Before the Independent Commissioners appointed by the Waimakakriri District Council

In the matter of	the Resource Management Act 1991 (**the Act**)
and	
In the matter of	Proposed Private Plan Change 31 (PC31) to the Waimakariri Operative District Plan by Rolleston Industrial Developments Limited

Summary of evidence of Shane Bishop on behalf of Waimakariri District Council (as Submitter) – 3 Waters Infrastructure

Dated: 9 August 2023

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Evidence of Shane Bishop:

Introduction

1. My full name is Shane David Stephen Bishop, a three waters engineer, employed by Stantec New Zealand. I prepared an expert three waters infrastructure brief of evidence for Waimakariri District Council as a submitter on dated 21 July 2023. My qualifications and experience were set out in that evidence. In that evidence I referenced the Code of Conduct for Expert Witnesses, which I continue to confirm I have complied with in preparing this summary statement.

2. The purpose of this summary evidence is to summarise the key points from my evidence in chief, as well as consider the additional material presented at the hearing by the Applicant three waters experts.

Summary of Evidence

3. Correction: in Paragraph 19 of my evidence I state "*Any possible temporary connection **should not** compromise the operation of the existing scheme*". This should be read as "*Any possible temporary connection **should not be allowed to** compromise the operation of the existing scheme*".

4. **Water Supply** – Source: Based on the preliminary assessment submitted as part of **Mr Steffens'** evidence and my understanding the yield and performance of the existing community water supply bore BW24/0262, in my opinion it is possible to provide water for the proposed private plan change area from a deep well source drawing from the same aquifer. However, there are uncertainties as to yield or drawdown inference for existing bores, the yield and performance of the bores within the proposed private plan change area and abstraction of groundwater from within the Eyre Groundwater Allocation Zone.

5. **Water Supply – Network: Mr McLeod** has noted in his evidence (Paragraph 41) that the assessment of a community wide water supply system would be carried out at subdivision design stage and has provided an indicative water supply schematic as part of his evidence. The schematic would appear viable in the context of the proposed plan change area provided that a resource consent to take and use groundwater for potable water supply could be obtained from the Canterbury Regional Council.

6. **Wastewater:** While a servicing approach presented by the Applicant for wastewater within the Plan Change Area could include a local pressure sewer network (as per Paragraph 38 of the evidence of **Mr O'Neill**), the ultimate configuration would be subject to WDC engineering approval. A case will need to be made as to variance from installation of a gravity collection system. Should a local pressure sewer network be progressed then mechanisms for monitoring and controls would need to be agreed with Council.

7. **Wastewater:** The Applicant has submitted an approach to conveyance of wastewater from the PC31 area to the Rangiora Wastewater Treatment Plant (a separate pressure main) which addresses the Council's concern regarding capacity within the existing system. A temporary connection to the existing system may be possible but further assessment would be required and would be subject to agreement with the Council. Any possible temporary connection should not be allowed to compromise the operation of the existing scheme

8. **Stormwater:** The submission of evidence of the Applicant that informed my evidence was incomplete as such my response was limited. The proposed approach to stormwater management presented by **Mr O'Neill** in his evidence regarding the use of swales, raingardens and bioscapes to manage and treat stormwater runoff is appropriate. However, the ability of the proposed approach can achieve the required level of stormwater management is limited by the risks identified on site, primarily high groundwater table and the potential to intercept groundwater during construction and continued operation with proposed solutions.

Response to Applicant's witness comments

9. I am in general agreement with the evidence of **Mr Steffens** in regard to the source of water for the plan change area. However, there remain uncertainties associated with the yield and performance of possible new community supply bores that have not been fully addressed.

10. In paragraph 13 of his evidence, **Mr Steffens** in response to my comments regarding yield and performance states "*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*". It is not clear from the evidence provided what the residual risk of requiring additional bores would be. This residual risk would remain with Council, along with the incurred

capital costs along with an increase in ongoing operations and maintenance if more bores are required.

