overlay zone. The Panel accepted the amendments recommended in the Expert Witness Conference statement and in its decision introduced a new Hazard 1A (flood) overlay zone for four of the areas submitted on, including the East Taieri Upper Pond to the west of the floodway. However, no agreement was reached between experts on the activity status for the Gordon Road floodway area, and the Hearing Panel's decision retained the Hazard 1 (flood) overlay zone over the Gordon Road Floodway area.

62. ORC appealed the decision in relation to the hazard overlay for the Gordon Road Floodway, seeking that natural hazard sensitive activities in the floodway be prohibited.

2.2 Key resource management issue

63. The key issue that the change sought through the appeal addresses is the risk to new or expanded natural hazards sensitive activities establishing in the floodway.

2.2.1 History of flooding and flood risk in the area

64. The Gordon Road Floodway has operated several times in the last two decades. A significant flood occurred in 2017, estimated to be a 30 to 40 year flood event[28] (2.5% AEP), which caused flooding to properties in the area. Some properties were reported to have water in excess of 1.5m deep through their dwellings[29].

65. Spilled water within the floodway tends to spread out over a wide area. Recent hydraulic modelling undertaken for ORC[30], indicates that in a 1% Annual Exceedance Probability (AEP) event (an event that has a 1% chance of occurring in any year)[31] the depth of floodwater within the floodway is expected to range between less than 0.5m to over 3m, and the velocity is expected to range between 0.5 and 1m/s. These depths and velocities exceed those modelled (and observed) during the 2017 flood. These depths and velocities pose a hazard to people, stock, vehicles buildings and roads. Flows in the Silver Stream can rise quickly, leaving a limited ability for residents and emergency services to plan a response once the spillway is operative. Early flood preparation is usually required for residents in the floodway, well before flows reach the threshold for the spillway to operate. Precautionary evacuation is also usually considered by emergency services in response to a heavy rainfall event[32].

66. With climate change being predicted to increase the frequency and severity of rainfall events, it will in turn increase the likelihood of the spillway operating and water entering the floodway[33].

67. This modelling has been used to generate a flood hazard categories map for the 1% AEP event, categorising the floodway and surrounding area into hazard vulnerability categories, from H1 to H6. These are described in Table 1 below:

Table 1: Hazard categories

H1	Generally safe for vehicles, people and buildings
H2	Unsafe for small vehicles
H3	Unsafe for vehicles, children and the elderly
H4	Unsafe for vehicles and people

[28] Affidavit of Michelle Mifflin 06.-ENV-2018-CHC-290-Affidavit-of-M-Mifflin-sworn.pdf (dunedin.govt.nz)
[29] Affidavit of Matthew Alley, Manager for Emergency Management Otago 07.-ENV-2018-CHC-290-Affidavit-of-M-Alley-sworn.pdf (dunedin.govt.nz)
[30] Bloxam, Burnett & Oliver, 2022
[31] The 1% AEP event is commonly used when assessing flood hazard. It is also consistent with the general level of protection provided by the Lower Taieri Flood Protection in the area (excluding the Gordon Road floodway)
[32] Affidavit of Dr Jean-Luc Payan to the Environment Court 05.-ENV-2018-CHC-290-Affidavit-of-Dr-J-L-Payan-sworn.pdf (dunedin.govt.nz)
[33] Affidavit of Dr Jean-Luc Payan to the Environment Court 05.-ENV-2018-CHC-290-Affidavit-of-Dr-J-L-Payan-sworn.pdf (dunedin.govt.nz)

H5	Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure

68. The hazard categories are shown in Figure 5 as the blue, green and yellow areas.

69. As shown in Figure 4 below, in a 1% AEP event, significant parts of the floodway will have water depths and velocities that are unsafe for vehicles, children and the elderly (H3 or greater), with parts unsafe for people and which may cause structural damage to buildings (H4 and H5). Parts of the floodway (to the east) are assessed as being generally safe for people (H1) in a 1% AEP event. It is also noted that the depth, velocity and extent of flooding locally can be influenced by local features such as embankments, fences, shelterbelts and buildings, which can impede or divert flows.

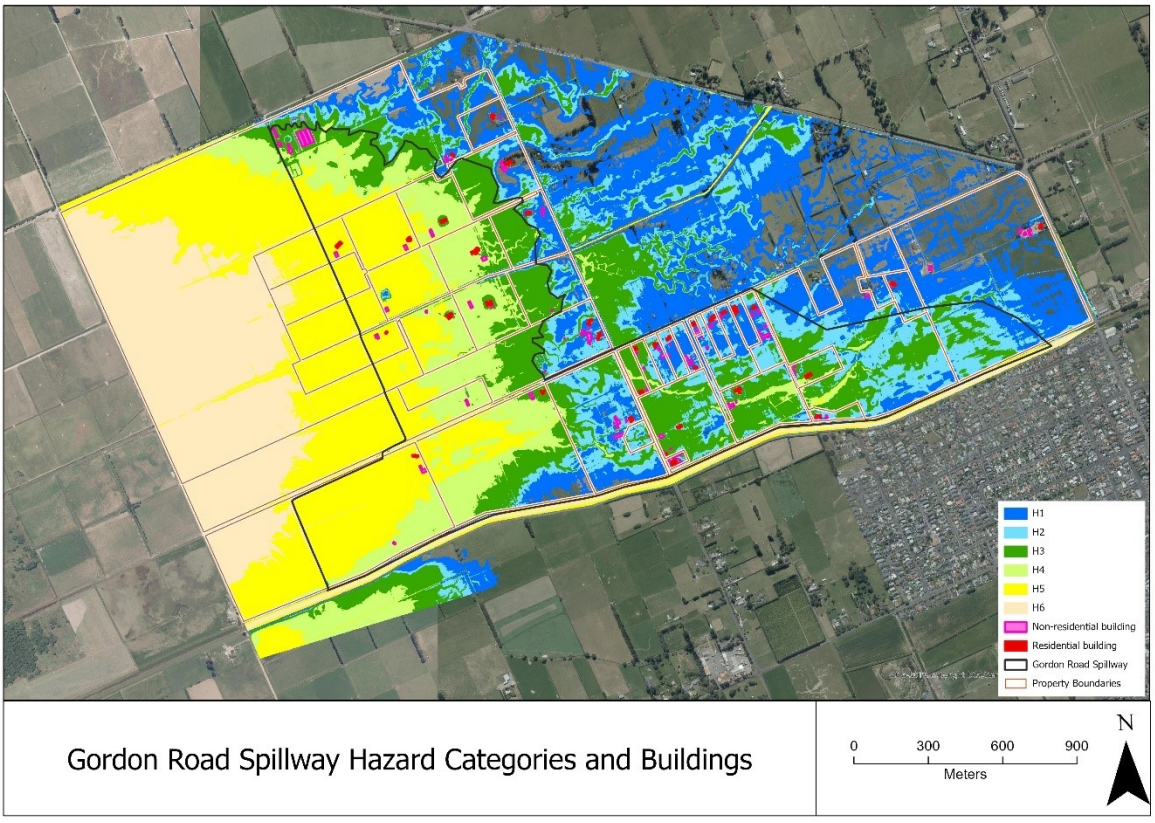

Figure 5: Gordon Road Floodway showing flood hazard categories and location of buildings

70. It is noted that the scenarios were modelled used present day climate data. That is, no provision has been made for the effects on climate change on rainfall. The peer review of the

modelling[34] recommended that in terms of hazard planning, the effects of climate change on 100 year flows should be considered. This means that what is considered to be a 1% AEP using the current rainfall and flow dataset may become a more frequent event in future, if climate change results in an increase in rainfall intensity or duration. In the future, a 1% AEP event may generate higher flows and increased overland flows than suggested by the current modelling. However, this may not result in significantly larger volumes spilling over the spillway due to the capacity of the Silver Stream channel upstream.

71. On the basis of current modelling, significant areas of the floodway pose a high risk to people (H3 and above). In these areas, allowing additional natural hazards sensitive activities would increase the number of people vulnerable to flooding events; the potential extent of any civil defence evacuation or rescue operation; and risk of damage to associated buildings, structures and infrastructure.
72. Areas identified as H1 and H2 have a lower hazard threat, with no identified risk to people (although small vehicles are at risk in H2 areas). However, land uses in these areas may potentially become isolated, if access routes are subject to flooding.

2.3 Proposed change

73. The ORC appeal seeks that natural hazards sensitive activities are prohibited in the Gordon Road Floodway.
74. Applying a Hazard 1A Overlay Zone would mean that natural hazards sensitive activities such as new residential activities would be prohibited. Natural hazards potentially sensitive activities would continue to be non-complying.
75. The position of both the ORC and DCC prior to consultation was that the hazard 1A flood overlay should apply to some, or all, of the Gordon Road floodway.

2.4 Consultation

76. Targeted consultation has been undertaken with the residents and owners of land within the Gordon Road Floodway, including through letters, website information and a meeting held for landowners and residents on 22nd March 2023.
77. Letters were sent out to all registered landowners and residents of each site with land within the Gordon Road Floodway informing them of the appeal process and inviting submissions. The letters referred to a website address containing further information on the consultation and appeal process.

[34] Tonkin + Taylor 2022. North Taieri flood hazard: Silver Stream modelling review

78. At the meeting, the DCC and ORC gave a presentation on the proposal, the operation of the floodway and the flood hazard risk. Opportunities were provided to ask questions of both councils during the presentation as well as through discussion following the presentation. ORC also employed a 'friend of the submitter' who was available at the meeting and during the submissions process to provide independent advice about how to become involved in the process.

3 SUBMISSION ANALYSIS

3.1 Overview of submissions received

79. In total there were 30 valid submissions (from submitters who are registered owners and/or occupiers of property in the Gordon Road Floodway area).

80. The majority of submissions received requested that the Hazard 1A (flood) overlay zone is not applied to the whole Gordon Road Floodway area; one submission requested that it not be applied on 101 Dukes Road South[35]. In addition to individual submissions, the Gordon Road Spillway Residents Group (GRSRG) also made a submission, which is signed by 26 parties and includes most of those that made individual submissions. The summary of decisions requested are included in Appendix 1 in Section 5: Appendices.

81. Note that each submission is provided with its own unique number, with the prefix 'OS' to indicate that it refers to an original submission. As there were no further submissions received, submissions are referred to within the body of this report by their individual numbers only. Figure 6 below is labelled with submission ID numbers on properties, to show which property a particular submission relates to. The properties outlined in blue indicate that the submitter is part of the Residents Group submission. The properties outlined in yellow indicate the other sites located within the Gordon Road Floodway.

[35] Clive Morley and Linda Elsie Wallis (OS18)

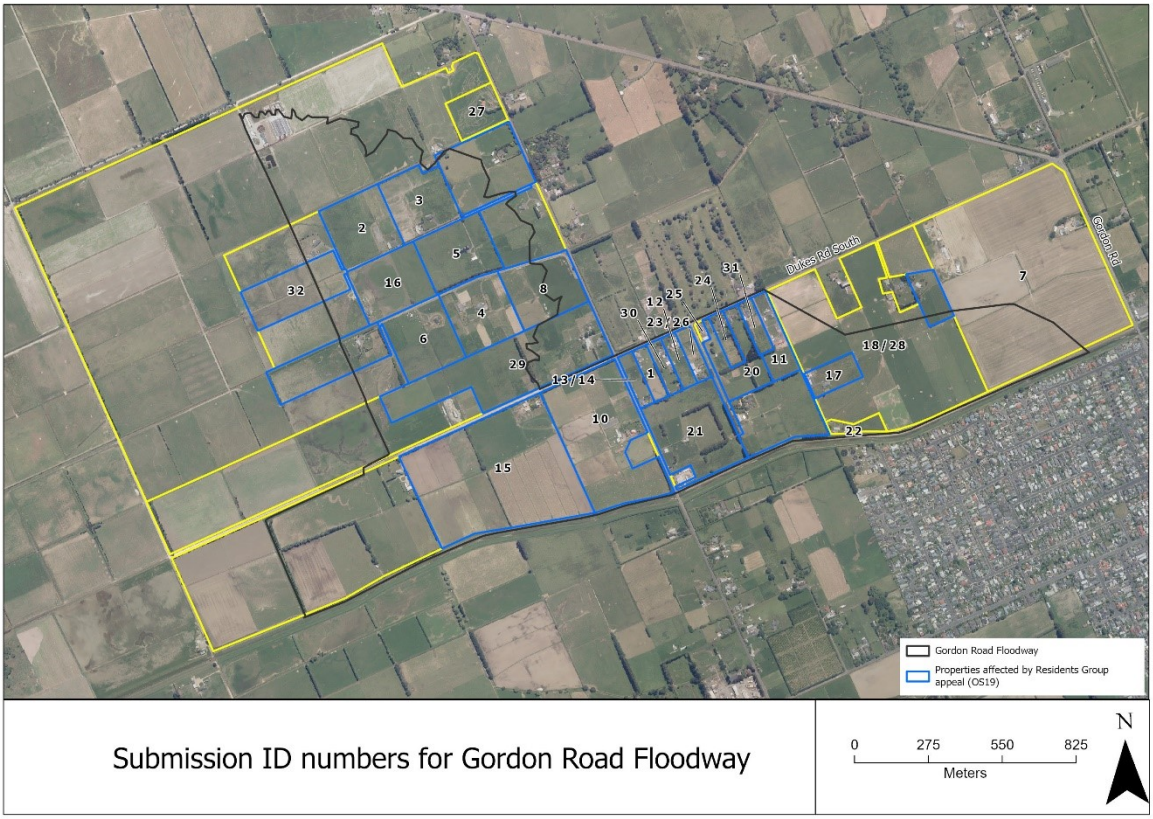

Figure 6: Submitters in the Gordon Road Floodway

3.2 Theme by theme submission analysis

82. While the submissions received were all on a single aspect of the 2GP, being the appropriate hazard overlay and activity status for natural hazards sensitive activities in the Gordon Road Floodway, there were several interrelated issues raised in the submissions, which are responded to in the section below.

