BEFORE THE INDEPENDENT HEARINGS PANEL APPOINTED BY THE WESTERN BAY OF PLENTY DISTRICT COUNCIL

IN THE MATTER of the Resource Management Act 1991 (**RMA**)

SUMMARY STATEMENT OF EVIDENCE OF JAMES ABRAHAM ON BEHALF OF WESTERN BAY OF PLENTY DISTRICT COUNCIL - (WASTEWATER, STORMWATER)

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AND

IN THE MATTER of Proposed Private Plan Change 95 to the Western Bay of Plenty District Plan First Review – Pencarrow Estate, Pongakawa

INTRODUCTION

1. My name is James Abraham

2. I am the Asset Management Team leader for Water Services at Western Bay of Plenty District Council with a Bachelor of Engineering Technology. I have 8 years of engineering experience in three waters design and Asset Management for Local Government.

3. I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023 and I agree to comply with it. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except where I state I am relying on the specified evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from my expressed opinion.

SCOPE OF STATEMENT

4. In preparing this statement, I have read;

   a) The plan change application and relevant accompanying documents and further information from the Applicant
   b) Relevant submissions and further submissions
   c) Council's Section 42A Report which I contributed to from a three waters perspective;
   d) Geotechnical Investigation Report for Plan Change, CMW, 11 February 2022;
   e) Engineering Servicing Report Revision 5, 6 and 7, Lysaght Consultants;
   f) Statement of Evidence of Daniel Hight (Engineering, Flood Hazard and Natural Hazards)
   g) Statement of Evidence of Kirstin Brown (Wastewater)

5. I cover the following topics in this statement:

   (a) Topic 1 – Stormwater

   (b) Topic 2 - Wastewater

TOPIC 1 – Stormwater

1. The Section 42a Report raised the following stormwater concerns about the proposal.
   1.1. Safe conveyance of existing overland flow paths through the plan change site.
   1.2. Stormwater soakage limitations.
   1.3. Cumulative impacts of additional stormwater due to discharge and displacement.
2. I am satisfied that existing overland flow paths can be safely conveyed through the residential site without exposing residents to unreasonable risk.
3. I continue to have the following concerns about the Plan Change:
   3.1. The suitability for disposal of stormwater to ground by soakage.
   3.2. Cumulative impacts of additional stormwater due to discharge and displacement.
4. I support Sue Southerwood's statement for the Bay of Plenty Regional Council that the applicant has not provided sufficient evidence that the soakage rate assumed can be achieved. Soakage characteristics used are based on testing undertaken in Pongakawa. If the soakage rate is not achievable, then the sizing of stormwater management devices (soakage crates, stormwater wetland) will need to be revised. Dan Hight for the applicant has noted that at an assumed soakage rate of 7mm/hr compared to the original 100mm/hr, that soakage is still a viable solution. I have used these assumptions and note that the soakage device sized to cater for these new assumptions will have an effective area of 75m^2 compared to the original 9m^2. This is significantly different from the original proposal. It is my opinion that while 7mm/hr that Dan Hight has used is very conservative the underlying issue is that soakage characteristics at the site are untested. This is an assumption which underpins feasibility of the entire stormwater system proposed.
5. Dan Hight for the Applicant proposed that fill may be required for lower lying areas. I agree this maybe required however, the fill design and quality of the installation is critical to maintain permeability of soils, there is a high risk that this will decrease the soakage characteristics.
6. The effect of fill and loading from dwellings has not been assessed with regard to the impacts on existing ground water levels. It is proposed by the Applicant that ground water monitoring will be

conducted following placement of fill, however, in my opinion, this poses a high risk to the feasibility of stormwater disposal options.

