BEFORE THE FAST-TRACK EXPERT CONSENTING PANEL

IN THE MATTER
of an application for approvals under section 42 of the Fast-track Approvals Act 2024 (the Act)

AND

IN THE MATTER
of the application for approvals by Pukerua Property Group Limited Partnership for the Mt Welcome Project, Pukerua Bay, Porirua (FTAA-2603-1181)

STATEMENT OF EVIDENCE OF DARCY BRITTLIFF

(Stormwater, wastewater, earthworks management and water supply infrastructure)

Independent Peer Review Expert and Engineering Caucus Facilitator appointed by the Expert Panel

Dated: 25 August 2026

INTRODUCTION

1. My full name is Darcy Vaughan Brittliff.

2. I hold the qualification of Bachelor of Engineering (Honours) in Natural Resources Engineering from the University of Canterbury. I am recognised as a Chartered Professional Engineer (Civil) with Engineering New Zealand and have been so since 2005. I am a practicing Engineer in the Civil engineering field specialising in land development, and also infrastructure for local authorities in my role as managing Director of Orogen Limited.

3. I have been appointed by the Expert Panel under Minute 9 (12 August 2026), paragraphs 7 to 9, to facilitate conferencing between the engineering experts on stormwater, wastewater, earthworks management and water supply infrastructure matters for the Mt Welcome Project, and under paragraph 8 to prepare an independent peer review report on those matters.

CODE OF CONDUCT

4. I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023 and that I have complied with it in preparing this statement of evidence.

5. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except where I state that I am relying on the evidence or opinion of another person.

6. I confirm that I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

SCOPE OF EVIDENCE

7. This statement of evidence responds to the directions of the Expert Panel in Minute 9 (12 August 2026), paragraphs 7 to 10, and Minute 10 (13 August 2026), in relation to stormwater, wastewater, earthworks management and water supply infrastructure matters for the Mt Welcome Project.

8. On 20 and 21 August 2026 I facilitated conferencing of the engineering experts on these matters. The outcome of that conferencing is recorded in the Joint Statement of Experts in the Field of Engineering, dated 21 August 2026 and finalised on 24 August 2026 (the JWS).

9. This statement is my report directed by paragraph 8 of Minute 9. It sets out each of the issues addressed in the JWS, in the same order as the List of Issues in the JWS, having regard to the matters of agreement and disagreement between the conferencing experts recorded there.

LIST OF ISSUES

Consistent with the Panel's direction that experts prioritise agreement, or narrowing of disagreement, on the matters below (Minute 9, paragraph 9; Minute 10, paragraph 4), I address the issues in the following order, being the order adopted in the JWS:

1. Sediment source and yield from earthworks, subsequent house-building activity, and open water courses between stormwater discharge headwalls and the "retention" wetlands (Minute 10, para 4; Minute 9, 9(e))

2. Sediment removal facilities at the retention devices (Minute 10, para 4; Minute 9, 9(g))

3. Retention wetland operation and maintenance access (Minute 10, para 4; Minute 9, 9(f))

4. Stormwater modelling and effect on downstream flood ponding (Minute 9, 9(a))

5. Achievability and scale of additional detention to mitigate any downstream flooding effect (Minute 9, 9(b))

6. On-lot storage / recycle tanks (Minute 9, 9(c))

7. Rain garden design criteria (Minute 9, 9(d))

8. Wastewater modelling and risk of downstream reticulation overflows (Minute 9, 9(h))

9. Onsite wastewater detention operation and septicity risk (Minute 9, 9(i))

ISSUE 1: SEDIMENT SOURCE AND YIELD FROM EARTHWORKS, SUBSEQUENT HOUSE-BUILDING ACTIVITY, AND OPEN WATER COURSES BETWEEN STORMWATER DISCHARGE HEADWALLS AND THE "RETENTION" WETLANDS

Reference: Minute 10, para 4; Minute 9, 9(e)

Panel's question: *The Panel has framed the specific issue for the scale of potential sediment load into the retention wetland systems, and potential continuation downstream to the Taupō Swamp environment and/or Pāuatahanui Inlet, after completion of earthworks, noting several sections of open stream between the stormwater piped system outlets and the retention wetland systems, and steep hillsides potentially prone to erosion, scour and/or slippage. Can the experts discuss the extent (if any) these additional potential sources of sediment could contribute to downstream sediment load, and whether this would impact on the operation and maintenance of the retention wetland systems.*

10. Four potential sources for sediment in the development are identified: (i) roads and roofs (developed impervious areas); (ii) erosion of open watercourse sections between the piped outfalls and the retention wetlands; (iii) existing hill slopes and catchments draining to the wetlands; and (iv) ongoing farming activity, including areas where land use is not changing.

