IN THE MATTER OF A NOTIFIED RESOURCE CONSENT APPLICATION FOR SUBDIVISION TO CREATE 11 LOTS (8 RURAL LIFESYLE LOTS, 2 BALANCE LOTS, AND A LOT TO BE AMALGAMATED AS A BOUNDARY ADJUSTMENT) AT MANGAKURI ROAD (RM230016)

SUMMARY STATEMENT OF SIMON GABRIELLE

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1 My full name is Simon Peter Gabrielle. I am a Senior Civil Engineer at Strata Group Consulting Engineers, a locally owned multi-disciplinary Engineering Consultancy based in Hastings, with a specialist Land Development team. I prepared a statement of evidence dated 11th June 2024. The purpose of this document is to summarise that statement and provide further rebuttal evidence after reviewing the submission received from Mr Michael Smith.

2 I outlined my qualifications, experience and commitment to comply with the Environment Court Expert Witness code of Conduct in my previous evidence statement.

STORMWATER

3 The overall design objectives for the proposed stormwater systems are to achieve stormwater neutrality with special attention to not increase the stormwater flow rates along the eastern boundary of the development; and to manage stormwater appropriately onsite with consideration of the receiving environment. The preliminary stormwater design includes the following features.

- Utilise a consent notice to enforce stormwater detention for all Lot owners
- Redirect stormwater run-off to the north-west where readily practicable
- Modify the existing farm pond to utilise it for stormwater detention
- Introduce 2 new dry ponds for stormwater detention
- Minor discharge at Mangakuri Beach (where no practical alternative was deemed to be available).

4 The above features combined provide for suitable stormwater detention to limit the post development flows to predevelopment flow rates for the events analysed with a decrease in flow rates to all discharge points, except for an increase to the land located north of Williams Road – located within the Applicants Land (referred to as Point A-1 in the Strata Group Land Development report).

5 The detailed design will include utilising storage routing software to model flows to and from the existing and proposed ponds.

WATER

6 All Lots will be responsible for their own potable water supply and rainwater harvesting. Part of the rainwater tanks will be utilised for stormwater detention as discussed in the Strata Group Land Development report. Consent notices have been offered to require all water tanks to be constructed with a 100mm diameter firefighting coupling for firefighting purposes. This method or a communal firefighting supply (shared tanks) will be investigated during detailed design for the development ensuring compliance with SNZ PAS 4509:2008.

WASTEWATER

7 Wastewater servicing is outside the scope of work undertaken by Strata Group, however, after consultation with local expert Steve Crockford from EMS (Effluent Management Systems), as included in the Consent application, I prepared a plan (sheet C300 included in the Strata Group Land Development report) showing indicative wastewater disposal fields. The preliminary disposal field size advice from Steve Crockford was based on his knowledge of *ASNZS 1547-2012 (On site domestic wastewater management)* with particular reference to table 5.2, page 55 - *Soil categories and recommended design irrigation rates for land application systems.*

NOTES REGARDING THE TECHNICAL MEMORADUMS RELATING TO THE CIVIL ENGINEERING ASPECTS

8 The memorandum from Wayne Hodson, Senior Design Engineer (Three Waters), Stantec, the memorandum from Chris Rossiter, Principal Transportation Engineer Stantec, and the written statement from Jacob Yee, Planner, Beca limited on behalf of Fire and Emergency New Zealand, are all generally supportive of the preliminary proposed civil engineering solutions, with some exceptions and proposed conditions which are readily addressed as recommended in my full Statement of Evidence. These exceptions and conditions are not considered “roadblocks” to the development and should my recommendations on these exceptions not be accepted, the development could still feasibly proceed from a civil engineering perspective.

NOTES REGARDING THE MEMORADUM FROM ERIN GRIFFITH PRINCIPAL, LANDSCAPE AND URBAN DESIGN, NATURAL CAPITAL

9 Regarding the proposed dry pond located in Catchment C as referenced by Ms. Griffith, The Applicant now plans to enlist the services of an ecologist to offer guidance regarding the potential wetland. If the ecological advice recommends against pursuing a resource consent application or indicates challenges in obtaining one in the currently proposed position north of Lot 3, alternative engineering solutions can be considered, including parcel rearrangement to relocate the dry pond uphill and out of the possible wetland area, relocating the dry pond to another location (at least 2 options possible), or utilising above ground tanks. Therefore, in my opinion there are viable alternative options to the originally proposed dry pond north of Lot 3, if an alternative is required.

