

**In the Matter of Proposed Plan Change 1 to the
Partially Operative Dunedin City Second Generation District Plan (2GP)**

Planning Evidence of Darryl Sycamore

Introduction

1. My full name is Darryl Allan Sycamore.
2. I am a Planner for Terrmark Limited and have held the position as Planning Manager with Terramark since January 2020.
3. I hold the qualification of Bachelor of Science from the University of Otago. I am a Member of the New Zealand Planning Institute and have been actively involved with the Otago Branch Executive for over 15 years including as chair. For the NZPI, I have been active in the NZPI Planning Advisory Group developing policy positions for the Institute. I am also a certified Hearings Commissioner having completed the Making Good Decisions course.
4. I am also one of seven Guardians of Lakes Manapouri, Monowai and Te Anau for over 13 years, including the last six-seven years as chairman. The Guardians of Lakes Manapōuri, Monowai & Te Anau provide advice on the environmental, ecological and social effects of the operation of the Manapōuri-Te Anau and the Monowai Power hydro-electric power schemes, and to make recommendations to the Minister of Conservation and to the Minister of Energy responsible for the administration of the Manapōuri-Te Anau Development Act 1963 including the operating guidelines for the levels of Lakes Manapōuri and Te Anau.
5. I have 19 years experience as a resource management practitioner, covering roles with Federated Farmers of New Zealand, Otago Regional Council, the West Coast Regional Council and almost ten years as a planner with the Dunedin City Council.
6. I confirm that I have read the 'Code of Conduct for Expert Witnesses' contained in the Environment Court Practice Note 2023 and I agree to comply with it. I have complied with it in the preparation of this statement of evidence. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this statement.

Minor Improvements

7. From a planning and natural justice perspective I have concerns the plan change has been promoted in the public as ‘minor improvements’. Many of these changes are not minor, or associated with other rules where minor improvements can further be refined. Many rules are new, and many amendments will certainly not be minor on those who are affected by the additional regulatory burden imposed upon them.
8. The ‘*Summary of Changes*’ is far from a complete list of those proposed changes promoted in the Plan Change. The public, being an average ratepayer who is in reality quite disconnected from the day to day activity of Council should be able to review the summary report and determine whether the Plan Change potentially impacts their interests, and whether they need to drill further into the document to gain a fuller understanding of the proposal, or not. The public should not have to dissect every proposed change in detail to determine whether the Plan Change summary is in fact complete nor engage a consultant to do that on their behalf.
9. DCC advises in there Stage 1 decision letter that “*Plan Change 1 proposed targeted minor improvements to the 2GP, including protecting more heritage buildings, providing more enabling rules for health activities, making a wide range of provisions easier to interpret and apply, making some rules more flexible and better managing environmental effects*”. There are a number of key provisions in this Plan Change which will make provisions harder to apply and interpret, will be less flexible and will not better manage environmental effects.
10. The amendments also introduce a question of natural justice to those parties who may have not submitted relying on narrow communication or the incomplete summary of proposed changes in Council communications which may have discouraged further evaluation of the proposal.
11. My submission seeks to address some key matters which will result in significant effects to the community.

Scope of my Evidence

12. The scope of my evidence will relate to the following matters-
 - Fire Fighting Performance Standards

- Stormwater Open Watercourses
- The Permitted Baseline
- Incorporating caravans into the residential density limit assessment,
- Scheduled Tree at 89 Bedford Street
- Rezoning at 12 McKinlay Road

Fire Fighting Performance Standards

13. A rule to comply with SNZ/PAS 4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice (the Code) is appropriate to ensure emergency services can appropriately respond to a fire event in the City.
14. Dunedin has a gravity-fed municipal water supply sourced from the Deep Stream and Deep Creek catchments. A shortfall with this scheme is that, for the much of Dunedin, the Cities municipal water network is not actually capable of providing sufficient water pressure to meet the Firefighting Code. I note this critical issue is not acknowledged in the s42A officers report.
15. Rule 9.3.3 of the Partially Operative 2GP requires development to comply with SNZ/PAS:4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice. The Code requires the confirmation of two fire hydrants within the specified distances from the development, where each hydrant then has sufficient water pressure to enable an appropriate response to fire fighting.
16. In practice, when applying for consent an assessment is made by Terramark planners in relation to the prescribed setbacks required under the Code, and a request is made to 3Waters to confirm those hydrants have sufficient water pressure to meet the requirements of the Code. Neither 3Waters nor City Planning staff make comment on the availability of suitable water pressure to comply with fire Code and the District Plan requirements.
17. Following notification of Plan Change 1 and observing the specific conditions relating to providing suitable water pressure (12.5L/sec for each of two hydrants) it become clear why no response from Council has been forthcoming despite numerous requests. In short, a large percentage of existing properties and or development in the City is not compliant with the requirements of the Fire-fighting Code. This is illustrated in Appendix 1.
18. Proposed amendments to Rule 9.3.3 requires new residential buildings meet one of the four specified fire-fighting water supply and access requirements set

out under Clause 2(a-d). Clause 2(a) carries the existing requirements already applied under the Partially Operative 2GP for development requiring the availability of two fire hydrants, with the first located within 135m of the development, and a second hydrant within 270m. The rule now Each hydrant must also be capable to provide a water flow of at least 12.5 L/sec.

