

Before a Hearings Panel appointed by Manawatū District Council

In the matter of the Resource Management Act 1991

And

In the matter of Private Plan Change 1 to the Manawatū District Plan

Joint Witness Statement – Stormwater Expert Conference

Date: 13 April 2023

Venue: Online

Started: 8:01 am

Participants:

- (a) Allison Reiko Baugham – for the Requestor;
- (b) Jon Bell for Manawatū District Council; and
- (c) Julia Jung for Horizons Regional Council.

Also in attendance from 8:01 am to 8:08 am of the meeting were the Planners:

- (a) Kim Anstey for the Requestor;
- (b) Daniel Batley for Manawatū District Council

Code of Conduct

1. This joint statement is prepared in accordance with section 4.7 of the Environment Court Practice Note 2014.
 2. The experts that sign this statement acknowledge that they have read the 2014 Environment Court Practice Note as it concerns the role of expert witnesses and witness conferencing protocol and they agree to comply with the practice requirements.
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Agenda topics for discussion

1. The overarching question for the SW Experts is whether the stormwater management approach proposed by PPC1 is feasible, noting that detailed design will occur at the consenting stage.
2. To that end, the SW Experts are invited to consider and comment on the following matters:
 - (a) Has the increased volume of stormwater travelling through Ruivaldts drain following MDC changing / upgrading the stormwater network in town been included in the Option B flow calculations?

Response: The Ruivaldt drain bypasses the pond. The Option B flow calculations are not affected by the change / upgrades of the town's stormwater network as the ponds are treated as separate and isolated catchments. Therefore the Option B flow calculations are not affected by the upstream discharges from the town. An allowance has been made for the upstream catchment flows / discharges to bypass the pond.

(b) Geotechnical

- i) Have further soil or geotechnical reports been undertaken for the western side of the Option B location?

Response: The original geotechnical sampling included testing/trial pits at the proposed Option B location within the stormwater pond area.

- ii) If so, do they support Option B as providing a feasible location for stormwater treatment and attenuation?

Response: Yes, although it is likely the pond will need to be lined due to the sand.

- iii) If not, what steps are being undertaken to provide the information required to establish that Option B provides a feasible location for a stormwater pond?

Response: The geotechnical report to date recommends further geotechnical investigations to support detailed design for the consenting stage.

- iv) Will this information be available to confirm the suitability of Option B location for stormwater treatment and attenuation before the detailed design, such as the dimensions and depth of the pond, or whether a liner should be provided is undertaken.

Response: No, the assessments done to date have touched on the feasibility and indicated the size of the proposed ponds but further assessment is required to inform the detailed design.

(c) Groundwater

- i) What information is available regarding the groundwater location or depth to ground water through the soil profile? Does the information support Option B as feasible in providing a location for stormwater treatment and attenuation?

Response: The SW experts agreed that groundwater is outside of their expertise. This issue was within the scope of the geotechnical investigation.

- ii) If the information is not available, what steps are being undertaken to provide the information required to establish that Option B is a feasible location for a stormwater pond?

Response: n/a

- iii) Will this information be available to confirm the suitability of Option B locations for stormwater treatment and attenuation before the detailed design, such as the dimensions and depth of the pond and/or whether a liner is required, is undertaken?

Response: n/a

(d) Engineering Design

- i) What level of engineering design for the ponds has been undertaken to date for Option B?

Response: Same as Option A; high-level concept design to inform the indicative pond sizing and depth, and project feasibility.

- ii) Will a liner be included in the engineering designs for Option B to address contamination of ground water or surrounding soil if this is found to be necessary once geotechnical and ground water testing results are available?

Response: This would need to be determined as part of the detailed design.

- iii) What calculations have been undertaken of earthworks required for the stormwater treatment and attenuation ponds for Option B?

Response: The exact dimensions would need to be determined as part of the detailed design, however the earthworks required for the pond, to provide the necessary detention, have been estimated based on the pond invert and existing ground level and assumed side slopes.

- iv) What are the potential adverse effects or issues arising from stormwater management Options A and B from PPC1? Are adverse effects from Option A or Option B likely to be more manageable through the engineering design process?

Response: With regard to stormwater quality, Option A would be more difficult than Option B due to its closer proximity to the existing wetland.

With regard to stormwater quantity, the infrastructure would need to be deeper for Option B. The discharge under Option B may have the potential for increased erosion, in the drain to which discharges would occur, due to the layout of the open drain and extended period of peak flow released by the pond. It is considered that these effects could be mitigated through the consenting of the discharge. Both options could require some work within the wetland to mitigate stormwater effects due to the increase in volume, but this would need to be informed as part of the detail design.

(h) Conclusion (refer to table below for individual responses)

- i) Are the SW Experts satisfied that those adverse effects or issues from stormwater treatment and attenuation Options A and B are likely to be managed through the provisions of PPC1 and/or the Horizons Regional Plan?
- ii) If not, what effects or issues from Option A and B stormwater treatment and attenuation are likely to require management and how would these best be managed through engineering design?
- iii) Does PPC1 as submitted provide enough information to determine how adverse stormwater treatment and attenuation effects or issues will be managed for both Option A and Option B of the proposed development so that the SW Experts can regard the proposal as feasible, prior to the detailed design information becoming available?