NOTES REGARDING THE SUBMISSION FROM MICHAEL SMITH

10 The submission from Michael Smith covers a range of topics. My rebuttal to Mr. Smith's submission only pertains to the stormwater related comments. A full rebuttal to this submission is included in the Appendix of this Summary Statement but the most important points are summarised as follows.

11 Mr. Smith has presented rainfall data from historical events in Central Hawke's Bay and has inferred that the technical reports have not considered such events. Although these events have produced significant volumes of rainfall, the intensities in these longer duration events, if averaged out, represent much lower rainfall intensities than the values used in the Land development report calculations. I consider that in the context of the proposal, the risk to downstream properties and the general environment is the rate of stormwater discharge from the development, and the events used in my analysis are appropriate with intensities much higher than the average intensities from the events cited by Mr. Smith.

12 Mr. Smith has offered comments regarding the use of HIRDs data from NIWA. To challenge the way this data is used is to challenge National standards and numerous regional engineering codes of practice and industry guidelines.

CONCLUSION

13 From a civil engineering perspective, the servicing of the proposed development is technically feasible. Avoiding effects on neighbours to the proposed development has been paramount to the design and a high level of collaboration between all consultants involved has strived to achieve the best outcomes for the development. In my professional opinion, there are no reasons why the consent should not be granted with the appropriate conditions.

Simon Gabrielle
Senior Civil Engineer

25th June 2024

APPENDIX A – FULL REBUTTAL TO THE SUBMISSION FROM MICHAEL SMITH

24th June 2024

Mangakuri Station Subdivision

Rebuttal to the submission from Michael Smith

The following commentary is in response to the submission from Michael Smith, received 24/06/24, with point numbers aligning with the submission from Mr Smith.

Point #6 and #22

The term best practice was not used in the Strata Group, Land Development report, however, I note that best Practice is defined as follows: **"***a procedure that has been shown by research and experience to produce optimal results and that is established or proposed as a standard suitable for widespread adoption*". Best practice Definition & Meaning - Merriam-Webster

Regarding the statement from Mr Smith stating, "*In addition, it is proposed that engineering issues are "mitigated" by imposing relevant consent conditions on the applicant and the future property owners within the subdivision. This does not resolve the concerns but just makes them somebody else's problem."*

The bulk solutions for the stormwater design including the ponds and outlets will be completed by the developer. The only stormwater aspects that are deferred, relate to the use of onsite stormwater detention tanks. This is commonplace throughout New Zealand and a default mechanism of most Building Consent authorities for a range of developments, rural and residential.

