BEFORE COMMISSIONER MARK ST. CLAIR APPOINTED BY NEW PLYMOUTH DISTRICT COUNCIL

UNDER	the Resource Management Act 1991 ("RMA")
IN THE MATTER	of an application under section 88 of the Act by **ROBE AND ROCHE INVESTMENTS LIMITED** to the **NEW PLYMOUTH DISTRICT COUNCIL** for a subdivision to create 113 residential lots and additional road and recreational reserves at 56 Pohutukawa Place, Bell Block. (SUB21/47803)

STATEMENT OF EVIDENCE LUKE ERROL BUNN FOR SUBDIVISION CIVIL DESIGN ON BEHALF OF ROBE AND ROCHE INVESTMENTS LIMITED

1. INTRODUCTION

1.1 I Luke Errol Bunn am presenting evidence in support of the proposed development in respect to Stormwater Management, Reticulated Water, Sanitary Sewer, and Earthworks. Evidence scope, qualifications, and practice fields are detailed below.

1.2 **Evidence Scope – Stormwater Management, Reticulated Water, Sanitary Sewer, and Earthworks.**

My full name is Luke Errol Bunn ("Luke"). I am a Senior Civil Engineer at Red Jacket Ltd ("RJL") and hold a B.Eng.Tech (Civil), NZDE (Civil), CMEngNZ (Eng. Technician). I have 15 years' experience in the Taranaki region as a civil contractor and engineering consultant. My areas of practice include private and local government projects, with particular focus on Land Development, stormwater management, reticulated water supply, sanitary sewer design, local roading design, and earthworks design.

1.3 This evidence is given in support of the subdivision and land use consent application ("the application") lodged by Robe and Roche Investments Limited ("the applicant"), to subdivide the land at 56 Pohutukawa Place, Bell Block into 113 residential lots and associated road and recreational reserves.

1.4 I am authorised to give this evidence on behalf of the applicant.

2. INVOLVEMENT IN THE PROJECT

2.1 RJL's involvement in the application has included:

(a) Initial meetings and consultation with NPDC, client, and McKinlay Surveyors early 2021 to establish subdivision design and consenting requirements.

(b) Ongoing consultation with NPDC, TRC, and the applicant to refine the civil engineering design.

(c) Preparation of civil design drawings and engineering report to support an NPDC subdivision consent application, delivered to the applicant and NPDC mid-2021.

(d) Completed a sanitary sewer main renewal assessment and design for NPDC. Civil design drawings and options report issued to NPDC mid-2022.

(e) Completed a hydrological analysis of the proposed development including stormwater management and treatment design to support a Taranaki Regional Council ("TRC") consent application, delivered to the applicant and TRC late-2024.

(f) Revised civil design drawings incorporating feedback from all parties involved, issued early-2025. Revised drawings circulated to NPDC roading and infrastructure team at that time.

(g) Completed a preliminary stage road design memo outlining the basis of design for the proposed roading network.

(h) Completed a Geotechnical Review of the 'Red Jacket Engineering Report – Proposed Development' dated May 2021.

2.2 RJL has also reviewed the following documents produced with the application, including:

(a) The original application for consent dated 26 May 2021;

(b) The 'Addendum to Application for Resource Consent 56 Pohutukawa Place' dated 8 July 2021;

(c) The associated scheme plans for the development dated 6 August 2021;

(d) The 'Archaeological Assessment' dated November 2021;

(e) The 'Consultation Summary';

(f) The 'Mounga Ecology Ecological Statement on Road 2 and Water Quality Standards' dated 11 August 2021;

(g) The 'Mounga Ecology Wetland Delineation Map' dated 24 June 2021;

(h) The 'Mounga Ecology Wetland Delineation Results and Assessment Against National Environmental Standards – Freshwater 2020' dated 28 June 2021;

(i) The 'Red Jacket Earthworks Plan, DWG-100-433 Rev D' dated 25 May 2021;

(j) The 'Red Jacket Engineering Drawings, DWG-100-433 Rev D' dated 25 May 2021;

(k) The 'Red Jacket Engineering Drawings, DWG-100-433 Rev E C1 3 and C1 4 amendments' dated 5 August 2021; and

(l) The 'Red Jacket Engineering Report– Proposed Development RPT-3917-01 Rev A' dated May 2021.

(m) The 'Red Jacket Engineering Report – Stormwater Management RPT-3917-02 Rev B' dated August 2024.

(n) The 'Red Jacket Engineering Report – Sewer Main Renewal RPT-4458-01 Rev C' dated May 2022; attached as **Appendix 1**.

(o) The 'Red Jacket Preliminary Stage Road Design Memo MEM-3917-C-01 Rev C', dated 25th March 2025.

