

BEFORE THE INDEPENDENT HEARINGS COMMISSIONER APPOINTED BY TIMARU
DISTRICT COUNCIL

In the matter of

the Resource Management Act 1991

And

Resource Consent Application 101.2017.2 (J & R Shirtcliff)

Statement of Evidence of -

Liz White, planning consultant on behalf of Environment Canterbury

Ashlee Dolamore, Environment Canterbury

Shirley Hayward, Environment Canterbury

7 November 2017

Introduction

1. My full name is Elizabeth (Liz) Jane White.
2. I am a Senior Resource Management Consultant at Incite, which is a specialist resource and environmental management consultancy. I hold a Bachelor of Arts with Honours from Canterbury University, and a Master of Resource and Environmental Planning with First Class Honours from Massey University. I am an associate member of the New Zealand Planning Institute and a member of the Resource Management Law Association.
3. I have over 10 years resource management and planning experience spanning both the public and private sectors. My experience includes preparing and processing resource consent applications, as well as both regional and district plan development.
4. I have been asked to provide planning evidence on behalf of Environment Canterbury in relation to its submission on the subdivision consent application 101.2017.2, to authorise a nine lot subdivision, in three stages, at 584 Orari Station Road, Geraldine.

Code of Conduct

5. Although this is a Council hearing, I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court's Practice Note 2014. I have complied with the practice note when preparing my written statement of evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Scope of Evidence

6. My evidence is limited in scope to those matters raised by Environment Canterbury in its submission on the subdivision consent application. In essence, this relates to the servicing of the subdivision, both from a regional consenting point of view, and from a wider strategic point of view. In particular, my evidence focusses on the direction in the Canterbury Regional Policy Statement (*RPS*) that is relevant to the application.

Evidence

Regional Consent Requirements for Servicing

7. My understanding, from the evidence of Ashlee Dolamore, is that regional council consent would be required for on-site disposal of wastewater for Lots 4-9 of the proposed subdivision, and for the discharge of stormwater from the subdivision. While consents for these are likely to be able to be granted, this is reliant on suitable design, and subject to the effects of the discharges being appropriately managed, including, as expanded on in the evidence of Shirley Hayward, effects on groundwater and surface water. I understand that the appropriateness of any wastewater disposal proposed is affected by the water supply that will be used for these lots. In the absence of detail regarding the water supply, or the treatment and disposal of wastewater, there is currently insufficient evidence to show that these consents can be obtained.
8. I also note Ms Dolamore's comments that while consents for the current subdivision proposal are likely to be granted, the servicing of any future subdivisions of the larger lots will become increasingly difficult when taking into account the proximity of services on other sites and the cumulative effects on water quality.

9. In my view, this demonstrates that while this subdivision could perhaps be designed so that consent from Environment Canterbury could be granted, this kind of site-by-site servicing means that further subdivision of the bigger lots, as anticipated by Timaru District Council's draft Growth Management Strategy (draft GMS), upon which the applicant relies, would become more and more difficult. In my view, this makes the subdivision an inefficient use of land, because the larger lots created (Lots 1, 2, 3 and 9) are smaller than the District Plan anticipates for rural use, but further subdivision at the density anticipated for rural residential growth is likely to be limited.

Wider servicing considerations

10. Notwithstanding the above, and if the lots subject to this application can be serviced appropriately and the required consents obtained, there is also, in my view, a wider strategic issue regarding the servicing of this subdivision. As I expand on below, this essentially relates to the direction in the RPS that subdivision and development of the type proposed in this application is to be co-ordinated with the provision of infrastructure. What this boils down to, in my view, is that for new subdivision to align with the RPS, a strategic and co-ordinated plan for infrastructure is required either ahead of (for example, an outline development plan included as part of a plan change process), or at the same time as, the subdivision is proposed (for example, a long-term servicing plan that has obtained necessary consents from Environment Canterbury).
11. It is my view that the current application essentially relies on the enabling parts of the RPS and the draft GMS to justify the rural residential scale of the subdivision proposed (in absence of such a zoning for the site), but essentially ignores the direction in both the RPS and draft GMS that such rural residential development needs to be co-ordinated and integrated with the provision of infrastructure.
12. In my view, the direction in the RPS and draft GMS requires taking into account the servicing of the site as a whole, not simply relying on individual servicing for each lot, as well as the ability to service further development of the larger lots (i.e. Lots 1, 2, 3 and 9), so as not to foreclose future development potential. In my view, individual servicing of rural residential-sized lots is generally an inefficient approach. This is because it has additional and on-going maintenance requirements for individual landowners, requires greater ongoing intervention by Environment Canterbury and the District Council, and limits the use of sites. I note that even if the Council's reticulated services are not available, alternatives to site-by-site servicing are still available.

Directions for infrastructure servicing in the RPS

13. There are various directions in the RPS that seek that development is located and designed so that it achieves consolidated urban growth, which is co-ordinated and integrated with the provision of infrastructure. These provisions are located in Chapter 5 Land-use and Infrastructure, and include:
 - a) Objective 5.2.1(1) which seeks that development is located and designed so that it functions in a way that achieves consolidated, well designed and sustainable growth, primarily in and around existing urban areas.
 - b) Policy 5.3.1 which requires rural residential development to occur in a form that concentrates, or is attached to, existing urban areas and promotes a co-ordinated pattern of development.
 - c) Policy 5.3.2(1) which seeks to enable development which ensures that adverse effects are avoided, remedied or mitigated, including where these would