83. These submissions have been grouped into the following themes for ease of analysis:

    - Residents' experience of flooding and reliability of data used to model the flood hazard
    - Information on flood risk available to landowners
    - Capacity and maintenance of flood protection infrastructure
    - Appropriate activity status for natural hazards sensitive activities in the Gordon Road Floodway

84. Using the themes listed above, each of the following sections describe the matters raised by submitters and provides a discussion and assessment from the DCC and ORC reporting officers (as indicated by DCC or ORC in the relevant subheading), incorporating the views of engineering and hazard experts where appropriate.

3.3 Residents' experience of flooding and reliability of data used to model the flood hazard

3.3.1 Matters raised by submitters

85. As described in the submission by the *Gordon Road Spillway Residents Group (19)*, residents were 'taken by surprise' by the Silver Stream flooding in 2006. The submission notes that during this event, six houses were inundated, and of these, four have been flooded in events since 2006.

86. *Jill and Brian Bennett* (*12*) note that on their property at 155 Dukes Road South, they have experienced three significant floods in 2006, 2017, and 2018. They state that in 2006 they had to move out for three months and, in 2017, had to move away for six months in order for repairs to be carried out. The submitters note that it is the back of the property, and the front where the house is built on a concrete slab, which are at risk of flood waters. By the 2018 flood event, the submitters had built a wall around their home with sliding gates and pumps.

87. *Geoffrey Thompson and Jenny Burt (17)* state that in 2017 the flood waters went right through their property (113 Dukes Rd) and they had to move out for six months. *Belinda and Ivan Glass* (*21*), owners of 240/248 Riccarton Road West, also state that their house was flooded in both 2006 and 2017 and they also experienced stock losses and damage to farm sheds and equipment, while *Alice Sinclair (29)* describes how her property (293 Riccarton Road West) was flooded in 2006, 2010, 2017 and 2018 affecting outbuildings, with flooding reaching under the house in 2017. *Margaret and Terry Pollitt (1)* state that to their knowledge, their house at 169 Dukes Road South has only been flooded once since it was built in 1965, in 2017.

88. Most of the other submitters (including *Richard & Jennifer Quelch, 11*) describe flooding only affecting land and in some cases sheds and garages, with *Pamela Bain (15)* stating that 39 of 45 properties have not had water entering houses and some have had no flooding, and *Belinda & Ferg Horne (10)* noting that the water was only about a foot deep on their land at 255 Riccarton Rd, affecting some sheds but not the house. *John Ross (25)* states that he has lived for 76 years on the floodway in three different homes and never had any water in any of the houses.

89. Some submitters note that because their houses have been raised, they have not been affected by floodwater including *Gilbert and Judith Black (16)* who note that they have raised the building platform for their house "well above the level of any known flood mark" and *John and Ronda McLaren (31). Jason and Lisa Breen (30)* state their house is built close to the front of the property (at 161 Dukes Road South) and sits above the road and *Andrina and Shayne King (8)* submit that all neighbours that built 1m above ground level or higher have never been flooded.

90. Some submissions called into question the accuracy of data modelling when comparing the experience of residents with the mapped hazard levels. John & Ronda McLaren (31) state that the area identified as the Gordon Rd floodway does not correlate to the modelling maps in either flow map or ratings map, and is not reflective of flood events nor does it take into account road levels or drainage. Jason and Lisa Breen (30) state that ORC has not visited each property and talked to landowners about what happens at each property during a flood

event. They consider that the modelling data is inaccurate as the inundation levels shown in the report do not align with their experience of past flood events.

91. John & Ronda McLaren state that "climate change is but one factor and who is to say it won't be heatwaves and drought".

3.3.2 Assessment

3.3.2.1 *Flood experience*

92. The submissions providing evidence of how flooding affected particular areas were analysed in order to determine if there was any correlation between the hazard risk shown on the map and lived experience. Figure 7 below is a map of the floodway showing hazard categories and submitter ID numbers, with sites where the landowners were part of the collective GRSRG submission highlighted with a brown border. Existing residential buildings are shown in red, while non-residential buildings are shown in pink.

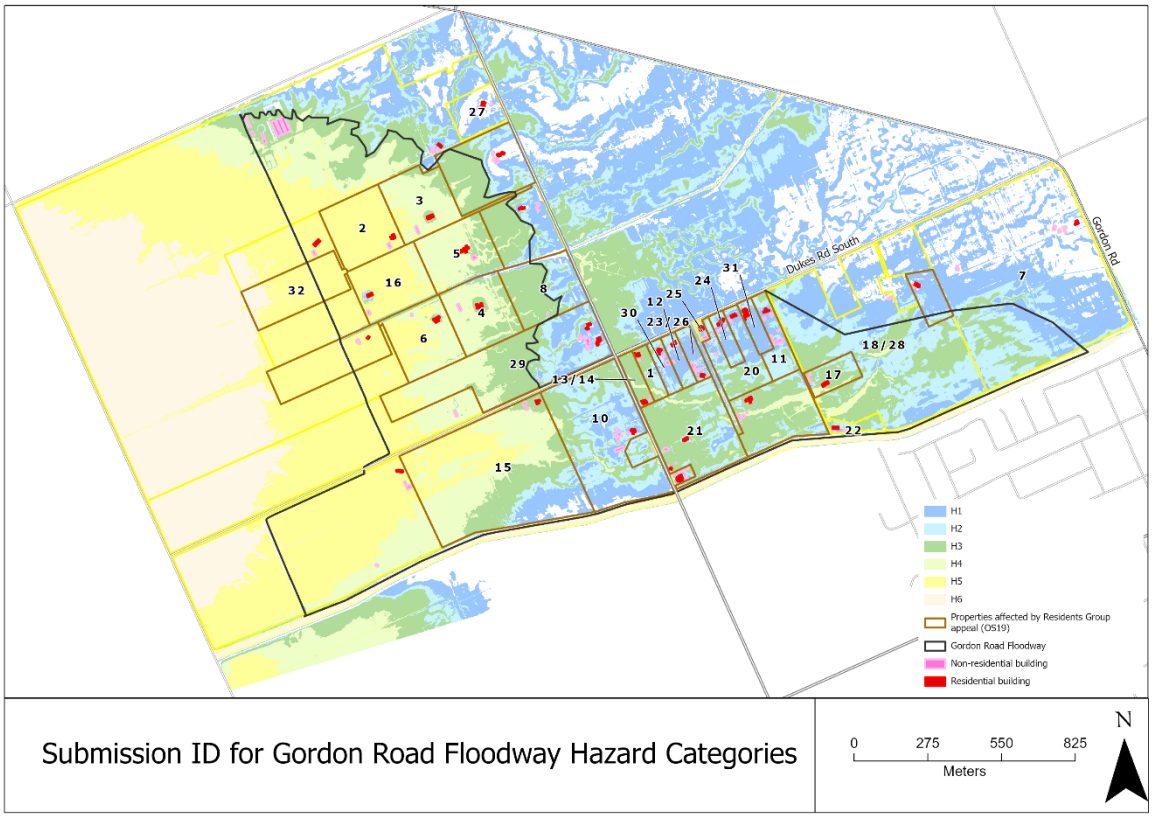

Figure 7: Map of Gordon Road Floodway with submission IDs and flood hazard categories

93. Table 2 below contains descriptions of flooding in particular areas, based on submitter descriptions and flood hazard categories.

Table 2: Residents' site specific flood experiences

Site location	Flood experience	Hazard categories
155 Dukes Road (#12)	Experienced three significant floods in 2006, 2017, and 2018. The submitters state that in 2006 they had to move out for three months and, in 2017, had to move away for six months in order for repairs to be carried out.	Site is mostly a mix of H1 and H2, with the house being in the H1 category.
113 Dukes Road South (#17)	2017 flood forced occupants to move out for six months	Site located about 170m away from the Silver Stream at its closest point. A substantial part of the property including the location of the house is classified as H3, with areas of H2 and H4
240/248 Riccarton Road West (#21)	During 2006 and 2017 floods house at 240 flooded, garage at 248 was flooded.	Site located directly adjacent to the Silver Stream and is largely within the H3 category, with areas (including the dwelling at 248) of H2 and H4 and a patch of H1.
293 Riccarton Road West (#29)	Flooding to property 4 times since 2006	Site straddles the Gordon Rd Floodway area and the Haz 2 overlay zone. All of the buildings appear to be in the H2 category
169 Dukes Road South (#1)	Flooding to house in 2017	Site on the south-eastern side of Dukes Road South. The house is built towards the front of the property in a H3 area; the property also has other areas of H2 and H5.
117 Dukes Road South (#11)	Flooding has not affected house in nearly 20 years current owners have lived there.	Site is mostly a mix of H1 and H2, with the house being in the H1 category.
255 Riccarton Road (#10)	Owners state house has never been flooded. Flood was a foot deep on land.	Mix of mostly H1-H2 (where buildings including house is) and some H3 at the intersection of Dukes Road and Riccarton Rd West.
127 Dukes Road (#31)	Residence is elevated and has not flooded in owners' 23 years there.	Site is mostly a mix of H1 and H2, with the house being in the H2 category.
161 Dukes Road South (#30)	House is built close to the front of the property and has not flooded.	Site is mostly a mix of H1, H2 and H3, with the house being in the H2 category.

94. Of the submissions which describe flooding on the submitter's properties, most were in H1-3 hazard categories, while there was no specific discussion about flooding experience in the areas of highest risk (H 4-5). The residents of 155 Dukes Road South (#12) have twice been forced to move out due to flooding since 2006, but the site has only been assessed as being within the lower risk H1-2 hazard categories. The other two descriptions of flooding affecting dwellings are 113 Dukes Road South (#17) where the house is in H3, and 240/248 Riccarton Road West (#21) where the house is in H2, but the site is largely within the H3 category. A number of submitters note that they have raised the building platforms for their dwellings; this can be seen on the hazard category map on a number of the properties, with lower hazard category 'islands' within higher hazard category land.

3.3.2.2 *Reliability of data (ORC reporting officer)*

95. In responses to concerns raised by submitters related to the residents' experience of flooding in the Gordon Road Floodway and the reliability of data used to model flooding, J-L Payan, Manager Natural Hazards at ORC has produced a memo which responds to the issues raised in the submissions (see Appendix 4).

96. When considering the reliability of data used to model flooding hazard Dr Payan had the following comments:

> *"6. As mentioned in my affidavit the modelling report was peer reviewed by Tonkin and Taylor (T+T). The peer reviewer concluded that the model is an appropriate tool for modelling the flood hazard in the Gordon Road floodway.*
>
> *7. The model was calibrated using data (debris mark survey) surveyed by ORC after the July 2017 flood event and visually checked by ORC using photos and videos collected during the July 2017 event. T+T confirmed that "the modelling approach and parameters selected in the development of the model, are soundly based and reflect conventional professional practice.*
>
> *8. Further, simulation results compared to available monitoring data for the 2006, 2010 and 2017 flood events provided validation of the model as a tool to investigate the flooding processes and present-day flood hazards in the North Taieri/Gordon Road Floodway area".*
>
> *9. Some submissions on the plan change appear to show a potential misalignment between the residents' experience of flooding in the Gordon Road Floodway and the modelled hazard categories i.e. dwellings located mainly within flood hazard category H1, with residents experiencing significant flooding into the dwelling. It is important to note that flood hazard categories are mapped based on the modelled flood depth and velocity. Depth of water in the H1 category can be up to 300mm. The modelling does not take into account the design (such as floor level) of existing dwellings. Therefore, the resident's experience of the flooding events affecting a dwelling does not represent an inaccuracy in the flood model.*
>
> *10. When considering land flooding (as opposed to flooding of dwellings), the modelling results (flood extent and characteristics) are consistent with the residents' experience of flooding in the Gordon Road Floodway.*
>
> *11. Appendix 2 provides an example illustrating the consistency of the residents' experience of flooding with the modelling results. I consider the July 2017 event to be a representative event for the floodway and was used to illustrate the consistency of the residents' experience of flooding with the modelling results. However, in their submissions, the residents have not always specified the date of the flood events associated with their observations and the comparison with the modelled July 2017 flood event can only be indicative."*

97. Given this I consider the reliability of data used to model flooding hazard appropriate.

98. In response to submissions questioning climate change, as noted in the affidavit of Dr Payan, "climate change is likely to increase the severity and frequency of rainfall events resulting in an increased likelihood of operation of the spillway." (Payan, p.4, 2022). In the 2021 Otago Climate Change Risk Assessment[36], the report found that annual rainfall is expected to increase across the region, extreme rainfall events are likely to increase in intensity and Mean Annual Flood (MAF) is projected to increase. With regard to the Gordon Road area, the report notes that:

> Spatial and temporal changes in extreme rainfall events have been analysed using rainfall records from the lower Taieri catchment. These records show that there is localised variability in extreme rainfall patterns, and that the northern end of the Taieri Plains (including the Silver Stream catchment) has experienced an increase in intensity and frequency of extreme rainfall events since the 1960s (O'Sullivan et al., 2013). This will likely place more pressure on this part of the scheme (ibid, p. 123).

3.4 Information on flood risk available to landowners

3.4.1 Matters raised by submitters

99. The GRSRG submission describes how the councils were approached for planning documentation about the spillway, which they have not been able to find in plans prior to the 2GP. They submit that a majority of residents "unwittingly purchased property within an engineered spillway", and that the information was not available on LIMs. *Thompson and Burt (17)* note that their house on 113 Dukes Road was built in 2004 and they were unable to find a record that their house was built on a spillway. *Craig & Julie Struthers (24)* state that they have lived in their house for 20 years and were also not aware that they had bought land on an engineered spillway.

100. The Residents' group and a few of the individual submitters also note that the DCC has allowed people to build on the land. In her submission, *Freya Smith (2)* states that she bought property in a residential subdivision allowed by DCC as it was deemed to have a 1 in 100 year flood risk and that councils should install proper flood protection. *Stephen Watkins (6)* states that the house was built with advice from ORC relating to appropriate height off ground level; the property also had consent for bunds to allow stock to move to higher ground. He also expresses concern about his investment and the fairness of the change. *Geoffrey Thompson and Jenny Burt (17)* ask why would resource consent be given to build in a designated floodway. They submit that if you allow development and not increase infrastructure around stormwater then there is not a fair and equal opportunity to use land for what it was allowed to be used for when consent initially given.

