BEFORE THE HEARING PANEL ON PROPOSED PLAN CHANGE 17 TO THE WAIPA DISTRICT PLAN

IN THE MATTER of the Resource management Act 1991 (the Act)

AND

IN THE MATTER of proposed Plan Change 17 to the Waipa District Plan

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Evidence of Mathew Philip Dickey on behalf of the Hautapu Landowners Group

Dated: 13th March 2023

MAY IT PLEASE THE HEARING PANEL

INTRODUCTION

1. My name is Mathew Philip Dickey. I am a Chartered Professional (CPEng) Civil and Waters Engineer, specialising in land development civil design, and the design and assessment of three waters infrastructure. I hold a Bachelor of Engineering (BE) with first class honours in Civil Engineering (2012).

2. I am a Principal Civil/Three Waters Engineer and Director of BTW Company Limited (BTW) and have worked at BTW for my full professional career of over 12 years. In my role at BTW, I am regularly involved in the civil engineering design, three waters engineering design, and geotechnical assessment for land development projects. Local Waikato-based land development projects I have been involved with include:

    a. 2025 Ohaupo Road 25 ha Private Plan Change Submission in the Waipā District; including civil and three waters technical design and geotechnical assessment and site suitability reporting.

    b. Te Wetini Developments Limited 16 Ha industrial subdivision on Te Wetini Drive, Hamilton; including civil and three waters technical design and geotechnical assessment and site suitability reporting.

    c. C1 & C2/C3 Residential Growth Cells, Cambridge in the Waipā District; including water supply modelling/design, wastewater servicing design and geotechnical assessment and site suitability reporting.

d. TOMRA Centre of Excellence Commercial Development on the corner of Airport Road / Lochiel Road in the Waipā District; including on-site three waters modelling/design, civil design, and geotechnical assessment.

CODE OF CONDUCT

3. I confirm have read the Code of Conduct for Expert Witnesses which is set out in the Environment Court Practice Note 2023 and have complied with that practice note in my preparation of this evidence. I agree to comply with it in presenting evidence at this hearing. The evidence that I give is within my area of expertise, except where I have stated my reliance on other identified evidence. I have considered all material facts that are known to me that might alter or detract from the opinions that I express in this evidence.

PURPOSE AND SCOPE OF EVIDENCE

4. The purpose of this evidence is to provide an assessment of the three-waters servicing and anticipated geotechnical suitability of the Hautapu Landowners Group ("**HLG**") site in support of part of its submission to rezone the HLG land to deferred industrial through Plan Change 17 ("**PC17**"). This is focussed on identifying stormwater management opportunities to form an overall improved solution to the currently proposed PC17 through inclusion of the HLG site are a focus of this evidence.

5. For completeness, in its current form, the PC17 approach to stormwater management presents potential adverse effects on the HLG site. However, as Mr Chrisp outlines in his evidence, the proposal to re-zone the HLG land to deferred industrial presents an opportunity for stormwater management re-design to mitigate adverse effects on the

HLG members.

6. The low soakage rate of 30 mm/hour for the proposed stormwater basin in the current PC17 master plan results in an extremely large stormwater reserve footprint, which is not viewed as efficient land use. Controlled discharge of predevelopment flows to the Mangaone Stream is an opportunity presented with the integration of the HLG site into PC17, which provides for significantly increased discharge rates becoming achievable for the PC17 area (in addition to soakage of initial abstraction volumes).

STORMWATER MANAGEMENT

7. The HLG site is generally elevated from the adjacent Mangaone Stream, not located in a known flood hazard zone, and stormwater management infrastructure can be designed and developed to provide an appropriate level of service and protection for inclusion of the HLG site into the PC17 area.

8. Stormwater management options for the HLG site into the PC17 area can be either standalone or integrated, with conceptual options being explored in BTW's site-specific Three Waters Engineering Report[1]. The following approaches are deemed applicable design options:

    a. Soakage to ground (as is the current stormwater management approach for the proposed PC17 area)

    b. Constructed wetlands with controlled discharge to the Managone Stream.