- compromise or foreclose options for accommodating the consolidated growth and development of existing urban areas; and the productivity of the region's soil resources through the further fragmentation of rural land.
- d) Policy 5.3.2 (3) which requires that development is integrated with the efficient and effective provision of infrastructure.
 - e) Policy 5.3.5 which directs development to be appropriately and efficiently served for the collection, treatment, disposal or re-use of sewerage and stormwater and the provision of potable water.
 - f) Various methods¹ that direct that territorial authorities include provisions in their district plans that establish a comprehensive approach to the management of the location of rural residential development, including provisions requiring consideration as to how the new land use will be appropriately serviced by infrastructure.
14. In my view the location of the proposed subdivision, adjacent to the existing urban area of Geraldine, generally meets the directions in the RPS relating to consolidation of growth, but falls short of the directions relating to co-ordination and integration with infrastructure, because there is no strategic and co-ordinated plan for the servicing of the lots that ensures the servicing is integrated. In my view, this is not simply about showing that each of the current new lots proposed can be individually serviced, but rather an overall and co-ordinated plan for the site as a whole is required before such a subdivision can be approved. This is particularly important because the application is for a density of development that is not in accordance with the current zoning of the site. In particular, my view is that individual on-site servicing of each lot is unlikely to be the most efficient and effective provision of infrastructure for the development of the application site as a whole. In the absence of such planning, the application will result in fragmentation of rural-zoned land, with no certainty that the larger lots (1, 2, 3 and 9) can be further developed for rural residential development in future.

Draft Growth Management Strategy

15. In my view, the planning for further growth and development proposed in the draft GMS is aligned, in a general sense (and subject to further consideration of detail), with the direction in the RPS. However, as well as needing to go through the process to finalise the draft GMS itself, any resulting change to the District Plan to implement the final GMS will still need to be shown to give effect to the direction in the RPS. As such, it is my view that relying on the site being identified within the draft GMS as suitable for rural residential development does not negate the need for the application to demonstrate its alignment with the relevant directions in the RPS.
16. I also note, for completeness, that while the application site is located within an area earmarked for potential rural residential development, the draft GMS goes beyond consideration of location alone. A guiding principal of the draft GMS is the concept of 'managed growth' which seeks to enable consolidation and expansion of existing urban settlements in strategically located areas.² The draft GMS states that the provision of infrastructure is critical to the development of communities and that new

¹ Policy 5.3.1, Method (2); Policy 5.3.2, Method 3(a); Policy 5.3.3, Method (3)(a), Policy 5.3.5, Method (3)(c).

² *Timaru District 2045 - Draft Growth Management Strategy*, Timaru District Council, page 24.

infrastructure is needed to integrate with and support future growth.³ Strategic Direction 8 'Infrastructure' of the draft GMS aspires to promote highly liveable communities and land use with efficiently and effectively integrated infrastructure by ensuring that infrastructure and land use patterns are aligned to achieve sustainability, efficiency and liveability.⁴ I consider this is a strong directive anticipating co-ordinated infrastructure servicing alongside development that is sustainable and efficient. The draft GMS also makes comment that infrastructure should be to a standard equitable to infrastructure elsewhere in the Timaru District to ensure the health and safety of the community.⁵

17. While I note that the draft GMS does not require reticulated services to be provided by TDC with regards to rural residential development, my understanding is that such provision would be supported by Environment Canterbury. Regardless, it is my view that the draft GMS, which cannot be implemented through the District Plan unless it aligns with the RPS, anticipates that as part of any rural residential zoning, infrastructure must be coordinated, sustainable and efficient.

Giving effect to the RPS

18. In my experience, the way that the direction in Chapter 5 of the RPS is usually given effect to, is through zoning within a district plan. Part of that zoning would also include planning for infrastructure provision for any zoned area as a whole. This is increasingly achieved through outline development plans which provide high level of detail about servicing. I note that this avenue is available to the applicant, by way of a private plan change application to the Timaru District Plan. In my opinion, it would be more appropriate for a change of zoning to be applied for (rather than a subdivision consent) given that the application proposes a substantially higher density than that anticipated by the site's current zoning.
19. In absence of a plan change application, I accept that the subdivision application must be considered on its merits. It is my view that before the application can be granted (from the point of view of the RPS), a comprehensive and co-ordinated plan for infrastructure is required. In my view, this needs to go beyond providing greater detail as to how each of the current new lots proposed can be individually serviced. It needs to demonstrate an overall and co-ordinated plan for the site as a whole, including showing how further rural residential development of the larger lots can be achieved. Ideally, the necessary consents required from Environment Canterbury for the overall servicing plan should be obtained prior to, or concurrently with consideration of the subdivision application. For the avoidance of doubt, the provision of such a plan does not mean that there would not be other reasons to decline the consent, but these wider considerations are beyond the scope of my evidence.

Summary and conclusion

20. Environment Canterbury is concerned that the subdivision consent application does not provide sufficient information or certainty that the proposed new lots are able to

³ *Timaru District 2045 - Draft Growth Management Strategy*, Timaru District Council, page 58.

⁴ *Timaru District 2045 - Draft Growth Management Strategy*, Timaru District Council, page 9.

⁵ *Timaru District 2045 - Draft Growth Management Strategy*, Timaru District Council, page 58.

achieve necessary infrastructure servicing. Even with further details about how each lot can be individually serviced, it is my view that the RPS clearly directs integration and co-ordination of servicing and development for the type of rural residential development that is proposed in this application. Additionally, an incoherent approach to infrastructure servicing and development may result in cumulative adverse effects arising from future resource consent processes, as individual lot owners seek separate resource consents to take water, and discharge wastewater and stormwater. This fails to achieve the integrated management of natural and physical resources and does not enable people and communities to provide for their social, economic and cultural wellbeing or their health and safety.

21. In conclusion, it is my view that the site is suitable for rural residential development of this nature, as indicated in the draft GMS. However, I do not consider the proposed infrastructure servicing to be sufficient. In particular, it is my view that reliance on the site being identified for potential future rural residential development in the draft GMS is not sufficient reason to ignore the direction in either the RPS or the draft GMS regarding the integration of servicing and subdivision. It is therefore my view that the application should be declined in its current form.
22. If the Commissioner is of a mind to grant consent, then I consider that an interim decision should be issued approving the development subject to a comprehensive infrastructure plan of the subdivision being undertaken that aligns with the direction in the RPS.