11. Expanding on my comment that a temporary connection of the wastewater network from PC31 to the existing system may be possible, this would still be subject to agreement with the Council. The comments made by **Mr O'Neill** in his evidence (Paragraphs 41-47) relate to the possible available capacity. For this temporary connection to be considered there would need to be enough residual capacity on peak days within the existing system to accommodate the flows and the PC31 wastewater network would need to be configured to balance out the daily peak flows. **Mr O'Neill** in his evidence (Paragraph 43) has assessed the spare capacity on a peak historic day record for the existing scheme (1,740 m^3/day on 31 July 2022). While this provides guidance as to the trends for the network, it does not address growth of connections within the existing scheme nor the system experiencing an event greater than occurred on 31 July 2022. Any possible temporary connection of PC31 would also require flow buffering on site either through a controlled local pressure sewer system or a balance tank at the PC31 pump station

12. While a viable means exists to service the PC31 area for wastewater, the approach has not been confirmed. The ability of the network to buffer flows via a pressure sewer system would require smart controls to either restrict or stop flows at individual sites when the downstream pressure main is constrained. This would be the case in either a temporary arrangement (connecting to the existing network) or, to a lesser degree, for a separate pipeline option. Any flow buffering solely at the PC31 pump station would require peak day buffering storage and additional emergency storage as stated within **Mr Roxburgh's** evidence (Paragraph 33).

13. While a temporary connection may be possible, the parameters for assessing a temporary connection of the PC31 wastewater network to the existing scheme have not been established with agreement of the Council. Therefore the 250 lots stated in **Mr O'Neill's** evidence (Paragraph 47) may be an overestimate.

14. The statements related to Stormwater management with conveyance, treatment and disposal generally relate to the ability of the proposed development to be implemented with groundwater levels up to 0.15m below the surface. As noted in my evidence, there are risks regarding the high groundwater table and the potential to intercept groundwater

during construction and continued operation with proposed solutions to mitigate those risks.

15. As noted in paragraph 27 of **Mr O'Neill's** evidence, both rain gardens and bioscapes have the potential to intercept groundwater during construction and the proposal is to line them to avoid interacting with the groundwater during operation. There is no guarantee that the rain gardens, bioscapes and associated infrastructure will remain water tight and over time there is the risk the groundwater will be intercepted. While I agree that rain gardens and bioscapes are appropriate methods for first flush treatment and conveyance, they should be considered where the likelihood of groundwater inundation is negligible.

16. With reference to paragraph 31 of **Mr O'Neill's** evidence, and comparison to the PDP Stormwater Treatment Report submitted with the 2022 Infrastructure Report, I note that the attenuation volume calculated for the site has changed from 55,950 m^3 to 21,990 m^3 with no clear explanation as to why. This will need to be clarified as it will have a direct bearing on the land allocation for detention storage.

17. With reference to paragraph 32 of **Mr O'Neill's** evidence, the conceptual design of the detention basins is for a maximum excavation of 200mm and a maximum depth of basin of 500mm (as stated in the PDP Stormwater Treatment Report). It is difficult to comment on the likely effectiveness of this approach without a layout plan of the proposed stormwater network and ground contours to assess how they work together. For example, how the underdrains from the rain gardens would connect with a piped stormwater network, which in turn would discharge to a drain or detention basin.

Conclusions

18. For the **Water Supply**, the Applicant has not fully addressed the residual risk associated with the yield and performance of the proposed bores. The residual risk would remain with Council, along with the incurred capital costs along with an increase in ongoing operations and maintenance if more bores are required.

19. For **Wastewater,** while temporary connection to the existing system is possible, the parameters of such a connection have not been agreed with the Council. Therefore, there is not sufficient information provided to state that the existing system would be unaffected / restricted.

20. For **Stormwater** management, there is conflicting information related to the attenuation volume calculated for the site which has changed from 55,950 m^3 to 21,990 m^3 without clear explanation of the variance. This would need to be addressed as it has a direct bearing of the area to be set aside for stormwater management.

21. For **Stormwater**, the groundwater levels for the site are high (recorded as up to 0.15m below the surface). In my opinion there will remain a risk that the proposed shallow attenuation basins and other stormwater treatment devices will intercept the groundwater table either during construction or during continued operation. This would restrict development within the site to areas where the land is relatively higher and consequently the depth to groundwater is greater.

Date: 21 July 2023

Shane Bishop