19. If a development does not have two hydrants with sufficient pressure within the specified setback, applicants are then able to install a sprinkler system, or have a sufficiently sized tank, coupling and hardstand to connect to a fire appliance, or seek a resource consent.
20. Each of these alternative options are expensive, visually obtrusive and in many cases not achievable. These alternative options, or consent will be the only pathways available for development in many parts of the City given the pressure component cannot be met. The utility of any resource consent for a breach is questionable, and what would the consent conditions seek, and require that hadn't been considered already. In this case, it appears to be a box-ticking exercise.
21. To further complicate the issue, the proposed rule does not specify what a '*new residential building*' constitutes. The Plan must provide a clear definition to avoid confusion to landowners, consultants or processing planners ie- does it apply to an extension to a dwelling comprising a new bedroom and ensuite, or a 12m² shed to the rear of the site for the electric lawnmower and the kids bikes? In my opinion, an extension of an existing dwelling or a new shed (>10m²) will be subject to this new rule.
22. The consequences of that is severe to property owners. For many sites, the minimum pressure cannot be met to satisfy the Code. This means for many areas in the City, those building their house extension or shed they will need to either-
 - In 2(b) install a sprinkler system with water storage of at least 7,000L,
 - As in 2(c) have legal and physical access to a communal fire-fighting system with a hardstand area, or
 - An alternative solution consistent with the Code of Practice, I.e a 30,000L static water tank, couplings and hardstand area.
23. Few residents in the City appreciate there are numerous areas where a connection to existing fire hydrants have insufficient or marginal pressure for

fighting a fire. For some properties there will simply be insufficient pressure to connect a single fire appliance to the communal network, and for many there is insufficient pressure to connect two appliances to Dunedin's water network.

24. Whilst it falls on developers to ensure there are sufficient fire hydrants to meet Code, it falls on the Council to provide adequate water pressure. Council has the ability to upgrade their water network to meet the firefighting Code, whereas a private landowner has no ability to do so.
25. The City has actively installed pressure-reducing devices to the municipal network in recent years. Higher water pressures add stress to the network and as the network is in a poor state of repair, a decision was made to lower overall water pressure which then extends the life of the network. This decision of Council means more homes are now without sufficient water pressure to meet the Code, and by inference has a reduced ability to fight a fire.
26. As an example Appendix 1 shows the properties along Helensburgh Road near Wakari Hospital as all being <10 L/sec flow, with some only 4L/sec or 5L/sec. A single fire appliance would struggle to utilise that flow, let alone two compliant hydrants as required in the Code.
27. Looking wider across the City, the FENZ GIS shows much of Maori Hill (i.e. Preswick Street, Cannington Road, Cairnhill Street or Braeview) having individual hydrants ranging from 10L/sec to 15L/sec. None of these properties can comply with the proposed rule in relation to the provision of adequate pressure.
28. The proposed rule states two hydrants that each must supply a flow of at least 12.5L/sec. However, when connecting two appliances on adjoining hydrants, they each do not deliver that specified rate. Pressure from one hydrant takes significantly diminishes the other, such that neither hydrant has pressure to fight a fire at a rate required in the Code.
29. It would be perverse to require all the properties in the City (that cannot be served by two hydrants each with a minimum of 12.5L/sec) to either install sprinkler systems, communal systems or large static supplies on their properties for new developments, a dwelling extension or a small shed, or seek a resource consent.

30. It is my opinion this rule should be deleted given the structural failure of the Cities water network not being able to provide sufficient water to meet the Code. Council should focus on improving the pressure of the mains network and then re-introduce this rule when landowners are not forced to apply alternative options or seek consent that result in a series of unintended perverse outcomes.

Stormwater Open Watercourses (Res13)

31. The addition of Stormwater Open Watercourses is not a 'minor improvement' as promoted in Plan Change 1. In my opinion it is poorly considered policy that will introduce a number of significant effects on Dunedin landowners.
32. Many of these mapped areas have not been 'ground-truthed' and have-
- no channel or depression,
 - show no evidence of surface water flow,
 - traverse through a site, a fence, shed and dwelling,
 - has an upper end within a site with no evidence of where the water originates, and no indication of where water goes at the downstream extent beyond the mapped watercourse,
 - are simply a flat landscaped lawn, or
 - is located inside forest or dense hedging.
33. For some landowners, a mapped Stormwater Open Watercourse on an adjoining property will sterilise the ability to use their own land unless they seek a consent (at their cost). This is shown in my submission in relation to the proposed Stormwater Open Watercourse at the rear of 62 Queen Street, Dunedin. Here a Stormwater Open Watercourse has been mapped through a dense hedge at Cosy Dell Tennis Club, and will impact the ability to use the land 2.5m inside the Queen Street property, which is zoned ICR. The yard setback for this zone is only 1.0m.
34. There are other consequences from the proposed new overlay. The DCC clearly has a view that a Stormwater Open Watercourse is 'watercourse' under the RMA. That is why the proposed Rule sits in Rule 10.3.3 relating to 'setbacks from waterbodies'.