(p) The 'Red Jacket Engineering Drawings, DWG-3917-C-01 Rev A' dated March 2025; attached as **Appendix 2**.

(q) Assessment of Potential Ecological Effects, Pohutukawa Place, Bell Block, Report No. 6969, Willie Shaw, Wildlands Consultants Ltd, 11/10/2024;

(r) Joint Witness Statement Transport, Andy Skerrett and Mark Georgeson, 7 March 2025.

3. CODE OF CONDUCT

3.1 I confirm that I have read the Code of Conduct for expert witnesses contained in the 2023 Environment Court Practice Note and that I agree to comply with it. I confirm I have considered all the material facts that I am aware of that might alter or detract from the opinions I express. In particular, unless I state otherwise, this evidence is within my sphere of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

4. PURPOSE AND SCOPE OF EVIDENCE

4.1 In this matter, RJL has been asked by the applicant to address the civil design of the proposed development with particular focus on stormwater management and roading network design.

4.2 RJL confirms that it has read the submissions on the Application relevant to its expertise and the Council Officer's Report. The assumptions, assessment and conclusions set out in the Red Jacket engineering drawings and reports noted in Section 2.2 above remain valid.

4.3 Except where my evidence relates to contentious matters, I propose to only summarise the conclusions set out in my expert technical reports as detailed below,

(a) The 'Red Jacket Engineering Report– Proposed Development RPT-3917-01 Rev A' dated May 2021;

(b) The 'Red Jacket Engineering Report – Stormwater Management RPT-3917-02 Rev B' dated August 2024;

(c) The 'Red Jacket Engineering Report – Sewer Main Renewal RPT-4458-01 Rev C' dated May 2022; and

(d) The 'Red Jacket Preliminary Stage Road Design Memo MEM-3917-C-01 Rev C', dated 25th March 2025.

4.4 My evidence is structured as follows:

(a) Summary (Section 5);

(b) Stormwater Management Design (Section 6);

(c) Reticulated Water Design (Section 7);

(d) Sanitary Sewer Design (Section 8);

(e) Earthworks Design (Section 9);

(f) Matters raised in submissions (Section 10);

(g) Officer's Report and Consent Conditions (Section 11); and

(h) Conclusions (Section 12).

5. SUMMARY

5.1 The key engineering related issues within my expertise in my opinion are:

(a) Hydrological effects of the proposed development on the Waipu Lagoons;

(b) NPDC reticulated water network providing an adequate level of service and protection for the proposed development;

(c) Existing NPDC sanitary sewer reticulation providing an adequate level service for the proposed development; and

(d) Cut and fill earthworks associated with the road formation not obstructing existing stormwater overland flow paths, and providing an adequate level of flooding protection for the proposed development.

5.2 By way of a summary, my detailed analyses and assessments enable me to confidently conclude that:

(a) The proposed development has a negligible effect on the hydraulic function of the Waipu Lagoons;

(b) The reticulated water network shall extend from Parklands Avenue connecting through to Pohutukawa Place. This shall provide the required level of service and protection for the proposed development;

(c) The proposed sanitary sewer main renewal driven by NPDC will provide sufficient capacity to accommodate the existing catchment and the proposed development; and

(d) Cut and fill earthworks have been designed to follow the natural contour of the land utilising existing overland flow paths and natural stormwater discharge locations. The vested carriageways shall act as

secondary overland flow paths providing the proposed development with an adequate level of flooding protection.

6. STORMWATER MANAGEMENT DESIGN

6.1 The proposed stormwater management design is based on the following:

- The stormwater model utilises multiple approved Hydrological and Hydraulic Design Software. This design software utilises 24-hr nested rain-fall data obtained via NIWA HIRDS RCP.8.5 for the years 2081-2100 as required by NPDC and TRC.

- Residential Lots shall dispose of developed stormwater on-site in accordance with NZBC E1. Any rainwater exceeding the capacity of the private stormwater soakage systems shall be directed towards the vested road carriageway, being the formed secondary overland flow paths.

- All Stormwater shall utilise the proposed stormwater network to convey up to the 10% AEP design storm. All stormwater run-off exceeding the capacity of the stormwater network will utilise the vested carriageway as a secondary overland flowpath for stormwater to reach the designed discharge locations.

- Stormwater runoff from the vested carriageway shall initially be directed to Rain gardens to provide first flush treatment; following this, the remainder of the stormwater runoff shall dispose of stormwater via a direct discharge to the designed discharge locations.

6.2 An overarching hydraulic model was prepared as part of a TRC resource consent application. The hydraulic modelling specifically covers the effects of the proposed development on the Waipu Lagoons over a range of design storms, being 10%, 2%, and 1% AEP.