101. The GRSRG submission notes that "since the engineering of the Spillway in 1974, the DCC have issued building consents for new builds, and since the 2006 flood event, they have

[36] Tonkin & Taylor Ltd Otago Climate Change Risk Assessment - Main report, Otago Regional Council

issued consents for extensions/renovations". *Andrina and Shayne King (8)* note that they were advised that they were entitled to build a house on their site at 323 Riccarton Rd West as a 2004 consent for land use associated with a subdivision[37] had been issued. *Gilbert and Judith Black (16)* state that their property was purchased with approval from both the DCC and ORC to establish a residential dwelling on the land and if the approval was rescinded, they would expect compensation for an associated drop in property value. *Craig and Julie Struthers (24)* carried out an extension in 2014 with an additional bedroom and garage and recently carried out another extension to kitchen/living. They note that DCC gave consent in 2022 "with the knowledge that our property was in the process of an appeal to rezone it to Hazard 1A. They have knowingly let us heavily invest further into our home, which will soon lose all value should ORC appeal be successful."

3.4.2 Assessment

3.4.2.1 *Flood protection scheme and designation in the District Plan (DCC)*

102. Firstly, I acknowledge the concerns of residents about how planning regulation can affect property values and recognise that not all landowners may have been aware that they were living on an 'engineered spillway', particularly prior to the major flood event in 2006.

103. It is my understanding that the Gordon Road spillway was engineered in the 1970s to protect the Mosgiel urban area from flooding and, as described in Section 2.1.5, this allows preferential spilling over a lowered area of the floodbank lining the Silver Stream into the floodway area. Following the 1980 Taieri flood, work was carried out to formalise the upper and lower ponding areas (from pre-existing natural ponding areas for the Taieri River) and construct the Riverside Spillway as part of the Lower Taieri Flood Protection Scheme. The Upper Pond cut off bank was built in the 1990s (see background reports in Appendix 4 for more information).

104. Although the spillway was engineered in the 1970s, the ORC designation relating to the floodway was only introduced to the District Plan in 2015 when the 2GP was notified. The ORC applied on 31 July 2015 for new designations for their various flood management schemes in Dunedin including the Lower Taieri Flood Protection Scheme. Pursuant to Section 170 of the RMA the notice of requirement was included in the proposed plan instead of complying with section 169 of the RMA. The 2GP was notified on 26 September 2015 and, in addition to the general notification of the 2GP to all ratepayers pursuant to Clause 5 of the First Schedule to the RMA, specific letters to landowners and occupiers were mailed on 21 September 2015 advising them of the proposed designation and introduction of the Hazard 1 (flood) Overlay Zone. Two submitters submitted on designation D217 Lower Taieri Flood Protection Scheme and their submissions were considered at the Designation Hearing of the 2GP on 12 May 2016.

[37] Land use consent RMA-2004-368162

105. In supporting evidence relating to the Taieri flood protection work, provided by Dr Gavin Palmer (ORC Director Engineering, Hazards and Science) for the 2GP hearing on designations, he noted that there was not "a high level of understanding amongst the community of the existence and importance of the overflow and detention areas despite the fact that they are integral parts of the schemes" (Palmer, p.5[38]). In his evidence, Dr Palmer states that although ORC undertakes public meetings, awareness was relatively low, especially for landowners who are new to the area and that the designations "will assist in publicising the existence of overflow and ponding areas and will help protect them from incompatible land use". On 7 November 2018 the 2GP Hearing Panel recommended that the notified designation be confirmed without any amendments. On 20 December 2018 the ORC pursuant to Clause 13 of the First Schedule to the RMA advised that they had decided to accept the 2GP Hearings Panel recommendation in full without modification. On 23 April 2019 all submitters and landowners were advised of the ORC decision on the designation and were given the opportunity to lodge an appeal. No appeals were received, and the designation was included in the 2GP without further formality.

3.4.2.2 *Information available to landowners (DCC)*

106. Prior to 2015, the provisions of the 2006 Dunedin District Plan (notified 1999) applied to land use activities in the floodway, with methods to manage hazards including:

- Hazards Register (containing information on the location and nature of identified or potential hazards including flooding) being publicly available;
- using land and project memoranda (LIMs and PIMs) to identify whether or not an activity or structure is proposed to be located on a site identified as hazard-prone in the DCC Hazard Register or a site which the Council has good cause to suspect may be prone to a hazard; and
- information requirements for consent applications on hazard prone sites.

107. In terms of information available to landowners on flood risk for the area prior to 2015, people purchasing property in the area could apply for a Land Information Memorandum (LIM) which should have contained any information about natural hazards of the land within the Gordon Road floodway known to Dunedin City Council at this time, including flood risk. An alternative method for locating flood risk information was the DCC Hazard Register. This was an A3 hard-copy series of maps available at DCC offices, which for flooding in the Gordon Road Floodway Area referred to a *Flood Risk Areas for Lifelines* study (ORC, 2013), and two DCC City Consultants' files relating to flooding of land in the Riccarton Road West and Dukes Road South areas. It is not unusual for information pertaining to particular sites to change over time - as new research has become publicly available, such as hazard mapping, these have been added to Council's records and become part of the information included in LIMs e.g. the *Natural Hazards on the Taieri Plains, Otago* report (ORC, April 2013) and the *Dunedin City Council – Minimum Floor Levels for Flood Vulnerable Areas* report (GHD, March 2015). In

[38] Statement of Evidence of Gavin Palmer for 2GP Designation Hearing, 12 May 2016

2010 the ORC began development of the Otago Natural Hazard Database and in 2012 this became a public online resource of current natural hazards information.

108. One of the approvals for new builds prior to 2006 was a resource consent issued in 2004 for a subdivision and residential activity on 13 resultant sites (the "Mill Creek subdivision", RMA 2004-0747), in Riccarton Road West. The proposed subdivision complied with the minimum site size of 6 ha and other rules for restricted discretionary subdivision in the Dunedin City Proposed District Plan (1999) and the effects assessment considered amenity values, cumulative effects and visual impact; future use; water, effluent disposal; reverse sensitivity; transportation and property access and land disturbance and hazards. In relation to hazards, the decision records that:

> The subject land is identified on Council's Hazard Maps as being affected by flooding. Resource consent (RMA 2004-0534) was granted in July 2004 affecting part of the site. At that time, advice from MWH New Zealand Ltd confirmed that part of the land was affected by the 1990 Taieri Flood. They understand that since then, the Otago Regional Council has upgraded flood banks along the Taieri River and that the land has a protection greater than a 1% probability of occurrence. In July 2004, MWH NZ Ltd did not consider any conditions were necessary.

109. This statement is perhaps indicative that at the time, flooding from the Taieri rather than the Silver Stream was more of a focus for these sites. It is evident from the submissions that community awareness of the hazard risk from the Silver Stream to the floodway area grew following the 2006 flood and it was noted in an ORC report to the Engineering and Hazards Committee that the ORC needed to "continue undertaking comprehensive hazard mapping across Otago, probably at sub-District or sub-catchment scale as part of the Hazards Register which in turn can define areas that should not be developed." The report also noted that, taking into account the 2006 event, the return period for flooding (at which overtopping occurs) at the floodbank between Gordon and Riccarton roads (the spillway) was revised from 100+ years to a figure of approximately 40 to 50 years[39]. As noted in the *Otago Regional Council – Hydraulic Support for Silver Stream and Gordon Road Floodway Modelling* report (Bloxam Burnett & Oliver, 2022), ORC initiated the flood hazard mapping of the Lower Taieri Floodplain in 2006 and this was later refined in 2013, 2014 and 2015.[40] ORC demarked the North Taieri area into four different hazard areas (Gordon Road floodway Area is 14B) based on elevation data, historical flood extents, flood-extent photos and observations provided by residents, landowners, and ORC field staff during previous flood events (ibid).

110. A LIM obtained for a site in the floodway in 2020 is reflective of the more up to date information as well as the recent designations for the area, and records that the site is identified as lying within *ORC Flood Hazard Area 14D North Taieri flood plain* and in *Flood Hazard Area 14B floodways*. Recent ORC reports on hazards are referred to, including Natural Hazards on the Taieri Plains Revision 1 (ORC, 2015). The LIM also includes a disclaimer:

[39] ORC Report to Engineering and Hazards Committee: Taieri Floodplain Risk Mitigation Plan, 25 May 2006

[40] *Otago Regional Council – Hydraulic Support for Silver Stream and Gordon Road Floodway Modelling* report (Bloxham Burnett & Oliver, 2022)

> We recommend that in addition to reading these reports, that you seek independent advice about how this property may be affected by natural hazards including natural hazards that are not described in the reports produced by the Otago Regional Council.

111. In a separate section outlining relevant 2GP provisions, it is noted that there are ORC Flood Protection Scheme designations relating to the site as well as the fact it is in a Hazard 1 (flood) overlay zone. The LIM also states that the operative and 2GP provisions and planning maps should be checked and that the person reading the report should check with the Council whether any changes have occurred since the date that the LIM report was issued.

112. In summary, since the 2006 flood there has been a growing body of information available to landowners, both in terms of the flooding hazard from the Silver Stream (as more detailed hazard studies and mapping have been undertaken), and through the designation of the flood protection scheme applying to the area in the district plan. For those sites with an existing resource consent, it is understandable that landowners would assume that the sites could be built on, without referring to more recent information. However, the introduction of a designation and more recent information on the risk from flooding and appropriate minimum floor levels may mean that some sites can no longer have a dwelling built on them, or through building consents may need design mitigation to meet current minimum floor level requirements.

113. Mention was also made in submissions of building consents issued for extensions and renovations since the 2006 flood. It is noted that extensions to a dwelling at 255 Riccarton Rd West required resource consent as a non-complying activity because the site was under minimum site size (LUC-2008-354). The decision noted the significant flood hazard at the address, an advice note attached to the consent stating:

> The subject site has been identified as being within an area having a 1 in 15 year return period for flooding. Accordingly, application of Section 73 of the Building Act has implications for the property owners when obtaining finance and hazard insurance for the dwelling. The consent holders should take appropriate measures to protect their property from inundation; and note that Council will state the flood risk information on any future LIM report for the property.

114. The most recent flood hazard assessment was carried out in order to better understand how the Gordon Road floodway is impacted by flood events and was not finalised until October 2022. This will add to the body of information available to landowners and potential purchasers of land within the floodway and both councils in making decisions on consent applications for land use and development activities.

3.5 Capacity and maintenance of flood protection infrastructure

3.5.1 Matters raised by submitters

115. The *GRSRG (19)* submits that the spillway is not working as originally designed and has not been maintained, referring to a 2019 ORC report. The understanding of the Residents Group from the report is that the spillway was originally designed and engineered (in 1974) to operate at a higher flow rate (above 175 m^3/s) than the level as of 2018 of 115m^3/s, and that this is due to aggradation and decreased sectional area of the Silver Stream.

116. Secondly, the Residents Group submits that other parts of the floodway infrastructure are not operating as they should, including the M4 and M3 drains and the “undersized and

ineffective culvert". The group is concerned that maintenance has not been occurring and applying the Haz1A overlay will mean that it will take longer for any maintenance to take place.

117. Both the capacity of the Silver Stream to run at a higher level before the spillway operates and the maintenance of drains and culverts was raised in many of the individual submissions. *Pamela Bain (15*) submits that it is not reasonable to 'rezone' land without exploring improvements to the flood scheme, such as widening ditches and culverts, dredging the Silver Stream or just maintaining the capacity of the Silver Stream to its set design flow in 1974.

118. Several submitters singled out the meeting of the M3 and M4 pipes at the intersection of Riccarton Road West and Dukes Road South as being a particular issue. *Jason and Lisa Breen's* submission describes how in the 2018 flood event the M3 drain was at capacity and the Dukes Road – Riccarton Road culvert and drain were not working to relieve water. They contend that a lack of maintenance directly caused increased inundation on the floodway, with water becoming trapped and backed up at the meeting of the M3 and M4 drains in a heavy rainfall event. In their submission they provide a diagram of the area which is affected by the backup, which in their view is because of a lack of drain capacity to move water under Riccarton Road towards the upper ponding area. *Jill and Brian Bennett (12)* also state that water cannot get away fast enough on the corner of Dukes Rd/Riccarton Rd as the culvert pipes are too small. *Belinda and Ivan Glass (21)* state that the drainage system, including M4, is not fit for purpose and that there is no exit point at Riccarton Road and the water is expected to flow through a small pipe with a 90 degree turn and it then backs up and floods 240 and 234 RRW.

119. Another issue raised in a number of the submissions is that the height of the roads is making them act as a dam, preventing water from flowing away from properties (*Margaret and Terry Pollitt, 1; Richard and Jennifer Quelch, 11*). *John Ross* also states that the bank on Riccarton Road West needs to be taken down to road height to help water flow.

120. Many submitters state that they are unaware of any maintenance taking place in the area in recent years (GRSRG, Thompson and Burt, Glass). For instance, *Andrina and Shayne King (8)* submit that if the Mill Creek water channels were maintained, the risk would be greatly reduced for landowners. *Richard and Jennifer Quelch (11)* submit that the Mill Creek catchment is further overloaded in flood situations by the reverse operation of the Mill Creek diversion. "It is therefore apparent that water from the Mill Creek catchment whilst it may eventually reach the cut off bank has nothing to do with the flood path of the Gordon Road spillway". *Stephen Watkins (6)* states that the residents of 327 and 325 reported that the floodbank had slumped by the Mill Creek but nothing was done.

121. Some submitters also raise the effects of the expansion of Mosgiel on the flood protection scheme as an issue, with *Jason and Lisa Breen (30)* noting that the scheme was designed 50 years ago and there have been no major upgrades since. *John and Ronda McLaren (31)* suggest that increasing stormwater has been entering Silver Stream from new Mosgiel subdivisions north of the spillway. *Stephen Watkins (6)* also refers to the new Mosgiel subdivision consents putting additional pressure on the Silver Stream.