10.3.3 Setback from Coast and Water Bodies

In all zones, other than the Harbourside Edge Zone, St Clair Neighbourhood Destination Centre, Dunedin Hospital Zone, Dunedin International Airport Zone, Mercy Hospital Zone, Moana Pool Zone, Otago Museum Zone, Port Zone and Wakari Hospital Zone, new buildings and structures, additions and alterations, earthworks - large scale, storage and use of hazardous substances, and network utility activities must be set back a minimum of:

1. 20m from mean high water springs (MHWS); and
 2. 20m from any wetland identified in Appendix A1.2, Schedule of Areas of Significant Biodiversity Value (ASBV);
 3. 20m from any water body with a clearly defined bed of at least 3m in width in the rural zones;
 4. 5m from any water body with a clearly defined bed less than 3m in width in the rural zones; and
 5. 5m from any water body with a clearly defined bed in all other zones; and
- X. 5m from a stormwater open watercourse mapped area;

35. The exemptions to the Stormwater Open Watercourse provisions also support the view they are considered a waterbody. The exemptions carried into PC1 are taken directly from the Regional Plan:Water rules in Chapter 13 that apply to watercourses/ivers. These exemptions include jetties, boat ramps, bird viewing structures, maimai, whitebait stands, navigational aids or a hydroelectric generator.
36. A landowner can incorporate these exempted structures into their back yard where a Stormwater Open Watercourse may be mapped, but they cannot erect a deck off their house if it is closer than 5m from either side of the mapped watercourse. This is, of course, absurd.
37. Another crucial issue in the addition of Stormwater Open Watercourse relates to how the Otago Regional Council themselves will apply the Regional Plan:Water against these mapped areas.
38. Chapter 13 of the Regional Plan:Water relates to land use on the beds of a waterbody. Here a number of exemptions which enable a number of activities in the bed of a watercourse as a permitted activity i.e.
 - a flow recording device or navigational aid (Rule 13.2.1.4),
 - a maimai (Rule 13.2.1.5), or
 - a whitebait stand (Rule 13.2.1.6),
39. There is another consequence, Rule 14.4.1 of the Regional Plan:Water states the erection or placement of any structure (i.e a deck attached to a dwelling), within 7m of the top of the bank of a watercourse is a permitted activity. Any structure less than 7m will however require consent. Once mapped, even when a structure such as a deck does comply with the DCC 5m setback, as the site now includes a mapped watercourse, the ORC setbacks of 7m may also apply.

40. This means for a deck within 5m of the Stormwater Open Watercourse, both a DCC and ORC consent may be required. For a deck or dwelling extension 6m from the Stormwater Open Watercourse, a consent will only be required from the ORC. I note the Council officers s42A report is silent on this point.
41. Where the watercourse is mapped, being a bed of a river, can a landowner mow the lawn or plant a garden or shrub? Presumably these activities would be captured by ORC RP:W rules in Chapter 13 relating to activities in the bed of a watercourse.
42. These are serious questions that must be resolved. It is clear the DCC consider a Stormwater Open Watercourse mapped area to be a watercourse under the RMA.
43. In my opinion the proposed Stormwater Open Watercourse provisions are poorly considered and should be rejected by the Panel. The severity of the provision is simply far too great to impose on private landowners.

Permitted Baseline (CP15)

44. Rule 15.11.1.X forms part of Change CP15, and is not a 'minor improvement'. It is a retrograde policy that was previously applied by DCC planners at the behest of 3Waters. This approach has now been superseded by City Planning for sites that are not within the Newly Developed Mapped Area in favour of site-specific runoff calculations that carry into consent notices. A copy of a consent notice as an example is found in Appendix 2 below.
45. Rule 15.11.1.X of CP15 reads as follows:
- With respect to section 104(2), Council will not consider potential permitted new buildings and structures or compliance with the maximum building site coverage and impermeable surfaces performance standard (Rule 15.6.10) as part of the permitted baseline in considering the effects of subdivision activities on stormwater management in the residential zones.*
46. The introduction to applying the permitted baseline in s104(2) effects assessments is a new addition, and certainly not a minor improvement. This proposition affects every subdivision in the City, yet there is no s32 analysis of the economic or social implications to private landowners.

47. This has not be sufficiently addressed in the s42A officers report. City Development has little appreciation of the issues faced by City Planning in interpreting and applying the District Plan, Equally, City Planning have little input in developing PC1.
48. There is no ‘error’ in the current Plan requiring a minor improvement. The technical advice provided to the 2GP Hearings Panel was very clear. That is, the permitted baseline is not applied to developments where impervious surface rules are met and in these situations attenuation should not be required unless there is a non-compliance beyond the permitted limit of impervious surfaces.
49. The consequence of applying the baseline at the time of the s104(2) assessment impact ‘mum and dad’ developers or in-fill development the greatest. In this case, even a small unit on a 500m² site must be treated as if any development and hard surfacing will take up 70% of the site. 3Waters then requires attenuation to address that hypothetical 70% coverage, when in reality most sites not subject to multi-unit developments are <50% which is a permitted activity.
50. The consequences of applying the baseline as proposed in Change CP15 leads to small units with 5,000L or 8,000L tanks on their property where a 1,000L will ensure post development flow off the site is less than pre-development. The larger tanks are more expensive and a visual instruction on one’s property.
51. It remains our position that from a Plan interpretation perspective, for any development that meets the performance standard for hard-surfacing and impervious surfaces, no mitigation is required. This is the baseline and is consistent with the technical memorandum presented in the 2GP hearings by Water & Waste Team Leader Tom Dyer. During that hearing, Mr Dyer stated that any activity that occurs within the performance standards of the impervious surface rules do not require any mitigation. Mr Dyer also stated-

“each resource consent and building consent application should demonstrate compliance, or provide acceptable options for mitigation of any non-compliance. This could be achieved by either; an additional financial contribution to the stormwater network, or the implementation of an infrastructure solution such as a holding tank or detention area”.

