BEFORE THE WAIKATO DISTRICT COUNCIL INDEPENDENT HEARINGS PANEL

IN THE MATER	of Proposed Variation 3, under clause 16A of Schedule 1 of the Resource Management Act 1991, to the Proposed District Plan Change
AND	
IN THE MATTER	of submissions by Pokeno West, West Pokeno, CSL Trust and Top End Properties Limited, at Munro and Helenslee Roads, Pokeno (the **Submitters**)

STATEMENT OF REBUTTAL ENGINEERING EVIDENCE OF JIGNESH PATEL FOR THE SUBMITTERS

19 July 2023

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1. INTRODUCTION

1.1 My full name is Jigneshbhai Kishorbhai Patel. I am a principal at Maven Associates Limited (**"Maven"**).

1.2 I have outlined my qualifications, experience and commitment to comply with the Environment Court Expert Witness Code of Conduct in my evidence in chief ("EIC").

1.3 This is a statement of evidence on behalf of the Submitters in relation to the Proposed Variation 3 (Enabling Housing Supply), to the Proposed Waikato District Plan ("**PDP**"), (the "**Variation**").

1.4 I have read the evidence of Matthew Darryl Davis on behalf of Anna Noakes and MSBCA Fruhling Trustee's Company Limited.

2. SCOPE OF EVIDENCE

2.1 This statement of rebuttal evidence does not restate matters addressed in my EIC but addresses Civil Engineering issues raised in the evidence of Mr Davis on behalf of Anna Noakes and MSBCA Fruhling Trustee's Company Limited.

3. NOAKES AND FRUHLING TRUST RESPONSE

3.1 Mr Davis has requested/supported amendments to the WDC plan that include explicit objectives provisions and rules that require:

(a) Restricting infilling the existing floodplain, regardless of the ability to demonstrate that incremental infilling has purported infill has less than minor effects on immediate nearby flood levels. He is concerned that cumulative effects of infilling the existing floodplain immediately upstream of the Noakes Property, and other farm land, will potentially adversely affect these properties.

(b) Addressing a concern about the flood classification. He considers there remains a tangible flood risk in addition to what is termed 'high-risk' and that it should be reviewed and that no infilling should occur within all flood classifications, except defended (while noting the point made S.74 that enabling more people and structures to build behind stopbanks with protection to 100-year ARI puts more people and

buildings at risk for rainfall events that exceed the 100-year ARI rainfall event.

(c) Assessment of the breadth of flood effects of the current urban development and the urban development permitted by Variation 3, including beyond the 100-year ARI event, which currently is limited to the HIRDS 4 rainfall for the 250-year ARI on the Noakes Property and including land immediately adjacent of the rail tracks and railroad bridge.

(d) Explicit methods and rules to assess alteration of flow volume, frequency, and duration of stormwater runoff on farm activity, access, and infrastructure, including stream crossings.

(e) Explicit methods and rules to assess downstream farm drainage and infrastructure that could be damaged by erosive flows.

Floodplains

3.2 I note the concerns regarding infilling in floodplains. However, in a large-scale development, there is the opportunity to manage this potential effect over a whole catchment. Traditionally infilling of existing floodplains are managed by offsetting the infill volume by providing the same flood storage volume elsewhere within the same catchment. This ensures the overall flood storage volume within the catchment remains the same as the existing scenario.

3.3 Therefore, infilling of floodplains will not alter nearby flood levels if the overall flood storage volume within the same catchment is maintained. The reasons that a floodplain may need to be altered include improving the overall efficiency of the development and final urban form outcomes. Serviced urban land is a scarce resource and it is important that its development is optimised to reduce unnecessary costs and provide cost effective development sites. Cheaper development sites contribute to important policy objectives such as enabling the supply of more affordable homes.

Dines Stage 5 Alleged Stormwater Effects on the Noakes Land

3.4 I note that much of the concern of Ms Noakes and Mr Davis appears to be because of the alleged impacts of the Stage 5 Dines development on the current farming activities. I have not had sufficient time, or land access, to fully investigate the concerns raised.

3.5 However, I can say that from my understanding, development of the Pokeno West/CSL/Top End land, will have no stormwater impact on the Noakes property because the respective properties are in separate sub-catchments.