6.3 The stormwater management design for the proposed development has been tailored to mimic the existing hydraulic regime for the design storms considered. To achieve this, a balance of groundwater recharge and surface water discharge has been incorporated into the design to keep global hydraulic effects to a minimum. TRC was consulted prior to commencing the stormwater management design to establish the parameters for this assessment and the desired outcome.

6.4 The percentage differences (across the range of design storms considered) between the predevelopment and post development scenarios are as follows:

- Runoff volume -1.0% to +1.4%
- Infiltration Volume -0.4% to +0.9%
- Peak Flows +2.0% to +4.2%
- Wetland Flooding Levels +20mm

The percentage differences and rise in wetland elevation is considered negligible in relation to hydraulic function of the Waipu Lagoons.

6.5 Stormwater water quality flow (WQF) treatment shall be provided by Rain gardens located within the vested carriageways. The Rain gardens have been designed and positioned to intercept and treat the first flush stormwater runoff from the vested carriageways.

6.6 The Rain gardens have been sized in accordance with the Auckland Region's Stormwater Management Devices guidelines (GD01). A higher constant rainfall intensity of 12 mm/hour has been used to reflect the Taranaki region's higher annual rainfall, GD01 specifies a rainfall intensity of 10 mm/hour. This approach has been agreed with NPDC.

6.7 The stormwater network has been sized to provide a 10% AEP, Level of Service with the vested carriageway conveying the 1% AEP, providing the required level of protection.

7. RETICULATED WATER DESIGN

7.1 The reticulated water design has been completed in accordance with the NPDC Land Development Standard, and SNZ PAS 4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice.

7.2 The proposed residential Lots shall be serviced by a reticulated water network consisting of DN150mm mains and DN63mm ridermains. All proposed mains have been assessed for capacity in accordance NPDC Land Development Standard, Tables 6.2 and 6.3.

7.3 To provide an adequate level of service and protection for the development, it is proposed to extend the DN150 water main from Parklands Avenue through to Pohutukawa Place.

7.4 A preliminary assessment from NPDC as part of the initial application process indicated that the proposed connection from Parklands to Pohutukawa will provide an adequate level of service for the residential Lots, and provide FW2 firefighting capabilities, achieving the required level of protection.

8. SANITARY SEWER DESIGN

8.1 There is an existing NPDC sanitary sewer main that runs through the proposed development. An assessment of this main has determined that the pipe is nearing the end of its design life, and should be replaced as part of the proposed development.

8.2 RJL in conjunction with NPDC have completed an options assessment to replace the existing main. The assessment included undertaking a capacity assessment to ensure the network was able to accommodate the existing and proposed contributing catchments.

8.3 The outcome of the assessment was to replace the existing DN150mm main with a DN225mm main on a similar horizontal alignment, following the proposed road alignment. The proposed main will connect into the existing trunk main further downstream from the current connection, to allow for an increase in vertical grade and increase in capacity.

8.4 A hydraulic model has been completed with the new DN225mm main. The model indicates that the proposed main will have the capacity to service the existing catchment and the proposed development in its entirety.

8.5 The development will be serviced by a reticulated gravity network, consisting of DN150mm mains. The mains shall connect into the proposed DN225mm main along the Road 1 and 2 alignments.

8.6 Depending on final Lot formation levels, there is the potential for 4-6 Lots along Road 2 and 3 not to be able to achieve gravity back to the network. It is proposed to utilise individual pump stations within each Lot and a common pumping main within the vested road, to pump back to the gravity terminal manhole in Road 3.

9. EARTHWORKS DESIGN

9.1 The earthworks design has been undertaken for the vested road formation only.

9.2 The vertical and horizontal alignment of the road has been designed to follow existing ground contours where possible, minimising cut and fill operations.

9.3 Existing low points and natural discharge points which have been incorporated into the roading design maintain existing stormwater overland

flow paths where possible, and provide a sufficient level of flooding protection for the proposed development.

10. MATTERS RAISED IN SUBMISSIONS

10.1 I have reviewed the submissions received; and comment below on the submissions from DOC, PKW, Forest and Bird, and Graeme Hight which raise the following particular matters within my field of expertise (which I felt needed to be responded to):

(a) **Submission Response to DOC, PKW, and Forest and Bird**

The stormwater management design for the proposed development mimics the existing hydraulic regime in relation to groundwater and surface water recharge of the Waipu Lagoons.

It is concluded that the proposed development will not have an adverse effect on the hydraulic function of the Waipu Lagoons.

(b) **Submission Response to DOC, PKW, and Forest and Bird**

As part of the formation of the vested carriageway and Lot formation, appropriate erosion and sediment control measures shall be installed in accordance with the Waikato Guidelines for Soil Disturbing Activities (adopted by TRC).