52. In the absence of any further technical report that supersedes the advice above, s32 analysis or Schedule 1 process, it remains my opinion this remains the correct permitted baseline.
53. I accept the City's stormwater network is compromised and some common sense is however required. It is not Terramark's intention to further exacerbate loading on the network which may increase the frequency or intensity of flood events on the community. As a result we have promoted a methodology where pre-development flows are modelled (including for the RCP 8.5 Climate Change Co-efficient) and carried into consent notices applied to each new site.
54. Following a number of meetings with City Planning staff, managers, and a General Manager a new approach has been adopted which does not adopt the above method. This approach creates a site and development-specific response which ensures the effects of any subdivision or development are hydraulically neutral compared to the pre-development flows. Attenuation may, or may not be required to comply with that maximum flow rate. This approach is consistent with 2GP Rule 9.9.3.7 and demonstrates compliance with Policy 9.2.1.7.
55. It is my strong opinion Rule 15.11.1.X should be rejected. The approach is deeply flawed and a nuanced approach to managing stormwater has been established and accepted by City Planners.
56. Terramark's position accepts the existing rules and baseline has the risk of exacerbating flood risk on the community, and has devised an approach to avoid that. This position imposes the need to attenuate new and existing sites where necessary and is a balanced, responsible approach which imposes some additional cost on development. To apply the proposed CP15 provisions will result in far greater costs and will force a strong challenge to what constitutes the permitted baseline set out in the plan.

Assessing Caravans and Campers in a Density Assessment

57. Proposed change Res7 Definition 1.41 is problematic in its interpretation and how it will be applied. Having read the available Council reports, it is unclear what the issue is that Council are trying to resolve.

58. Note 15.5.2A.3, states a movable building i.e a caravan or a motor home on wheels must comply with the density performance standards, irrespective of whether it is a registered vehicle or not. Terramark seeks the amendment of the proposed definition of 'Building' so that this excludes movable homes and caravans where these structures/vehicles are not being actively used for residential housing.
59. It is common practice for homeowners to store caravans on their property, for use as holiday accommodation when they go on holiday. This is embedded in New Zealand culture. These owners should not be required to obtain a resource consent, or otherwise relocate their caravan in order to comply with a new rule. It is overreach and precisely why planners as professionals and the RMA is viewed by many with derision.
60. In practical terms, it is unclear how this proposal rule will be assessed should it carry into the Plan. Will Building Control when assessing a building consent application send the applicant an RFI asking whether they have any caravans or campers on their property as a matter of rule?
61. There are 1,105 motor homes registered in Dunedin as of 31 January 2025¹, and there are no records available for the number of traditional caravans in the City. Will City Planning write to each owner and ask how many habitable rooms does their dwelling comprise so they can make an assessment on density including their caravan, which may then trigger the need to obtain a resource consent? And what would the conditions of the consent even be, beyond a general accordance condition?
62. I note the s42A report author has revised the rule following consideration of submissions to allow a caravan on the site to be excluded from the density standards provided the caravan/mobile home is not used for residential use for greater than three months in any year. Again, I question how will this be assessed, and enforced?
63. This proposal is both unnecessary and ill-considered. It is my opinion the Panel should reject this change.

Tree2 at Bedford Street

¹ Figure.NZ

64. PC1 identified the group of Schedules Trees G014 as being located in the Bedford Road reserve. Change Tree2 seeks to locate these trees on the boundary R Bedford Street and 89 Bedford Street despite Council having the trees location GPS'ed as part of the previous STEM assessment.
65. The root-shoot interface of the group of trees is within road reserve, approximately 3m from the boundary with 89 Bedford Street. This is illustrated in Appendix 4.
66. Submission S24.001 by Kylie Robinson raises this issue and comments that residents in the area have been asking Council to better maintain these trees, and that the acorns on sloping asphalt creates quite a hazard to pedestrians and cyclists.
67. GIS mapping of these tress should reflect their actual location, being road reserve where Council can actively manage the risk without consultation with the owner of #89 Bedford Street which can complicate any future need for maintenance works.