Signed:

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke extending to the right.

Liz White

Appendix 1 – Relevant RPS Provisions

Objective 5.2.1 – Location, design and function of development (Entire Region)

Development is located and designed so that it functions in a way that:

- (1) achieves consolidated, well designed and sustainable growth in and around existing urban areas as the primary focus for accommodating the region's growth; and*
- (2) enables people and communities, including future generations, to provide for their social, economic and cultural well-being and health and safety; and which:*
 - (a) maintains, and where appropriate, enhances the overall quality of the natural environment of the Canterbury region, including its coastal environment, outstanding natural features and landscapes, and natural values;*
 - (b) provides sufficient housing choice to meet the region's housing needs;*
 - (c) encourages sustainable economic development by enabling business activities in appropriate locations;*
 - (d) minimises energy use and/or improves energy efficiency;*
 - (e) enables rural activities that support the rural environment including primary production;*
 - (f) is compatible with, and will result in the continued safe, efficient and effective use of regionally significant infrastructure;*
 - (g) avoids adverse effects on significant natural and physical resources including regionally significant infrastructure, and where avoidance is impracticable, remedies or mitigates those effects on those resources and infrastructure;*
 - (h) facilitates the establishment of papakāinga and marae; and*
 - (i) avoids conflicts between incompatible activities.*

Policy 5.3.1 – Regional growth (Wider Region)

To provide, as the primary focus for meeting the wider region's growth needs, sustainable development patterns that:

- (1) ensure that any*
 - (a) urban growth; and*
 - (b) limited rural residential development**occur in a form that concentrates, or is attached to, existing urban areas and promotes a coordinated pattern of development;*
- (2) encourage within urban areas, housing choice recreation and community facilities, and business opportunities of a character and form that supports urban consolidation;*
- (3) promote energy efficiency in urban forms, transport patterns, site location and subdivision layout;*
- (4) maintain and enhance the sense of identity and character of the region's urban areas; and*
- (5) encourage high quality urban design, including the maintenance and enhancement of amenity values.*

Policy 5.3.2 – Development conditions (Wider Region)

To enable development including regionally significant infrastructure which:

- (1) *ensure that adverse effects are avoided, remedied or mitigated, including where these would compromise or foreclose:*
 - (a) *existing or consented regionally significant infrastructure;*
 - (b) *options for accommodating the consolidated growth and development of existing urban areas;*
 - (c) *the productivity of the region's soil resources, without regard to the need to make appropriate use of soil which is valued for existing or foreseeable future primary production, or through further fragmentation of rural land;*
 - (d) *the protection of sources of water for community supplies;*
 - (e) *significant natural and physical resources;*
- (2) *avoid or mitigate:*
 - (a) *natural and other hazards, or land uses that would likely result in increases in the frequency and / or severity of hazards;*
 - (b) *reverse sensitivity effects and conflicts between incompatible activities, including identified mineral extraction areas; and*
- (3) *integrate with:*
 - (a) *the efficient and effective provision, maintenance or upgrade of infrastructure; and*
 - (b) *transport networks, connections and modes so as to provide for the sustainable and efficient movement of people, goods and services, and a logical, permeable and safe transport system.*

Policy 5.3.5 – Servicing development for potable water, and sewage and stormwater disposal (Wider Region)

Within the wider region, ensure development is appropriately and efficiently served for the collection, treatment, disposal or re-use of sewage and stormwater, and the provision of potable water, by:

- (1) *avoiding development which will not be served in a timely manner to avoid or mitigate adverse effects on the environment and human health; and*
- (2) *requiring these services to be designed, built, managed or upgraded to maximise their ongoing effectiveness.*

Introduction

1. My full name is Ashlee Jane Dolamore. I am a Consents Planner at Environment Canterbury. I have a Bachelor of Science from the University of Otago and a Master of Water Resource Management from the University of Canterbury.
2. I have been employed in my current role by Environment Canterbury since June 2016. Prior to this, I was employed in a similar role by Mackenzie District Council for 10 months.
3. My experience includes processing resource consent applications, both for district and regional councils, as well as advising the public about the resource consenting requirements of projects or developments they may wish to undertake.
4. I have been asked to discuss potential resource consent requirements on behalf of Environment Canterbury with regards to the proposed subdivision consent application, 101.2017.2, submitted to Timaru District Council.

Scope of Evidence

5. My evidence is limited to matters raised by Environment Canterbury in its submission on the subdivision consent application. It relates to the resource consents which may be required from Environment Canterbury should the subdivision consent be granted.

Evidence

6. Activities on/in land or water within the area in which the subdivision is located are managed directly by either the Land and Water Regional Plan or the Opihi River Regional Plan. The Opihi River Regional Plan is intended to manage surface water quality and quantity within the Opihi River catchment. The Land and Water Regional Plan is the region-wide plan which addresses land use, water takes, discharges to water or ground, and activities within the beds of rivers and lakes. It is intended to address activities on an individual basis, within the strategic parameters set by the higher-level Canterbury Regional Policy Statement.
7. My evidence covers the rules as they apply to domestic waste water, domestic water supply wells and stormwater. I note that the subdivision itself, which often precedes applications in each of these areas, is controlled by district councils. The RPS sets the strategic context for subdivision and development; regional rules are not the key tool for achieving integration between land use and infrastructure. This aspect is covered in Liz White's evidence.

