IN THE MATTER OF the Resource Management Act 1991

AND

IN THE MATTER OF Private Plan Change 95 Pencarrow Estate Pongakawa to the Western Bay of Plenty District Plan

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JOINT WITNESS STATEMENT

Stormwater / Wastewater

Dated: 05/12/2024

Introduction

1. This Joint Witness Statement relates to expert conferencing on the topic of stormwater / wastewater.

2. The conference was held on 4 December 2024 by way of teleconference.

3. Attendees at the teleconference were Daniel Hight, Kirstin Brown, Sue Southerwood and James Abraham.

4. This Joint Witness Statement is a record of the outcomes of this session. It has been prepared in accordance with section 9.5 of the Environment Court Practice Note 2023.

5. The parties discussed the below questions at the conferencing following the Commissioners' Minute 4 dated 3 December 2024.

Question One

What is the appropriate size of a disposal field for each residential lot? What is the maximum residential density can be realised with the disposal fields (if agreement cannot be reached, the maximum density is needed for each disposal field size)?

6. Ms. Southerwood and Mr. Abraham confirmed that the respective councils (Bay of plenty Regional Council ("BOPRC") and Western Bay of Plenty District Council ("WBOPDC")) typically require that soakage systems can drain completely within either 48 hours (BOPRC) or 24 hours (WBOPDC). These requirements ensure that a soakage system can receive two consecutive design storms in short succession. For conservatism, the more stringent 24 hour drain time was the focus of the conference discussion.

7. Prior to the conference Mr. Abraham reviewed a number of other soakage systems in the vicinity of the site. He confirmed that the average design soakage rate for those sites was in the order of 60mm/hour.

8. Mr. Hight presented the Lysaght calculation spreadsheet, and the conference experimented with various parameters (soakage rate, soakage system size, time to drain completely, etc.). In particular, the group was satisfied that:

    i. If a conservatively slow design soakage rate was used (3.5mm/hour), a system of approximately 30m² in footprint is sufficient to store two consecutive design storms (10-year, 60-minute storm, as per the New Zealand Building Code) without surcharge. This approach isn't in strict compliance with the requirements discussed in paragraph 6 above, in that such a system would take between four and five days to completely drain. However, such a system can receive two design consecutive storms without surcharge and was therefore considered a suitable solution.

    ii. If the design soakage rate was increased to approximately 30mm/hour (noting that the surrounding sites used rates in the order of 60mm/hour, according to

Mr Abraham's research), then a system measuring approximately 17m² in footprint could drain the design storm within 24 hours, complying with the requirements set out in paragraph 6.

9. Given that the two scenarios discussed in paragraph 8 above can both be feasibly sited within a small lot, the conference agreed that the size of soakage systems would not have a meaningful impact on the density of development at the Plan Change site.

10. In direct response to Question 1:

    i. The size of soakage systems within the lots cannot be confirmed at this early stage, as detailed soakage testing (refer to paragraph 14 in reference to Question 3) will need to be carried out and the lots' respective hardstand catchments would need to be understood in more detail. However, the conference agreed that even if very conservative soil parameters are adopted as above, suitably sized soakage systems can be sited within small lots.

    ii. There is no need to set a maximum development density based on soakage constraints.

Question Two

Can the planned overland flow path that cuts through the planned irrigation field be moved so it does not traverse this feature? If yes, please show on a plan where it can (and where you recommended) be relocated to. If the overland flow path cannot be relocated, can setbacks be applied to ensure that the irrigation field is not impacted by the overland flow path?

11. Note that the discussion in paragraphs 15 through 18 in response to Question 4 should be read prior to this response.

12. The conference agreed that the overland flowpath can flow through the planned irrigation field, and doesn't necessarily need to be redirected from the alignment

shown on the Structure Plan. The precise alignment of the overland flowpath can be confirmed as part of a subsequent design phase (for example, as part of the resource consent process), as it is not critical to the functionality of the irrigation field.

13. The irrigation field can be installed in a modular and irregular manner, and it would be simple to design an arrangement that allowed the overland flowpath to pass through it. The appropriate setback of irrigation drippers (or similar) from the overland flowpath can be confirmed as part of a subsequent design phase (for example, as part of the resource consent process).

Question Three

What programme of soakage testing is needed to ensure that the site can accommodate the ground soakage proposed and to determine the sizing of the disposal fields? When (what time(s) of the year) should that programme be undertaken? Is it accurate that the soakage testing could be completed in a week (as suggested by Mr Abraham's - Supplementary Evidence dated the 22nd of November 2024, paragraph 11)? And what is the likely cost of such monitoring and the probability that it would provide the data needed.

14. The conference agreed that the soakage testing needed to more accurately size the soakage systems can be deferred to the subsequent resource consent phases, given that it was also agreed (refer to paragraphs 6 through 10 in response to Question 1) that even with conservative soil parameters a suitably sized soakage system can be sited within the proposed lots. Therefore, the specifics of this question weren’t discussed further.

Question Four

Is the proposed primary wastewater irrigation field (as shown in Structure Plan dated the 14th of November 2024) of sufficient size to cater for the expected residential density in the site (120 to 130 residential sections)? If no, how much more land is required (exclusive of proposed reserve field and floodable area)? If further land is required, where should that land be and why should it be there, and what fill will be needed for the irrigation field to function as needed? Will the expansion of the irrigation field cause downstream flooding and erosion effects on third parties and/or the environment?

15. In discussing this issue, the conference considered the following potential constraints that may impact upon the land available for the irrigation system. This list isn't necessarily exhaustive, and further constraints may be identified in time:

    i. The likely extent of the modelled 20-year flood, which isn't a scenario that has been modelled. The irrigation field must however be clear of that flood extent.

    ii. The location and size of the wastewater treatment plant, and the formation of an accessway to provide access to it.

    iii. The location and width of Overland Flow Path 3, currently shown on the Structure Plan as flowing through the irrigation field.

    iv. The location of existing farm drains that run through the irrigation field.

16. Further, the following variables were also raised:

    i. The effluent application rate assumed by CMW of 4 mm/day. Mr Abraham confirmed that he had that rate peer reviewed and that he considered it appropriate.

ii. The assumed head count per dwelling of 5. The conference agreed that this was likely a conservative assumption, meaning that the irrigation field as designed may be larger than it needs to be.

iii. The exact treatment and disposal technology has not been confirmed (despite Innoflow having supplied a potential solution). Variance in effluent quality and disposal technologies could alter the irrigation field size.

17. Having considered the above factors, the conference agreed that the sizes of both the irrigation field and the reserve area shown on the structure plan are appropriate to cater for the expected density of development within the site. The conference also agreed that flexibility needs to be included in the Plan Change rules to allow for the shape of both the irrigation field and reserve area to change to accommodate the potential constraints listed in paragraph 15 above, and/or any other unforeseen limitations. Exactly how that flexibility could be implemented within the framework of the Plan Change documentation isn't something that was discussed, as it is outside of the field of expertise of those present at the conference.

18. The conference agreed that there is sufficient land available to the northeast of the presently identified irrigation field and reserve areas to allow the necessary flexibility in design, even in a conservative theoretical scenario where all of the constraints listed in paragraph 15 were to impact upon the suitability of the land.

Date: 11/12/24

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Daniel Hight

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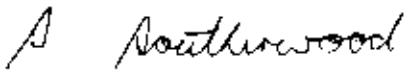
Kirstin Brown



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Sue Southerwood

James Abraham

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