3.6 As also pointed out in my Primary Evidence, and as now required by the Council, the latest Catchment Management Plan requires a reduction to 70% of the current peak flows when the Submitters land is developed. Therefore, the current downstream properties to the Submitters land will benefit from a significantly reduced flood risk when the land is converted from rural to urban activities.

Pre and Post-Development Volume, Frequency and Duration

3.7 Mr Davis and Ms Noakes have requested explicit methods and rules to assess alteration of flow volume, frequency, and duration of stormwater runoff on farm activity, access, and infrastructure, including stream crossings.

3.8 I consider that it is not practically achievable for all future developments to implement stormwater management which achieves the specific provisions requested by Mr Davis/Ms Noakes. When land is converted from rural uses, that are mostly permeable, to urban uses, which allow for impermeable surfaces, it is inevitable that there will be a change in stormwater characteristics of volume, frequency, and duration. This is illustrated in the diagrams of Figure 1 & 2 in the primary evidence of Mr Davis.

3.9 Because it is inevitable that the profiles of volume, frequency and duration will change, that is why standard engineering practice focusses on the maintenance of the flow rate, because increased flow rates have the greatest potential to cause adverse effects to downstream land.

3.10 It is unrealistic to expect no changes to volume, frequency and duration of stormwater events, when going from a highly permeable land surface (pasture/plants) to up to 50% of building cover (Clause 14), and a minimum of

only 20% of landscaped grass/plants (Clause 18), as per the new development standards in Schedule 3A of the Act. With driveways, paths, and hard landscaping areas, these standards allow up to 80% of impermeable surfaces on a newly developed site. And then there is all of the runoff from roads and footpaths and business/commercial areas that usually allow even more coverage.

3.11 Engineering best practice is to design and implement mitigation measures to try and maintain downstream stormwater effects as best as practicable, including;

(a) Promoting on-site or collective rainwater harvesting systems;

(b) Promoting ground water discharging of stormwater to replenish aquifers and ground water tables;

(c) Swales to filter, absorb and slow down, runoff from hard surfaces where practical;

(d) Creating new wetlands to filter contaminants and slow flows and act as a buffer to spread the discharge peak;

(e) Stormwater ponds to capture peak flows and release them over a longer period; and

(f) Maintaining and retaining overall floodplain volume, while recognising there may be overall benefits in modifying the existing floodplain areas as outlined above.

3.12 Furthermore, specifically limiting the flow volume, frequency, and duration of to pre-development level will not necessarily achieve a greater level of mitigation for adverse stormwater effects than the current stormwater provisions in the PDP. Velocity of stormwater runoff is a key characteristic when assessing the effects of erosive flows, and an increase in velocity would create more erosion to the receiving environment. In this instance, by maintaining/reducing the pre-development flow rate, the velocity will also be limited to pre-development. This will address the scouring risk that is identified by Mr Davis, and not make worse any health and safety issues of being caught in stormwater.

3.13 In general terms, the current stormwater provisions in the PDP require:

(a) Pre-development hydrological conditions to be retained as far as practicable; and

(b) That there is no increase the flow of stormwater runoff onto adjoining properties adjacent land or floodplains, or any reduction in storage capacity on-site.

3.14 In my opinion the current stormwater provisions set out in PDP for Variation 3 are in accordance with standard engineering practice to mitigate adverse stormwater effects. The current provisions ensure the stormwater pre-development hydrological conditions are maintained where practical and peak discharge flow rate from future developments will be limited to pre-development peak discharge flow rate and be gradually released over a length time. In my opinion these requirements will ensure the best practical outcomes for downstream properties.

3.15 The relief sought by Mr Davis is not practicable as it does not fully appreciate the inevitable changes that occur when land is converted from rural to urban development.

3.16 Finally, as addressed in the evidence of Mr Boldero (par 23), for Pokeno West, post development flows have to be 70% of pre-development flows. This is to help mitigate downstream existing flooding risks to established development and in that regard is a “public benefit”. Therefore, contrary to the position put in the Noakes submission and the evidence of Mr Davis, the flood risk will most likely be reduced from the current levels if the land is rezoned MRZ 2 and redeveloped, as per the Catchment Management Plan, regulatory provisions and stormwater management best practice.

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19 July 2023