122. *Thompson and Burt* refer to a bund proposal reported on in an ODT article from 2012 that would give 15 properties protection, including their land, but it had been withdrawn.

123. Finally, *Craig & Julie Struthers* noted the current review of the East Taieri Drainage Scheme and that things should not change until this was completed.

3.5.2 Assessment

3.5.2.1 *Scope*

124. As highlighted in the summary of issues above, the Gordon Road Spillway Residents Group (GRSRG) requested that the original design capacity of the floodway be restored to 175 cumecs, and there were also a number of other submissions relating to the maintenance of flood protection works such as culverts. These aspects of the submissions have been assessed as being outside of the scope of the ORC appeal, which relates to the 2GP rule framework in relation to natural hazards sensitive activities being non-complying or prohibited in the Gordon Road Floodway. However, the submissions raise a number of concerns and questions about how the flood protection scheme works and implications for the residents who live in the floodway, which we respond to in this section.

3.5.2.2 *ORC functions (ORC reporting officer)*

125. In response to concerns raised by submitters related to the capacity and maintenance of flood protection infrastructure, M Mifflin, Manager Engineering and K Tebbutt, Project Manager have produced a memo which sets out the high-level response from the ORC's Engineering team to the issues raised in the submissions in respect of the Gordon Road Spillway Consultation (see Appendix 4). This memo sets out:

- Relationship of Spillway to Lower Taieri Flood Protection Scheme
- Capacity and performance of the Silver Stream
- Maintenance of the Silver Stream
- Management of the Silver Stream

126. The memo then response to the following themes raised by submitters:

> Spillway not operating as originally designed (aggradation of the Silver Stream):
>
> *We understand this to mean "as originally constructed" in this instance.*
>
> *The ORC prepared a draft report in 2019 regarding the capacity of the Silver Stream and the operation of the Spillway. It is relevant to note that the original construction plans (circa 1972-73) may not reflect what has actually been constructed at the Silver Stream Floodway. The plans held by the Council are the original design plans, however there are no as built drawings held. Accordingly, any difference between the current threshold of operation and the threshold as originally constructed is not necessarily linked with reduced channel capacity due to bed aggradation.*
>
> *The 2019 investigation of the capacity of the Silver Stream channel and the operation of the spillway was to inform the broader investigation of the Lower Taieri Flood Protection Scheme performance which is currently underway. As such the 2019 report was never formalised or considered by the Council. Notwithstanding this, the report has highlighted a number of matters that may require consideration to determine whether they impact on the operation of the Gordon*

Road Floodway. These matters include any gravel aggradation and any areas of the Spillway that may require levelling. The Council is presently scoping these matters for inclusion in the next Long Term Plan; the funding that has been included in the current LTP will be used for the completion of this scoping and may also allow some low cost works to be undertaken. It is intended that this work will be undertaken this Summer (subject to resource consenting), and work will continue over successive years to restore appropriate capacity.

It is key to note that regardless of any remediation or on-going maintenance work carried out within the Silver Stream channel and/or ORC scheduled drains, the area is designed to act as a floodway. The floodbank has a feature of a natural (non-mechanical controlled) spillway which is designed to spill water into the floodway under weather circumstances. It is on this basis that the prohibition of natural hazards sensitive activities within the area is sought.

<u>Floodway infrastructure issues (undersized culvert, M3 and M4 pipe capacity, maintenance issues, height of roads acting as a barrier etc):</u>

The M3 and M4 drains are shown in Figure 3 below.

The section above[41] (Maintenance of the Silver Stream) sets out the typical maintenance activities that occur in the East Taieri Drainage Scheme and the Lower Taieri Flood Protection Scheme on a routine basis. These maintenance activities are appropriate to ensure the continued effectiveness of the flood protection scheme, including the Silver Stream Floodway. In terms of concerns with the drainage network including infrastructure adequacy (size of culverts), the drainage scheme is designed to a rural standard, meaning it is for land drainage purposes, not storm drainage.

The ORC initiated a preliminary assessment of Drains M3 and M4 in 2019. This was not intended to be a comprehensive review of the drainage system. It provided preliminary recommendations based around 1D hydraulic modelling which suggested minor constrictions and some improvements that could be undertaken to structures within these Drains.

ORC, Engineering is looking to develop a comprehensive modelling of its drainage network in future years (future LTP), which will assist in identifying pressure points in the scheme, including the preliminary recommendations in the 2019 assessments.

[41] See full memo from M Mifflin, Manager Engineering and K Tebbutt, Project Manager within Appendix 4

Figure 3: Map of the area showing Drain Names (source: Flood Protection Management Bylaw). Pink shading denotes Gordon Road Floodway, blue shading denotes Excavation Sensitive Areas

Bund proposal in 2012/2022 ORC Draft Long-Term Plan

A concept project was included in the Draft 2012/2022 LTP regarding the establishment of a bund within the Floodway area. Internal conceptual advice regarding the bund was that a 1.7km bund of 1 metre in height would direct water within the Floodway towards the west. This conceptual advice resulted in a concept project being included in the Draft 2012/2022 LTP regarding the establishment of the bund, however the project did not continue through the LTP decision making process to be implemented. Therefore, it was not included in the final version of the 2012/2022 LTP.

3.5.2.3 *DCC functions (DCC reporting officer)*

127. The roads within the Gordon Road Floodway area are owned and managed by the DCC. The DCC's Transportation Group manages resealing of roads in floodways by typically maintaining the level of the existing road. Where rehabilitation treatment (overlaying of an existing road with approximately 100mm of metal) is required, the existing height of the road is maintained in several sections to enable floodwater to continue to flow. If the road height is increased, then there may be a requirement for a resource consent pursuant to Rule 12.3.2.1(h) of the Otago Regional Plan: Water.

128. In response to submissions raising the effects of increasing development in Mosgiel on stormwater as an issue for the area, DCC 3 waters department have provided feedback. The DCC manages stormwater in the urban parts of Mosgiel and has 4 pump stations that discharge stormwater into the Silverstream. Any increase in stormwater discharge to the Silverstream requires consent from the ORC under the ORC Flood Protection Management Bylaw and modelling of increased stormwater discharges as a result of increased runoff indicates that it would only have a very minor effect on levels of the Silverstream i.e. less than 10mm in design rainfall events. Changes to stormwater management controls through the 2GP prevent additional stormwater as a result of development being discharged into the

Silverstream when it is not in peak flow. Overall, while over time there will have been additional stormwater discharged into the Silverstream as a result of development, this will only have had a minor effect on flood levels in the Gordon Road Floodway and now is more tightly controlled to prevent any further increase.

3.6 Appropriate activity status for natural hazards sensitive activities in the Gordon Road Floodway

3.6.1 Matters raised by submitters

129. One of the key reasons expressed in the submissions for not supporting a change in hazard overlay is concern over the negative effects on property values of more tightly restricting land use activities in the Gordon Road Floodway. *Jill and Brian Bennett (12)* are concerned that properties would be devalued and difficult to sell and that this is unfair to residents. Jason and Lisa Breen (30) state that changing from 1 to 1A would have the potential to significantly impact the property values of all of the properties affected, with the potential of becoming uninsurable. *Rey Graham Murphie (5)* expresses concern that even if owners are able to get insurance, banks may exercise 'on demand' clause and call up mortgages.

130. *Pamela Bain (15)* wishes to be able to replace the current house on her property or build a granny flat and also considers that a change in hazard overlay would deflate investment values. *Bronwyn Miles (32)* is concerned that she would no longer be able to build a house on her vacant section (353 Riccarton Road West).

131. A number of submitters, including the *Gordon Road Spillway Residents Group* point to the level of risk varying considerably across the floodway yet all areas are being treated with the "same blunt instrument approach". Further, there are 'extensive areas to the north of the floodway' that are also subject to H1-4 classifications and 'yet they are not subject to the same land use controls'.

132. The Residents Group does not consider the activity status across the whole area to be justified and the submission states that while a non-complying activity status is still onerous it still does not entirely close the door for acceptable proposals. It is also noted that the zoning currently provides for a minimum site size of 40ha [for subdivision], but most properties are less than 5ha and their only 'reasonable' use is lifestyle. *Margaret and Terence Pollitt* consider that existing residential – lifestyle properties should be excluded from the proposal.

133. A number of submitters are concerned about the application of existing use rights, in particular the risk of existing use rights being lost if flood repairs take longer than 12 months (for instance if there are delays in accessing builders or insurance). *Margaret and Terry Pollitt (1)* ask whether existing use rights would allow for a 55m^2 extension to an approximately 130m^2 house. *Clive and Linda Wallis (18)* state that they are unable to rely on existing use rights for 101 Dukes Road South as it is a vacant site so they would not be able to build a dwelling within the part of the property within the floodway. The Residents Group submits that existing use rights are an unsatisfactory basis to recognise the legitimacy of existing houses.

134. The Residents Group submits that a prohibited activity status will prevent landowners taking proactive measures to potentially mitigate the risk of flooding on their dwelling such as increasing minimum floor levels, relocating houses to less vulnerable parts of the property or building up ground. The Residents Group and *Mark and Rebekah Jenkins* are concerned that existing use rights will only encourage more like for like development and not enable greater resilience (through being able to utilize new technologies). *Belinda and Ivan Glass (21)* and *Abe and Dini Oksam (20)* also submit that Haz 1A will prevent owners having the opportunity to mitigate future flood events.

135. *Jason and Lisa Breen (30)* consider that it is unjust and unfair to put the Hazard 1A (flood) overlay over the whole floodway when 80-90% of homes have never been affected. The submitters also note that their application to build a second dwelling on their property had been declined by the ORC in 2022 and ask why it is necessary to change the overlay zone to Hazard 1A when the ORC has demonstrated the ability to control sensitive activities under the current setting. *John Ross (25)* also states that houses not on the spillway have more water in them [during floods]. *Clive and Linda Wallis (18)* consider that the risk shown for 101 Dukes Road south "does not align" with the Hazard 1A overlay zone and is similar to the properties to the northwest in the Hazard 2 (flood) Overlay Zone. They also consider that it would be inappropriate to have part of their site classified as Haz 1A and part as Haz 2 "as there is not such an extreme differentiation of risk in the property".

136. The Residents Group submits that the Haz1A status does not achieve anything in terms of risk avoidance or to ORC's powers to protect the operation of its scheme. The Group is not clear how changing the activity status for housing would affect the safe operation or the integrity of spillway/floodway, or the level of service for Mosgiel. They consider that farm buildings will have the same diversionary effect as buildings accommodating sensitive activities. Further, it is noted that the likelihood of obtaining consent for further residential activities would be low anyway due to the density rules. Outcomes being sought by ORC and DCC can therefore be achieved without the prohibited activity status. *Robert Reid (28)* also states that there are plenty of laws and by-laws already to cover the flooding issue.

137. Another subject raised in submissions was that landowners are aware of the flood risk and currently manage their own risk. *Rebekah Jenkins (14)* and *Mark Jenkins (15)* state that they bought their property knowing the risks associated with living in the area and that they monitor and proactively prepare for floods.

138. Finally, the Residents Group seeks:

    a. A declaration that Haz1A satisfies grounds under s85(3B) of the Act and that an order modifying or deleting Haz1A overlay provisions under section 85(3A)(a)(i) be made in the event that the case for Haz1A status is otherwise made out."

    b. In the alternative, the Haz1A provisions be modified to enable:

        (a) One Standard Residential Activity within an associated Residential Unit within a list of titles located within the floodway. This list should include all those properties that contain an existing dwelling at the time the s293 application was made and where the record of title does not include any area outside of the floodway of a suitable size to accommodate a dwelling.

(b) Performance standards for any new building to include a minimum floor level requirement to avoid inundation in the modelled 100 year ARI event plus an allowance for freeboard.

3.6.2 Assessment

3.6.2.1 *Scope*

139. Firstly, in response to the comment from GRSRG, that there are 'extensive areas to the north of the floodway' that are also subject to H1-4 classifications and 'not subject to the same land use controls', we consider that this matter is outside the scope of this appeal, which is limited to the Gordon Road floodway. We also note that classification of different hazard levels according to risk (H1-6) in the vicinity of the Gordon Road floodway has only recently been undertaken and therefore any potential implications of the classification for areas outside of the appeal area have yet to be considered.

3.6.2.2 *Ability to use site under a prohibited or non-complying activity status (DCC reporting officer)*

140. GRSRG are concerned that over time a prohibited activity status will prevent landowners from continuing to use their properties or being able to take proactive measures to lower the risk of flooding on their dwellings such as increasing minimum floor level or relocating to less risky areas of their properties.

141. It is my understanding that a proposal to raise the minimum floor level of an existing dwelling would normally be managed under the building consent process and not require a new resource consent unless other performance standards of the 2GP were contravened as a result of the change of elevation e.g. Rule 16.6.5 – Maximum height or if the proposal also involved extending the dwelling, in which case it would also be assessed under Rule 16.3.6.1 as a natural hazards sensitive activity. With respect to the rules that manage buildings, the relocation of a building within a site in the Gordon Rd floodway is provided for as a RD activity under Rule 16.3.6.3:

> New buildings and additions and alterations to buildings that create within any two calendar-year period: more than 36m² of new ground floor area in the Henley mapped area, or more than 60m² of new ground floor area outside the Henley mapped area

142. The definition of buildings is:

> The development activity which includes a building that is permanently fixed to the land and over 10m².
>
> This definition only applies to "buildings" as an activity in the development category. It does not cover any other use of the word "building", which should rely on the broader definition for "building" (singular).
>
> For the sake of clarity, this definition consists of newly constructed buildings **and buildings relocated to**, or within, a site.
>
> Buildings are an activity in the buildings and structures sub-category, which is in the development activities category.