11. Each of these sources exist with the (ii) open water courses between piped outfalls and the retention wetlands being the higher risk/more likely source of sediment in this development. This is due to the fact that no hydrological controls are promoted on these discharges which mean all rain events direct and increase peak flows to these flow paths. Runoff is concentrated via a pipe network to a natural gully head where the discharge is to a hill slope, soil types, and topography then introduce this potential sediment source as a result of erosion between pipe outlet, watercourse, to retention wetland.

12. Consideration and careful selection of outlet location with respect to these factors will minimise this potential source. I will present this in Issue 2 as it relates to that question.

13. A potential solution to manage sediment risk on the downstream stormwater features in the development is via the implementation of a Commissioning Plan. The JWS promotes this concept where a Commissioning Plan is prepared by the Developer as a live management plan document, reviewed by GWRC & Tiaki Wai, items for inspection are listed, their inspection frequency, metrics are agreed and then monitored.

14. Maintenance (i.e. sediment removal, vegetation replacement, any remedial works etc.) would occur over the agreed maintenance period by the Developer. For Mt Welcome the Caucus contemplated an 80% build out of an area as being a potential good maintenance duration for the Developer i.e. 80% of lots developed out as being a period in the life of a development where catchments are stabilised and mature from construction effects. Therefore, this would be a sensible time for the final maintenance inspection and potential handover of a device(s) to the next management party i.e. Tiaki Wai for example.

15. The Applicant presented that sedimentation had been allowed for in their concept design for the wetland on the basis that capacity exists for sedimentation. I would suggest that the opportunity exists in the development for improvements in the outlet locations and

the sediment management design response as contemplated in the JWS to minimise the risk of creating the sediment source (or aiming to minimise it) as being the approach that should be considered at Mt Welcome. This then minimises any risk for any future maintenance on the wetlands, or potential discharges beyond to the wider receiving environment.

ISSUE 2: SEDIMENT REMOVAL FACILITIES AT THE RETENTION DEVICES

Reference: Minute 10, para 4; Minute 9, 9(g)

Panel's question: *Some of the retention wetland systems receive inflow from different sub-catchments discharged in different locations into the basin containing the retention wetland structure. Can the experts discuss if pre-treatment and/or forebay provision is required on these systems and, if so, how that might work where there is more than one discharge location into a system.*

16. The challenge here in the Caucus and reported in the JWS is the engineering parameter (or conflict) that is imposed by the presence of wetlands nominated for ecological value. The applicant's engineer has purposely lifted outlets from the development's pipe networks out of these areas up the land contour. And by doing so introduced energy and erosion risk to the flow path below.

17. In Caucus the discussion was held on the ability to earthwork gully areas to potentially provide forebay, access to it for maintenance and it is concluded that the outlet areas to wetlands are accessible, but gully heads where the pipe outlets from the development are in places inaccessible.

18. I would suggest that the decision needs to be made on whether the classification of these wetlands should be stormwater management areas to enable the engineer to design functional stormwater systems that provide for ongoing access and maintenance. By doing so the community can be assured that best practice stormwater devices are provided and therefore the downstream environment (Taupo Swamp, or Pauatahanui Inlet) are then protected by best practice.

19. I have not completed any conceptual design detail on this point but present the opportunity to the Panel to consider a mass earthwork exercise to create a best practice stormwater system upon the land. This system requires the improvement of current flow paths by piped outlets or flumes from elevated slopes to a lower level within gullies, energy dissipation areas at outlets, erosion protection from the dissipation areas through the flow paths (i.e. a Terramesh or similar product to support natural vegetation reinforcement in key flow paths with high velocity), to accessible forebays for routine maintenance, to wetlands with volume provision for peak flow management, and volume detention. Planting of, reinstatement of, and ecological enhancement could be provided on top of these engineered stormwater management areas but to achieve them earthworks is required.

20. This approach would be a direct conflict to the current wetland design based on the ecological restrictions on the development. The current site's ecological impact of such an engineering focused design compared to the current restricted/balanced design promoted in the application is unknown. It has not been discussed in my presence by any Party, but it is my view that it should be considered in context by the Panel as it provides a potential alternative engineering response to the sediment management issue raised by the Panel.

