BEFORE THE HEARINGS PANEL
FOR THE PROPOSED TIMARU DISTRICT PLAN

UNDER	the Resource Management Act 1991 (RMA)
AND	
IN THE MATTER	of the Proposed Timaru District Plan
AND	
IN THE MATTER	of Hearing Stream G: Future Development Chapter

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STATEMENT OF EVIDENCE OF MARK TREWARTHA ON BEHALF OF THE CANTERBURY REGIONAL COUNCIL

PROPOSED TIMARU DISTRICT PLAN

26 JUNE 2025

SUMMARY STATEMENT

1 The Section 42A report requested further information from the Canterbury Regional Council (**Regional Council/Environment Canterbury**) to provide advice on the proposed activities for the property and potential issues regarding current state of groundwater, potential impacts on groundwater, and potential risks to groundwater and groundwater users (sensitive receptors).

2 I consider groundwater beneath the property to be highly vulnerable to discharges to land.

3 I consider wells located within the property, any future wells within the property, and wells downgradient of the property to be most susceptible to adverse effects from discharges to land at the property.

4 I also consider the springs, spring-fed river, and Runanga Sensitive Area described within this evidence as potential receptors that could also be adversely affected by discharges to land.

5 If either water supply or wastewater reticulation services are not available, further investigation and assessment is recommended to evaluate potential adverse effects to groundwater and sensitive receptors based on proposed alternatives.

6 The cumulative effects of additional discharges to land on general groundwater quality in the vicinity were outside the scope of this review.

INTRODUCTION

7 My full name is Mark Albert Trewartha.

8 I hold a Bachelor of Science degree in Geology. I have been employed by the Regional Council as a senior scientist – groundwater since January 2016. My work at the Regional Council includes investigating, monitoring, and reporting on groundwater resource quantity and groundwater quality of the region. I also provide technical advice for on-site wastewater management systems (**OWMS**s) and other matters related to water quantity and quality. This role involves assessing and providing advice on potential groundwater impacts with respect to their associated planning provisions.

9 I can confirm that I have read and am familiar with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and I agree to comply with it while giving any oral evidence during this hearing. Except where I state that I am relying on the evidence of another person, my evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

10 Although I am employed by the Regional Council, I am conscious that in giving evidence in an expert capacity that my overriding duty is to the Hearings Panel.

SCOPE OF EVIDENCE

11 I have prepared my evidence on behalf of the Regional Council.

12 My evidence relates to the potential impacts to groundwater from the proposed development.

13 I have reviewed the following documents and evidence in preparing my evidence:

a. Statement of Evidence by Kevin Thomas Kemp (30 May 2025), pg 14 - 15;

b. The Section 42A Report prepared by TDC (4 June 2025), 10.11 Rezone for Growth – FDA11 Templer Street Future Development Area;

c. Assessment of land owned by D & S Payne, 20 Bennett Rd, Geraldine for its potential to be subdivided under the National Policy Statement - Highly Productive (The AgriBusiness Group);

d. Environment Canterbury databases and maps;

e. Landcare Research S maps.

DESCRIPTION OF PROPOSED ACTIVITIES

14 The property is at 20 Bennett Street (8.79ha) (Figure 1). The property is identified in the Timaru District Plan (**TDP**) for long-term future rural lifestyle development.

15 There currently is no connection to reticulation services for drinking water or wastewater. Options and the potential impacts of each option for providing drinking water and management of wastewater are currently being weighed.

16 From the Proposed Timaru District Plan Section 42A Report: Hearing G – Growth, Section 10.11.16:

i. For water supply the Te Moana water supply is identified as being available for rural uses and application to residential sized lots is not supported. However as identified by Mr Kemp:

"At 5000m2 density the possible demand on the Te Moana – Geraldine Flat water scheme is significant and would require further modelling to confirm capacity. With the existing property fragmentation, 2Ha lot size minimums would allow for approximately an additional 6 allotments. The Te Moana – Geraldine Flat water scheme can accommodate this increase in demand." …

iii For wastewater Council engineers have identified that there are no plans to fund or install wastewater reticulation to facilitate further development as associated with the amening [1](sic) *proposal. A cohesive landowner funded*

[1] There appears to be an error in the Section 42A Report. I have assumed this word is supposed to be "amending".

wastewater network extension (and associated infrastructure) would be challenged by the extent of fragmented titles, with any additional beneficial yield limited to a handful of landowners within the block. Mr Kemp identifies that 'Geraldine infrastructure is unable to accommodate the disposal of blackwater (on-site holding tanks), meaning waste needs to be transported to Timaru for disposal'.