Domestic Wastewater

8. Domestic wastewater discharges are controlled by Rules 5.7 to 5.9 of the Canterbury Land and Water Regional Plan. Rule 5.7 only pertains to existing wastewater systems which were lawfully established before 1 November 2013. As the proposed lots do not have existing wastewater systems which meet these criteria, Rule 5.8 is the relevant permitted activity rule.
9. Rule 5.8 is as follows:

The discharge of wastewater from a new, modified or upgraded on-site wastewater treatment system onto or into land in circumstances where a contaminant may enter water is a permitted activity, provided the following conditions are met:

- 1. The discharge volume does not exceed 2 m³ per day; and*
 - 2. The discharge is onto or into a site that is equal to or greater than 4 hectares in area; and*
 - 2a. The discharge is not located within an area where residential density exceeds 1.5 dwellings per hectare and the total population is greater than 1000 persons; and*
 - 3. The discharge is not onto or into land:*
 - (a) where there is an available sewerage network; or*
 - (b) that is contaminated or potentially contaminated; or*
 - (c) that is listed as an archaeological site; or*
 - (d) in circumstances where the discharge would enter any surface waterbody; or*
 - (e) within 20 m of any surface waterbody or the Coastal Marine Area; or*
 - (f) within 50 m of a bore used for water abstraction; or*
 - (g) within a Community Drinking-water Protection Zone as set out in Schedule 1; or*
 - (h) where there is, at any time, less than 1 m of vertical separation between the discharge point and groundwater; and*
 - 4. The treatment and disposal system is designed and installed in accordance with Sections 5 and 6 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and*
 - 5. The treatment and disposal system is operated and maintained in accordance with the system's design specification for maintenance or, if there is no design specification for maintenance, Section 6.3 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and*
 - 6. The discharge does not result in wastewater being visible on the ground surface; and*
 - 7. The discharge does not contain any hazardous substance.*
10. Resource consent would be required to discharge domestic wastewater to land within proposed Lots 4, 5, 6, 7, 8, and 9 as these lots do not meet condition (2) of Rule 5.8 since they are less than four hectares in area. Domestic wastewater discharges from Lots 1, 2 and 3 would be permitted and wastewater systems could be installed without resource consent provided the other conditions of Rule 5.8 are met.
11. Since a discharge of domestic wastewater from Lots 4 to 9 would not be permitted under Rule 5.8, it would instead be assessed against Rule 5.9 as a restricted discretionary activity. This means that there are only certain matters which the person processing the consent could use as a basis to recommend grant or decline, or to impose conditions (i.e. their discretion is restricted to these matters). These are:
- 1. The actual and potential environmental effects of not meeting the condition or conditions of Rule 5.7 for an existing system; and*
 - 2. The actual and potential direct and cumulative environmental effects of not meeting the condition or conditions of Rule 5.8 for a new, modified or upgraded system; and*

3. *The actual and potential environmental effects of the discharge on the quality and safety of human and animal drinking-water; and*
 4. *The effect of on-site domestic wastewater treatment system density in the local area including known on-site domestic wastewater treatment system failures, the material health status of the community, current groundwater quality, the nature of effects of current sewage disposal methods, treatment options available and affordability.*
12. Typically, we would focus on assessing the potential effects of the discharge on the quality of groundwater in the area, on drinking water supplies, stock water supplies, and on human and stock health, taking into account both individual effects and effects which the discharge may have in combination with other authorised discharges and other consents in the vicinity.
13. We look at the existing environment including other discharges in the area, depth to groundwater, the drainage characteristics of the soil, slope of land, flood risk, and nearby waterways.
14. In terms of policy direction, in my opinion the most relevant objectives and policies in the Land and Water Regional Plan are as follows:
1. *Objective 3.22 – Soils are healthy and productive, and human-induced erosion and contamination are minimised.*
 2. *Policy 4.2 – The management of lakes, rivers, wetlands and aquifers will take account of the fresh water outcomes, water quantity limits and the individual and cumulative effects of land uses, discharges and abstractions will meet the water quality limits set out in Sections 6 to 15 or Schedule 8 and the individual and cumulative effects of abstractions of water will meet water quantity limits in Schedule 6 to 15.*
 3. *Policy 4.14 – Any discharge of a contaminant into or onto land where it may enter groundwater:*
 - a. *Will not exceed the natural capacity of the soil to treat or remove the contaminant; and*
 - b. *Will not exceed available water storage capacity of the soil; and*
 - c. *Where meeting (i) or (ii) is not practicable, the discharge will:*
 - i. *Meet any nutrient limits in Schedule 8 or Sections 6 to 15 of this Plan; and*
 - ii. *Utilise the best practicable option to ensure the size of the contaminant plume is as small as is reasonably practicable; and*
 - iii. *Ensure there is a sufficient distance between the point of discharge, any other discharge and drinking-water supplies to allow for the natural decay or attenuation of pathogenic micro-organisms in the contaminant plume; and*
 - iv. *Not result in the accumulation of pathogens, or a persistent or toxic contaminant that would render the land unsuitable for agriculture, commercial, domestic, cultural or recreational use or water unsuitable as a source of potable water or for agriculture; and*
 - v. *Not raise groundwater levels so that land drainage is impeded.*

