Before the Hearings Panel
At Kapiti Coast District Council

Statement of evidence of Rita Louise O'Brien on behalf Kāpiti Coast District Council (Stormwater and Flood Hazard Management)

Date: 1 October 2025

INTRODUCTION:

1 My full name is Rita Louise O'Brien. I am employed as the Stormwater and Coastal Asset Manager at the Kāpiti Coast District Council (Council).

2 I have prepared this statement of evidence on behalf of the Council in respect of technical related matters arising from the submissions and further submissions on the Private Plan Change 4 (PPC4) to the Kāpiti Coast District Plan (District Plan).

3 Specifically, this statement of evidence relates to the following matters:

3.1 Flood hazard

3.2 Stormwater Management

4 I am authorised to provide this evidence on behalf of the Council.

QUALIFICATIONS AND EXPERIENCE

5 I hold the qualifications of Bachelor of Engineering in Industrial Geology from the University of Exeter (UK) (1996), and a Master of Applied Sciences in Environmental Management from Lincoln University (2003)

6 I have held a variety of positions at Kāpiti Coast District Council (Council) since 2025, namely:

6.1 Team leader of Monitoring, Enforcement & Licensing 2005-2007;

6.2 Subdivision Engineer 2027-2011;

6.3 Team Leader / Senior Development Engineer 2011-2016; and

6.4 Stormwater and Coastal Engineer 2016-2004

7 I have held the position of Stormwater and Coastal Asset Manager since March 2024

Code of conduct

8 I have read the Code of Conduct for Expert Witnesses set out in the Environment Court's Practice Note 2023[1]. I have complied with the Code of Conduct in preparing my evidence and will continue to comply with it while giving oral evidence before the Environment Court. My qualifications as an expert are set out above. Except where I state I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.

SUMMARY

9 My name is Rita Louise O'Brien.

10 I have been asked by the Council to provide flooding and stormwater evidence in relation to private plan change 4.

11 My statement of evidence addresses stormwater management and flood hazard mitigation.

INVOLVEMENT WITH THE PRIVATE PLAN CHANGE 4

12 I have been involved in the PPC4 since 18 August 2025.

SCOPE OF EVIDENCE

13 My statement of evidence addresses the following matters:

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[1] https://environmentcourt.govt.nz/assets/Practice-Note-2023-.pdf

13.1 Site Description

13.2 Flood Hazard Mitigation

13.3 Stormwater Management

13.4 Submissions

Site Description

14 Welhom Developments Limited requests a change to the Operative District Plan. The request relates to two properties [part of 65 and 73 Ratanui Road] and seeks to rezone the site from its current Rural Lifestyle Zone to General Residential Zone under the District Plan with a Development Area and associated Structure Plan, policies and rules. The request will enable the residential development of the site [i.e. a subdivision of 153 allotments which could accommodate 235 dwellings assuming a number could be medium density], with specific provision for uses associated with a retirement village[2].

15 The Request largely seeks to work within the existing District Plan framework by fundamentally adopting existing District Plan provisions to enable the residential development of the Site [subject to some new provisions specifically enabling a retirement village].

16 The site is traversed by a highly modified stream which runs from east to west. The stream starts adjacent to the Kapiti Expressway, flows through private property and ultimately discharges into the Mazengarb Stream at Wood Leigh. Although often dry throughout the year, it is well defined and incised. The Plan Change documents that groundwater was recorded at depths between 2.1m to 5.0m below ground level.[3] It also identifies that extended groundwater monitoring of the existing piezometers can potentially be undertaken in the future (e.g. for Resource and/or Building

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[2] Civil Engineering Infrastructure Assessment, Ratanui Plan Change [29/11/2024], p 20

[3] Appendix I, Geotechnical Assessment – Plan Change [29 November 2024], p 6

Consent stages) to better understand the groundwater fluctuation (sensitivity to rainfall).

17 The stream's location is protected by a stream corridor overlay in the District Plan, with most of the ponding occurring adjacent to the stream.

18 In 2020, the Council started to review its current suite of flood hazard models [legacy models] for the District Plan and flood hazard mapping. The new base models [TUFLOW models] are available for use to scenario test proposed development and to provide guidance. At this point in time the new base models are yet to be finalised following receipt of feedback as some submissions may result in changes to the base model. The Council's stormwater team, consultant hydrologists and flood modellers are currently reviewing feedback received on draft model outputs. Once finalised [in about 6 months' time], the new model outputs will be considered the latest available information. Although planners can then use these updated model output to guide district planning decisions, until a flood hazard plan change is publicly notified, the existing rules in the operative District Plan will apply to any area that are identified in the current flood hazard overlays. The requestor has included e-mail correspondence from Council's consultant hydrologists and flood modellers in support of its request.

