



RESPONSE TO EXPERT PANEL MINUTE 16 MT WELCOME, PUKERUA BAY

TO	Pukerua Property Group LP	DATE	31 August 2026
PROJECT NAME	Mt Welcome, Pukerua Bay	ENVELOPE REF	1753-02
ATTENTION	William Dorset	FROM	Kyle Dirse
EMAIL ADDRESS	william.dorset@classicdevelopments.co.nz		

INTRODUCTION

This memorandum responds to the requests for information in paragraph 9 of Minute 16 of the Expert Panel (FTAA-2603-1181, 28 August 2026) that relate to Envelope Engineering's assessments.

Item	Matter
(a)	On-lot water retention and re-use – cost
(b)(i)	Muri reservoir – site status and design water levels
(b)(ii)	Water main head losses – reservoir to the Lucas block
(b)(iii)	Lots not meeting the RSWS minimum pressure, and shortfall
(b)(iv)	Tiaki Wai agreement to a lower design minimum pressure
(b)(v)	On-site storage tanks and pressure pumps
(b)(vi)	Lots 315 – 319 – maximum pressure and pressure reduction

ITEM (A) – ON-LOT WATER RETENTION AND RE-USE – COST

The applicant does not support a requirement for on-lot water retention and re-use, partly on the basis of its cost. What is the approximate cost of such facilities for an average dwelling of the type the applicant seeks to make provision for?

Response:

Indicative costs have been prepared for two types of on-lot rainwater retention and re-use:

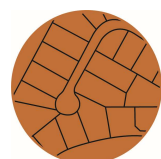
- Garden irrigation only: approximately \$12,000 including GST per dwelling. This includes a 3,000 L tank, concrete pad, leaf diverters, plumbing, contingency, fees and contractor margin.
- Indoor non-potable re-use, including toilet flushing: approximately \$24,000 including GST per dwelling. This includes a 3,000 L tank, pump and control system, concrete pad, leaf diverters, additional internal plumbing, contingency, fees and contractor margin.

These estimates exclude the opportunity cost of the land occupied by the tank. An above-ground tank reduces functional backyard space and may affect lot value. A below-ground tank reduces this impact but can still constrain landscaping, structures and future use of that area.

The estimates also exclude ongoing maintenance and operating costs, including annual servicing of pumps and filtration systems, electricity use, tank cleaning and the eventual replacement of pumps, filters and controls.

Untreated rainwater also presents potential health and safety risks if it is accessed from an external tap or hose and mistaken for potable water. Additional treatment, such as UV disinfection, may be required where this risk cannot be adequately controlled.

Rainwater may contain organic material and other contaminants that increase the risk of staining and fouling within the dwelling's plumbing system, particularly toilets. Contaminants can prevent inlet or outlet valves from sealing, resulting in continuous water loss until repairs are completed. These maintenance and nuisance issues also create a risk that owners may bypass the reuse system after the Code Compliance Certificate is issued, as there is generally no ongoing compliance monitoring.



ITEM (B) – MURI RESERVOIR, WATER SUPPLY PRESSURE AND CONDITIONS

Table 10 in the Infrastructure Report states that the upper zone reservoir (Muri Site) will have a top water level (TWL) of RL186m. We understand this future reservoir will also service the upper zone in the Muri Block. Section 11.2 of the Infrastructure Report states that the proposed works will maintain compliance with the Regional Standards for Water Supply (RSWS) v3.0. As stated in Section 11.2, the RSWS requires a minimum pressure at each lot of 25m.