3.6.2.3 *Vacant developable sites (DCC)*

143. Two of the vacant developable sites within the floodway have been assessed as being within the high risk H5 hazard range. These sites, which are at 351 and 353 Riccarton Rd West are part of a subdivision (RMA 2004-0671) and land use consent (RMA 2004-0747) was granted in 2004. These are part of a wider subdivision where eleven sites out of the original 13 have now been developed, with dwellings and other buildings. 349 Riccarton Rd which is adjacent to 351 and 353 Riccarton Rd West and also mostly in the H5 risk category has recently had a relocatable dwelling moved on-site (ABA-2022-1165). The related submission from Gilbert and Judith Black states that "our property was purchased with approval from both the Dunedin City Council and the Otago Regional Council to establish a residential dwelling on it". It is my understanding that ORC has no record of any approvals for this site since 2016.

144. It is my understanding that, in line with case law, the remaining sites of the 2004 subdivision are still able to have new dwellings built under the 2004 consent. This is because the consent has been given effect to (through the development of the first sites in the subdivision within the 5 years stipulated within the consent decision). However, as the area is subject to a designation, an assessment (and final approval) would also need to be made by the ORC with respect to that designation before any substantive activity takes place on these sites.

145. A further site, at 170 Dukes Road South was subdivided from 293 Riccarton Road West in 1999. It does not currently have a dwelling on it and is below the minimum site size for residential activity under the 2GP (25ha). To my knowledge there is no current resource consent to establish a residential activity on the site and a non-complying activity status would apply both in terms of the underlying rural zoning and the hazard overlay under the status quo.

146. In terms of potential for any second dwellings to be built on already occupied sites in the floodway, the minimum site size for a second residential activity per site in the Taieri Plains Rural Zone is 80ha (Rule 16.5.2.1.g.ii) with contravention of this performance standard being a non-complying activity. New family flats are only a permitted activity where they are associated with a residential activity which meets the performance standard for density (25ha). All of the sites that lie solely within the floodway are well below the minimum site size for a second residential activity and the only sites large enough to meet the family flat rule are 383 Riccarton Rd West and 257 Gordon Road, which have dwellings outside of the Gordon Road Floodway in the hazard 2 overlay, and 269 Dukes Road South which lies across the floodway and the Upper Pond. Therefore, any residential or other sensitive activity would be subject to very strict tests in order to be granted resource consent to establish on the site.

147. Further, as all of the sites are also subject to a designation, ORC approval would need to be sought for additional residential development.

148. Section 176 of the RMA requires that (1) if a designation is included in a district plan, then no person without the prior written consent of that requiring authority, can do anything in relation to the land that is subject to the designation that would prevent or hinder a public work or project or work to which the designation relates, including undertaking any use of the land, subdividing the land and changing the character, intensity, or scale of the use of the

land. My understanding is that 'doing anything' has a broad meaning and would almost certainly include further residential development.

3.6.2.4 *Overlap with 2GP and designation (ORC Reporting officer)*

149. In relation to the overlap with the 2GP provisions natural hazard provisions and the ORC floodway designation, some submitters note that the Otago Regional Council designation for the Lower Taieri Flood Protection Scheme already provides the ORC with the ability to control sensitive activities currently, and question why it is necessary to change the overlay zone to Hazard 1A. It is acknowledged that the existing designation gives the ORC the ability to decline activities within the designation that would prevent or hinder a public work or project or work to which the designation relates. The process for assessing applications under the designation are set out Section 2.1.4 above.

150. It is also noted that the approval process under the designation, and the resource consent process within the 2GP are managing the same activity, i.e., a new dwelling, but for different purposes under different parts of the Resource Management Act. The approval process under the designation is required to ensure that the proposed activity will not prevent or hinder the operation of the floodway[42]. Whereas the resource consent process under the 2GP assesses the adverse effects of the activity on the environment and the extent to which the proposed development will achieve the relevant objectives and policies of the 2GP.

151. From the submitters' perspective it is acknowledged that this may appear to be a duplication of approval processes. However, given these processes are required for different purposes I consider the approval process under the designation cannot be relied on to consider a broader range of effects considered under the resource consent process. As such, I consider both processes are required.

4 OPTIONS EVALUATION

4.1 Introduction

152. Section 32AA(1) requires a further evaluation under the Act for any changes that have been made to or are proposed for the proposal since the initial evaluation report was completed. This evaluation must be undertaken in accordance with section 32(1) to (4).

153. This section discusses the options that have been assessed for managing natural hazards sensitive activities in the Gordon Road floodway. After outlining the options, the discussion is divided into separate assessment, recommendations and s32AA evaluations from the ORC reporting officer and the DCC reporting officer.

[42] Section 176(b) of the Resource Management Act

4.2 Options for managing natural hazards sensitive activities in the Gordon Road Floodway

154. Three potential options were considered within Section 4 of the s32a report. These were to:

- include the entire floodway area in the 1A overlay, making natural hazards sensitive activities prohibited (Option 1); or
- include some of the floodway area within the 1A overlay based on an assessment of the relevant natural hazard risk (Option 2); or
- retain all of the floodway in the Hazard 1 (flood) overlay, retaining a non-complying activity status for natural hazards sensitive activities (Option 3).

155. Paragraph 60 of the s32 report notes that, retaining the Hazard 1 (flood) overlay over the whole area is not considered to be appropriate and would not give effect to the 2GP objectives, due to the risk to people and property, particularly in the higher flood category areas. However, no conclusion was made in relation to the relative preference between the other two options and it was noted that this assessment would be undertaken once feedback was received from landowners and occupiers.

156. In response to the submissions, these options have been reconsidered.

4.2.1 Additional evidence on flood risk

157. Dr Payan, Manager Natural Hazards at ORC was asked to provide technical advice on the relative risk of areas within the Gordon Road Floodway and has included this in his memorandum in response to key issues raised in submissions (see details in Appendix 4). He indicates that there are areas of higher risk and areas of lower risk within the mapped Gordon Road Floodway as shown in Figure 8 below. The area outlined with a dotted purple line is assessed as being lower risk, while the rest of the floodway area which is outlined in blue, is assessed as being at higher risk.

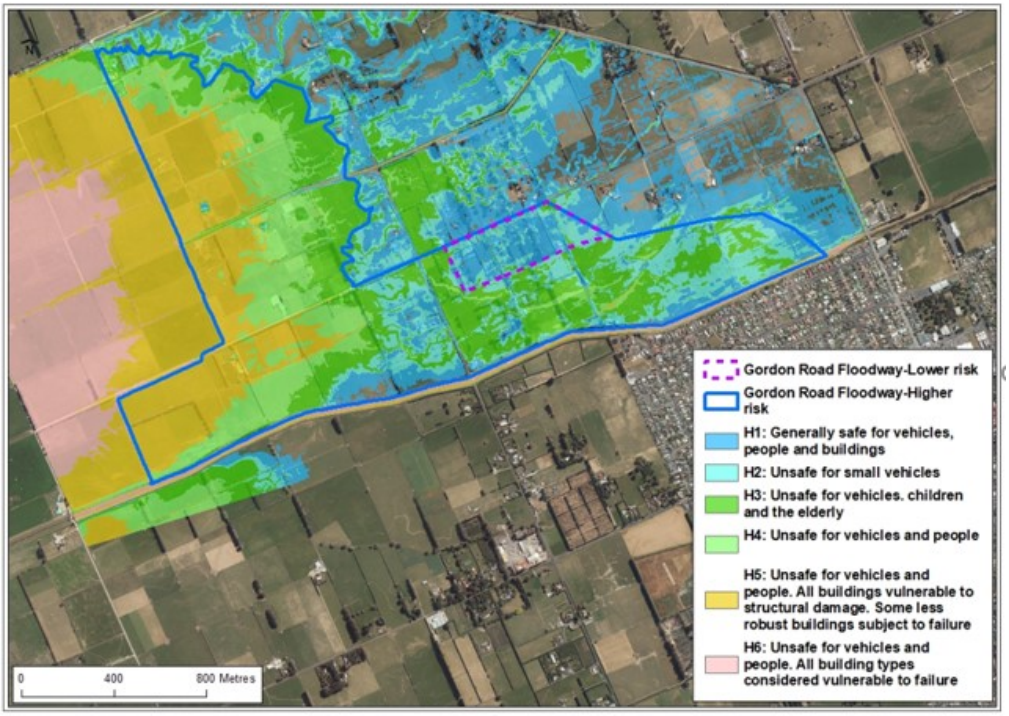

Figure 8: Areas assessed as being of a higher or lower risk in the Gordon Road Floodway

158. In support of this assessment Dr Payan states:

> *"17. The higher risk areas correspond to the areas where:*
>
> - *the flood hazard characteristics are such that they are a potential threat to life (flood hazard category H3 or higher),*
> - *the ability to safely access the property is compromised or restricted (flood hazard category H2 or higher)*
> - *buildings are vulnerable to structural damage (flood hazard category H5)*
> - *properties are likely to rely on civil defence assistance (for example for evacuation in a relatively short timeframe[43]).*
>
> *18. The higher risk areas also include areas where the flood hazard characteristics may not be a threat to life but where the areas are within the flowpath of the spilled water and likely to affect the safe functioning of the spillway.*
>
> *18. Using the guidance and definitions from Section 11 of the 2GP, I consider that the consequences listed above correspond to the "moderate" and "major" consequences categories.*

[43] As described in Affidavit of Matthew Stuart Alley for Appellant in support of an application under section 293

20. *Depending on the severity of the event[44], the likelihood associated with the higher risk areas ranges from "very likely" to "moderately likely" based on table 11.1.2A in Section 11 of the 2GP.*

    Combining the consequence rating and likelihood rating based on table 11.1.2A (see table below), the risk corresponding to the higher risk areas of the Gordon Road Floodway is determined as "moderate risk" to "high risk" depending on the scale of the flood event and on the volume of water spilled into the floodway. At the mapped full extent of the Gordon Road Floodway, most of the higher risk areas within the Gordon Road Floodway are determined as "high risk" based on table 11.1.2A.

Table 11.1.2A Risk Guidance

Likelihood	Minor consequences	Moderate consequences	Major consequences
Very likely (less than 1:50 (1 in 50 year event) or annual exceedance probability (AEP) 2% or more)	Low to Moderate risk	Moderate to High risk	High risk
Moderately likely[1] (1:50 - 1:200 or AEP range 0.5% to 2%)	Low risk	Moderate risk	High risk
Unlikely (1:200 - 1:500 or AEP range 0.2% to 0.5%)	Low risk	Low risk	Moderate risk
Very unlikely (1:500 to 1:2500 or AEP range 0.04% to 0.2%)	Very low risk	Low risk	Moderate risk
Extremely unlikely (more than 1: 2500 or AEP 0.04% or less)	Very low risk	Very low risk	Low risk

[1] Where likelihood is unknown or poorly established, use 'moderately likely'.

21. *The identified lower risk areas (Figure 2) are located at the margin of the Gordon Road Floodway and where the flood hazard characteristics associated with spilled water are less likely to be a threat to life (flood hazard category H2 or less). Access to the areas (through Dukes Road South) is less likely to become unsafe[45].*

22. ***It is important to note that the lower risk areas are part of the Gordon Road Floodway and have a degree of flood hazard (refer to Appendix 2 for illustration); the lower risk areas are not necessarily areas where flood hazard risk is low, they are areas where the risk is lower than other areas in the Gordon Road floodway."***

4.2.2 Options for assessment

159. The three options are presented in Table 3 below showing the key differences, with each of the reporting officers providing their assessment of the options below the table.

[44] The spillway operation starts when the flows in the Silver Stream at Gordon Road exceed approximately 120-130m^3/s with the spillway fully operating when flows exceed 150-170m^3/s as described in affidavit of Dr Jean-Luc Payan. The thresholds of the spillway operation correspond to flows having more than a 2% Annual Exceedance Probability (AEP). The mapped full extent of the higher risk areas within the Gordon Road Floodway corresponds to an event having a 1% AEP.

[45] Refer to submissions: Richard-and-Jennifer-Quelch, John-and-Ronda-McLaren, Jason-and-Lisa-Breen, Jill-and-Brian-Bennett

Table 3: Options for managing natural hazards sensitive activities

Option #	Hazard overlay zone	Activity status for natural hazards sensitive activities
1	Hazard 1A (flood) overlay for all of the Gordon Road Floodway area	• Natural hazards sensitive activities are prohibited within the overlay area that is amended to Hazard 1A.
2	Include higher risk areas of the Gordon Road Floodway area within the Hazard 1A (flood) Overlay Zone, and lower risk areas within the Hazard 1 (flood) Overlay Zone, based on the relevant natural hazard risk	• Natural hazards sensitive activities are prohibited within the areas that are included in the Hazard 1A overlay, with a bespoke rule managing the expansion of existing dwellings as a non-complying activity. The areas that remain in the Hazard 1 overlay retain the current non-complying status
3	Retain all of the floodway in the Hazard 1 (flood) overlay, retaining a non-complying activity status for natural hazards sensitive activities	• Retains status quo - Natural hazards sensitive activities are non-complying

Option 1 would adopt the current Hazard 1A overlay provisions for the whole of the appeal area (Gordon Road Floodway). Natural hazards sensitive activities are prohibited in the Hazard 1A (flood) Overlay Zone[46].

Option 2 would include part of the appeal area in the Hazard 1A overlay and part in the Hazard 1 overlay as follows:

- The area identified on Figure 8 as 'Gordon Road Floodway – higher risk area' would be included in the new Hazard 1A (flood) Overlay Zone. New natural hazards sensitive activities would be prohibited in these areas. The expansion of existing dwellings would be a non-complying activity. The area identified in Figure 8 as 'Gordon Road Floodway – lower risk area' would remain in the

[46] Rule 16.3.6(1)

notified Hazard 1 (flood) Overlay Zone. New natural hazards sensitive activities would be non-complying in these areas.[47].

Option 3 is to retain the current Hazard 1 overlay for the whole of the floodway.

160. It is also important to note that for each of the options, any new dwelling within the Gordon Road Floodway designation requires approval from the ORC as the requiring authority for the designation, and a separate approval may also be required under the ORC Flood Protection Management Bylaw.

161. In addition, Rule 14.3.2 of the Regional Plan: Water for Otago also requires resource consent as a discretionary activity for the erection, placement, extension, alteration, replacement, reconstruction, demolition or removal, of any defence against water[48], other than on the bed of any lake or river.