ISSUE 3: RETENTION WETLAND OPERATION AND MAINTENANCE ACCESS

Reference: Minute 10, para 4; Minute 9, 9(f)

Panel's question: *The current concept designs for the retention wetlands appear to have limited facilities for access for future operation and maintenance, and less than that required by Tiaki Wai. Can the experts discuss to what extent the preliminary design can be improved to provide appropriate access.*

21. The JWS reports the maintenance access and the issue of stormwater versus ecological area.

22. I would direct consideration of these areas to stormwater management first as stated in Issue 2 above. Then clearly set boundary of land title around what is stormwater management, and what is ecology therefore providing clear delineation to support access and maintenance activities required by these stormwater systems.

ISSUE 4: STORMWATER MODELLING AND EFFECT ON DOWNSTREAM FLOOD PONDING

Reference: Minute 9, 9(a)

Panel's question: *The Applicant's stormwater modelling uses a "cut-off" model approach, calibrated at the hydraulic boundaries to reduce model complexity, used to confirm preliminary sizes of on-site detention systems and associated outlet control culverts to avoid an increase in instantaneous peak flow. The whole-of-catchment Awa model identifies significant downstream flood ponding in extreme events, which the Applicant's cut-off model does not consider. Can the experts discuss the extent (if any) to which the additional stormwater runoff volume generated within the Mt Welcome development, passing through the Applicant's proposed stormwater detention systems, might increase the depth, extent and/or behaviour of flooding in the lower catchment identified by the Awa model.*

23. In Caucus the agreement was that the current Awa model was the best tool to respond to this question however it too has limitations on its suitability due to how it considers the lag and behaviour of Taupo Swamp. Lidar in that model is out of date to current information and all Parties agreed that any model run requires both these items to be updated. The Applicant post caucus has completed an initial run of this for future discussion with Tiaki Wai/GWRC and therefore a pathway exists for over time improving this model to provide confidence in the assessment of the downstream environment.

24. The Applicant is of the view that based on their development's location, their peak flow mitigation, and that the James Street area of Plimmerton is influenced by culvert restrictions that their development does not influence that situation during flood events.

ISSUE 5: ACHIEVABILITY AND SCALE OF ADDITIONAL DETENTION TO MITIGATE ANY DOWNSTREAM FLOODING EFFECT

Reference: Minute 9, 9(b)

Panel's question: *If, as a result of their consideration of stormwater volume having an increased effect on downstream flooding, can the experts consider if it is likely to be achievable to mitigate that effect by increased retention within the site, and if so, what might be the indicative scale of the increase in retention wetland volume and footprint required to avoid increased flooding in the downstream catchment.*

25. The question that has not been answered in the JWS is what scale of additional detention can be provided in the development to aid potential downstream flooding. Without contemplating a bulk earthworks concept (as introduced in Issue 2) that could deepen, widen, or improve detention in the gully shape, or by bunding in the gully corridor to achieve this purpose, I have simply considered the Application and where it is sensible to lift the spillway height and therefore ultimate outlet height to contemplate additional storage opportunity. I therefore see the following detention opportunities:

Detention Area to the Taupo Catchment	Bund & spillway height increase above that current proposed (m)	Potential increase to ponding area (m^2)	Potential increase in volume (m^3)
Wetland A	+1m to RL 44.50	3460	3,400
Wetland B	+0.5m to RL 58.70	5390	2,600
Wetland C	+1.5m to RL 69.00	4190	6,000
Totals:			**12,000**

Detention Area to the Muri Catchment	Bund & spillway height increase above that current proposed (m)	Potential increase to ponding area (m^2)	Potential increase in volume (m^3)
Wetland D	No change	No change	No change
Total:			**No change**

Detention Area to the Kakaho Catchment	Bund & spillway height increase above that current proposed (m)	Potential increase to ponding area (m^2)	Potential increase in volume (m^3)
Wetland E	+1.3m to RL 95.00	11,000	11,000
Total:			**11,000**

Refer to appended sketches of these Detention Areas that show the increase in ponding areas to support this concept. This information has not been discussed in Caucus, however it is provided by me as independent with respect to Issue 5.