(b)(i) Status and design water levels of the Muri reservoir

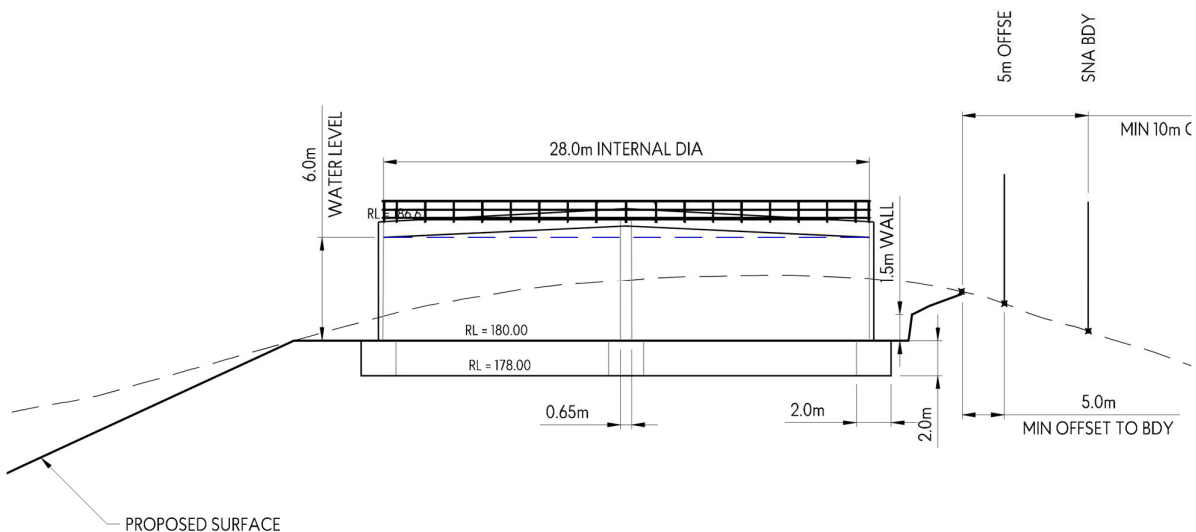
The Panel requests that the applicant outline the status of the Muri reservoir site in terms of current design plans and/or planning approvals and indicate the degree of certainty of the likely design top and bottom water levels of the reservoir. We note that PCC LIDAR information indicates the reservoir floor level is likely to be at approximately RL181m, but the reservoir site is on a reasonably restrictive 'dome-shaped' hill and any requirements for visual screening of the reservoir may result in a lower level of the reservoir so that the platform for the reservoir can contain the reservoir, access around the reservoir for maintenance and bunding or planting for visual screening. We request that the applicant comment on these matters so that the Panel can better understand the likely available water pressure at the Mt Welcome development.

Response:

The reservoir has been consented, and early contractor engagement has been undertaken. Detailed design has not yet progressed, as the reservoir is not required for the initial development stages. There is general agreement between the relevant landowners on the design approach, programme and allocation of costs.

The reservoir location, elevation, access and visual screening were addressed through the approved consent. The pressure zone and servicing limits were also assessed to confirm that the reservoir can service the intended lots without pressure gaps or future issues for homeowners.

Section 10 of the Infrastructure Report (Appendix 9, to the Application) adopts a top water level of RL186 m and a bottom water level of RL180 m for the upper-zone reservoir, which are the same as the consented reservoir levels. These levels are therefore considered reasonably certain. The figure below shows the proposed reservoir location and levels.



(b)(ii) Design head losses between the reservoir and the Lucas block

It also appears to the Panel that there is likely to be a pipeline length of approximately 450m of water main within the Muri block to the northern boundary of the Mt Welcome block at the road connection to the Lucas block, and a further pipeline length of approximately 800m within the Mt Welcome proposal to service lots 785 – 790 in the Lucas block. The Panel requests that the applicant comment on likely design head losses between the reservoir and the higher sites within the Lucas Block at peak domestic demand periods so that these losses can be considered when assessing available pressure at the development.



Response:

The DN150 main will form part of a wider looped network supplying lots within both the Muri and Mt Welcome developments. Based on a preliminary assessment of the anticipated combined peak domestic demand, head losses between the reservoir and the higher Lucas Block lots are expected to be approximately 2–4 m.

The actual flow distribution, head loss and available pressure will be confirmed at detailed design and engineering approval.

(b)(iii) Lots not meeting the minimum pressure, and the shortfall

We note that Drawing 2130 R1 shows lots 785 – 790 as being formed at a proposed level of RL162. Drawings 2129 & 2130 shows lots 770 – 803 and lots 833 – 836 as being above RL155.

We request that the applicant confirm which lots are likely to not meet the minimum pressure requirements set by the RSWS and advise the likely shortfall in available pressure at peak domestic demand for those lots. In its response to comments, the applicant suggested that consent orders were not required to address this situation. If, having considered the above matters, the applicant maintains that position, the Panel requests that the applicant advise what level of shortfall would justify consent orders.

Response:**Reservoir Consent**

Information on the serviceability of the elevated lots was previously provided to Tiaki Wai on 3 March 2025 as part of the section 92 response for the reservoir consent (RCA24215).

That response identified that properties above RL155 may receive less than 25 m pressure when the reservoir is near bottom water level (BWL). It also confirmed that the road network would be designed so that all hydrants retain at least 10 m residual pressure while supplying firefighting flows.

The RCA24215 decision records that the reservoir application was assessed against the pressure range in RSWS Table 6-1. It also records that the minimum pressure may be reduced to 10m for connections near the reservoir, subject to a reduced-pressure consent notice being registered on the title and a private booster pump being installed.

Assessment for the current application

The reservoir has a BWL of RL180 and a top water level (TWL) of RL186. The highest lots are formed at approximately RL162 and would therefore receive approximately 18m pressure at BWL and approximately 24m when the reservoir is near TWL. All lots would receive at least approximately 18m pressure at BWL.