4. *Policy 4.14A – The disposal of domestic effluent and wastewater shall be managed so as to avoid any adverse effect that is more than minimal on surface and ground waters. Where residential density exceeds 1.5 dwellings per hectare and the total population is greater than 1000 persons, community reticulated systems should be promoted. Alternatively, other measures should be promoted to reduce adverse effects on water bodies from effluent disposal systems, including secondary treatment systems and septic tank warrants of fitness.*
 5. *Policy 4.14B – Have regard to Ngāi Tahu values, and in particular those expressed within an iwi management plan, when considering applications for discharges which may adversely affect statutory acknowledgement areas, nohoanga sites, surface waterbodies, silent file areas, culturally significant sites, Heritage New Zealand sites, any listed archaeological sites, and cultural landscapes, identified in this Plan, any relevant district plan, or in any iwi management plan.*
 6. *Policy 4.23 – Any water source used for drinking-water supply is protected from any discharge of contaminants that may have any actual or potential adverse effect on the quality of the drinking-water supply including its taste, clarity and smell and community drinking water supplies are protected so that they align with the CWMS drinking-water targets and meet the drinking-water standards for New Zealand.*
15. As shown in paragraph 7 above, one of the conditions of Rule 5.8 is that the discharge is not within 50 metres of a well. This is to protect the quality of water supply from the wells. If each of these lots were to be individually serviced, the location of wells and discharge areas would need to be carefully arranged to ensure each discharge area was at least 50 metres from each well. It is possible to grant a consent for a discharge within 50 metres of a well, but usually written approval would be needed from the well owner to show that they are happy to adopt the level of risk associated with having a discharge nearer to their well. In this case, if the applicant were to apply for resource consent for both wells and wastewater systems, they could effectively give approval to themselves, but this would raise concern about the potential effects on the health of future users of the wells. The applicant would not be using the water supply wells themselves, so they would not be personally taking on the health risk by giving themselves approval. Rather, this would be deferred to future residents on the lots. This approach would be inconsistent with Policy 4.23, above.
16. I note that the applicant holds existing resource consents CRC103524, CRC110024, CRC110025, CRC110026, CRC110027 and CRC110028 for domestic wastewater discharges to land for a different proposed subdivision at the site. These resource consents have not been activated, and to the best of my knowledge, no wastewater systems have been installed under these consents. Due to changes in the proposed subdivision plan since these consents were granted, it is not entirely clear which lots these service; however, it appears they may be able to be used for proposed Lot 3 but not the other proposed lots. This is because (insofar as I can tell) proposed Lot 3 is in the same general location as the lots which were granted domestic wastewater consents. The other lots proposed in this application are in a different part of the site. Should the subdivision application be granted, and the applicant chooses to operate under one of these consents, it will need to be updated to reflect the amended location. Discharge to proposed Lot 3 would likely be permitted by the regional plan, regardless.

Domestic Water Supply Wells

17. The installation of bores is managed by Rules 5.103 to 5.110 of the Land and Water Regional Plan. In this case, the installation of bores for domestic water supply would come under Rule 5.103, which reads:

The use of land, including the bed of a lake or river, for the installation, maintenance and use of a water infiltration gallery (other than a water infiltration gallery used for emergency firefighting purposes), or a bore, other than a bore for geotechnical investigation or monitoring, is a permitted activity, provided the following conditions are met:

- 1. The bore or gallery is installed by a bore driller or bore drilling company that holds a current accreditation under the CRC Bore Installers Programme; and*
 - 2. The screening of any bore or gallery may only be into a single aquifer or water-permeable zone. During bore installation reasonable and practicable methods shall be used to minimise the risk of interconnection or movement of groundwater between aquifers or water-permeable zones; and*
 - 3. Any bore constructed to abstract groundwater is screened to below any minimum water level for the groundwater zone as set out in Section 6 to 15 of this Plan; and*
 - 4. Contaminants or water are prevented from entering the top of the bore or gallery or underlying groundwater by:*
 - (a) covering or capping the bore or the above ground portion of the gallery pipe, when not in use; and*
 - (b) sealing the exterior of the bore (the annulus) with bentonite or concrete grout from ground level to above the screen or 1 m below ground level, whichever is the lesser; and*
 - (c) sealing the bore-head or above ground portion of the gallery pipe at ground or pumphouse floor level with a concrete pad of at least 0.3 m radius and 0.1 m thickness which is contoured to slope away from the bore or pipe; and*
 - 5. Information on bore or gallery location, bore installation (including bore logs and intended uses), and other relevant information is submitted to the CRC within 20 working days of drilling the bore; and*
 - 6. The bore or gallery is not installed on contaminated or potentially contaminated land.*
18. In my opinion, the applicant is likely to be able to meet the conditions of this rule, in which case they could install domestic supply wells without needing resource consent from Environment Canterbury.
19. Taking groundwater from a private well for domestic use is permitted by Rule 5.113 of the Land and Water Regional Plan if:

1. The volume taken is less than 10 m³ per day;
 2. The rate of take is less than five litres per second; and
 3. The bore is more than 20 metres from any property boundary or surface waterbody.
20. In the event that the applicant could not meet the permitted activity rules for bore installation, it would be a fully discretionary activity under Rule 5.105 of the Land and Water Regional Plan.
21. Typically, daily domestic water demand would not exceed 10 m³. Therefore, it is likely that a water permit would not be required to take water domestically at any proposed lot within the subdivision. However, taking into account the 50 metre standard minimum setback between wells and wastewater discharge areas, and the 20 metre setback needed between the bore and property boundaries, it would be increasingly difficult to locate the services in such a way as to meet the rule requirements and minimise the risk to human health. Even if the current proposed subdivision can be designed effectively to reduce these concerns, problems may be encountered if the larger lots are further subdivided in future.
22. In the application, the applicant referred to installing shallow domestic bores. I note that shallow bores are potentially more prone to contamination from discharges at ground level than deep bores, which are generally protected by confining layers in the aquifer.
23. If the taking of water could not meet Rule 5.113, it would either be restricted discretionary under Rule 5.114A (where only the effects of not meeting part of Rule 5.113 could be assessed), or if the bore is hydraulically connected to surface water such as the nearby stream (common for shallow bores) it would come under the Opihi River Regional Plan instead (as either a restricted discretionary or fully discretionary activity).
24. When processing a resource consent application to take groundwater, I would usually assess whether the proposed take is reasonable and efficient, whether there will be any cumulative effects, whether the take would impact on other people's ability to take water from their wells, whether the take is going to affect any nearby streams (e.g. by drawing water indirectly from the stream), whether there will be any contamination or de-stabilisation of the aquifer which may result from the take, and whether it is likely to cause any saltwater intrusion at the coast.
25. In this case, with the potential for many shallow bores to be located in close proximity to each other, there is the potential that each bore would interfere with the ability of the other bores to access groundwater, making the supplies less reliable. There is also a possibility that the takes would cause a lowering in the water level of the stream which runs through the proposed subdivision, or the Waihi River.
26. Relevant objectives and policies include the following:
1. *Objective 3.9 – Abstracted water is shown to be necessary and reasonable for its intended use and any water that is abstracted is used efficiently.*
 2. *Objective 3.10 – Water is available for sustainable abstraction or use to support social and economic activities and social and economic benefits are maximised by the efficient storage, distribution and use of the water made*

available within the allocation limits or management regimes which are set in this Plan.