New Zoning at 12 McKinlay Road

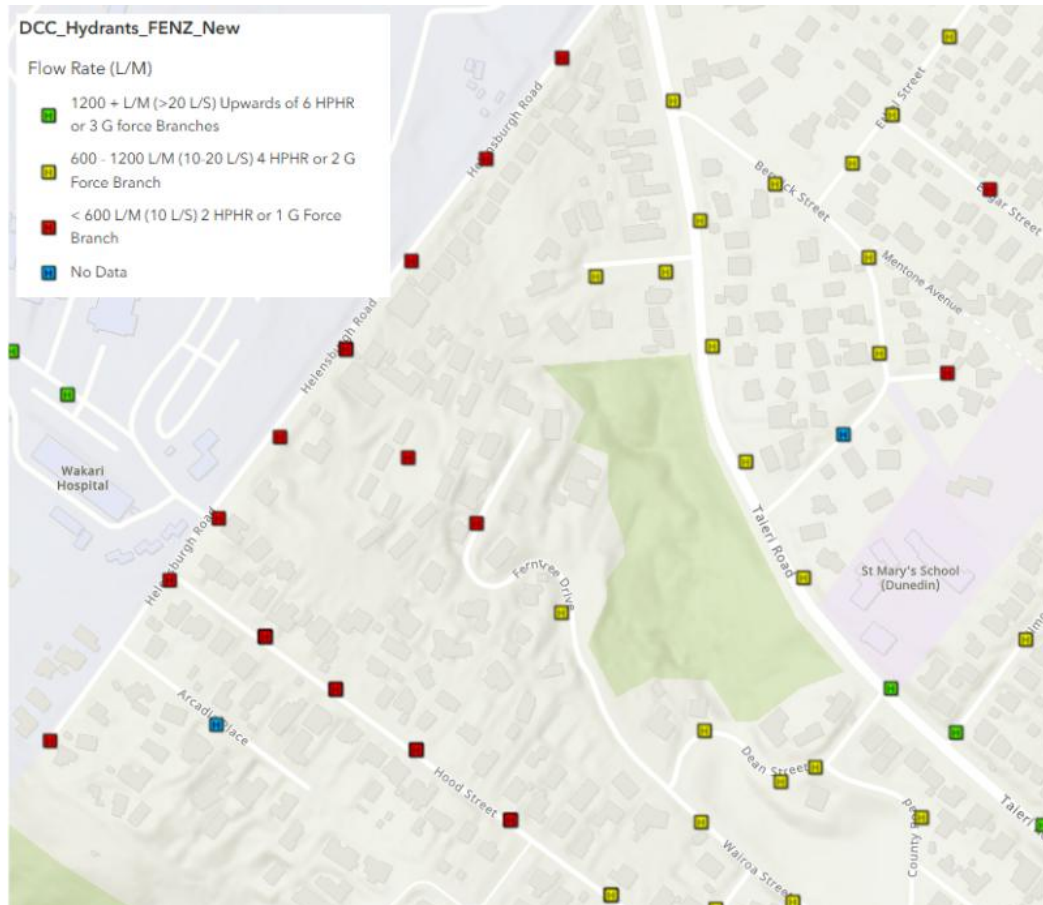
68. City Development stresses the point that PC1 is not 'a rezoning plan change', yet there are a number of sites being promoted by Council for a change of zoning. Plan Change 1 is amongst other things, a rezoning plan change.
69. The land at 12 McKinlay Road is split-zoned Residential 1 and Hill Slopes Rural and is shown in Appendix 5 below.
70. The split zoning on this land was an error (according to DCC GIS staff) and discussions with Council have been ongoing since 2015 regarding the split land zoning. At the time City Development met with Council Planners to introduce and promote the 2GP (as a replacement to the 2005 District Plan), Council's GIS Information Support Officer attended that meeting with a A4 page of an example of the Operative Plan maps showing the #12 McKinlay Road site. There, he promoted the benefits of the 2GP as correcting the split zoned anomalies using this specific property as the example of what will be addressed through the Schedule 1 process.

71. Oddly, that very site presented to DCC planners was not included in the list of split zoned sites to be corrected as part of creating the 2GP maps. The landowner submitted but was rejected as being out of scope.
72. Terramark for the landowner then promoted the site as a logical inclusion to the Variation 2 Plan Change which sought to enable further housing development. Again, it was not adopted and the site remained split zoned.
73. The residential component was then subdivided into 13 new Lots. Some (proposed Lots 8-11 and 13 were split zoned) over two stages.
74. Consent was then sought to develop the rural part of the site being Proposed Lot 12 into the wider development, which was declined on the basis of the avoid policy in the Rural Chapter being interpreted as 'prohibit'. The rural area is shown in black in Appendix 5.
75. Both the applicant and Terramark have been in further discussions with Council with the intention of addressing the split zone issues, yet again the site was not carried into PC1 which was anticipated.
76. The rural zoning has no relationship with the site nor does it have any rural values given the 4,489m² rural land is squeezed in a 14-lot residential development carried out by the landowner, a 6-lot subdivision on the adjacent property and the Grandvista development to the south-east. This is an ideal piece of land for a 'minor improvement' in terms of the split zoning, with no external parties considered potentially affected by rezoning.
77. The existing environment is a 13 Lot development. Twelve lots are consented for residential use, with Lot 12 comprising 4,489m² as rural with no practical use. The rural land cannot be farmed, used productively, nor is it practical for the likes of plantation forestry as that would introduce significant effects on adjoining residential sites.
78. For the 4,489m² rural site, the existing environment includes-
 - a site located within a recently approved residential subdivision in a desirable part of Dunedin with a unique microclimate,
 - a 16m wide road vested in Council to the front boundary,
 - kerbside rubbish and recycling collection to the boundary on Thursdays,

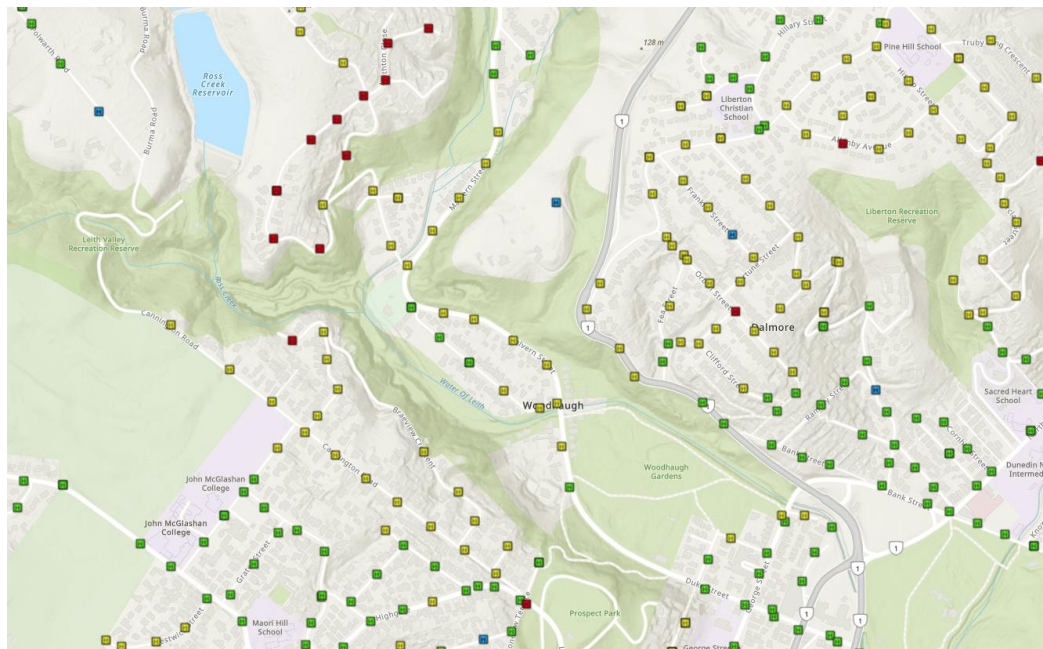
- water and foul services into the boundary,
- twelve new homes on generous sized sites,
- kids playing on their bikes on the street, and
- dad's cooking a barbecue on the lawn.

