Before the Independent Hearings Panel
at Waimakariri District Council

under: the Resource Management Act 1991

in the matter of: Proposed private plan change RCP31 to the Operative Waimakariri District Plan

and: **Rolleston Industrial Developments Limited**
Applicant

Evidence of Carl Cedric Steffens

Dated: 3 August 2023

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SUMMARY OF EVIDENCE OF CARL CEDRIC STEPHENS

1 My full name is Carl Cedric Steffens.

2 I am a Technical Director, Water Resources at Pattle Delamore Partners Ltd. My qualifications are Post Graduate Diploma in Science (Engineering Geology) and Bachelor of Science (Geology) from the University of Canterbury. I am a member of the New Zealand Hydrological Society.

3 I have nearly 19 years of professional work experience as a hydrogeologist and environmental scientist. I specialise in groundwater assessments and have carried out numerous assessments relating to groundwater sources for community supply throughout Canterbury and New Zealand.

4 In my evidence I have summarised a preliminary assessment of the feasibility of establishing a community drinking water supply at the site of the proposed plan change in Ōhoka. This assessment includes the water demand requirements, a preliminary assessment of environmental effects, and planning considerations.

5 I consider it viable to establish a supply, with an estimated total of four new bores providing adequate redundancy, assuming that the performance of any new bores is similar to that of existing Ōhoka community supply bore BW24/0262.

6 The preliminary assessment predicts that well interference and stream depletion effects are less than minor. In addition, while the groundwater allocation zone is considered to be over-allocated, the existing irrigation allocation onsite means that no additional allocation would be required, although even if it were, there is provision in the Canterbury Land and Water Regional Plan for additional allocation to be available for new community supplies in over-allocated catchments. As a result, I consider the available information indicates there are no significant barriers to prevent consenting of new public water supply bores.

7 Over-allocation of groundwater in the area is ultimately not a significant concern because there is a pathway in the LWRP for consenting of groundwater for community supply even when allocation volumes are exceeded.

8 Overall, I consider that the preliminary assessments described in my evidence demonstrate that establishing a new public water supply that meets the anticipated demand for the plan change area is viable and therefore, the plan change can be supported from a water supply perspective.

9 At the resource consenting stage site specific pumping tests and an assessment of environmental effects will be required to support a resource consent application (which is a typical requirement for groundwater abstraction applications).

RESPONSE TO SUBMITTER EVIDENCE

10 Mr Shane Bishop from Stantec New Zealand has provided evidence as a submitter on behalf of Waimakariri District Council. This has included comments on my evidence in paragraphs 8 – 15 and a summary relevant to potable water supply for the plan change area in paragraph 22 of his evidence.

11 From reading Mr Bishop's evidence, it appears he is in general agreement with my evidence. In paragraph 14, he indicates he considers a deep well source drawing from the same aquifer is viable for provision of the water for the proposed private plan change area.

12 In addition, in paragraph 8 of his evidence, Mr Bishop acknowledges that the existing Ohoka community water supply bore BW24/0262 can give an indication of the yield and performance of possible new community supply bores within the PC31 area. However, he also notes that the actual yield and performance from any proposed deep supply bores is uncertain because no testing has been conducted by the applicant to validate these assumptions.

13 While it is correct that the actual yield potential of any bore cannot be confirmed prior to drilling and testing, as per paragraph 79 of my evidence, the rates and volumes of water required for this proposal are not significantly high. As a result, I consider there is relatively high confidence that a deep water supply source should be achievable at the site. If the yield potential of the deep strata turned out to be lower than anticipated, I expect the required rates and volumes of water could likely still be obtained via a greater number of supply bores. In the unlikely event that was not the case, a shallow water supply or offsite water supply are both viable back-up options.

14 Overall, I consider the risk that the required yields cannot be supplied from the deep strata is sufficiently low that it does not justify drilling and testing of bores at this plan change stage of the proposal. This is particularly the case given there are also other viable supply options including shallow bores and an offsite source in the unexpected situation where the deep strata were not suitable. Overall, in the context of multiple viable supply options I consider the uncertainties do not justify commitment to drilling and testing at this stage.

15 In paragraph 10 of Mr Bishop's evidence, he states he agrees with my evidence that a deep well source in the same aquifer as BW24/0262 will not be detrimental to current shallow groundwater abstractions.

However, with regard to this matter he also notes that no testing has been conducted by the applicant to validate those assumptions.

16 I have considered potential well interference effects in paragraphs 40 to 44 of my evidence where preliminary assessments indicate the effects are likely to be less than minor. Although drilling and testing of the proposed supply bores could result in different aquifer parameters to those indicated by testing in BW24/0262, for the majority of bores in the area the effects on existing shallow bores must be less than is currently consented given that abstraction will be from deeper strata and the proposed rates are lower than the consented irrigation rates. That would still be the case if testing of deep bores onsite indicates different aquifer parameters, because the intermediate depth strata between the proposed deep bores and existing shallow bores will provide at least some degree of hydraulic separation between the proposed supply and the existing shallow abstractions in the area.

Dated: 3 August 2023

Carl Cedric Steffens