On a preliminary assessment of the anticipated combined peak domestic demand, head losses between the reservoir and the highest lots are expected to be approximately 2–4 m. Lot elevation remains the primary influence on available pressure; however, network head losses are not negligible and will be confirmed through full-network hydraulic modelling at detailed design and engineering approval.

Plan SK-8511 R1 identifies the lots that would not achieve 25m pressure when the reservoir is at BWL. With the reservoir at RL180, the maximum lot level that can achieve 25m of static pressure is approximately RL155.

Assessed against Tiaki Wai RSWS Table 6-1 with the reservoir at BWL:

Zone	Lots	Total
RL 155-161	770, 771, 772, 773, 774, 775, 800, 801, 802, 803, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 851, 852	24
RL 161 and 162	776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799	24

Lots 785–790 are formed at approximately RL162 and represent the highest affected lots. These lots would receive approximately 18m pressure at BWL and approximately 24m under normal operation when the reservoir is near TWL.

Applicant's position

We maintain that reduced-pressure consent notices are not required. Under normal operating conditions, the minimum pressure at the highest lots would be approximately 24m, representing only a 1m departure from the 25m requirement. While pressure



may reduce to approximately 18m when the reservoir is empty, this remains well above the 10m minimum contemplated by the RSWs. The reduced pressure would not compromise the firefighting supply.

If the Panel does not accept the proposed 24m pressure under normal operating conditions, a condition could be proposed requiring private booster pumps for the specifically affected lots, with that requirement secured by consent notice. The final booster pump arrangement would be confirmed through detailed design and the building consent process.

I have asked Mr McDonnell about what amendments he considers would be appropriate should this need to be conditioned. He agrees that an engineering detailed design condition would likely be required, as well as a consent notice on all relevant lots to require future owners/builders to construct the necessary mitigations.

(b)(iv) Tiaki Wai agreement and consequential condition amendments

If the above consideration confirms the minimum pressure of 25m is not going to be achieved at some of the higher lots, the Panel queries if agreement will be required from Taiki Wai as to which lots (if any) will be permitted to have a lower design minimum pressure. If so, that would suggest to the Panel that amendment will be required to conditions (e.g. condition 27 but there may be other conditions affected) to ensure the design is consistent with the conditions.

Response:

The Applicant agrees that the affected lots and the proposed reduced minimum pressure should be confirmed with Tiaki Wai through the detailed design and engineering approval process. Plan SK-8511 R1 identifies the lots that may receive less than 25 m pressure when the reservoir is at BWL.

The condition should provide that, if the proposed pressure departure is not accepted by Tiaki Wai, compliant private booster pumps must be provided for the affected lots, with this requirement secured through consent notices.

(b)(v) On-site storage tanks and pressure pumps

Similarly, if it is intended to have on-site water storage tanks and associated water pressure pumps to achieve the minimum pressure of 25m at the higher sites, then it would seem that these lots will need to be captured by appropriate conditions relating to water supply. Can Mr McDonnell please comment on whether such amendments are required, and how he would recommend they be framed.

Response:

The Applicant is not proposing on-site water storage tanks and booster pumps as the primary servicing solution. As set out above, the highest lots would receive approximately 24m pressure under normal operating conditions, and the Applicant seeks acceptance of this minor departure from the 25m requirement.

Any proposed on-site reuse tanks would supply non-potable uses such as toilets, laundry and garden irrigation. These systems would reduce demand on the potable water supply but would not increase the public-network pressure available at the building site.

If the proposed pressure departure is not accepted, the affected lots would instead require a compliant private potable-water booster system.

(b)(vi) Lots 315 – 319 – maximum pressure

The Panel notes also that lots 315 – 319 are shown on drawing 5106 R1 to be connected to the upper water supply zone. These lots are shown on drawing 2116 R1 to be formed at a level ranging from RL86 to RL94 respectively. Without pressure reducing infrastructure, these lots would appear to have pressure exceeding 90m, which would not meet the RSWs standard for maximum pressure.

The Panel requests that the applicant advise if it is proposed to use pressure reducing infrastructure to protect these lots from excessive pressure and if so, what consequential amendments to condition 27 are required.