[1] "Geotechnical and Three Waters Engineering Report for HLG Site", BTW, Rev Final Draft, Dated 13/03/2023

9. The preferred and recommended stormwater management design approach is to collect and manage stormwater run-off within centralised constructed wetland(s), which provide the function of water quality treatment, extended detention, flow attenuation and flood protection. These wetlands would include a controlled discharge (for pre-development flows) into the Mangaone Stream. Figure 1 below provides an indicative layout of this integrated option.

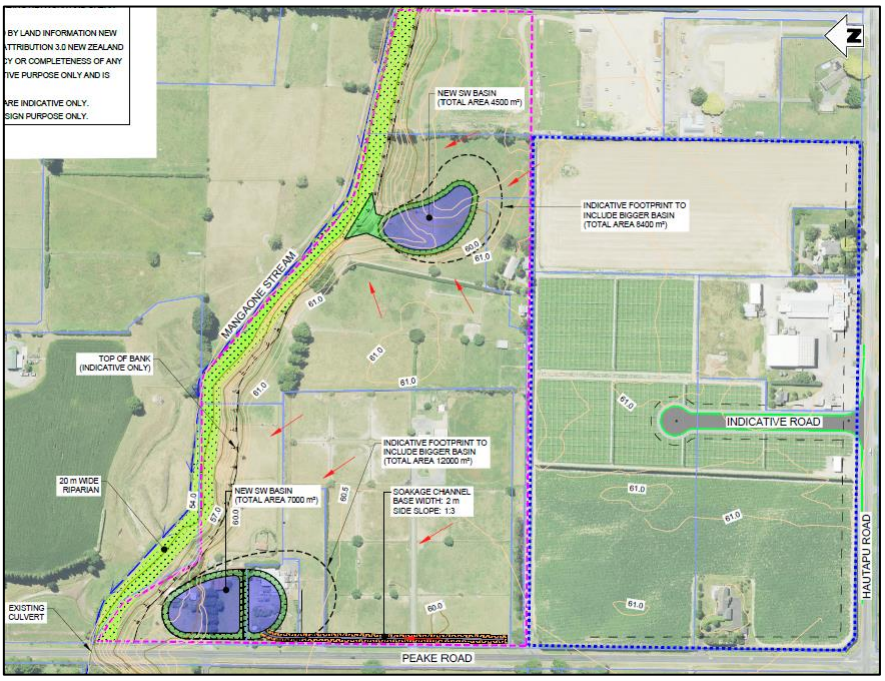

Figure 1: Integrated Stormwater Management System – Attenuation and Controlled Discharge to the Mangaone Stream.

10. The establishment of a discharge point into the Mangaone Stream allows for significantly higher discharge rates than can be achieved via soakage discharge to ground within the soakage systems in the currently proposed PC17 area. This reduces the footprint and size of the system required to manage post development flows, and therefore provides an improved land use for PC17. It is noted that this option would require a discharge consent approved from the Waikato Regional Council. I expect that this approach would result in a decreased overall cost associated with PC17 stormwater management infrastructure.

11. Alternative soakage basin solutions for stormwater management of the combined PC17 and HLG site is also a fasible option (without requiring consented discharge to the Mangone Stream). Figure 2 provides an indicative footprint of decentralised soakage basins, with Figure 3

indicatively showing a single combined soakage basin footprint. The overall size of these soakage basins is anticipated to reduce once site-specific soakage testing has been undertaken, considering recent soakage testing near the general area[2].