ISSUE 6: ON-LOT STORAGE / RECYCLE TANKS

Reference: Minute 9, 9(c)

Panel's question: *The Applicant has provided additional assessment of the potential effectiveness of on-lot storage/recycle tanks in its response (PDP, 4 August 2026). Can the experts discuss the additional information and confirm the extent of agreement (if any) on that information, and update their position on the potential use of this element of stormwater management (and potential reduction in water demand) for the site.*

26. Issue 1 identified that the most likely sediment source was the piped outlets from the development into the flow paths on the site. Caucus agreed that onlot tanks provide hydrological control.

27. I provide Figure 6 below sourced from the GWRC Hydrological design guideline that illustrates this concept which is applicable to this site:

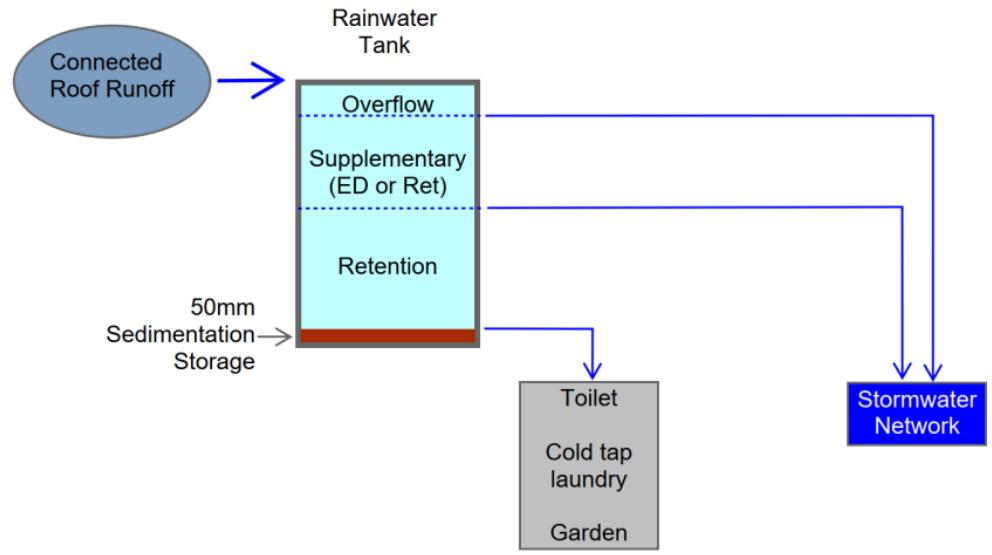


Figure 6: Roof runoff without infiltration

28. The concept is roof runoff is collected and retained for use on the property. An overflow is set mid-tank with a small diameter outlet. This allows a portion of rainfall to be slowly released over the following 24 hour period – this is extended detention which is intended to mitigate increases in runoff rates for small frequent rainfall events due to the introduction of development/new roofs in a catchment.

29. In terms of water reuse it was agreed roof water tanks provide water conservation benefits and resilience.

ISSUE 7: RAIN GARDEN DESIGN CRITERIA

Reference: Minute 9, 9(d)

Panel's question: *Can the experts discuss appropriate rain garden design criteria for the site and confirm the extent of agreement on this matter.*

30. The JWS is clear on the rain garden design criteria understood across New Zealand and I have no further comment to make upon that.

ISSUE 8: WASTEWATER MODELLING AND RISK OF DOWNSTREAM RETICULATION OVERFLOWS

Reference: Minute 9, 9(h)

Panel's question: *The wastewater modelling presented by the Applicant does not consider the full downstream system. Can the experts discuss the potential extent (if any) to which the additional wastewater volume generated within the Mt Welcome development, passing through the Applicant's proposed wastewater detention tank, might increase the risk of additional overflows in the downstream wastewater reticulation system. Consideration should include allowance for other developments currently under construction, as the experts see fit.*

31. It is understood that in time reticulation upgrades are required in the Porirua network to support the Northern Growth Area (Mt Welcome and other developments). Tiaki Wai hold the current wastewater model that will be utilised to guide these upgrades and it would also be used to assess the impact of any development and therefore mitigation required by the development.

32. The JWS reports the approach for a Wastewater mitigation plan which considers the development programme against the Porirua network upgrade programme based on a model that will continue to be an improved data source with time. This approach is a reasonable approach to this question as initial development may simply require short main upgrades immediately below the site (as presented in the application) and only in time once the development grows to later stages more significant mitigation may be necessary once its discharge rates become more significant.