Flood hazard mitigation

19 There are several objectives in the Operative District Plan relating to development within a flood hazard overlay. Objective DO-03 requires the maintenance of a consolidated urban form that delivers resilient communities where *development does not result in an increase in risk to life or severity of damage to property from natural hazard events*. Objective DO-O5 requires assurance of the safety and resilience of people and communities by avoiding exposure to increased levels of risk from natural hazards.

20 Policies DO-P2 and DO-P3 require a risk-based approach to subdivision, land use and development within areas subject to flood hazards [as identified in maps], and where such activities are proposed, it is only

allowed where any potential increase in risk exposure on or beyond the land itself has been avoided, remedied or mitigated. Where uncertainty exists, policy NH-P4 requires a precautionary approach to be taken to the management of risk from natural hazards.

21 Policy NH-P5 protects natural features that have the effect of reducing hazard risk by buffering development from the effects of natural hazards. The protection mechanisms include development controls [such as setbacks] and restoration of such natural features.

22 Policy NH-Flood-11 provides for a higher level of control on subdivision, use and development within river corridors, stream corridors, overflow paths and residual overflow paths, with a generally lesser level of restriction on activities within ponding, residual ponding, shallow surface flow, flood storage and fill control areas.

23 Subdivision, use and development within river corridors, stream corridors, overflow paths and residual overflow paths is to be avoided unless it can be mitigated on-site to avoid damage to property or harm to people [policy NH-FLOOD-P12].

24 The Plan Change request sets out the following concept design for managing flooding on the site[4]:

24.1 *We have assumed that the invert of constructed stormwater management areas would act as an effective 'upper bound' to groundwater levels, and consequently the groundwater interception would not use up available storage volume within these attenuation / compensation ponds.*

24.2 *Compensatory Flood Storage Areas set aside adjacent to the watercourse and along the west boundary of the Site, as identified by the recent KCDC/Awa modelling.*

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[4] Welhom Developments Ltd, Private Plan Change Request [February 2025], pp 29-30

24.3 *A culvert crossing over the watercourse has been assumed, based on assessment of predevelopment flowrate within the watercourse within the KCDC/Awa flood model.*

24.4 Detailed modelling will be required at subdivision or land use consent stage to confirm available freeboard above the 100-year overland flow path water surface within the Site [likely to be 300mm to 500mm above the ponded 100-year water surface].

24.5 *Access to the watercourse for maintenance by KCDC will need to be provided, which will be addressed at subdivision or land use consent stage. This maintenance would typically be carried out by a small excavator and truck and would be provided by having a suitably formed accessible hardstand on one side of the watercourse.*

Stormwater management[5]

25 There are several objectives in the Operative District Plan relating to the provision of infrastructure services. Objective DO-03 requires the maintenance of a consolidated urban form that delivers resilient communities where *development does not result in an increase in risk to life or severity of damage to property from natural hazard events* and *sustainable natural processes including freshwater systems, … ecological integrity…*

26 Policies INF-GEN-P11, and INF-MENU-P17 *Subdivision and development will be designed to ensure that the stormwater runoff from all new impermeable surfaces will be disposed of or stored on-site and released at a rate that does not exceed the peak stormwater runoff when compared to pre-development situation* [in accordance with the Council's Land Development Minimum Requirements].

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[5] Welhom Developments Ltd, Private Plan Change Request [February 2025], pp 29-30

27 Policy INF-MENU-P18 sets out the assessment criteria that applies when considering the adverse effects of stormwater runoff when processing a resource consent application for subdivision or development, specifically [but not limited to]:

27.1 whether there is capacity in Council's existing infrastructure;

27.2 the extent to which the capacity and environmental values of watercourses or drains and the associated catchment areas will be compromised;

27.3 the extent to which the adverse effects of stormwater runoff, in particular cumulative effects, from subdivision and development will be minimised.

28 The performance criteria proposed for the development meets the relevant standards and criteria identified in Council's Land Development Minimum Requirements, namely:

28.1 hydraulic neutrality so that maximum rate of discharge and peak flood levels in the receiving body for the 1-2 year, 1 in 5-year, 1 in 10-year, 1 in 10-year and 1 in 100-year design rainfall events shall not exceed the pre-development peak flows for the same design rainfall events;

28.2 provide for climate change predictions as advised by the Council; and

28.3 creates a multifunctional landscape where design integrates with other aspects of site planning, makes use of available natural features and processes, and meets regional and district stormwater discharge quality requirements.