4.3 ORC assessment

162. When assessing the proposed options, I have relied on the PORPS19 and the pORPS21 to help frame my analysis. The two policies of particular relevance to this appeal are listed below.

163. Policy 4.1.6(a) and (b) of the PORPS19 states:

> *Minimise natural hazard risk to people, communities, property and other aspects of the environment by:*
>
> *(a) Avoiding activities that result in significant risk from natural hazard;*
>
> *(b) Enabling activities that result in no or low residual risk from natural hazard;*
>
> *(c) …*

164. Similarly, Policy HAZ–NH–P3 – New activities states:

> *Once the level of natural hazard risk associated with an activity has been determined in accordance with HAZ–NH–P2, manage new activities to achieve the following outcomes:*
>
> *(1) when the natural hazard risk is significant, the activity is avoided,*
>
> *(2) when the natural hazard risk is tolerable, manage the level of risk so that it does not become significant, and*
>
> *(3) when the natural hazard risk is acceptable, maintain the level of risk.*

[47] [note addresses]

[48] Defence against water is defined in the Water Plan As: Any dam, weir, bank, carriageway, groyne, or reservoir, and any structure or appliance of any kind which has or may have the effect of stopping, diverting, controlling, restricting, or otherwise regulating the flow or spread or subsidence, in or out of a water body, of water including flood waters, which is specifically established for the purpose of flood hazard mitigation.

ORC assessment – Option 1

165. I consider the prohibited activity status for new sensitive activities across the whole of the Gordon Road Floodway will give effect to the avoidance requirements of Policies 4.1.6(a) and HAZ–NH–P3(1) as it will ensure that activities that result in significant risk from flood hazard will be avoided.

166. However, I also note that the flood risk mapping included within Appendix E and F of Dr Payan's affidavit[49] highlights that within the Gordon Road Floodway area the risk varies from 'H1 – Generally safe for vehicle, people and buildings' to 'H5 – Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building subject to failure'.

167. Given the broad spectrum of natural hazard risk within Gordon Road Floodway area, I consider there are likely to be areas within the Gordon Road Floodway where the risk is less than significant. In these lower risk areas, the direction within Policy 4.1.6(b) and HAZ–NH–P3(2) adopts a more nuanced approach to the management of natural hazard risk. In these lower risk areas of the Gordon Road Floodway, I consider that prohibited activity status is not required, to give effect to the pORPS21 and the PORPS19.

ORC assessment – Option 2

168. As set out in Appendix 4 of this report Dr Payan has reviewed the relative flood risk associated with the Gordon Road Floodway based on a number of factors. Based on this assessment he has divided the floodway into an area of 'higher risk' and an area of 'lower risk'.

169. Option 2 responds to the technical advice from Dr Payan and retains the Hazard 1A (flood) Overlay Zone and associated prohibited activity status for any new natural hazards sensitive activities establishing in areas of the Gordon Road Floodway that are considered to be 'higher risk'. The expansion of existing dwellings within the 'higher risk area' would be a non-complying activity. The areas identified as having a 'lower risk' will be included within the Hazard 1 (flood) Overlay Zone. This will provide landowners a consenting pathway, as a non-complying activity for additional natural hazards sensitive activities. The non-complying activity status will be supported by Policy 11.2.1.1 of the 2GP requiring 'the risk from natural hazards is avoided, or is no more than low'[50]

170. I consider this approach will achieve the requirement within the pORPS21 and the PORPS19 to avoid activities that result in significant risk from natural hazard, as the prohibited activity

[49] Affidavit of Dr Jean-Luc Payan to the Environment Court 05.-ENV-2018-CHC-290-Affidavit-of-Dr-J-L-Payan-sworn.pdf (dunedin.govt.nz)

[50] Policy 11.2.1.1 of the 2GP states:

In the Hazard 1 (flood) Overlay Zone, avoid natural hazards sensitive activities and natural hazards potentially sensitive activities unless:

a. the risk from natural hazards is avoided, or is no more than low; and

b. the activity has a critical operational need to locate within the Hazard 1 (flood) Overlay Zone and locating outside it is not practicable.

status will ensure no new natural hazards sensitive activities are established in the 'higher risk' parts of the Gordon Road Floodway. I consider that the policy direction within Policy 11.2.1.1 of the 2GP requiring 'the risk from natural hazards is avoided, or is no more than low' and guidance on the assessment of resource consents associated with the non-complying activity status will ensure that there is a comprehensive assessment of the risks before any expansion of an existing residential building is granted or an additional natural hazard sensitive activity can be established in the 'lower risk' parts of the Gordon Road Floodway. I consider this option achieves the requirement of Objective 11.2.1 of the 2GP listed above.

ORC assessment – Option 3

171. The concern I have with this option is that it provides a consenting pathway, albeit a difficult consenting pathway, for additional natural hazard sensitive activities to be established within areas of the Gordon Road Floodway that are known to have considerable flood risk, including areas located within the following risk categories:

- H5: Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building subject to failure.
- H4: Unsafe for vehicles and people.
- H3: Unsafe for vehicles and people.

172. I consider it is important to acknowledge that this is an area that is designated as a floodway and therefore is an area that is designed to flood. Given this, the natural hazard risk associated parts of the Gordon Road Floodway is considerable and I consider it would be inappropriate to allow additional natural hazards sensitive activities in large parts of the floodway, particularly those areas identified as being 'Unsafe for vehicles and people (H3-H5)'. Furthermore, given the speed at which flood water can rise in the Gordon Road Floodway and the unpredictable nature of weather events, as highlighted in the affidavit of Mr M Alley[51], evacuating residents can be difficult, and adding additional natural hazards sensitive activities within this area would add to that difficulty.

173. I consider the restrictive policy direction requiring 'the risk from natural hazards is avoided, or is no more than low'[52] and associated non-complying activity status may effectively prohibit additional natural hazards sensitive activities in much of the Gordon Road Floodway

[51] https://www.dunedin.govt.nz/__data/assets/pdf_file/0005/927698/07.-ENV-2018-CHC-290-Affidavit-of-M-Alley-sworn.pdf

[52] Policy 11.2.1.1 of the 2GP states:
In the Hazard 1 (flood) Overlay Zone, avoid natural hazards sensitive activities and natural hazards potentially sensitive activities unless:

a. the risk from natural hazards is avoided, or is no more than low; and
b. the activity has a critical operational need to locate within the Hazard 1 (flood) Overlay Zone and locating outside it is not practicable.

given the natural hazard risk mapping included within the affidavit of Dr Payan[53]. As such, within the 'higher risk' areas of the Gordon Road Floodway there is a danger that a non-complying activity status will send the wrong message to landowners as it will be extremely unlikely that any new natural hazard sensitive activities will ever be able demonstrate that the natural hazard risk can be avoided or is no more than low.

174. Notwithstanding the concerns raised above, I consider the direction within Policy 11.2.1.1 of the 2GP and the guidance on the assessment of resource consents associated with the non-complying activity status will ensure that there is a comprehensive assessment of the risks before a natural hazard sensitive activity can be relocated. I consider this option achieves the requirement of Objective 11.2.1 of the 2GP listed above.

4.3.1 32AA Evaluation

175. A Section 32AA(1) evaluation under the Act is required for any changes to the proposal since the evaluation report was completed. Table 4 below provide a summary of the cost-benefit analysis of the options, which have been reassessed since the completion of the Section 32 evaluation report.

Table 4: Cost-benefit analysis of options (ORC)

Option 1 - Hazard 1A overlay over the whole of the Gordon Road Floodway	
Costs	**Benefits**
- Would prevent new natural hazards sensitive activities across the whole of the mapped Gordon Road Floodway regardless of natural hazard risk associated with the application.	- Ensures the risks associated with new development with the Gordon Road Floodway is avoided. - Provides clarity as to the anticipated level of development within the Gordon Road Floodway
Efficiency	This option would be inefficient at achieving Objective 11.2.1[54] of the 2GP as there would be no ability for any applicant to apply for a new natural hazards sensitive activity, even if the risk associated with the activity can be avoided or will be no more than low as required by Objective 11.2.1.
Effectiveness	This option would be very effective and efficient at achieving Objective 11.2.1 of the 2GP as there would be no opportunity for any new natural hazards sensitive activities to be applied for.

Option 2: Re-mapping of the Gordon Road Floodway with:

[53] https://www.dunedin.govt.nz/__data/assets/pdf_file/0012/927696/05.-ENV-2018-CHC-290-Affidavit-of-Dr-J-L-Payan-sworn.pdf

[54] Objective 11.2.1:
Land use and development is located and designed in a way that ensures that the risk from natural hazards, and from the potential effects of climate change on natural hazards, is no more than low, in the short to long term.

- areas subject to a high flood risk are contained within the Hazard 1A (flood) Overlay Zone; and - areas subject to lower level of flood risk are contained within the Hazard 1 (flood) Overlay Zone.	
Costs	**Benefits**
- May prevent new natural hazards sensitive activities on the mapped Gordon Road Floodway that could demonstrate that the natural hazard risk associated with the application can be avoided or is no more that low.	- A risk-based planning approach which responds to the variation of natural hazard risk across the Gordon Road Floodway. - Ensures that no new hazard sensitive activities on the mapped Gordon Road Floodway can be established in the 'higher risk areas' of the Gordon Road Floodway. - Provides some limited ability to develop within the Gordon Road Floodway area while also ensuring that the level of natural hazard risk associated with any potential development in avoided or is no more than low.
Efficiency	Option 2 would be reasonably efficient at achieving Objective 11.2.1 of the 2GP as the prohibited activity status will ensure no new natural hazard sensitive activities are established in the higher risk areas of the Gordon Road Floodway. There may be some inefficiencies associated with this option in the higher risk areas, as there would be no ability for an applicant to apply for a new natural hazard sensitive activity, even if the risk associated with the activity can be avoided or will be no more than low as required by Objective 11.2.1. In the lower risk areas within the Gordon Road Floodway this option would provide the ability for a new natural hazard sensitive activity to demonstrate, through a non-complying activity consent process, that the risks associated with it are avoided or will be no more than low as required by Objective 11.2.1 in areas identified as having a lower risk.
Effectiveness	Option 2 would be effective at achieving Objective 11.2.1 of the 2GP it will ensure no new natural hazard sensitive activities are established in the higher risk areas of the Gordon Road Floodway. In the lower risk areas within the Gordon Road Floodway it will provide the ability for a new natural hazard sensitive activity to demonstrate, through a non-complying activity consent process, that the risks associated with any activity is avoided or will be no more than low as required by Objective 11.2.1 in areas identified as having a lower risk.

Option 3: Hazard 1 overlay over the whole of the Gordon Road Floodway	
Costs	**Benefits**
- The Gordon Road Floodway is an area that is designated by the ORC as a floodway and is designed to flood. The natural	- Requires a resource consent as a non-complying activity for the establishment of

	hazard risk associated parts of the Gordon Road Floodway are considerable. Therefore, the non-complying activity status may provide landowners with a false sense that there is an ability construct a new dwelling in higher risk areas of the Gordon Road Floodway. Particularly given that any new residential activity will also require the approval of the ORC under the designation.	new hazard sensitive activities on the mapped Gordon Road Floodway. - Provides some limited ability to develop within the Gordon Road Floodway area while also ensuring that the level of natural hazard risk associated with any potential development in avoided or is no more than low.
Efficiency	Options 3 would be reasonably efficient at achieving Objective 11.2.1 of the 2GP. It will provide the ability for a new natural hazard sensitive activity to demonstrate, through a non-complying activity consent process, that the risks associated with any activity is avoided or will be no more than low as required by Objective 11.2.1. However, the non-complying activity status for new natural hazard sensitive activities may be inefficient, particularly in the higher risk areas of the floodway, as it allows landowners to apply for a resource consent for an activity that is very unlikely to be approved.	
Effectiveness	Option 3 would be reasonably effective at achieving Objective 11.2.1 of the 2GP. The non-complying activity status and policy direction would require that any new natural hazard sensitive activity will need to demonstrate that the risks associated with the activity can be avoided or will be no more than low as required by Objective 11.2.1. This option leaves the 'door ajar' to applications for new natural hazard sensitive activities in the higher risk areas of the Gordon Road Floodway which if consented may not achieve Objective 11.2.1. Particularly given the technical reports[55] have modelled parts of the Gordon Road Floodway as being unsafe for vehicles and people (areas H3 – H5).	

Adequacy of Information and Risk of Acting or Not Acting

176. Section 32(2)(c) of the RMA requires an assessment of the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.

177. If no action is taken and the Proposed Plan is retained as notified, this is in effect Option 3 which has been assessed above. The information on which the options are assessed is the modelling information discussed in section 2.1.7 of this report. I consider that this information can be relied upon to inform the assessment of options.

[55] Reports by Bloxam Burnett & Olliver and peer reviewed by Tonkin and Taylor Ltd

Conclusion

178. I recommend that the Court adopts Option 2. I consider that the prohibited activity status for new natural hazard sensitive activities included within Option 2 is a transparent planning response to the natural hazard risks that apply to the Gordon Road Floodway. The Gordon Road Floodway is an area that is designated as a floodway and is designed to flood. Therefore, as highlighted by the flood modelling, the natural hazard risk associated with parts Gordon Road Floodway are considerable. In addition, this option ensures that new natural hazard sensitive activities in the 'lower risk areas' and the expansion of existing residential buildings are manged through a consent framework as a non-complying activity.

179. For clarity, I support the changes recommended by the DCC reporting officers to the text of the 2GP, which ensures greater clarity within the rules. Our recommendations differ in relation to the appropriate hazard overlay for the Gordon Road Spillway. I support a split between the Hazard 1A (flood) overlay and Hazard 1 (flood) overlay with a bespoke rule managing expansion of residential dwellings as a non-complying activity as set out in Appendix 4. Whereas the DCC reporting officers consider the whole of the Gordon Road Spillway should be identified within the Hazard 1 (flood) overlay.