Conclusion Questions	Summary Comment - Julia Jung	Summary Comment – Jon Bell	Summary Comment – Reiko Baugham
<p>i) Are the SW Experts satisfied that those adverse effects or issues from stormwater treatment and attenuation Options A and B are likely to be managed through the provisions of PPC1 and/or the Horizons Regional Plan?</p>	<p>In terms of water quantity, the stormwater treatment devices used for option A and B (i.e. pond, raingarden and swale) meet industry standards for stormwater treatment and peak flow attenuation.</p> <p>Detailed design that supports the resource consent, I believe, will discuss any adverse effects and issues and mitigation measures in detail, if any e.g. discharge velocity.</p>	<p>Yes. The information provided as part of the PPC application shows that the management of stormwater can feasibly be undertaken in such a way that the downstream effects of the development will be no more than minor.</p> <p>The provisions of PPC1, and the consenting of the detailed design under Horizons Regional Plan will ensure that any potential adverse effects will be managed.</p>	<p>The proposed provisions, in addition to the Horizons Regional Plan, require sufficient detail to inform the mitigation required to manage both quality and quantity issues that may arise from stormwater discharge from the subdivision.</p>
<p>ii) If not, what effects or issues from Option A and B stormwater treatment and attenuation are likely to require management and how would these best be managed through engineering design?</p>	<p>The Options A and B propose indicative pond dimensions as a result of flow calculation and assumptions for the pre and post development. The design to date is reasonable and feasible from an Engineering perspective.</p> <p>The Te Kawau drain and Sluggish drain downstream from the development is currently in a full capacity of the 5year rainfall. The detailed design is to consider if there is any further future development occurs in the catchment, the detailed design should consider and incorporate the impact from the development.</p> <p>Option B is 100m north of the natural wetland, the drain passes multiple bends</p>	<p>The detention pond will require detailed design in terms of its exact location, sizing and construction. This will be assessed through the consenting process.</p> <p>Likewise the discharge from the site to the drain managed by HRC will be subject to consent, and will require detailing.</p>	<p>The subdivision layout and earthworks plan are required to inform the detail design of the pond and mitigation required to manage the effects of the development. The work done to date demonstrates that the likely mitigation required is feasible, and the provisions of PPC1 list what needs to be considered as part of the consenting process. This will include management of effects on the receiving system, both in terms of quality and quantity. This is required for both Options.</p>

	<p>(i.e. Ruivaldts, Capmpbells Drain) prior to entering the wetland. The discharge from the pond to the drain is limited via a proposed culvert. So this could achieve flow peak attenuation but the further investigation in terms of flow velocity downstream (not limited to) should be checked and if required, erosion counter measure should be proposed as part of the detailed design.</p>		
<p>iii) Does PPC1 as submitted provide enough information to determine how adverse stormwater treatment and attenuation effects or issues will be managed for both Option A and Option B of the proposed development so that the SW Experts can regard the proposal as feasible, prior to the detailed design information becoming available?</p>	<ul style="list-style-type: none"> • <u>Stormwater Treatment Effects (Water Quality)</u> <p>As stated above in the response for the question i), I looked at the report from a stormwater quantity point of view rather than quality. However, as far as I know the proposed stormwater treatment devices are supposed to treat run-off contaminant as per the industry design guidelines. The details on the level of treatment however, I believe, will be provided in the detailed design for the technical assessment.</p> <p>Note that assessment on the water quality is outside of my expertise in my current role with Horizons, so I will not be assessing this element during consenting process.</p> <ul style="list-style-type: none"> • <u>Stormwater Attenuation Effects (Water Quantity)</u> <p>As stated above in the response for the question ii), the proposed stormwater discharge peak attenuation is appropriately designed.</p> <p>I believe, the detailed design will provide how any adverse effects arising during the</p>	<p>PPC1, as submitted, provides enough information to show that adverse stormwater attenuation effects or issues can feasibly be managed for both Options A and B.</p> <p>The exact details of the stormwater management and attenuation measures will need to be subject to detailed design.</p> <p>It is outside of my area of expertise to comment on the treatment of stormwater in terms of water quality.</p>	<p>The stormwater assessment undertaken to inform PPC1 demonstrates that stormwater can be managed and the proposed methods (attenuation pond and wetland) are feasible in the plan change area. The assumptions used to determine the indicative sizing and overall feasibility are considered to be appropriate. As identified in (ii) above, further detail of the subdivision layout is required to inform the exact design and mitigation required.</p>

	<p>detailed design are adequately mitigated and managed in the long term, as well as stormwater asset owner's responsibilities and maintenance.</p> <p>In conclusion, both Options are feasible in terms of the water quantity point of view.</p> <p>Note that geotechnical and groundwater aspects are outside of my expertise. My statement in water quantity for both Options does not consider both aspects.</p>		
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Signed

Name: Allison Reiko Baugham

Signature:



Date:

21/04/2023

Name: Jon Bell

Signature:



Date:

21/04/2023

Name: Julia Jung

Signature:



Date:

14/04/2023