79. It is illogical to not include this site in any of the previous rezoning processes.
80. Should the Panel elect to re-zone this land to General Residential 1, they can be assured there will be no risk to natural justice. All adjoining landowners are well aware the applicant has been engaged with Council on rezoning this property with no complaint since the inception of the 2GP.
81. It is my view, the Panel can elect to rezone this land and the landowner will spend their money, and assume the risk of developing their residual parcel of land in the middle of a residential development to the betterment of Dunedin City.

APPENDIX 1 – FIRE FIGHTING PROVISIONS



Example of hydrant pressures in the Taieri² – Helensburgh Road Area



Wider Context of hydrant pressures in the Maori Hill- Woodhaugh – Dalmore A

² www.arcgis.com/apps/mapviewer/index.html?layers=77cd61cee1f140219462c9e7fbfdb7bd

APPENDIX 2 – EXAMPLE OF CONSENT NOTICE APPENDED TO NEW RECORDS FOR STORMWATER MANAGEMENT

The following is an excerpt from a Stormwater Assessment for a recent consent application. A comprehensive report sits behind these calculations to ensure the post-development flows are neutral or better than pre-development flows off the site. This method is clear to all parties and simple to implement. This method has support from City Planning consistent with the Partially Operative 2GP, and will be lost as a consequence of the proposed permitted baseline provisions being adopted.

Consent Notice

Attenuation for the site is required due to the resulting increase in post-development flow rates leaving the site.

Imposition of the following consent notice upon the titles of Lots 1 & 2 will achieve this:

A consent notice to address stormwater flows must be prepared and registered on the record of title for Lots 1 & 2 hereon for the following on-going conditions:

- i) *Stormwater discharges associated with all land use, development and/or redevelopment activities on-site must be restricted to the following levels.*

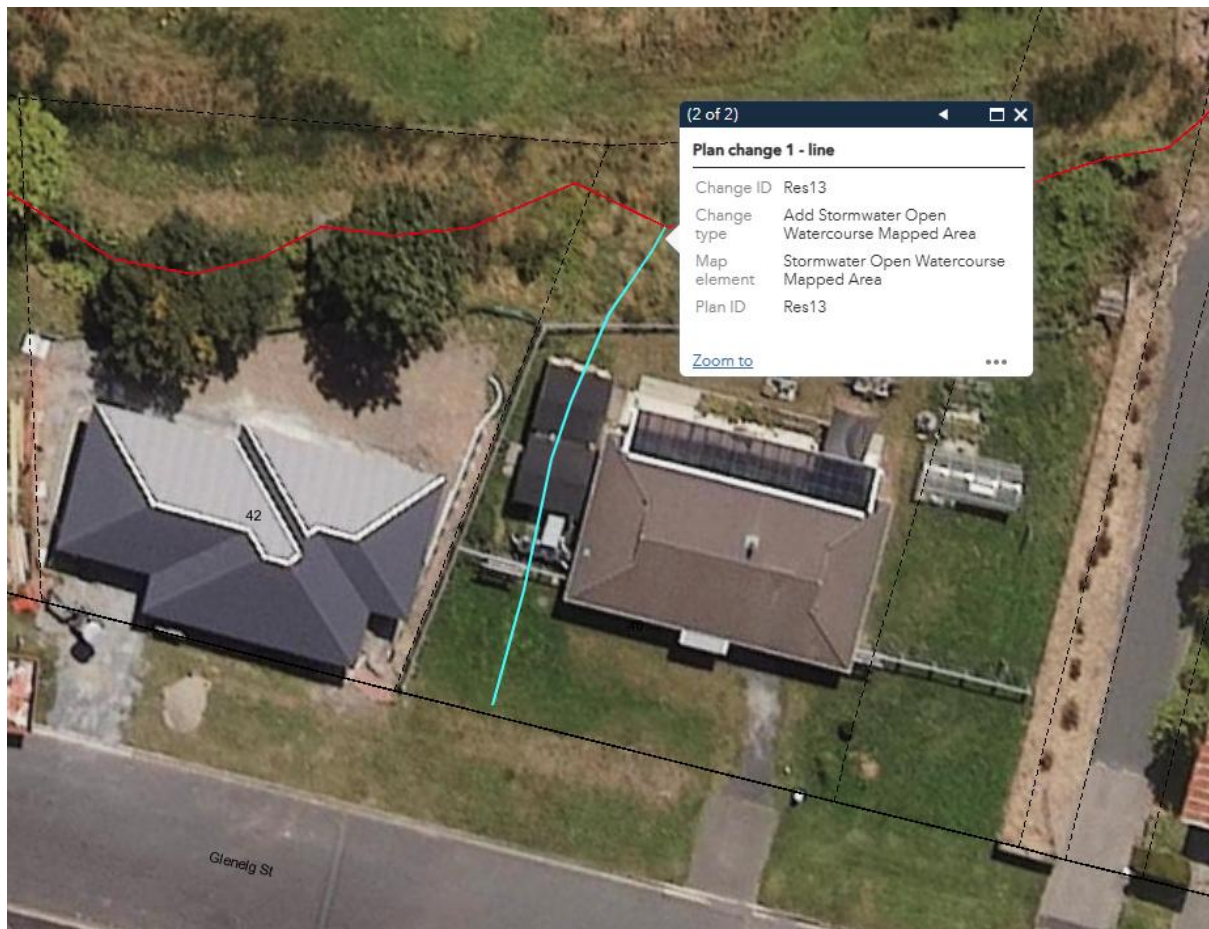
Site	Permitted Stormwater Site Discharge Rates	
	<i>Historical Rainfall 10% AEP 10-minute Time of Concentration (L/s)</i>	<i>RCP 8.5 Rainfall 10% AEP 10-minute Time of Concentration (L/s)</i>
Lot 1	2.73	3.65
Lot 2	2.20	3.12