180. I have included a list of recommended amendments to the 2GP within Appendix 3. I acknowledge if this option is adopted there may also need to be consequential changes to the 2GP required to integrate this drafting into the 2GP. These changes will need to be consistent with the overall drafting approach to the 2GP.

4.4 DCC assessment

4.4.1 2GP objectives and policies

181. The relevant 2GP objectives and policies to the assessment are set out in section 2.1.4 above as well as in the Section 32 Report: Objective 2.2.1 and policies 2.2.1.3, 2.2.1.6, 2.2.1.8; and Objective 11.2.1 and policies 11.2.1.1 and 11.2.1.2.

182. Objective 2.2.1 states that the risk to people, communities and property from natural hazards, and from the potential effects of climate change on natural hazards, is no more than low as the overarching strategic objective. Objective 11.2.1 focuses on the location and design of land use and development to ensure the risk is no more than low in the short to long term.

183. Policy 2.2.1.3 sets out the key difference between the Hazard 1A (flood) overlay and the Hazard 1 (flood) overlay, which is where prohibited activity status is not seen as appropriate, areas should be included in Hazard 1. As stated in the section 32 report, there is no specific guidance as to what is appropriate but that it can be interpreted as 'appropriate' in terms of the objectives of the plan, based on the general use of this term in section 32(1)(b) of the RMA.

184. Policies 11.2.1.1 and 11.2.1.2 set up the non-complying and prohibited activity statuses in the Hazard 1 and Hazard 1A overlays respectively. Policy 11.2.1.1 requires that natural hazards sensitive and potentially sensitive activities are avoided unless the risk from natural

hazards is no more than low, and the activity has a critical operational need to locate in the zone and locating outside it is not practicable.

4.4.2 Assessment of options

185. Overall, it is my view that Option 3, retaining a non-complying activity status for natural hazards sensitive activities in the Gordon Road Floodway, is the most effective and efficient option to give effect to Objective 2.2.1 and 11.2.1 of the 2GP as well as the risk-based approach set out in the ORPS19 and the pRPS21. I outline my reasoning below.

4.4.2.1 *Risk assessment*

186. In making my assessment I rely on the expertise of Dr Payan and have considered his memorandum responding to issues raised in the submissions (as detailed in Appendix 4).

187. The modelling shown in Figure 4 indicates that there are significant areas of the floodway that are predicted to have water depths and velocities that may be unsafe for vehicles, children and the elderly, with the most at risk parts being unsafe for all people and where buildings are vulnerable. I note Dr Payan's advice that most of the higher risk areas of the floodway are moderate to high risk and this corresponds to flooding that poses a threat to people's safety, where access may be compromised, buildings structurally damaged and a likely reliance on civil defence assistance.

188. However, I also note that there are also some areas in the east of the floodway which have been assessed as lower risk and being generally safe for people. I therefore do not consider that including the whole floodway in the Haz 1A overlay (Option 1) is appropriate.

189. The mapping of the hazard risk together with the feedback from submitters highlights that the Gordon Road Floodway is a complex environment with many variables which contribute to the risk experienced by landowners. I note that Dr Payan has addressed this matter where he states that 'the modelling does not take into account the design (such as floor level) of existing dwellings. I consider that there may be circumstances where minor expansions of an existing natural hazards sensitive activity may be appropriate if located and designed appropriately to mitigate risk from hazards (for example if associated with the relocation or raising of an existing dwelling), even within areas that are shown as higher risk than H1-2 on Figure 4 if the hazard risk can be mitigated.

190. I also note that Dr Payan states in his assessment that the higher risk area that he has identified "also include areas where the flood hazard characteristics may not be a threat to life but where areas are in the flowpath of the spilled water and likely to affect the safe functioning of the spillway" (para 17). It is my understanding that this is a matter that would be considered in any application to the ORC for new development in the floodway under the designation.

191. As previously noted, a consent for a non-complying activity status with the current objectives and policies represents a very high bar for landowners to achieve. Any proposed additional residential development, for instance extensions to an existing home or a new family flat, would need to demonstrate that Policy 11.2.1.1 can be achieved, and that risk is avoided or no more than low. I also note the second part of Policy 11.2.1.1 that must be met – that 'the activity has a critical operational need to locate within the overlay and locating

outside it is not practicable'. This is particularly relevant for landowners who may not be able to move their residential activity elsewhere.

192. I also acknowledge the concern of residents around the application of existing use rights and the uncertainty that would be created with respect to ongoing use of their land if a prohibited activity status were to be applied to natural hazards sensitive activities.

4.4.2.2 *Effectiveness of prohibited versus non-complying activity status for new sensitive activities*

193. I note that the ORC reporting officer's preferred option (Option 2) is to provide for expansion of existing residential activities as non-complying in the area identified as higher risk by Dr Payan, while prohibiting new natural hazards sensitive activities (modified Hazard 1A overlay) and retaining the lower risk area in the Hazard 1 overlay. I agree with the outcome sought as I agree it may be appropriate to consent a minor technical expansion of a residential activity (for example adding a room that could be used as a bedroom but in practice is unlikely to have more than a negligible increase to the risk to people).

194. However, I do not consider Option 2 to be the most effective and efficient method to achieve Objective 11.2.1. Firstly, having reviewed the available evidence along with the submissions, I consider that the risk-based approach required by the 2GP would be better dealt with on a case by case consenting basis rather than by applying the prohibited activity status for new natural hazards sensitive activities across most of the floodway as Option 2 would require. I am not convinced that the bar to justify a prohibited activity status has been met at this point in time, particularly if consideration may still be given to the design and operation of the floodway as indicated in the memorandum from Michelle Mifflin, Kirsten Tebbutt and Jean-Luc Payan responding to submissions on the capacity and maintenance of flood protection infrastructure (see details in Appendix 4).

195. As described above in Sections 2.1.8 and 3.6.2.3, there are a total of 41 sites with some land within the Gordon Road Floodway area. Of these:

- 25 sites are entirely within the Gordon Road Floodway area, ranging in size from 0.24 to 24.2ha (all below the minimum site size)
- 16 sites also have land outside the Gordon Road Floodway area, ranging in size from 2 to 65ha. Of these, 4 sites (269 Dukes Road South, 257 Gordon Road, and 2 sites at 383 Riccarton Road) are 25ha or larger and therefore comply with the density requirement for a family flat. No sites meet the minimum site size requirement of 80ha for a second residential unit.

196. In terms of residential activity:

- 34 sites have a current residential activity
- 7 sites do not have a current residential activity:
    - 3 sites (323, 351, 353 Riccarton Road West) have resource consent to establish a residential activity within the Gordon Road Floodway area.

- 1 site (101 Dukes Road South) has a total area of 31ha with 10ha of the site being within the Hazard 2 (flood) Overlay Zone. This currently has the potential to establish a residential activity and associated family flat as a restricted discretionary activity in the Hazard 2 (flood) overlay part of the site, and as a non-complying activity in the Hazard 1 (flood) Overlay Zone part of the site.
- 1 site (245 Riccarton Road West) has a total area of just under 1ha, and is Designation D388 for the Airways Corporation of New Zealand Limited for the purpose of a navigational aid (non-directional beacon).
- 1 site (part of 255 Riccarton Road West) with an area of 0.2662ha is part of a larger property of just over 14ha which contains a residential activity.
- 1 site (270 Dukes Road South) with an area of just under 24ha.

197. Only the site at 270 Dukes Road South could feasibly apply for a consent for a new dwelling as a non-complying activity and even then, it would be subject to the National Policy Statement for Highly Productive Land 2022 and would require approval from the ORC under its designation.

198. The likelihood of any additional residential dwellings on already occupied sites is also very low due to no sites meeting the minimum site size for second residential dwellings. Any additional residential development would have to meet the strict objectives and policies related to residential activity in the Taieri Plains Rural Zone It would also be subject to the designation and would need permission from the ORC under that designation. The same strict tests would apply to family flats, as discussed in section 3.6.2.3.

199. Therefore, in my opinion, changing the area assessed as being as at higher risk to a Hazard 1 overlay is unlikely to make a substantive difference with regard to any new residential development given the current level of development, lawfully permitted activities and the existing designation.

200. Secondly, I do not consider the option proposed by the ORC reporting officer in Appendix 3 of including a new rule to provide a pathway for appropriate expansions in the identified higher risk area is the most effective and efficient option because it would require a number of changes to the plan and it would deliver virtually the same outcome in practice as the status quo (Hazard 1) in terms of managing the risk in the floodway so that it is no more than low and achieving Objective 11.2.1.

201. In addition, I note that there are only nine sites that would be left in the Hazard 1 (flood) overlay under Option 2 and these sites are mostly below 2ha (one is 2.4ha) and fully developed except for one site that lies across the Gordon Road Floodway – Hazard 2 overlay boundary.

202. I note that the ORC reporting officer is concerned about the wrong message being sent to landowners if Hazard 1 is retained over the whole floodway as it will be extremely unlikely that any new natural hazards sensitive activities will be able to meet Policy 11.2.1.1 of the 2GP. In my view, non-complying status as it is used in the 2GP sends a strong message that additional development is not provided for. I note the 2GP only uses this status where it is intended that the activity is not provided for and only should be consented in very limited

circumstances. This is reflected in the accompanying “avoid, unless..” policy language the plan uses. In that case the policy directs that non-complying activities are avoided unless two tests are met (1) that the hazard risk is avoided or is no more than low, and (2) that the activity has a critical operational need to locate within the Hazard 1 (flood) overlay zone and locating outside it is not practicable. Further I note that the designation for the flood protection scheme is shown on the 2GP Planning Map and is included in LIMs for all sites.

203. While I agree with the ORC reporting officer that it is important that there is an understanding that the area is in a designated floodway and I consider that it would be inappropriate to allow any further natural hazards sensitive activities in much of the floodway, I do not consider that a prohibited activity status is warranted. For the reasons outlined above, I consider that the risk of development that will lead to additional residents in the area is very low.

204. Overall, I maintain my opinion that a non-complying pathway should be retained because, as set out in the introduction to Section 11 of the 2GP, the potential high risk can “sometimes be reduced to a low risk under the right circumstances”. The resource consent process is used to determine the actual risk of a particular proposal at a specific location, and whether it can meet the policy test of being 'no more than low'. This assessment will also include the potential off-site risks (e.g. diversion of floodwater creating or exacerbating risk). It will also consider the residual risk in the event any proposed mitigation measures should fail.” As discussed in section 3.4.2.2, the recent flood hazard assessment for the Gordon Road floodway will add to the body of information taken into account when making decisions on resource consent applications. Further, the designation will also require a secondary process of seeking approval from the ORC.

4.4.3 DCC Recommendation

205. Given the variability of the mapped hazard risk within the area and the range of flooding experienced by submitters, together with the high bar to gain resource consent for a new or additional house on any of the sites (noting that 3 vacant sites already have consent to have a new house), I consider that the non-complying pathway provided by the Hazard 1 (flood) overlay should be retained to provide an opportunity for people to potentially undertake minor expansions of their activity at the same time as implementing measures to reduce their risk from natural hazards such as raising floor levels or relocation of dwellings where possible. This would provide opportunities for lowering the risk for the residential activities that are already present in the area along with increasing the community’s awareness of the flood hazard.

206. In my opinion, providing for the relocation of existing houses within the area to safer locations within the same site where possible (as provided for by Rule 16.3.6.3) and providing for the minor expansion or modification of those existing dwellings at the same time to be considered as a non-complying activity in very limited circumstances, to be the most efficient and effective way of managing the flood risk in the floodway. For these reasons I recommend that the Court retains the Hazard 1 (flood) Overlay Zone for the entire Gordon Road Floodway area.

207. Further, I consider, while not a matter for decision by the Court, that the hazard category mapping for the Gordon Road Floodway prepared by ORC and associated modelling reports need to be included in LIMs, and made available through the ORC's Otago Natural Hazards Database as soon as practicable.

208. As well as retaining the Gordon Road floodway in the Hazard 1 (flood) overlay I consider that, if there is scope to do so, that Rule 16.3.6 should be amended to improve clarity for plan users. This would make it clear that all new buildings and expansions of existing buildings are subject to the non-complying natural hazards sensitive activity status under Rule 16.3.6.1 if they are to be used for a residential activity.

209. I also consider that it would be beneficial to clarify, that relocation of a natural hazards sensitive activity within the same site would be not be considered as a new land use activity under Rule 16.3.6.1. If my interpretation is correct this clarification can be made under Clause 16 of the Act, however, if that interpretation is not shared by the Court, the Court would need to consider if there is scope to make that change.

210. Under Rule 16.3.6.3 the relocation of an existing dwelling is a restricted discretionary activity based on the definition of (new) buildings. As there may be opportunities for some landowners to move their houses to areas of their sites that are assessed as being at lower risk and in my view, the planning rules providing for this should be highlighted in order to encourage adaptative responses to the hazard risk.

211. Finally, I consider that it would also be useful to highlight that designations may also be in place in hazard flood overlay areas. Although these are shown on the 2GP maps, adding a note to Rule 16.3.6 would help ensure that people are aware that there are other requirements that they may need to meet under that designation.

4.4.3.1 *Recommended amendments to the 2GP*

212. To implement these suggested changes, I propose the following amendments:

    a. Amend Rule 16.3.6.1 and 16.3.6.2 to clarify that the natural hazards sensitive and potentially sensitive activities refer to new or expanded activities.

    b. Amend Rules 16.3.6.1 and 16.3.6.3 to clarify that relocation of an existing building used for a lawfully established natural hazards sensitive activity or existing natural hazards potentially sensitive activity is not subject to Rule 16.3.6.1 but is subject to Rule 16.3.6.3.

    c. Add a Note to Plan Users (Note 16.3.6A – Other RMA considerations) to highlight to landowners that it is also necessary to consult with ORC over any planned development (including new non-residential buildings) within the ORC's designation.

    d. Amend Rule 11.5.2.2 (assessment rules for new buildings and additions and alterations in a hazard 1 (flood), 1A (flood) or 2 (flood) overlay zone) to add additional guidance on relocation.