#14 - 15

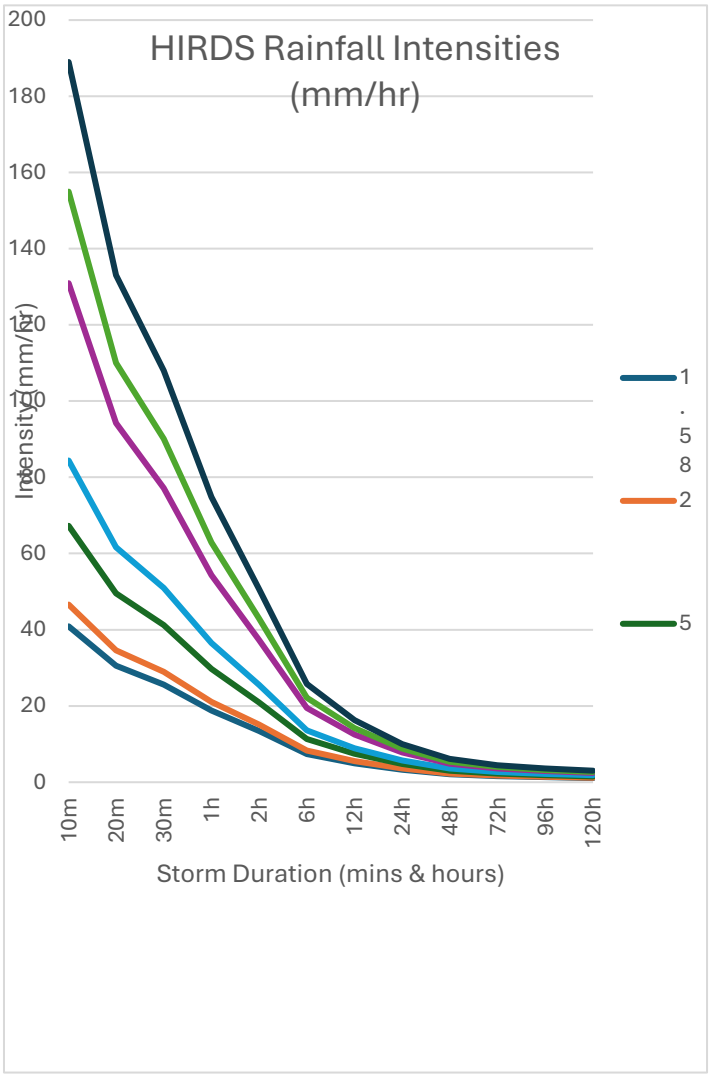

Figure 1 – Graph of Geo specific rainfall intensity data for the site. Data Source https://hirds.niwa.co.nz downloaded on the 14th Sept 2022

The graph in figure 1 illustrates the rainfall intensity data used in the analysis to date, noting the worst-case RCP (representative concentration pathways) of 8.5 has been adopted. The graph illustrates that the shorter storm duration has much higher rainfall intensities. The total volume of rainfall may be greater in longer duration events, but in the context of the Mangakuri development, the downstream environment assessed considers the existing channels capacity (breach risk) and the discharge environment. Effectively, the rate of discharge from the development to the downstream environment is what the preliminary design has sought to mitigate.

The downstream environment be more adversely affected by short duration events which result in increased run-off rates compared to the longer duration events, noting the events cited by Mr Smith are all 9 hours or more in duration. Furthermore, throughout various recognised methods for analysing stormwater flows, the size of the

catchment is always used to determine the time of concentration to apply to determine the peak run-off generated.

As a simplistic example, for a catchment of 6.59 Ha (same as catchment B), with a run-off coefficient of 0.4, a 100-year, 30-minute event has an intensity of 90.1 mm/hour, which equates to a total peak run-off rate of **660** litres per second.

By comparison, a 250-year 24-hour event (similar to that reported by Mr Smith) has an average event intensity of 10mm/hour, which only equates to a total peak run-off rate of **73** litres per second. So, although the total event volumes may be much more, the potential for the existing stormwater channels to be breached, or scouring of the discharge environment is lower than the events analysed in my report.

Year	Event	Location	Rainfall	ARI
1917	Unnamed	Elsthorpe	381mm in 60 hrs	>250 yrs
1936	Unnamed TC	Maraetotara	254mm in 24 hrs	>250yrs
1953	Heavy Rain	Kahuranaki	224mm in 9hrs	>250yrs
1996	Cyclone Beti	Waipoapoa	201mm in 24hrs	80 yrs
2011	HB Rain Bomb	Pourerere	480mm in 18 hrs*	>250yrs

*Not recorded/reported by NIWA

Figure 2 - Rainfall events as cited/provided by Mr Smith

In my opinion, the greater risk to the houses to the east of the development during rainfall events such as those cited by Mr Smith, is the threat of land movement resulting from saturated soils. This however is an existing risk, and a risk that has been considered by the overall development design, with the inclusion of mass plantings and the proposed overall stormwater management.

It is also worth noting that in longer duration rainfall events, once the soils are saturated, the run-off generated from pasture increases, and the differences in run-off generation from a pre to post development scenario are reduced or if soils become completely saturated, the run-off difference in the pre to post development scenario become negligible.

#23. To challenge the way the HIRDS data is used is to challenge National standards and numerous regional engineering codes of practice and guidelines.

#24. It is noted that the preliminary pond volumes exceed the design requirements. The final design will utilise storage routing software to model flows to and from the existing and proposed ponds and a freeboard volume will also be included in the final design.

#25. Refer to #22, the use of detention tanks is common practice and although there is risk associated with unmaintained systems, the use of onsite detention tanks provides attenuation at the source of capture – reducing immediate discharge rates and velocities to the receiving drain, channel or pipe. This form of mitigation is difficult to achieve at the immediate collection point in any other manner.

#26 - #27. Blocked drains are an issue not exclusive to this development. The main stormwater drains for this development will be located in the balance Lot and not Lots 1- 10.

#28. It is important to note that the existing pond has existed since circa 1966 without known failure. The development will see the existing pond geotechnically investigated, improved and it's risk of failure will be reduced. Regarding the proposed dry ponds, it is important to remember that these are proposed as dry ponds, that will only fill or partially fill during rainfall events. Although the pond walls will be constructed with the same engineering controls as an earth dam, the forces applied and the risk of failure of the dry ponds is less than a permanent pond or dam.

Yours faithfully,

For and on behalf of Strata Group Consulting Engineers Ltd

Simon Gabrielle
Senior Civil Engineer