- ii) *Changes to this site, including but not limited to additional buildings or increased impervious surfaces which may result in exceedances of the specified permitted stormwater site discharge rates in clause i) above, requires the preparation of a Stormwater Attenuation Plan by a suitably qualified person. If the assessment identifies an exceedance of the authorised level of stormwater discharge for this site, the Stormwater Attenuation Plan must be submitted to the Dunedin City Council for approval to confirm how on-going compliance will be achieved. If associated with development that requires building consent, this information must be submitted to the Dunedin City Council along with the building consent application; and details of any required stormwater attenuation device or measures must be shown on the building consent plans.*
- iii) *Any required stormwater attenuation device must be designed to have an interchangeable orifice size that can accommodate both the historical and climate change adjusted RCP 8.5 2081 – 2100 events.*
- iv) *Any required stormwater attenuation device must feature dead storage for silt retention within water tanks, and leaf deflectors constructed prior to the intake of the attenuation device.*
- v) *The on-going operation and maintenance of the stormwater attenuation device on the affected lot is the responsibility of the Lot owner.*
- vi) *The attenuation design to fit the criteria of Clause (i) must be submitted as part of the building consent/land use consent application for the new residential dwelling.*
- iv) *The on-going operation and maintenance of any private stormwater device required on the affected lot is the responsibility of the Lot owner.*
- v) *Stormwater must be appropriately managed and must not cause a nuisance to neighbouring properties or cause any adverse downstream effects.*

APPENDIX 3 – STORMWATER OPEN WATERCOURSE EXAMPLES



At the rear of #62 Queen Street



Glenelg Street



Frontage of Glenelg Street Example

APPENDIX 4 – TECHNICAL REPORT BY 3WATERS ON IMPERVIOUS SURFACES AND THE PERMITTED BASELINE FOR THE 2GP



Memorandum

TO: City Development

FROM: Asset Planning Team Leader, Water and Waste Services

DATE: 11 August 2015

SUBJECT: **MAXIMUM SITE COVERAGE & IMPERMEABLE SURFACES – RULE 15.6.11 (SECOND GENERATION DISTRICT PLAN)**

BACKGROUND

Water and Waste Services (WWS) are responsible for the collection and discharge of stormwater from urban run-off. This is carried out through the operation of a network of pipelines and pump stations known collectively as the Stormwater Network. Managing site coverage with impermeable surfaces is necessary to ensure that the amount of stormwater run-off can be quantified, to ensure there is sufficient capacity within the Stormwater Network. Rules in the District Plan, which manages land use and associated development, are considered to be the best approach for achieving this.

SUPPORT FOR PROPOSED RULES

Stormwater run-off intensity and volume is directly related to the permeability of the catchment area. As a general principle, for a given rainfall event the greater the area of impermeable surfaces within the catchment, the greater the network capacity required to convey those stormwater flows. This means that as impermeable surfaces in a catchment increase, larger pipelines and pump stations are required to manage the run-off, which comes at greater cost to Council. Ultimately, WWS would prefer low coverage of impermeable surface to reduce total run-off, and high surface roughness to reduce the intensity of the run-off. In reality, the nature of modern urban development results in a prevalence of smooth impermeable surfaces.

Zone		i. Maximum site coverage: buildings and structures with a footprint greater than 10m ² (% of site)	ii. Maximum site coverage: buildings and structures and any impermeable surfaces (% of site)
a.	General residential 1 zone	40%	70%
b.	General residential 2 zone	50%	80%
c.	Inner city residential zones	60%	80%
d.	Low density residential zone	35%	65%
e.	Large lot residential 1 and 2 zones	30%	50%
f.	Township and settlement zone	40%	70%
g.	Townships and settlement zone in a non-reticulated wastewater mapped area	30%	50%

WWS consider the levels proposed in the Second Generation District Plan (2GP) to reflect a fair balance between urban land use needs, existing site coverage trends and manageable stormwater volume and intensity.

In industrial and commercial areas, 100% site coverage is enabled through the District Plan, and therefore anticipated and acceptable to WWS for stormwater management.

WWS strongly recommend city wide application of the maximum site impermeable surface rules that are proposed, rather than applying the rules only where stormwater problems exist. Failure to manage stormwater in one area can also result in issues in other areas that share the same network e.g. surface flooding, surcharging etc. Proactive management of additional run-off volume enables prevention of future problems developing when a given area is developed and/or redeveloped. Stormwater assets are typically in service for 100 to 200 years; which is significantly longer than typical land development and redevelopment cycles. A city wide approach provides a baseline from which to design stormwater networks that are more likely to be in service throughout their full intended useful life, resulting in a more cost effective stormwater service.