3. *Policy 4.61 – Any abstraction of groundwater is subject to conditions specifying:*
 - a. *The maximum instantaneous rate of take;*
 - b. *A maximum seasonal volume based on reasonable use determined in accordance with Schedule 10 over the period the water is required;*
 - c. *The area of the property within which the water is to be used;*
 - d. *The location of the abstraction;*
 - e. *Any minimum groundwater levels at which abstraction ceases if specified in Sections 6 to 15;*
 - f. *Any other conditions to regulate the rate or volume of water that may be abstracted relative to the estimated volume of groundwater stored in a groundwater zone, if specified in Sections 6 to 15;*
 - g. *Where the water is used for irrigation, the need for, compliance with, and auditing of a Farm Environment Plan.*

Stormwater Discharge

27. The discharge of stormwater is managed by Rules 5.93A to 5.95 of the Land and Water Regional Plan and also by the Opihi River Regional Plan. If stormwater from the proposed subdivision was to be discharged to surface water (i.e. the creek that runs through the subdivision), then the discharge would be managed by both plans.

28. The relevant rule under the Land and Water Regional Plan is 5.95:

The discharge of stormwater into a river, lake, wetland or artificial watercourse or onto or into land in circumstances where a contaminant may enter a river, lake, wetland, or artificial watercourse is a permitted activity, provided the following conditions are met:

1. *The discharge is not from, into or onto contaminated or potentially contaminated land; and*
2. *The discharge is not into:*
 - a. *a water race, as defined in Section 5 of the Local Government Act 2002; and*
 - b. *a wetland, unless the wetland is part of a lawfully established stormwater or wastewater treatment system; and*
 - c. *a waterbody that is Natural State, unless the discharge was lawfully established before 1 November 2013; and*
3. *The discharge does not result in an increase in the flow in the receiving waterbody at the point of discharge of more than 1% of a flood event with an Annual Exceedance Probability of 20% (one in five year event); and*
4. *The discharge meets the water quality standards in Schedule 5 after reasonable mixing with the receiving waters, in accordance with Schedule 5; and*
5. *The concentration of total suspended solids in the discharge shall not exceed:*
 - a. *50 g/m³, where the discharge is to any spring-fed river, Banks Peninsula river, or to a lake except when the background total suspended solids in the waterbody is greater than 50 g/m³ in which case the Schedule 5 visual clarity standards shall apply; or*
 - b. *100 g/m³ where the discharge is to any other river or to an artificial watercourse except when the background total suspended solids in the*

waterbody is greater than 100 g/m³ in which case the Schedule 5 visual clarity standards shall apply; and

6. *The discharge to water is not within a Community Drinking-water Protection Zone as set out in Schedule 1; and*
 7. *The discharge does not occur where there is an available reticulated stormwater system.*
29. Schedule 5 is the part of the plan which sets out minimum water quality requirements for different types of waterways. If, after the stormwater had fully mixed with the stream, the water quality met the minimum standard in Schedule 5, and if the flow increase is no more than 1% of the one in five year flood event, then the discharge would likely be permitted under this plan.
30. If the discharge of stormwater does not meet Rule 5.95, resource consent is required under Rule 5.91 and the discharge would be classified as fully discretionary.
31. The discharge of stormwater to surface water is also controlled by the Opihi River Regional Plan, Chapter 6 Rule 1:

The discharge of contaminants, other than treated or untreated human sewage, into the Opihi River or its tributaries, or onto land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering these water bodies is a discretionary activity.

32. There are a specific set of conditions which have to be applied to any resource consent granted under Rule 1.
33. Essentially, resource consent would be needed for any discharge of stormwater to surface water and ECan would have full scope to consider any potential effects.
34. If stormwater from the subdivision is to be discharged to ground, it would come under Rule 5.96 of the Land and Water Regional Plan (unless it is likely to enter surface water indirectly, in which case it would be addressed by Rule 1 of the Opihi River Regional Plan). Rule 5.96 is as follows:

5.96 The discharge of stormwater onto or into land where contaminants may enter groundwater is a permitted activity, provided the following conditions are met:

1. *The discharge is not from, into or onto contaminated or potentially contaminated land; and*
2. *The discharge:*
 - a. *does not cause stormwater from up to and including a 24 hour duration 10% Annual Exceedance Probability rainfall event to enter any other property; and*
 - b. *does not result in the ponding of stormwater on the ground for more than 48 hours, unless the pond is part of the stormwater treatment system; and*
is located at least 1 m above the seasonal high water table that can be reasonably inferred for the site at the time the discharge system is constructed; and
 - c. *is only from land used for residential or rural activities; and*

3. *does not occur where there is an available reticulated stormwater system; and*
 4. *is not from a system that collects and discharges stormwater from more than five sites.*
35. As the proposed subdivision has more than five sites, it would not meet clause (4) of Rule 5.96. Therefore, resource consent would be needed under Rule 5.97 and ECan would have full discretion to assess all potential effects arising from the discharge of stormwater to land.
36. The things we usually consider when processing stormwater discharge applications include the effect on water quality and drinking water supplies (including existing water quality), the design of the stormwater system and whether it appears to be suitable for the site, the potential impact on water quality, the risk of ponding or flooding, and potential effects on any cultural sites.
37. The stormwater consents are likely to be granted provided the stormwater system is designed to minimise effects and provided suitable conditions are imposed, which may include requirements for regular soil or water quality monitoring.
38. Depending on the area of earthworks needed to create the subdivision, it is possible that resource consent would be needed to discharge stormwater from exposed earth to land. This would come under Rule 5.94 of the Land and Water Regional Plan:

The discharge of construction-phase stormwater to a surface waterbody, or onto or into land in circumstances where a contaminant may enter groundwater or surface water, is a permitted activity, provided the following conditions are met:

1. *The area of disturbed land from which the discharge is generated is less than:*
 - a. *1000 m² for any construction-phase stormwater generated as a result of work carried in out in an area shown as High Soil Erosion Risk on the Planning Maps; or*
 - b. *two hectares in any other location; and*
2. *The concentration of total suspended solids in the discharge shall not exceed;*
 - a. *50g/m³ where the discharge is to any spring-fed river, Banks Peninsula river, or to a lake except when the background total suspended solids in the waterbody is greater than 50g/m³ in which case the Schedule 5 visual clarity standards shall apply; or*
 - b. *100g/m³ where the discharge is to any other river or to an artificial watercourse except when the background total suspended solids in the waterbody is greater than 100g/m³ in which case the Schedule 5 visual clarity standards shall apply; and*
3. *The discharge does not result in an increase in the flow in the receiving waterbody at the point of discharge of more than 1% of a flood event with an Annual Exceedance Probability of 20% (one in five year event); and*
4. *The discharge is not from, into or onto contaminated or potentially contaminated land; and*

5. *The discharge does not contain any hazardous substance.*

39. When considering applications for stormwater discharge consents, the most significant objectives and policies may include:

a. *ORRP Objective 1 – Enable present and future generations to gain cultural, social, recreational, economic and other benefits from the water quality of the Opihi River, its lagoons and its tributaries through the enhancement of water quality and the elimination of discharges of human sewage while:*

- i. *Safeguarding their existing value for efficiently providing sources of drinking water for people;*
- ii. *Safeguarding the life supporting capacity of the water, including its associated: aquatic ecosystems, significant habitats of indigenous fauna, and areas of significant indigenous vegetation;*
- iii. *Safeguarding their existing value for providing mahika kai for Takata Whenua;*
- iv. *Protecting wahi tapu and other wahi taonga of value to Takata Whenua;*
- v. *Preserving the natural character of lakes and rivers, and their margins and protecting them from inappropriate use and development;*
- vi. *Protecting the habitat of trout and salmon; and*
- vii. *Maintaining, and where appropriate, enhancing amenity values.*

b. *ORRP Policy 2 – Promote land use practices and investigate controls on land use which improve the water quality of the Opihi River and its tributaries to improve cultural values and provide water quality suitable for aquatic ecosystem purposes, for water contact recreation and as sources of water for public water supply systems.*

c. *LWRP Objective 3.8 – The quality and quantity of water in fresh water bodies and their catchments is managed to safeguard the life-supporting capacity of ecosystems and ecosystem processes, including ensuring sufficient flow and quality of water to support the habitat and feeding, breeding, migratory and other behavioural requirements of indigenous species, nesting birds and, where appropriate, trout and salmon.*

d. *LWRP Objective 3.23 - Soils are healthy and productive, and human-induced erosion and contamination are minimised.*

e. *LWRP Policy 4.14 - Any discharge of a contaminant into or onto land where it may enter groundwater (excluding those passive discharges to which Policy 4.26 applies):*

- i. *will not exceed the natural capacity of the soil to treat or remove the contaminant; and*
- ii. *will not exceed available water storage capacity of the soil; and*
- iii. *where meeting (a) and (b) is not practicable, the discharge will:*
 1. *meet any nutrient limits in Schedule 8 or Sections 6 to 15 of this Plan; and*
 2. *utilise the best practicable option to ensure the size of any contaminant plume is as small as is reasonably practicable; and*
 3. *ensure there is sufficient distance between the point of discharge, any other discharge and drinking-water supplies to*

- allow for the natural decay or attenuation of pathogenic micro-organisms in the contaminant plume; and*
4. *not result in the accumulation of pathogens, or a persistent or toxic contaminant that would render the land unsuitable for agriculture, commercial, domestic, cultural or recreational use or water unsuitable as a source of potable water or for agriculture; and*
 5. *not raise groundwater levels so that land drainage is impeded.*

f. LWRP Policy 4.17 - Stormwater run-off volumes and peak flows are managed so that they do not cause or exacerbate the risk of inundation, erosion or damage to property or infrastructure downstream or risks to human safety.

Summary

40. The applicant, as a property developer, will be required to obtain a stormwater discharge consent for the proposed subdivision. They may also apply for wastewater discharge consents for each property and install bores to take water for domestic supply, or they may leave this up to new property owners.
41. I consider that these consents are likely to be granted, provided suitable design plans and assessments are submitted with the application, and provided that the services can be installed strategically in locations that minimise the risk to drinking water supplies and nearby streams. However, I also note that servicing of any future subdivisions of the larger lots may become more difficult due to the proximity of services on other sites and the cumulative effects on water quality.