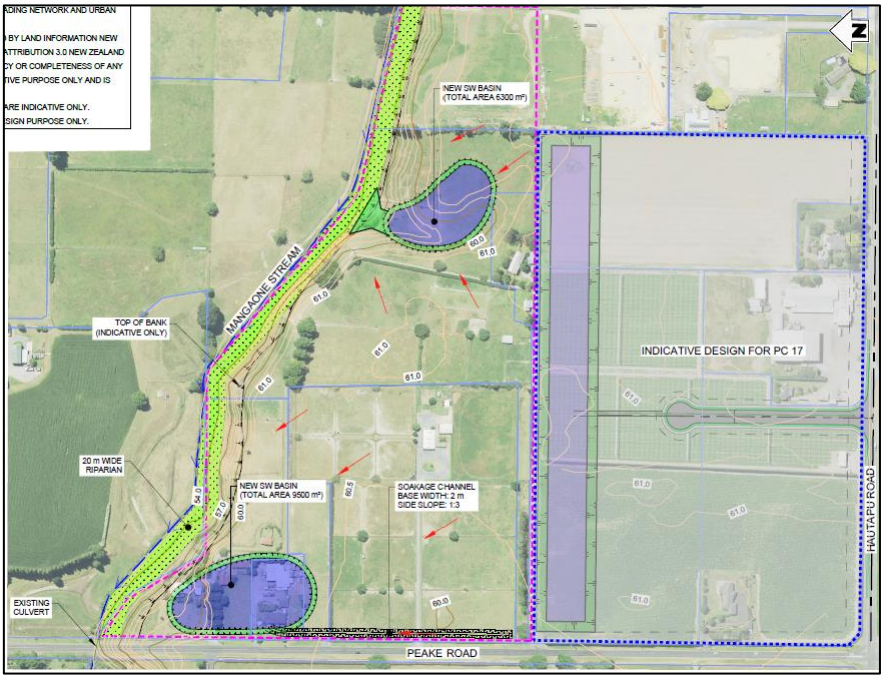

Figure 2: On-site Stormwater Management Alternative Option – Soakage basin solution.

[2] BTW Company; 2020: Geotechnical Report, Stormwater soakage rates at the southern end (turning head) of Allwill Drive, Hautapu. Report prepared for: Waipa District Council. Job No.: 191347.05; Revision: A; Date: 18/06/2020.23p.

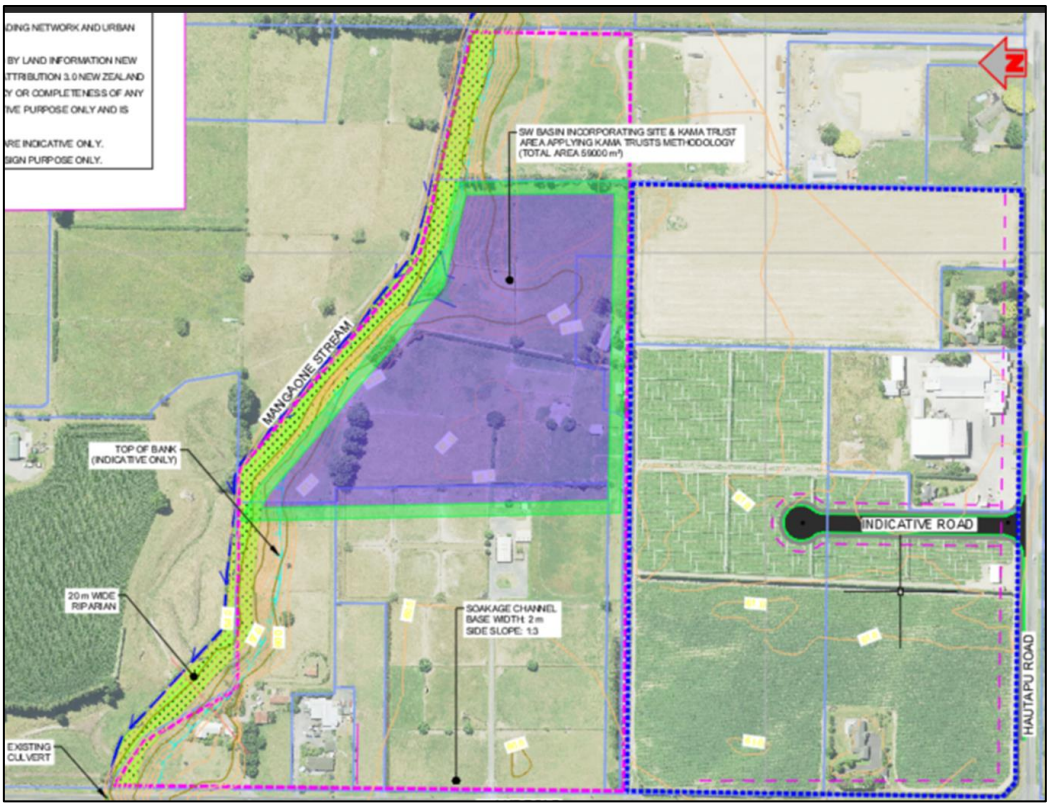

Figure 3: On-site Stormwater Management Alternative Option – Centralised soakage basin solution.