(c) **Submission Response to DOC, PKW, and Forest and Bird**

Stormwater treatment for the vested carriageway in the form of Rain gardens have been implemented as part of the stormwater management design for the proposed development. The Rain gardens shall be vested with NPDC, and will have an operation and maintenance manual to ensure the system remains effective during its service life.

(d) **Submission Response to DOC, PKW, Forest and Bird, and Graeme Hight**

The stormwater management design for the proposed development has assessed potential flooding risk to the Waipu Lagoons. The assessment has concluded that the proposed development will have a negligible effect to water level of Waipu Lagoons during high intensity rainfall events.

11. OFFICERS REPORT AND CONSENT CONDITIONS

11.1 I have read the Officer's Report; and the proposed consent conditions relevant to my field of expertise. I Have the following comments in relation to the Draft Consent Conditions.

11.2 Condition 31 – Reference to Lots 1 – 117, should be revised to Lots 1 – 113.

11.3 Condition 32 – This consent condition should be reworded to the following:

The existing 150mm line along Parklands Ave shall be extended to service a maximum of 82 Lots.

The current 150mm main services 78 residential properties along Nadine Stanton Drive, Sunset Street, Impact Drive, Waipu View Road, and Parklands Ave. NPDC Land Development and Subdivision Infrastructure Standard, Section 6.3.5.7, Table 6.2 indicates that a single direction 150mm feed should have the capacity to service 160 residential Lots.

NPDC shall confirm (utilising their current water model for the Bell Block area) the maximum number of Lots that can be serviced from the dead-end supply at the end of Parklands Ave.

11.4 Condition 33 – This consent condition should be reworded to the following:

Once the maximum number of Lots is reached a water line will be required to join the existing water line Pohutukawa Place to provide a loop in order to provide fire-fighting supply.

11.5 Condition 34 – Reference to Lots 1 – 117, should be revised to Lots 1 – 113.

11.6 Condition 35 – This consent condition should be reworded to the following:

For Stages 6, 7, 8, and 9 the 150mm sewer line vested in Council that currently runs through this property is to be removed and a new sewer line installed along the line of the new road. The new main shall extend from the service main on Pohutukawa Place through to the NPDC trunk main to the North of the development. The replacement of the Council sewer line shall be designed by the consent holder's engineer so this aligns with the sewer system required for the development. NPDC will pay for this design to be undertaken.

11.7 Condition 35 Advice Note – This advice note should be reworded to the following:

Advice Notes:

NPDC will pay for this design to be undertaken.

The replacement of this line shall be funded by Council. The Developers agent shall model the sewer system to ensure that the proposed alignment of the new sewer line has the capacity to accommodate the existing flow and proposed additional flow.

Red Jacket Engineering Report RPT-4458-01, Section 3.1 details that the existing 150mm main is currently at capacity in peak dry weather flows and surcharged under wet weather flow conditions. It is conclusive that the existing main requires upgrading in size and grade to service the existing catchment. A 225mm main has been proposed in Section 3.2 to accommodate the existing catchment and proposed development, modelling indicates that the proposed main will function without surcharging under peak wet weather conditions.

The current Red Jacket Design proposes the use of a gravity sewer system only. No pumped sewer reticulation will be utilised within the proposed development.

11.8 Condition 36 – Reference to Lots 1 – 117, should be revised to Lots 1 – 113.

11.9 Condition 40 – This consent condition should be reworded to the following:

For all residential Lots the minimum freeboard height additional to the computed top water flood level of the 1% AEP design storm (utilising HIRDS V4 RCP6.0 2081-2100) should be as specified in Section 4.3.5.2 of the NPDC Land Development and Subdivision Infrastructure Standard. The minimum freeboard shall be measured from the top of the water level to the building platform level or underside of the floor joists or underside of the floor slab, whichever is applicable. Finished platform levels for all sections shall be shown on the final engineering report. Levels shall be shown in relation to Taranaki Datum.

11.10 Condition 43 c) – This consent condition should be reworded to the following:

Stormwater design calculations for both the primary and secondary stormwater systems, including replicating the hydrological regime of the Waipu Lagoons. Refer TRC Resource Consent: 11136-1.0

11.11 Condition 43 d) – This consent condition should be removed as there is no proposal for detention tanks or ponds.

12. CONCLUSIONS

12.1 My conclusions are summarised in Section 5.2 of my evidence above; and I have found no engineering related issues in respect of the proposal that are an impediment to the granting of consent (subject to appropriate conditions, and my comments above), within the context of my expertise.

Luke Errol Bunn, Senior Civil Engineer
Red Jacket Ltd

28 March 2025

APPENDIX 1 – RED JACKET ENGINEERING REPORT RPT-4458-01 REV C, MAY 2022

APPENDIX 2 – RED JACKET ENGINEERING DRAWINGS DWG-3917-C-01 REV A, MARCH 2025