BEFORE THE NEW PLYMOUTH DISTRICT COUNCIL
INDEPENDENT HEARING COMMISSIONERS

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a request for Private Plan Change NPDC PLC18/00048 by Oakura Farm Park Limited to rezone land at Oakura within the New Plymouth District

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STATEMENT OF FURTHER EVIDENCE OF LUKE ERROLL BUNN ON BEHALF OF OAKURA FARM PARK LIMITED

Dated 11 October 2019

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INTRODUCTION

1. My full name is Luke Erroll Bunn.

2. I am a Senior Civil Engineer at Red Jacket Engineering Services.

3. My qualifications are B.Eng.Tech (Civil), NZDE (Civil), CMEngNZ (Eng. Technician).

4. I have 10 years' experience in the Taranaki Region working on private and local government projects, with particular focus on land development and stormwater design.

CODE OF CONDUCT

5. I have read the Environment Court Code of Conduct for expert witnesses and agree to comply with it. I confirm that the opinions expressed in this statement are within my area of expertise except where I state that I have relied on the evidence of other persons. I have not omitted to consider materials or facts known to me that might alter or detract from the opinions I have expressed.

SCOPE OF EVIDENCE

6. This evidence covers the high-level assessment of the proposed stormwater management system for the proposed Wairau Estate Development. This includes assessing the upstream catchment from the Kaitake Ranges to the confluence point with the Wairau Stream, and assessing the potential hydrological effects of the proposed subdivision on the receiving environment.

7. The proposed stormwater management system, detention ponds will be situated in the existing natural low points within the proposed

development, an unnamed tributary of the Wairau Stream utilising the existing DN600 culvert discharge at SH45.

8. For the purpose of this high-level design the pond systems have been modelled as a single pond structure. The multiple pond system is a viable option as they will be interlinked and utilise a single outlet to the downstream environment. The multiple pond structures shall be designed at detailed design phase.

SUMMARY OF EVIDENCE

9. Based on the analysis undertaken and the results of the HEC-HMS model:

   a) There is sufficient capacity within the proposed Wairau Estate detention pond to accommodate up to a 1% AEP design storm within the extents of the existing unnamed tributary.

   b) The proposed detention pond servicing the proposed Wairau Estate development does not increase the pre-development peak flow at the discharge point for 20%, 10% and up to 1% AEP design storms.

   c) The proposed Wairau Estate development in conjunction with the proposed detention pond has a no more than minor effect on the downstream DN600 mm culvert crossing SH45 and the downstream confluence with the Wairau Stream, for 20%, 10% and up to 1% AEP design storms.

   d) The peak flow from the proposed Wairau Estate development comprises of less than 5% (range of 1.5% to 3.5%) of the total peak flow at the confluence point across all design storm scenarios considered. It can be concluded that the proposed development will

have a negligible impact on the existing downstream environment for all design storm scenarios considered.

e) The proposed detention pond servicing the Wairau Estate development is subject to detailed design and shall be designed in accordance with the NZ Building Code, WRC earthworks guidelines, and best practice engineering design.

ANALYSIS

10. The hydrological analysis of the existing upstream catchments and catchments contributing to the proposed stormwater management system have been analysed using US Army Corps of Engineers HEC-HMS 4.3 Hydrological Modelling System. The analysis undertaken is set out in Redjacket Engineering report **RPT-2351-04 Rev A Oct'2019** accompanying this statement of evidence.

11. The proposed stormwater management system servicing the proposed Wairau Estate development has been designed to have a peak flow discharge no greater than pre-development during design storms of 20%, 10%, and 1% AEP. The design allows for no impact on the peak flows and food elevations at the DN600 culvert under SH45 and no impact at the downstream confluence zone where the unnamed tributary meets the Wairau Stream.

CONCLUSION

12. Based on analysis undertaken, the proposed stormwater management system for the Wairau Estate development will have a no more than minor effect on the downstream confluence zone with the Wairau Stream, in

relation to peak flows and time to peaks for a wide range of design storm scenarios.

13. The proposed stormwater management system shall be designed in accordance with the WRC earthworks guidelines to minimise the potential downstream effects in relation to sediment runoff from the proposed development.

Luke Bunn

11 October 2019