Introduction

1. My full name is Shirley Ann Hayward. I hold the qualifications of Bachelor of Science in Plant and Microbial Sciences and Master of Science in Environmental Science. I am a member of the New Zealand Freshwater Sciences Society. I am currently employed as a Senior Canterbury Water Management Strategy Water Quality Scientist for Environment Canterbury.
2. I have over 20 years' experience working in the scientific fields of surface water and groundwater quality and aquatic ecology. In my current and previous employment with Environment Canterbury I have been involved with, and lead, water quality and ecological monitoring and investigation programmes. I have authored numerous peer reviewed technical reports on groundwater quality, river and lake water quality and aquatic ecosystem health and have provided statements of evidence to planning and consent hearings and to the Environment Court. While the majority of my experience has been in Canterbury, I have also worked on projects across the country as an environmental consultant and while working for DairyNZ.
3. I have been asked by Environment Canterbury to provide evidence in relation a description of the general environment of the proposed subdivision in terms of groundwater and surface waterways, and potential risks to this environment. This is to assist with understanding the potential effects of, and matters to be considered in relation to, the servicing of the proposed subdivision. I am also aware that some submitters have raised matters relating to potential effects on groundwater and surface water arising from the proposal and have been asked by Environment Canterbury to assist with any technical questions relating to this.
4. I have read the consent application by John and Rosemary Shirtcliff (consent number 101.2017.2) and the Canterbury Regional Council's (Environment Canterbury) submission.

Code of Conduct

5. Although this is a Council hearing, I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court's Practice Note 2014. I have complied with the practice note when preparing my written statement of evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Raukapuka Stream

6. The property subject to this consent application ('the property') is on generally flat land, with Raukapuka Stream bordering its north-western boundary and running through the southern part of the property to Orari Station Road.
7. Raukapuka Stream is a small spring-fed stream arising approximately 2 km north of Geraldine between the Waihi and Orari rivers. It flows into the Waihi River about 4 km downstream of Orari Station Road. It is fed by groundwater via the Orari and possibly Waihi rivers and land surface recharge. Raukapuka Stream flows year round with an estimated mean annual low flow of 345 L/s at Coach Road and is an important source of flow to the Waihi River during low flow periods (Scarf, 2003).

8. Environment Canterbury has monitored the water quality of Raukapuka Stream at Coach Road since 2004 and has monitored 3 other sites for short periods during the late 1990s and early 2000s as part of an investigation into complaints by the local community about the poor state of the stream. The stream is typical of spring-fed streams that flow through farmland on the Canterbury plains, with moderate to high levels of nutrients and faecal indicator bacteria (*Escherichia coli* (*E. coli*)) (Hayward *et al.*, 2016). Historically, the stream also had poor water clarity and high amounts of suspended solids but through improvements of farm practices and cessation of a stockwater race discharge, water quality of the stream has improved in recent years. Hayward *et al.* (2016) reported significant improvements in concentrations of dissolved phosphorus, suspended sediment and *E. coli* in Raukapuka Stream at Coach Road over the past 10 years.
9. Although there are no formal records of fish surveys in Raukapuka Stream, I expect the stream will support populations native fish, particularly eels (*Anguilla* spp.) and bullies (*Gobiomorphus* spp.). I also expect some brown trout (*Salmo trutta*) could be found inhabiting that stream at times. Anecdotally, observations of trout and eels in the stream have been reported.
10. Spring-fed streams such as Raukapuka are very important habitats within the Waihi/Temuka catchments. They provide cool, stable flow habitats which can act as refugia during summertime low flow periods and during flood events in the mainstems of hill-fed rivers. Spring-fed streams also have high cultural values, particularly for mahinga kai values. Through the Healthy Catchments Project⁶, protecting and enhancing the biodiversity and mahinga kai values of waterways is seen as a priority.

Groundwater

11. Based on well data for the surrounding area, the property lies in an area of shallow groundwater. Depending on the local topography, groundwater levels may be as high as 2 metres below the ground surface. Groundwater flow is in a south to south-east direction (Zarour *et al.*, 2016). Based on existing well data in a 2 km radius of the property, most wells are very shallow (less than 10 m deep). Groundwater this shallow can be vulnerable to inputs of contaminants from activities on the land that includes grazing stock, on-site sewage disposal systems (e.g. septic tanks) and stormwater discharges to land. Hanson *et al.* (2006) found faecal indicator bacteria contamination can occur in shallow groundwater up to 50 m deep, with the highest level of detection of faecal indicator bacteria occurring in wells less than 10 m deep.

Risks to the environment

12. Based on the application, I understand that the specific nature of services to the proposed properties have not been confirmed. In particular, disposal of stormwater and domestic wastewater have not been described in detail, and the domestic water supply options include rainwater harvesting, connection to community public supply or installing wells.

⁶The Healthy Catchments Project is a collaborative project led by the Orari-Temuka-Opihi-Pareora (OTOP) Zone Committee to encourage community input on how to achieve better outcomes for water in the OTOP zone. Through this project, the zone committee will develop a set of recommendations for management of the freshwater resources of the zone.

13. Disposal of stormwater and domestic wastewater poses risks to both groundwater and nearby surface waterways. The key contaminants include faecal pathogens and nutrients from domestic wastewater, and suspended sediment, metals and hydrocarbons from stormwater. These risks can be mitigated through use of appropriate infrastructure and treatment systems, appropriate separation distances and ongoing maintenance of the systems. The challenge for the proposed subdivision is that the property includes an important natural surface waterway (Raukapuka Stream) and overlies shallow groundwater. Given the small area of some of the proposed properties, I believe that greater certainty is needed that the services can be installed and sited appropriately to ensure that the risks to the receiving environments are minimised.

References

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- Hayward, S., Clarke, G., Dynes, K., Barnden, A., Arthur, J., Barbour, S., 2016. Orari, Temuka, Opihi and Pareora Zone: state and trends in water quality and aquatic ecology. Environment Canterbury Report No. R16/63.
- Scarf, F. 2003: Low flow of the mainstem and tributaries of the Orari and Temuak Rivers and Ohapi Stream. Environment Canterbury technical report U03/38.
- Zarour, H., Aitchison-Earl, P., Scott, M., Peaver, L., DeSilva, N., 2016. Current state of the groundwater resource in the Orari-Temuka-Opihi-Pareora (OTOP) Zone. Environment Canterbury Report No. R16/41.