213. In response to GRSRG's submission suggesting performance standards for any new building to include a minimum floor level requirement, this is a matter that will be assessed as part of a building consent[56] and may also be considered as part of a RD consent for relocation.

214. I have set out my suggested changes in Appendix 5.2

4.4.4 Section 32AA Evaluation

215. A Section 32AA(1) evaluation under the Act is required for any changes to the proposal since the evaluation report was completed. Table 5 below provides a summary of the cost-benefit analysis of the options, which have been reassessed since the completion of the Section 32 evaluation report.

Table 5: Cost-benefit analysis of options (DCC)

Option for assessment	Costs	Benefits	Efficiency and effectiveness
Option 1 Hazard 1A over whole Gordon Road floodway	• Need for landowners to rely on existing use rights, impact on use of land, uncertainty for landowners • Potential negative impact on property values/insurance • Would apply across whole floodway regardless of level of risk	• Sends clear message that no further natural hazards sensitive activities will be allowed in the floodway	Mostly ineffective to prevent new residential activity as there is only one 'vacant'[57] site. Effective at prohibiting expansion of residential activity. Inefficient at achieving Objective 11.2.1 as: • will have little impact in practice on ability to construct additional dwellings in floodway • provides no ability to apply for an expansion of a natural hazards sensitive activity (such as extension to an existing dwelling, even if the overall risk might be lower and met the policy

[56] Note 11.3.4A Other requirements outside of the District Plan notes that minimum floor levels are implemented through the building consent process.

[57] Meaning a site without an existing dwelling or lawfully permitted status for a new residential activity, or where a dwelling cannot be located in a lower risk overlay within the same site.

Option for assessment	Costs	Benefits	Efficiency and effectiveness
			test of being no more than low (for example a proposal to relocate or raise a dwelling and do a minor expansion at the same time).
Option 2 Hazard 1A over H3 and above areas (partial Hazard 1), with the expansion of existing dwellings in the Haz 1A area being provided for as a NC activity.	• Need to rely on existing use rights, impact on use of land, uncertainty for landowners across Hazard 1A areas. • Potential negative impact on property values/insurance in Hazard 1A areas	• Risk-based approach • Provides pathway for consent in area identified as at lower risk where it can be demonstrated risk is no more than low	Mostly ineffective to prevent new residential activity as the only 'vacant' site is also below minimum site size for residential activity and is identified as being highly productive land, as well as being subject to the ORC designation. Inefficient at achieving Objective 11.2.1 as: • will have little impact in practice on ability to construct additional dwellings in floodway • providing for expansion of residential dwellings as a separate NC activity would require a number of changes to the plan and in practice would virtually deliver the same outcome in practice as the status quo Hazard 1.
Option 3 Status Quo (Hazard 1 over whole floodway) with clarification of rules relating to relocation of existing buildings, and additional note to highlight the potential need to get written consent from the ORC as requiring	• Creates a consenting pathway for a new residential activity on an undersized site	• Provides pathway for consents in certain circumstances where it can be demonstrated that risk is no more than low • Comprehensive assessment guidance ensures that risk, including risk transferred offsite, is	Effective as all new natural hazards sensitive activities (including expansion of existing activities) are non-complying activities. Enables a case-by-case consideration of mitigation or avoidance of risk where the degree of hazard risk is variable.

Option for assessment	Costs	Benefits	Efficiency and effectiveness
authority for the designation		evaluated fully so that consent would be granted only where risk can be demonstrated to be no more than low	Efficient at achieving Objective 11.2.1 as: • enables Policy 11.2.1.4 to be given effect to.

216. Overall, my assessment is that Option 3 is the most efficient and effective option for achieving the objectives of the 2GP.

217. The submissions on the activity status for natural hazards sensitive activities in the Gordon Road Floodway also indicate that greater clarity may be needed about how the natural hazards provisions in Rule 16.3.6 work. If no action is taken and the 2GP is retained as notified, it may cause confusion and may result in a lack of consistent interpretation.

218. Section 32(2)(c) requires an evaluation of the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions. The information on which the options are assessed is the modelling information discussed in section 2.2.1 of this report. As discussed in the s32 report, I consider that this information can be relied upon to inform the assessment of options.

219. The Section 32 report for the Gordon Road proposal sets out the statutory considerations that were taken into account in that assessment. Having considered the submissions, along with additional information on land use in the floodway, I consider that Option 3, retaining the Hazard 1 (flood) overlay for the Gordon Road floodway, alongside amendments to provide clarification will give effect to the partially operative and proposed RPS. In addition, Option 3 aligns with the Dunedin Spatial Plan (2012) strategic objective and policy regarding the reduction of threats posed by natural disasters and climate change and discouraging development in areas subject to flooding.

5 APPENDICES

5.1 Appendix 1: Summary of Submissions

No.	Submitter Name	Affected Property	Decision requested
OS1	Margaret and Terry Pollitt (*)	169 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS2	Freya Smith	357 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS3	Moyra Johnston (*)	359 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS4	Sarah & Andrew Maydon (*)	325 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS5	Rey Graham Murphie	347 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS6	Stephen Watkins (*)	327 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS7	Craig & Rebecca Mitchell (*)	257 Gordon Road Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS8	Andrina & Shayne King (*)	323 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS10	Belinda & Ferg Horne (*)	255 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS11	Richard & Jennifer Quelch (*)	117 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS12	Jill & Brian Bennett (*)	155 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS13	Rebekah Jenkins	264 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway, alternatively provide one residential dwelling on each site entirely within the Gordon Road Floodway area that had a dwelling when the 2GP was notified.

OS14	Mark Jenkins	264 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway, alternatively provide one residential dwelling on each site entirely within the Gordon Road Floodway area that had a dwelling when the 2GP was notified.
OS15	Pamela (Pam) Bain (*)	209 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS16	Gilbert & Judith Black	349 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS17	Geoffrey Thompson & Jenny Burt (*)	113 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS18	Clive Morley and Linda Elsie Wallis	101 Dukes Road South Mosgiel	Apply the Hazard 1A (Flood) Overlay Zone to part of the floodway.
OS19	Gordon Road Spillway Residents Group	69 Dukes Road South Taieri 113 Dukes Road South Taieri 117 Dukes Road South Taieri 127 Dukes Road South Taieri 133 Dukes Road South Taieri 137 Dukes Road South Taieri 147 Dukes Road South Taieri 149 Dukes Road South Taieri 155 Dukes Road South Taieri 161 Dukes Road South Taieri 169 Dukes Road South Taieri 209 Dukes Road South Taieri 248 Riccarton Road West	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway

		Mosgiel 255 Riccarton Road West Mosgiel 264 Riccarton Road West Mosgiel 293 Riccarton Road West Mosgiel 323 Riccarton Road West Mosgiel 327 Riccarton Road West Mosgiel 331 Riccarton Road West Mosgiel 347 Riccarton Road West Mosgiel 349 Riccarton Road West Mosgiel 353 Riccarton Road West Mosgiel 357 Riccarton Road West Mosgiel 359 Riccarton Road West Mosgiel 371 Riccarton Road West Mosgiel 413 Riccarton Road West Mosgiel	
OS20	Abe & Dini Oskam (*)	133 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS21	Belinda & Ivan Glass (*)	240 & 248 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS22	Bernadette & Jonathan Rout (*)	115 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS23	Christine Oliver (*)	149 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS24	Craig & Julie Struthers (*)	137 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway

OS25	John Ross (*)	145 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS26	Garth Thomson (*)	149 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS28	Robert Reid (*)	101 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS29	Alice Sinclair (*)	293 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS30	Jason & Lisa Breen (*)	161 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS31	John & Ronda McLaren (*)	127 Dukes Road South Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway
OS32	Bronwyn Miles (*)	353 Riccarton Road West Mosgiel	Do not apply the Hazard 1A (Flood) Overlay Zone to the whole floodway

5.2 Appendix 2: DCC's proposed changes to the 2GP

16.3.6 Activity Status in Hazard 1 (Flood), Hazard 1A (Flood) and Hazard 2 (Flood) Overlay Zones

Activity		**Activity status**		
		a. Haz1A (flood)	**b. Haz1 (flood)**	**c. Haz2 (flood)**
Land Use Activities				
1.	(New) Natural hazards sensitive activities or expansion of natural hazards sensitive activities. For the sake of clarity, this does not include relocation of existing buildings used for lawfully established natural hazards sensitive activities within the same site.	Pr	NC	RD
2.	(New) Natural hazards potentially sensitive activities or expansion of natural hazards potentially sensitive activities. For the sake of clarity, this does not include relocation of existing buildings used for lawfully established natural hazards potentially sensitive activities within the same site.	NC	NC	RD
Development Activities				
3	New buildings and additions and alterations to buildings that create within any two calendar-year period: more than 36m² of new ground floor area in the **Henley mapped area**, or more than 60m² of new ground floor area outside the **Henley mapped area.** For the sake of clarity this includes relocation of	RD	RD	RD

	existing buildings within the same site.			

Note 16.3.6A - Other RMA considerations

X Section 10 of the RMA (existing use rights) provides for land to be used in a manner that contravenes a rule in a district plan if the use was lawfully established before the rule became operative or the proposed plan was notified, and the effects of the use are the same or similar in character, intensity and scale to those which existed before the rule became operative or the proposed plan was notified.

2. Accordingly, activities that are shown to have effects that are the same or similar in character, intensity and scale to those which existed before the rule became operative or the proposed plan was notified will not usually trigger the provisions for natural hazards sensitive activities and natural hazards potentially sensitive activities in Rule 16.3.6. However, Council will consider specific circumstances associated with the development and how this affects the character, intensity and scale of effects from the land use activity.

Y Areas of Hazard (flood) overlay may also be subject to an ORC designation for flood protection under Section 176 of the RMA. The 2GP Planning Map shows the extent of ORC designations in relation to flood management. Approval is required from the ORC as the requiring authority for doing anything in relation to land subject to a designation that would prevent or hinder the work or project to which a flood protection designation relates.

11.5.2 Assessment of all restricted discretionary activities

	Activity	Matters of discretion	Guidance on the assessment of resource consents
2	In a hazard 1 (flood), 1A (flood) or 2 (flood) overlay zone: • new buildings and additions and alterations to buildings that create within any two calendar-year period: more than 36m² of new ground floor area in a residential zone or in the **Henley mapped area**, or more than	a. Risk from natural hazards	*Relevant objectives and policies:* i. Objective 11.2.1 ii. The scale, location and design of the building or other factors mean risk is avoided, or is no more than low (Policy 11.2.1.4). *General assessment guidance:*

	60m² of new ground floor area in all other locations		iii. In assessing options for the appropriate location for the relocation of a building associated with a natural hazards sensitive activity, Council will consider the most up to date available information on hazard risk for the site. *Conditions that may be imposed include:* iv. Restrictions and conditions, including by way of consent notice, on development activities including: 1. location of residential building; 2. minimum floor level; 3. relocatable building requirements; 4. stormwater management systems; 5. establishment, enhancement, or retention of vegetation; 6. design of earthworks; and 7. the location and design of driveways and vehicle tracks.

5.3 Appendix 3: ORC reporting officer's recommended amendments to the 2GP

220. I support the additions proposed by DCC in Appendix 2 above. However, I also support:

- a new map layer identifying the 'higher risk' areas of the Gordon Road Floodway being identified as Haz1A,
- the addition of a new rule managing the expansion of existing residential buildings in the Haz1A Gordon Road Flood Overlay.
- additions to the assessment of non-complying activities section to refer to the expansion of existing residential buildings.

221. I note that further amendments may be required to integrate this drafting into the 2GP. These changes will need to be consistent with the overall drafting approach to the 2GP.

5.5 Appendix 4: Summary of background documents and research

222. The ORC and DCC have overlapping functions under the RMA in relation to natural hazards. Both the ORC and the DCC hold information on natural hazards in Dunedin. The ORC has an online Natural Hazards Database[58], which is publicly accessible; while the DCC has a Hazard Information Management System (HIMS), formerly known as the Hazard Register. Hazards information held by the DCC can be requested[59]. In addition, the ORC has considerable expertise in the field of natural hazards and both agencies have civil defence responsibilities.

223. The following memoranda were provided by ORC to inform the response to the submissions:

- Gordon Road Spillway – Natural hazard's Response to Key Issues (J-L Payan, Manager Natural Hazards, ORC)
- Gordon Road Spillway – Engineering's Response to Key Issues (M Mifflin, Manager Engineering; J-L Payan, Manager Natural Hazards, K Tebbutt, Project Manager BAU)

224. The following reports provide useful background information:

- *Hydraulic Support for Silver Stream and Gordon Road Floodway Modelling* (Bloxam, Burnett & Oliver, 2022). This report describes the hydraulic modelling carried out to assess the flood hazard for the Gordon Road Floodway.
- *North Taieri flood hazard: Silver Stream modelling review* (Tonkin and Taylor, 2022). A review of the hydrological modelling and flood hazard assessment undertaken by Bloxam, Burnett & Oliver for the Gordon Road Floodway.
- *Flood hazard on the Taieri Plain. Review of Dunedin City District Plan: Natural hazards* (Otago Regional Council, 2015).
- *Flood Hazard on the Taieri Plain and Strath Taieri Review of Dunedin City District Plan: Natural hazards* (Otago Regional Council, 2014).
- *Natural Hazards on the Taieri Plains, Otago* (Otago Regional Council, 2013)

225. The following affidavits from hydrological, engineering and planning experts, provided to the Environment Court in December 2022 in support of a request to undertake further consultation with landowners within the floodway, provide further background information on flood hazard and management within the floodway. These reports and affidavits are available here: https://www.dunedin.govt.nz/council/district-plan/2nd-generation-district-plan/gordon-road-floodway-consultation

- Affidavit of Dr Jean-Luc Payan
- Affidavit of Michelle Mifflin

[58] Otago Natural Hazards Database (orc.govt.nz)
[59] Hazard information - Dunedin City Council

- Affidavit of Matthew Alley
- Affidavit of Bikesh Shrestha
- Affidavit of Tom Bassett
- Affidavit of Gary Bayne
- Affidavit of Paul Freeland