ISSUE 9: ONSITE WASTEWATER DETENTION OPERATION AND SEPTICITY RISK

Reference: Minute 9, 9(i)

Panel's question: *If the solution for wastewater relies on significant onsite storage to buffer wastewater flows, what is the likely period the detention tank would be expected to operate in a large event, and would that period be such that potential adverse septicity issues could be triggered. If so, could those issues be managed via reasonable engineering infrastructure.*

33. The JWS confirms that engineering technology and mitigation pathways exist should they be necessary in time.

34. The Caucus agreed to present physical space in the first stage of development that provided room for a potential storage tank concept. I would suggest this area is slightly larger than shown in this concept sketch to provide space for access, potential mitigation items like aerators, power and control systems, maintenance route etc. Albeit the idea of, and location of such an area presented in Caucus is reasonable.

DECLARATION

35. I confirm that this statement of evidence is true and correct to the best of my knowledge and belief, and that the opinions expressed are wholly my own.

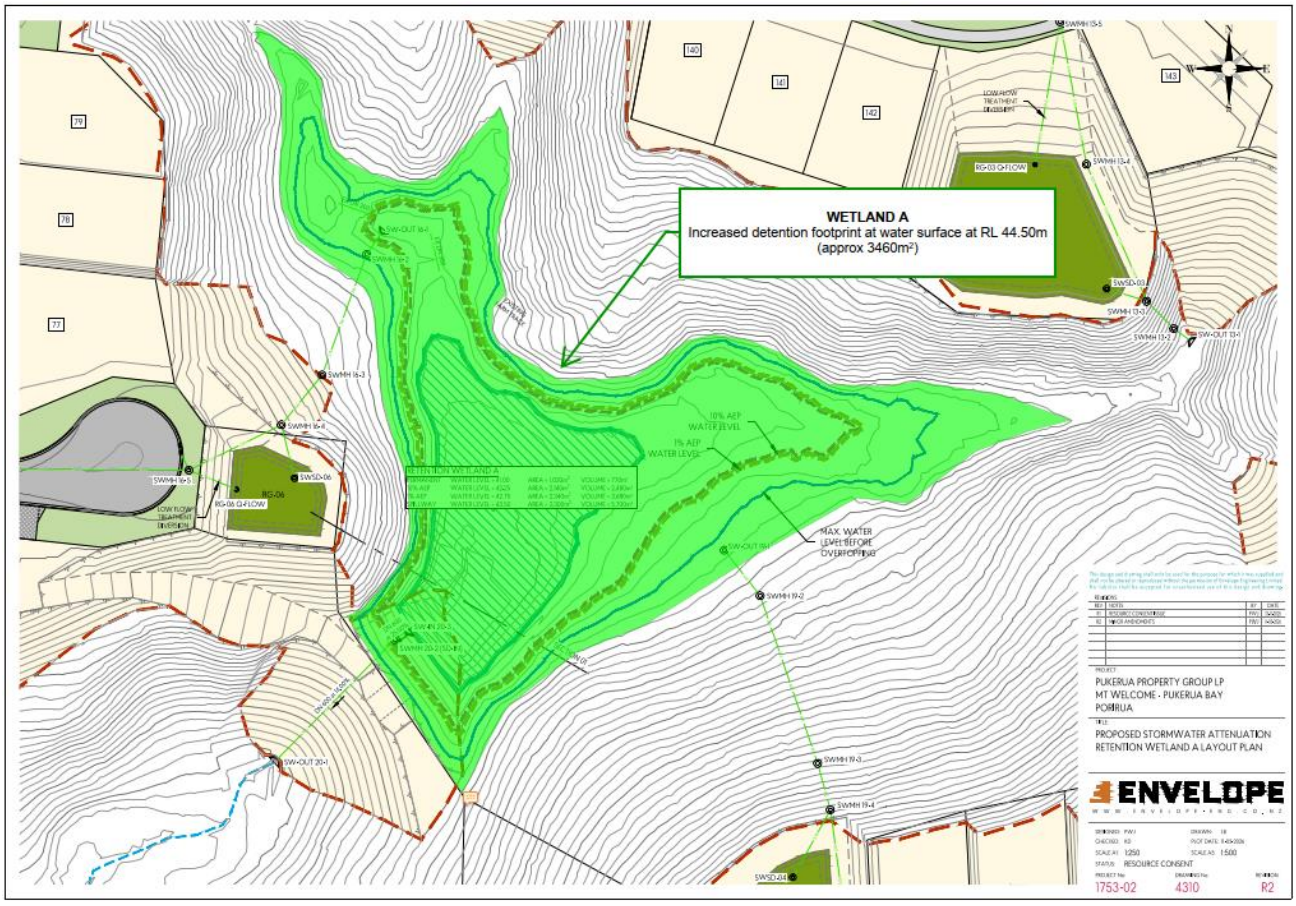
Signature: _____

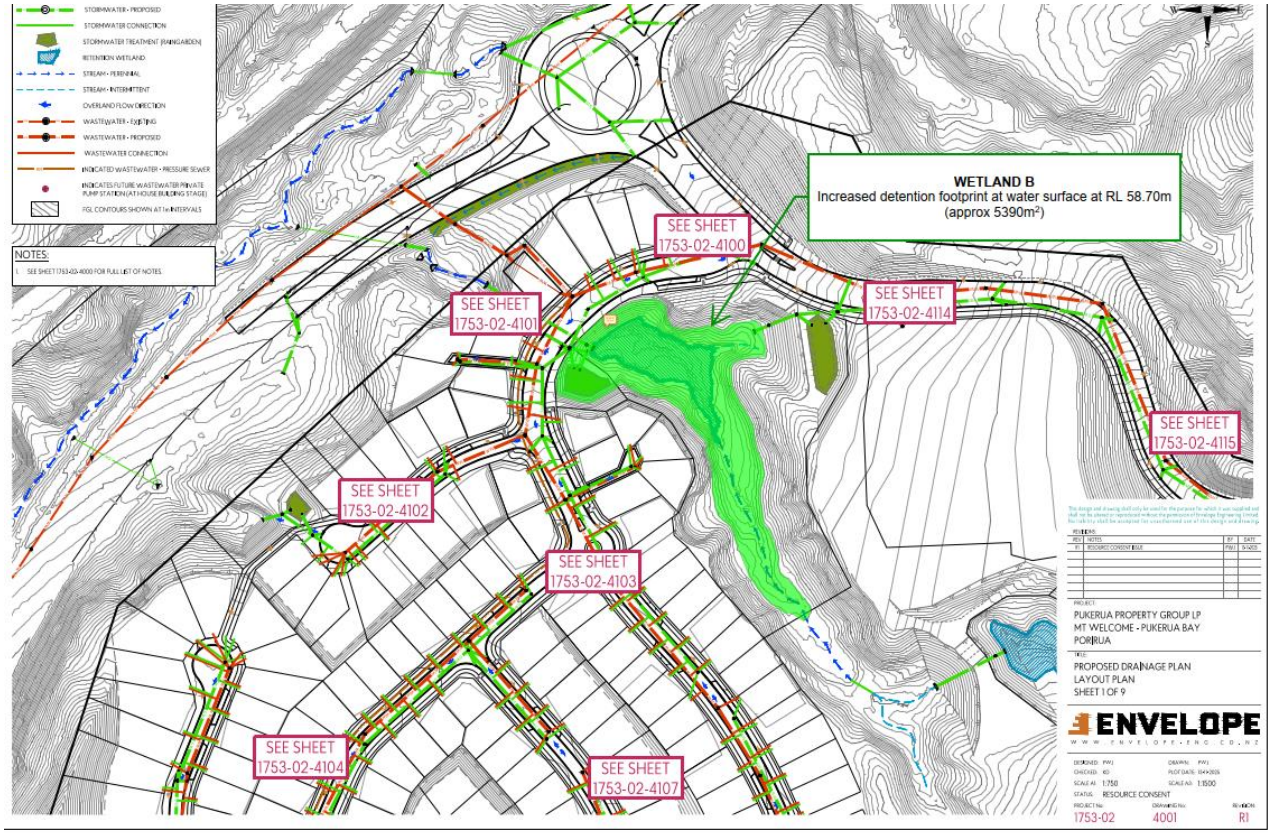
Darcy Brittliff B.E (Nat. Res.)(Hons.) CPEng (Civil) 233414