29 The Plan Change request confirms the following with respect to managing stormwater on the site [6]

29.1 *Rainfall would be obtained from NIWA HIRDS v4 for RCP8.5 climate change scenario and a 100-year event horizon, in accordance with KCDC and Welhom requirements.*

29.2 In accordance with KCDC requirements, stormwater reticulation within the Site would be designed to convey the 10-year storm event while overland flow for events greater than the 10-year event will be contained within the proposed internal road network.

29.3 The stormwater attenuation system designed to mitigate the increase in stormwater runoff associated with the development for all rainfall events up to and including the critical duration 100-year storm event.

29.4 *We have assumed that rock-filled soakpits for roof water runoff designed for the 10-year AEP 1hr rainfall event in accordance with the NZ Building Code compliance doc E1/VM1 would be provided. Soakpits would be distributed across the Site located underneath greenspace areas/between townhouses etc for a retirement village development, or on each allotment under a residential development scenario. Roof water runoff more than the soakpit capacity would be directed to the stormwater management area.*

29.5 Stormwater management areas would provide quality and quantity mitigation for the Proposed future development. Part of the area set aside would be formed as wetland and would provide stormwater treatment as well as offsetting the existing low-value wet areas identified on the Site that would be demolished due to development of the Site. Some existing

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[6] Welhom Developments Ltd, Private Plan Change Request [February 2025], pp 29-30

wetlands identified by Blue Green Ecology could be integrated into these new stormwater management areas and/or compensatory flood storage areas.

29.6 *The Site would logically be split into two catchments, defined by land each side of the existing Drain; this avoids earthworks level and quantity issues associated with raising part of the Site to convey stormwater overland across the waterway to a centralised stormwater management area. Each catchment would have its own stormwater management area for treatment and attenuation of stormwater runoff.*

30 The structure plan [Dev3 – Figure 1: Ratanui Development Area Structure Plan] provides indicative extents for central restoration wetland and stormwater management, and compensatory flood storage areas, but acknowledges these areas are to be confirmed through the resource consent process.

Submissions

31 Several submitters (2, 6) were concerned that existing drainage and overland flow paths would not be adequately protected if the plan change were to be granted. While the developer is proposing to alter ground topography and provide for the attenuation and conveyance of stormwater from the site and to compensate for any loss of ponding areas, I consider that the existing policy and rule framework within the District Plan will satisfy these concerns. The change in use (and associated changes in topography) cannot alter existing overflow paths without providing an adequate alternative. This will be addressed in any subsequent land use or subdivision consents and may involve requiring supporting evidence from a geohydrologist.

32 Regarding the overflows from the south-west the Engineering report does recognise these, and states existing floodplain storage would either be protected by setting aside this land as undevelopable or by providing

offset compensatory storage[7]. Given that the overflows are isolated and largely fill defined low areas within the development extent then these should be relatively easy to mitigate within a landscape, vegetative buffer.

33 One submitter (4) was concerned that there should be no exemptions for this development under the current District Plan requirements for stormwater management. I am not aware that the request includes an expectation to waiver any requirements with respect to stormwater of the District Plan. Any proposed on-site attenuation is in addition to volumes required for water demand management.

34 Two submitters (14, 15) raised concerns regarding the civil design provided as part of the request.

34.1 Submitters raise that the area downstream is subject to flooding and that the attenuation system will offset peak flow but is likely to prolong the downstream flooding or intensify it due to the increased runoff.

34.1.1 In a subsequent land use or subdivision consent of this magnitude, Council would expect to see a hydraulic model to demonstrate that the flood risk is not worsened by development, and that there is a reasonable and feasible solution to manage stormwater runoff. A hydraulic model presents the flood hazard associated with the peak flow and the flood volume. It is normal for applicants to differentiate between the proposed post-development flood map and the pre-development flood map to produce a difference map which clearly identifies whether there are resulting adverse effects to the surrounding area. This facilitates Council's review of the flood risk considering changes in peak

[7] Civil Engineering Infrastructure Assessment, Ratanui Plan Change [29/11/2024], p 11, section 4.1.3

flow, displacement of flood waters associated with infilling ponding areas, and to downstream users, when assessing resource consent applications.

34.2 Submitter concerned that E1 soakpit solutions are outdated and not accepted by many councils across the country, with best practice being a nested storm in accordance with GD07.

34.2.1 Council accepts the methodology outlined in E1 as it is reasonable and applicable to the entire country and has not been superseded or replaced by alternative guidelines. However, Council does encourage developers to use KCDC's stormwater soakage spreadsheet for design. This does take a nested storm approach ensuring that the soakpit is sized to detain stormwater runoff across various durations, not solely the 60-minute duration as specified in E1. The use of soakpits is considered on a case-by-case basis considering the infiltration rate and groundwater depth based on site specific testing.