Whilst it is understood that this matter remains in dispute, under the application of the RLZ the TPDP would limit density to 2Ha/allotment, albeit that ECan rules within the Canterbury Land & Water Regional Plan261 require consent for new on-site wastewater treatment systems on sites below 4 hectares in area.

SETTING

17 The property is mapped as overlying Late Pleistocene River deposits which consist of mixtures of gravel, sand, silt and clay[2].

18 The property is mapped as overlying unconfined/semiconfined aquifers[3].

19 Review of borelogs for wells within the property boundary confirm FDA11 overlays deposits of gravels, sand, silt, and clay. Additionally, bore logs also do not show the presence of a confining layer between the ground surface and shallow groundwater. (The aquifer beneath FDA11 is unconfined).

20 The property is mapped[4] over soils that are considered moderately well drained a medium nitrogen leaching vulnerability.

21 One spring is mapped within the property and one spring is mapped just outside the southwest corner of the property. An unnamed spring-fed river is mapped running through the property (Figure 2).

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[2] GNS – Geological Map of New Zealand (1:250 000)

[3] https://gis.ecan.govt.nz/arcgis/rest/services/Public/Groundwater/MapServer

[4] https://gis.ecan.govt.nz/arcgis/rest/services/Public/Landcare_SMap_Layers/MapServer

22 The property is mapped as shallow groundwater having oxic (rather than reduced) conditions[5]. In oxic conditions, the potential for denitrification processes to exist is limited.

23 Depth to groundwater is mapped as less than 1 m below ground surface[6].

24 Review of water level data within and within the vicinity of the property consistently indicates depth to water at less than 2 m[7].

25 Based on groundwater quality data[8], nitrate-nitrogen concentrations in the area range between less than 1 to 9 milligrams per litre (mg/l), with 5-year medians generally below half the maximum allowable value (MAV) for drinking water (< 5.95 mg/l). Frequency of e. coli concentrations detected in wells has varied between sometimes (5 to 25% of the time) to most of the time (>50%).

POTENTIAL SENSITIVE RECEPTORS

26 In the context of this evidence, potential sensitive receptors are considered receptors (wells, spring-fed rivers, Runanga sensitive areas) in the vicinity and at a location (i.e., downgradient) from the property that may receive water that could be impacted by proposed activities.

27 Wells within and in the vicinity of the property have mixed use, many listed as Domestic Supply and Domestic and Stockwater (Figure 2).

28 There are four community drinking water source protection zones (**CDWSPZs**) (City of Geraldine) east and cross-gradient of the property and eight (Temuka, Farmyard Holiday Park, Orari) approximately 4.5 km south and downgradient of the property.

29 A Runanga (Arowhenua) Sensitive Area (Mahinga kai) and the southern end of the property intersect.

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[5] Sarris, T. et al, Reducing Uncertainty of Groundwater Redox Condition Predictions at National Scale, for Decision Making and Policy

[6] https://gis.ecan.govt.nz/arcgis/rest/services/Public/Groundwater/MapServer

[7,7] ECAN Power BI

DISCUSSION

30 Groundwater beneath the property is shallow and unconfined. This makes the groundwater vulnerable to contaminants that may be in water leaching from the surface.

31 Based on the type of soils mapped at the property and groundwater being shallow, there is limited potential for denitrification processes or removal of pathogens to occur before entering groundwater.

32 Based on redox conditions of shallow groundwater, there is limited potential for denitrification processes to occur in groundwater.

33 Based on the conditions described above, there is a high potential for contaminants contained in discharges to land to impact on groundwater quality beneath and downgradient of the property.

34 Potential sensitive receptors most likely to be adversely affected by any proposed discharges to land would be wells located downgradient of the discharges and springs, spring-fed river, and/or the Runanga sensitive area described in this review.

35 The CDWSPZs to the east of the property are considered cross gradient and potential for impact from discharges to land at the property are considered low.

36 The CDWSPZs south of the property are downgradient of the property. However, there is a significant separation distance (approximately 4.5 km) from the property and these CDWSPZs. Based on this, risk of direct impact from OWMS discharges to these zones are also considered low risk.