TOPIC 2– Wastewater

7. The Section 42a Report raised the following wastewater concerns about the proposal.
   7.1. Disposal field viability.
   7.2. Site Conditions. (Soil, Groundwater and Surface Water)
   7.3. Environmental risk.
   7.4. Council's Financial Resources.
8. Alan Woodger Senior Environmental Engineer at GWE Consulting Engineers Limited was engaged by Council to undertake a review of the wastewater design presented in Private Plan Change 95 by the Applicant. The review is attached.
9. I continue to have the following concerns about the Plan Change:
   9.1. Disposal field viability.
   9.2. Site Conditions (Soil, Groundwater and Surface Water)
   9.3. Environmental risk
   9.4. Councils Financial Resources
10. **Disposal Field**
    10.1. Overland Flow Path 3 crosses the proposed disposal area, and no comment has been made from the Applicant as to how this will be managed or how this might affect the function of the disposal field.
    10.2. It is noted by Kirstin Brown for the Applicant that an irrigation area of 3.53ha is required, this is more than the 3.45ha identified in the structure plan drawings.
    10.3. The wastewater treatment plant proposed by the Applicant and access to it will take up a large area and it is not clear if this has been accounted for within any of the plans or design documentation provided by the Applicant.
    10.4. Residential land is proposed to be directly adjacent the wastewater irrigation field. As this will likely be a mowed field and could encourage residents to utilise the irrigation area, it is my recommendation that a setback be imposed between the residential area and the irrigation field. This is consistent with the WBoPDC Maketu irrigation field and imposed setbacks from the neighbouring campground. It is not clear if allowance has been made by the Applicant for setbacks from the proposed residential area with some of this area being higher density

zones. Nor is there any allowance for setbacks from Arawa Road.

10.5. There is not a clear statement from the Applicant on how wastewater is to be disposed of on the site, and there appears to be conflicting comments from the Applicant over the disposal method, namely whether it will be via raft fill or directly to land.

10.6. Approximately 7000m^2 (0.7ha) or 13% of the disposal field area is identified as being floodable in a climate adjusted 1-in-100-year flood event. Dan Hight notes that earthworks to lift ground levels could be carried out, to meet BOPRC OSET requirements to avoid placement of wastewater disposal fields below the 1 in 20-year flood level, this has not been assessed by the Applicant. These fill volumes do not appear to have been allowed for in flood water displacement volume calculations.

10.7. Each of the points above identify risks that have not been assessed and the cumulative risk being that the disposal area is undersized. An increase in the disposal area is likely required which would likely result in moving the disposal area further into identified floodable land. The application has not provided sufficient evidence to suggest that the proposed wastewater disposal method is appropriate without significant variation from the proposed plan.

11. **Site Conditions (Soil, Groundwater and Surface Water)**

11.1. Overland Flow Path 3 crosses the proposed disposal area, and no comment has been made by the Applicant as to how this will be managed or how this might affect the function of the disposal field.

11.2. Approximately 7000m2 (0.7ha) or 13% of the disposal field area is identified as being floodable in a 1-in-100-year flood. BOPRC OSET requirements seek to avoid placement of wastewater disposal fields below the 1 in 20-year flood level, however this has not been assessed by the Applicant.

11.3. The final disposal system chosen is unclear, Kirstin Brown for the Applicant notes buried, or partially buried wastewater infrastructure is proposed to be located in the north of the site over the peat soils. Peat soils have been identified at 0.5m below ground indicating saturated soils at this depth. The north of the site is also where identified floodable areas are most prominent increasing the risk of effluent being transported in flood waters. As a solution Dan Hight mentions that earthworks to lift ground levels could be carried out, but this poses a high risk of

differential settlement in peat soils if left unsaturated. The fill design and quality of the installation is critical in the long-term function of the irrigation field. Preloading of the field will manage settlement within the peat. However, this is not ideal for a wastewater disposal field and will likely result in soils having lower permeability characteristics. These compounding risks have not been assessed.

11.4. Kirstin Brown for the Applicant notes that the backfilling the existing farm drains could have an effect on groundwater, and that this will be assessed after the plan change has been adopted, however in my view this poses a risk to the overall viability of the disposal field. My recommendation is this assessment is required prior to plan change adoption.

12. **Environmental**

12.1. With the disposal field being adjacent to a residential area, mowing the disposal field will invite public use of the field. Council's recent experience with mowing of disposal fields (Maketu) in areas of soft compressible soils highlights a risk of pipe breakage due to the mower traffic over the field. Resulting in effluent ponding at the surface and damage compounded by the mowing and or public utilisation of the field. Such a scenario also presents a health and environmental risk.

12.2. The Waihi Estuary has been identified as a catchment requiring management to improve water quality and this may have an influence on the final design of the wastewater system. This uncertainty is a risk to the long-term acceptance of the discharge. It is noted that minimum setbacks have been proposed however, the site is identified as being in a floodable area with no assessment of how this will be managed.

13. **Council's Financial Resources**

13.1 Ongoing Council operating costs associated with small community wastewater systems are an inefficient use of financial resources compared to intensifying development in existing urban areas with existing wastewater treatment plants as noted in the section 42a report.

James Abraham
13 November 2024