12. Opportunity exists for ecological enhancement along the Mangaone Stream with the introduction of a buffer zone containing biological diversity and riparian planting. While I am not an expert in the relevant fields, in my experience working on other projects, I anticipate that this would likely provide an acoustic and visual barrier between rural and industrial zoned land, whilst providing additional ecological enhancement opportunities compared to the currently proposed PC17.

13. The detailed design for an integrated stormwater management solution for PC17 to include the HLG site (as shown in the Figure 1 layout) is best approached through collaboration between the relevant technical design consultants. This would involve discussion as to the best option to ensure optimal integration and environmental outcomes.

WATER SERVICING

14. Water supply for the HLG site is proposed to be serviced via integration with the proposed PC17 water reticulation, which will be serviced by a connection to the Waipā District Council C8/C9 growth cell water supply reticulation.

15. The HLG site would require the same level of service as the currently proposed PC17 area. In addition to FW3 fire water classification flows, it is estimated that peak industrial water demands for the fully developed HLG site are in the order of 3.5 L/s.

16. On review of the existing water supply modelling report and outcomes for PC17[3], the estimated industrial demands above, and the HLG land contour in relation to the PC17 area, water demands of the HLG site are anticipated to be readily serviceable from connection to the future Waipā District Council C8/C9 water supply network (including the water infrastructure upgrades associated to service PC17).

17. The proposed Hautapu booster pumps and pipelines to service the C8/C9 and PC17 areas requires further review/design once staging of these growth areas is better understood[1]. This future modelling exercise would provide opportunity for a more detailed water supply modelling assessment to include the HLG site.

WASTEWATER SERVICING

18. Wastewater disposal for the HLG site would be serviced via integration with the Kama Trust conveyance system to the C8/C9 growth cells council owned and maintained wastewater reticulation and C8/C9

[3] "Water Supply Hydraulic Assessment for Hautapu Industrial Kama Trust Plan Change", WSP Consultants, 12th July 2022

pumping station(s), which subsequently pump flows through to the Cambridge wastewater treatment plant.

19. The conveyance system from the PC17 and HLG site to the C8/C9 pumping station(s) may conceptually be via a gravity reticulation (preferred), or a local PC17 pumping station and rising main to the C8/C9 pumping station(s), pending future design phases and infrastructure localities.

20. Wastewater flows are calculated with an average daily flow of 75.44 m^3/day, peak daily flow of 1.61 L/sec and peak wet weather flow of 4.52 L/sec.

GEOTECHCNIAL SUITABILITY

21. Based on a desktop review of the site; the site soils are deemed to be generally suitable to support industrial development. The anticipated soil types are sufficient to support light weight height portal framed building with low to moderate foundation bearing demands with anticipated shallow (< 1 m) subgrade improvement layers. Deep piles or excavation and replacement with imported hardfill is not envisaged.

22. Onsite soakage for the anticipated site soils will be an option for the development, provided that a secondary overland flow path is provided for and pending on-site soakage testing.

CONCLUSION

23. I consider that the HLG site can be suitably integrated into the PC17 development area with regards to the management of stormwater. Although an integrated soakage basin solution is possible without obtaining a regional discharge consent, an integrated system with a

discharge consent to the Mangaone stream for pre-development flows is considered the best approach at this stage, considering land use efficiency, ecological opportunities, and stormwater infrastructure development costs.

24. I consider that the HLG site can be suitably integrated into the PC17 area with regards to servicing of wastewater flows and water supply demand. This would be through connection to the Waipā District Council water/wastewater networks currently proposed for servicing of the PC17 area.

25. I consider that the anticipated soil types are suitable to support industrial type development buildings and associated infrastructure.

26. The statements in both this evidence and the current PC17 technical three-waters documents are subject to future detailed design modelling and site investigation phases.

13/03/2023

Mathew Philip Dickey