37 The cumulative effect of adding additional discharges to land on the general groundwater quality in the vicinity and potential downgradient receptors, was outside the scope of this review.

38 There exists the potential that groundwater beneath the property contributes to the springs, spring-fed river, and/or the Runanga sensitive area described in this review. Based on this, there is the potential for discharges to land on the property to adversely affect these features.

39 Shallow groundwater can affect options available for discharge for OWMSs, as mounding of effluent discharge fields can be necessary and discharge by drip irrigation requires large areas.

40 Proximity of these discharge areas to sensitive receptors can increase the likelihood of contaminants from wastewater discharges affecting groundwater quality for wells and/or entering the spring-fed river and the Runanga sensitive area.

41 If either water supply or wastewater reticulation services are not available, further investigation and assessment is recommended to evaluate potential adverse effects to groundwater and sensitive receptors based on proposed alternatives.

Mark Trewartha

26 June 2025

Figure 1 Property Location

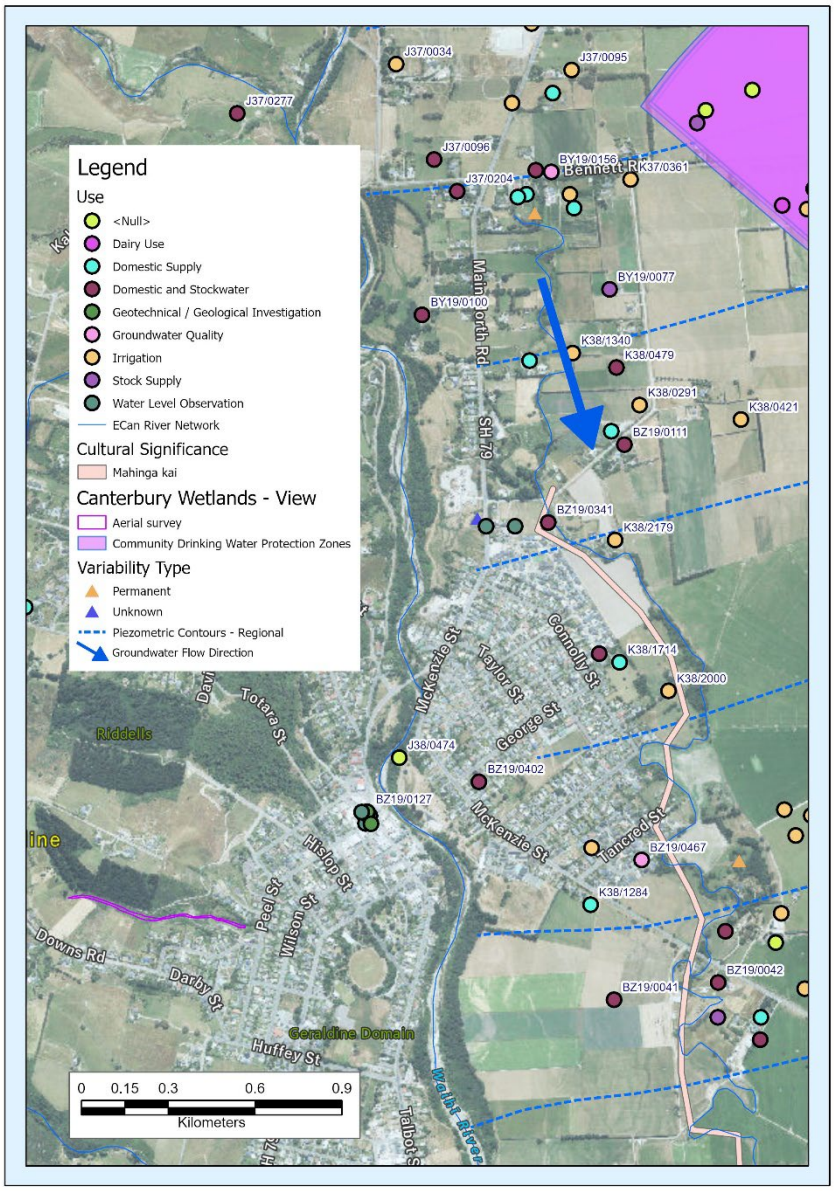

Figure 2: Well Locations and Uses