**BEFORE THE HEARING PANEL**

**IN THE MATTER** of the Resource Management Act 1991

**AND**

**IN THE MATTER** of Proposed Plan Change 12 to the Operative Hamilton City District Plan

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**SUMMARY STATEMENT OF EVIDENCE OF STUART JAMES EDGAR FARRANT**

**(STORMWATER MANAGEMENT)**

**Dated 4 September 2024**

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## INTRODUCTION

1. My full name is Stuart James Edgar Farrant. I am a Principal Ecological Engineer and Water Sensitive Design practice lead at Morphum Environmental Ltd. I have worked extensively for Hamilton City Council (**HCC**) on the technical development of the Plan Change 12 (**PC12**) rules related to on lot stormwater management including computational modelling to underpin these.

2. I have not provided Primary Evidence as part of the PC12 process. However, I have provided a statement of rebuttal evidence dated 14 August 2024 which responds to evidence filed by Kainga Ora and Pragma Holdings Limited (**Pragma**).

## SUMMARY OF REBUTTAL EVIDENCE

3. The drivers for improved stormwater management are well documented and do not appear to be disputed by submitters. HCC has considered the available opportunities to 'retrofit' effective stormwater management into existing urban areas and investigated the efficacy of a range of on lot measures including rainwater reuse tanks. Based on these investigations, HCC seeks to promote cost effective stormwater management options to manage adverse effects, achieve environmental outcomes and compliance.

4. The mitigation of site generated stormwater must consider both the hydrology and quality of stormwater to protect freshwater receiving environments. This needs to reflect the complex physical, biological and chemical processes which support functioning ecosystems and the vulnerability of stream structure and indigenous biodiversity to urban development impacts.

5. Having reviewed the evidence of Kainga Ora, it was noted that the importance of management of the volume of stormwater to broadly mimic the natural water balance has been misunderstood and comparisons between the proposed rainwater reuse tanks and detention tanks do not appropriately reflect the fundamental difference between retention (as proposed by PC12) and detention (typically used for flood mitigation). In particular, Sections 7.6, 7.7, 7.8 and 7.9. of Mr Jaggard's evidence appear to misrepresent the key objective of the provisions in PC12 which is to mitigate increased stormwater volumes to protect and enhance freshwater values.

6. Comments in Sections 7.10 and 7.11 of Mr Jaggard's evidence infers that there are no water quality benefits from providing treatment of roof surfaces. This position is disputed based on recent research and long standing understanding of the impacts of unmitigated stormwater.

7. Mr Jaggard questioned the basis for the 10mm retention requirement. Whilst I agreed that due to the complexity with data collection and monitoring for very small frequent rainfall events, and the lack of calibrated flow data for these events, there is some residual uncertainty with a definitive value, I consider that the 10mm provides a reliable metric that aligns best with existing data on natural hydrological processes.

8. The technical report appended to Mr Jaggard's evidence was reviewed and commented on in my rebuttal. I note that the comparisons of retention tanks with detention are not supported due to the fundamental difference between detention and retention. Considerations of costs need to also consider the costs of any business as usual approach which ultimately imposes costs to HCC through remedial stream works and erosion protection alongside costs to design

and develop centralised end of pipe solutions which are significantly restricted by a lack of available unencumbered space. Intangible costs of adversely impacted biodiversity values need consideration.

9. Mr McNutt on behalf of Pragma questions the minimum 3,000 L tank requirement with a particular focus on high density residential where alternatives such as shared communal tanks may be preferable. HCC is currently finalising a technical practice note for the use of rainwater reuse to achieve required stormwater retention in high density multi-unit development. Given the potential high number of residents relative to the roof area this includes analysis and recommendations on optimal configurations to provide the retention targets in an efficient and effective manner. This includes recommendations for shared tanks and partial connections (i.e. only needing to provide harvested rainwater to a smaller number of units based on contributing impervious areas).

10. Having reviewed the evidence provided for the stormwater retention components of PC12, I see no justification to amend the PC12 provisions.

**Stuart James Edgar Farrant**

**4 September 2024**