Application of the proposed rule when designing future stormwater infrastructure will provide a greater level of confidence in future design flow estimates. In the absence of design confidence the community is typically burdened with the additional costs associated with conservative engineering design, or re-design.

APPLICATION AND ENFORCEMENT

To give the proposed rules effect, enforcement across several council departments is required.

Currently the impact of subdivisions and non-complying developments on the stormwater system is assessed through the resource consent process by a condition of consent requiring a Stormwater Management Plan; the content of which is assessed by WWS. Building consents are currently assessed for building site coverage, but not for impermeable surfaces. In many cases hard-surfacing does not require a building consent and therefore may not come to Council's immediate attention.

As a minimum, to give reasonable effect to the Impermeable surface rules in the 2GP, each resource consent and building consent application should demonstrate compliance, or provide acceptable options for mitigation of the effects of any non-compliance. This could be achieved by either; an additional financial contribution to the stormwater network or, the implementation of an infrastructure solution such as a holding tank or detention area. The mechanics of this would need to be worked through with affected departments and documented as a clear business process.

WWS will investigate additional powers of enforcement aligned with this rule during the development of a proposed Stormwater Bylaw. The Stormwater Bylaw, scheduled for development in 2015/16 will cover all aspects of urban stormwater management.

Furthermore, modern tools such as Lidar (Light Detection And Ranging) and Geographic Information Systems could feasibly provide an opportunity for a "blue sky" approach to managing Dunedin's runoff. These could be utilised to determine current physical baselines and compare them with future change. An imperviousness level for each property could be derived, and compared against zoning to determine compliance. Both of these tools are widely used by Council for other mapping and engineering purposes. This approach would however require significant compliance resource. It is not clear whether this type of an approach would provide value in a Dunedin context.

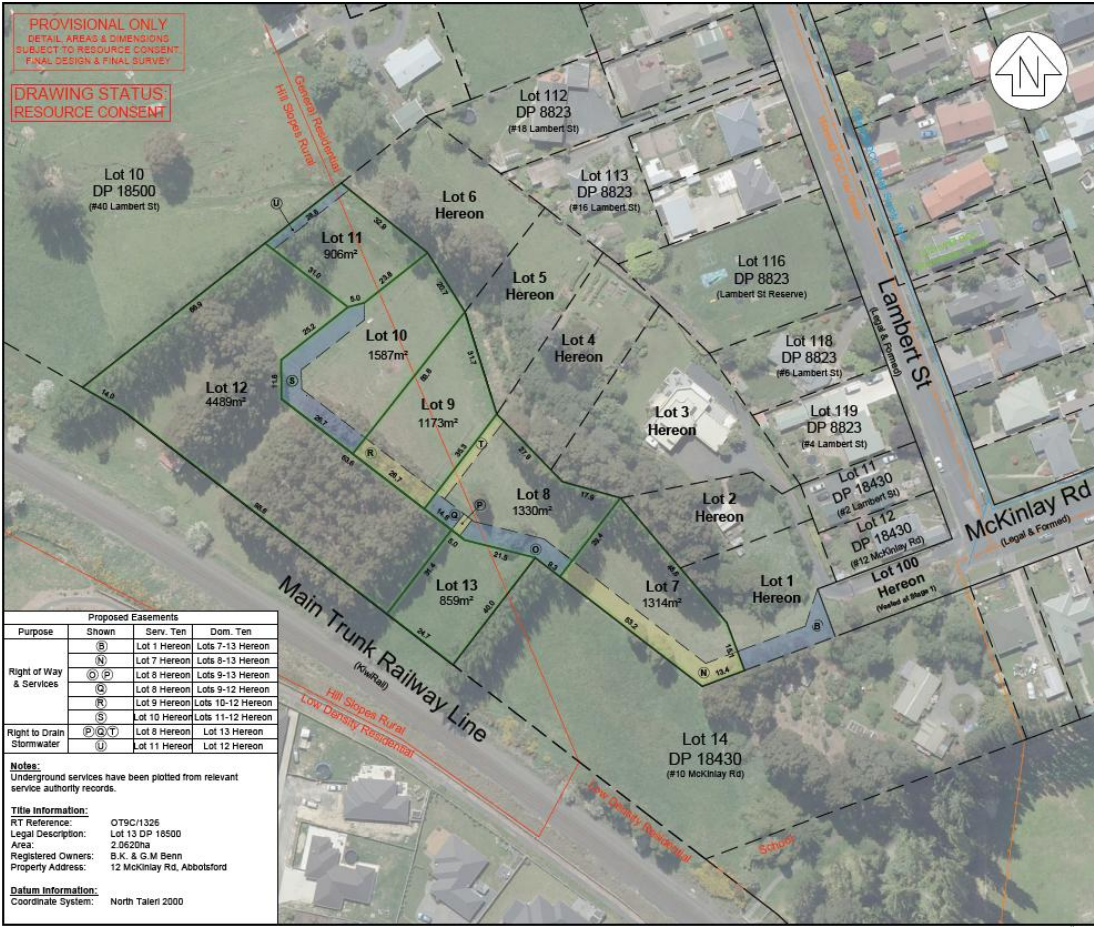


Tom Dyer
ASSET PLANNING TEAM LEADER

APPENDIX 4 - LOCATION OF GROUP OF SCHEDULED TREES (G014)



APPENDIX 5 – APPROVED SCHEME PLAN FOR #12 MCKINLAY ROAD



Approximate Rural Zone