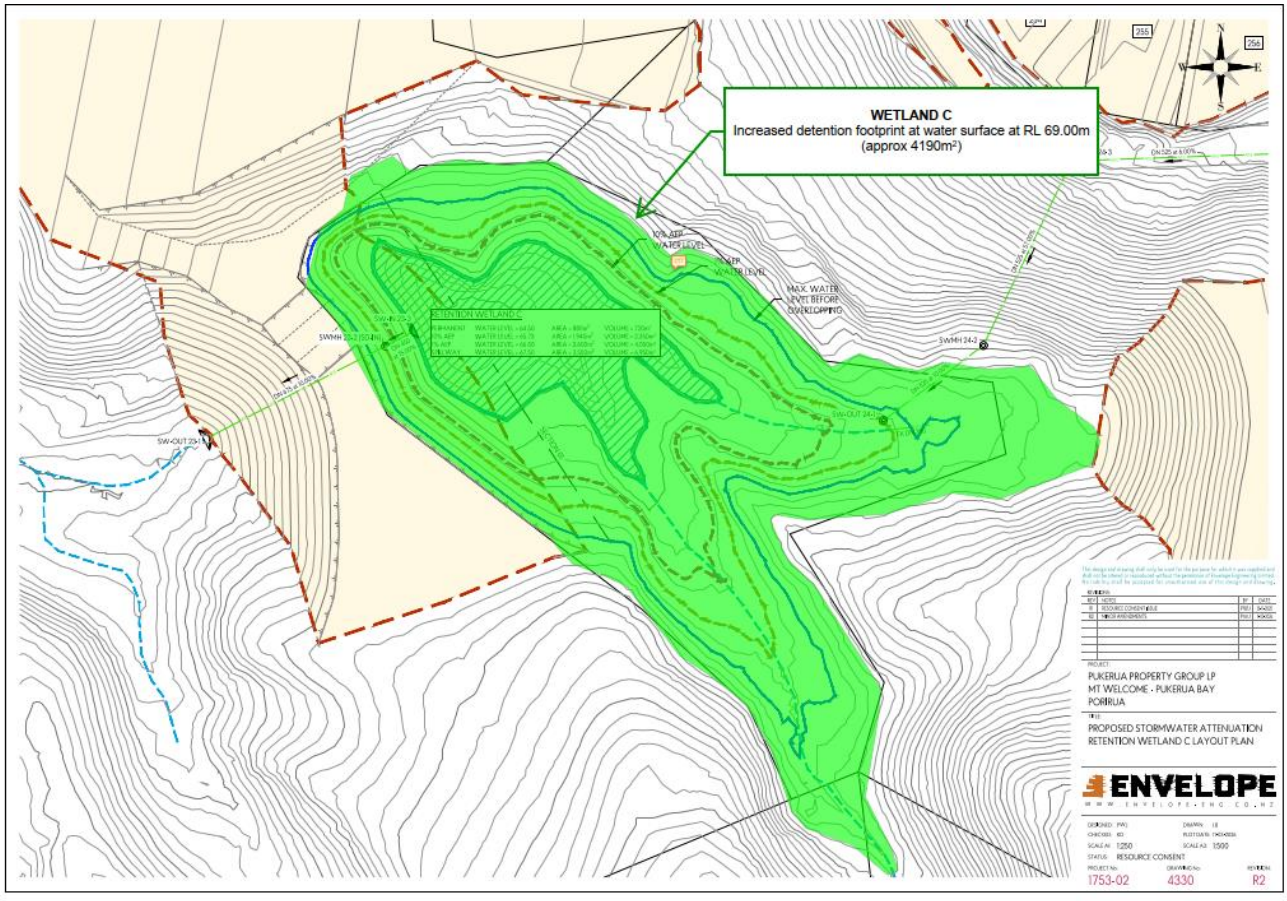
Date: 25th August 2026

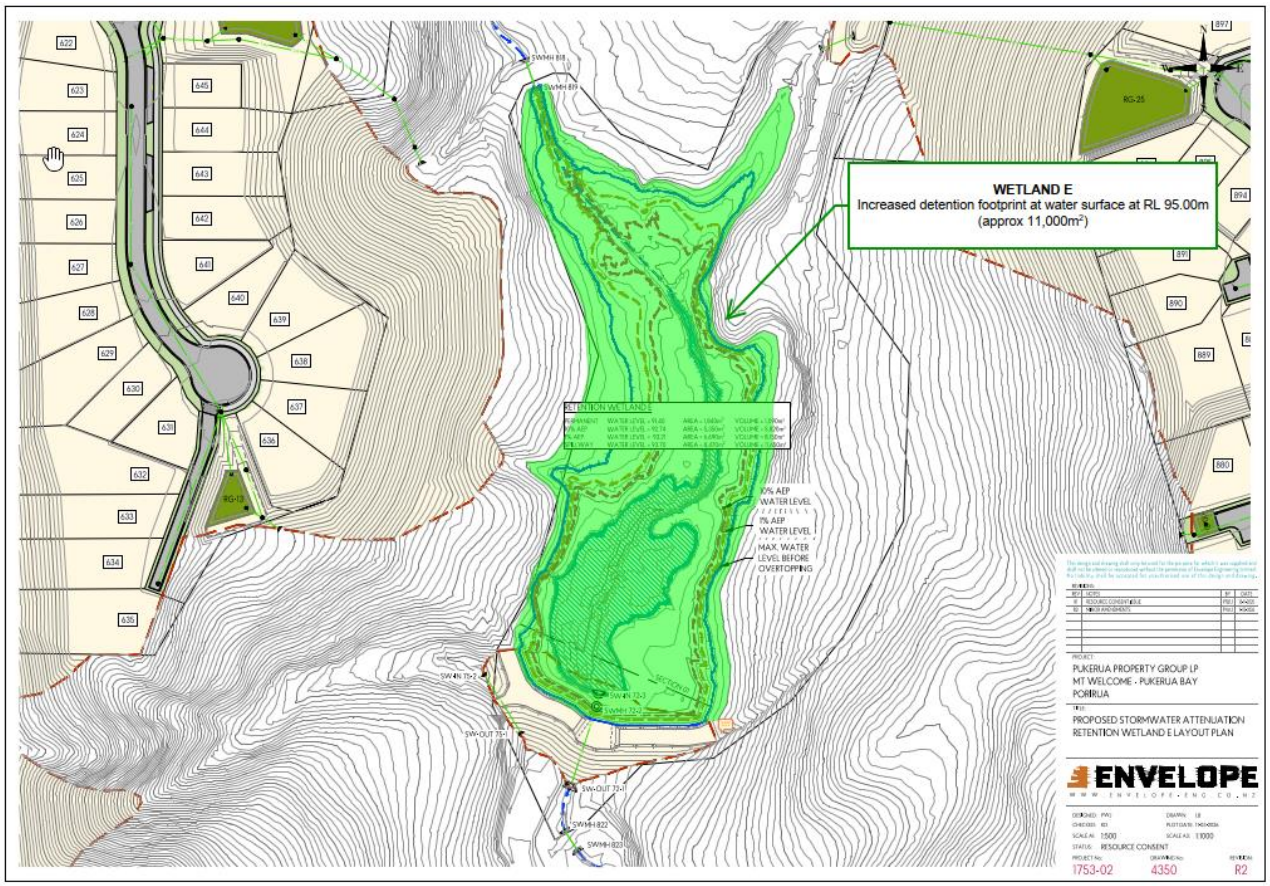
APPENDED REFERENCES:

Potential Increase in Detention areas:




WETLAND B
Increased detention footprint at water surface at RL 58.70m
(approx 5390m²)
SEE SHEET 1753-02-4100
SEE SHEET 1753-02-4101
SEE SHEET 1753-02-4102
SEE SHEET 1753-02-4103
SEE SHEET 1753-02-4104
SEE SHEET 1753-02-4107
SEE SHEET 1753-02-4114
SEE SHEET 1753-02-4115
NOTES:
PUKERUA PROPERTY GROUP LP
MT WELCOME - PUKERUA BAY
PORIRUA
PROPOSED DRAINAGE PLAN
LAYOUT PLAN
SHEET 1 OF 9
ENVELOPE
1753-02
4001
R1


WETLAND C
Increased detention footprint at water surface at RL 69.00m
(approx 4190m²)
PUKERUA PROPERTY GROUP LP
MT WELCOME - PUKERUA BAY
PORIRUA
PROPOSED STORMWATER ATTENUATION
RETENTION WETLAND C LAYOUT PLAN
ENVELOPE
1753-02
4330
R2


WETLAND E
Increased detention footprint at water surface at RL 95.00m
(approx 11,000m²)
10% AEP WATER LEVEL
1% AEP WATER LEVEL
MAX. WATER LEVEL BEFORE OVERTOPPING
PUKERUA PROPERTY GROUP LP
MT WELCOME - PUKERUA BAY
PORIRUA
PROPOSED STORMWATER ATTENUATION RETENTION WETLAND E LAYOUT PLAN
ENVELOPE
1753-02
4350
R2