35 Submitter 15 identifies the potential for intensification on the site to increase runoff and downstream flooding as shallow groundwater is present [rendering soak pits unreliable] and no commitment to downstream improvements. They ask for robust a structure plan prepared with effective buffers, ecological offsets and stormwater treatment prior to granting.

35.1 The feasibility of soak pits distributed across the site would need careful consideration at the resource consenting stage. The applicant recognises that *further testing at subsequent phases of design development should be carried out to confirm this rate* [assumed infiltration rates], *and any spatial variability*

across the Site[8] to confirm they can be relied upon during periods of high groundwater. It is noted that soakage testing was undertaken over the dryer months.

35.2 If there is no groundwater bore close by, then piezometers could be put across the site over a calendar year to record groundwater. However, the new TUFLOW models has a groundwater component based on GWRC model and is the best indication of future groundwater levels that the Council has when looking out to 2130.

35.3 Regarding the overflows from the south-west the Engineering report does recognise these, and states *existing floodplain storage would either be protected by setting aside this land as undevelopable or by providing offset compensatory storage*[9]. Given that the overflows are isolated and largely fill defined low areas within the development extent then these should be relatively easy to mitigate within a landscape, vegetative buffer.

35.4 Regarding the indicative location of the constructed wetland and compensatory storage area, adjacent the open channel is probably the best location for these from a mitigation perspective with future, inflow, outflows or overflows in mind. It is not clear, however, what these areas allow for, if the compensatory storage area is just going to be a pond and whether the constructed wetland areas consider the area needed for treatment. Although the report says they have used the new [TUFLOW] model to inform the requirements for compensatory storage[10], no founding documentation is

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[8] Civil Engineering Infrastructure Assessment, Ratanui Plan Change [29/11/2024], p 11, section 4.1.2

[9] Civil Engineering Infrastructure Assessment, Ratanui Plan Change [29/11/2024], p 11, section 4.1.3

[10] Civil Engineering Infrastructure Assessment, Ratanui Plan Change [29/11/2024], p 11, section 4.1.3

provided which supports the location and size of the area set aside for mitigation .

36 Submitter 16 raised concerns regarding the operation and maintenance of the Mazengrab Stream, the adequacy of the culverts at its confluence with the Oxbow [Waikanae River], and the impact of rising sea and ground water levels because of climate change and adjacent land development.

36.1 The operation and maintenance of the Mazengrab Stream, the adequacy of the culverts at its confluence with the Oxbow [Waikanae River], and the impact of rising sea and ground water levels because of climate change and adjacent land development is beyond the scope of this plan change request.

36.2 If downstream works are required to mitigate / off-set the impact of this development, these will be confirmed at the resource consent stage. Council's forward works programme for stormwater management is consulted on through the annual or long-term planning process. In the next long-term plan, Council intends reviewing its forward works programme. The priority, however, will continue to be habitable floor flooding.

36.3 As stated previously, use of the new [TUFLOW] modelling, coupled with compliance with existing stormwater / flood management policy and rule framework will ensure any downstream impacts from this development can be appropriately managed at resource consent stage.

RECOMMENDATIONS

37 I concur with all the submitters in that this development cannot be considered in isolation.

38 The structure plan [Dev3 – Figure 1: Ratanui Development Area Structure Plan] provides indicative extents for central restoration wetland and stormwater management, and compensatory flood storage areas, but acknowledges these areas are to be confirmed through the resource

consent process. At the consent stage, all aspects of this development will need to be hydraulically modelled so further consideration of extents and location will be required. I would expect the restoration wetland and stormwater management areas would be located to facilitate natural overland flow paths and stormwater management. In addition, wetland restoration and stormwater management can often be mutually exclusive so further consideration of how these areas will work in practice will be required at consenting stage. I am confident that the existing provisions in the District Plan plus the provision in the request will allow this to occur at the consenting stage.

39 In my opinion, the use of district plan maps overlays and new [TUFLOW] modelling [which incorporates a groundwater component based on GWRC groundwater model and a climate change projection based on Ministry for Environments latest guidance, i.e. SSP8.5M for planning purposes], coupled with compliance with existing stormwater / flood management policy and rule framework will ensures any downstream stormwater and flooding impacts from the development can be appropriately managed at the resource consent stage.

40 There are, therefore, no matters that submitters have raised that cannot be addressed through any subsequent resource consent, that would mean the Plan Change should be rejected from either a stormwater or flooding perspective.

Date: 1 October 2025