Response:

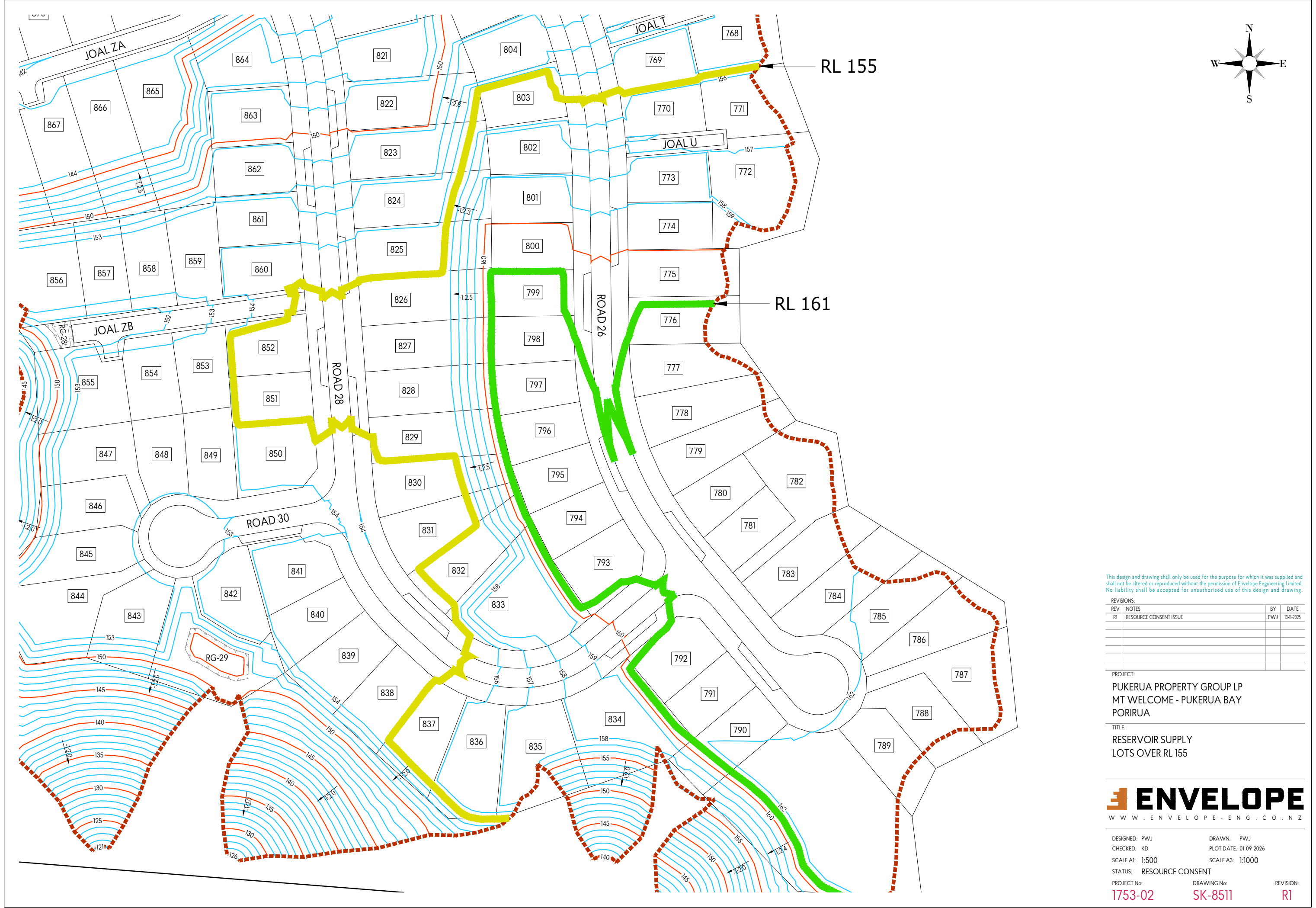
This matter was previously identified to Tiaki Wai on 3 March 2025 through the section 92 response for the reservoir consent (RCA24215).



Lots 315–319 may receive maximum static pressure of up to approximately 100m when the reservoir is near TWL. While this exceeds the RSWS maximum of 90m, it is within the range currently supplied to some properties in the Wellington region. Due to the isolated location of these lots, servicing them from the lower Pukerua Bay pressure zone is not practicable.

The Applicant proposes supplying these lots from the upper zone without public pressure-reducing infrastructure. If required, private PRVs can be installed on the private side of the connections, with the need confirmed through the building consent process.





This design and drawing shall only be used for the purpose for which it was supplied and shall not be altered or reproduced without the permission of Envelope Engineering Limited. No liability shall be accepted for unauthorised use of this design and drawing.

REVISIONS:			
REV	NOTES	BY	DATE
R1	RESOURCE CONSENT ISSUE	PWJ	13-11-2025

PROJECT:
PUKERUA PROPERTY GROUP LP
MT WELCOME - PUKERUA BAY
PORIRUA

TITLE:
RESERVOIR SUPPLY
LOTS OVER RL 155



DESIGNED: PWJ	DRAWN: PWJ
CHECKED: KD	PLOT DATE: 01-09-2026
SCALE A1: 1:500	SCALE A3: 1:1000
STATUS: RESOURCE CONSENT	
PROJECT No: 1753-02	DRAWING No: SK-8511
	REVISION: R1