
Joint Witness Statement

Stormwater / Flooding and Groundwater / Geotechnical

Sunfield [FTAA-2503-1039]
21 November 2025

Facilitated by: Dave Serjeant, Planner and Independent Planning Commissioner
Recorded by: Nick Freeman, Planner, Tattico

Attendance

The list of participants for this expert conferencing is included in the schedule at the end of this Statement.

Basis of Attendance and Environment Court Practice Note 2023

All participants agree to the following:

- (a) The Environment Court Practice Note 2023 provides relevant guidance and protocols for the expert conferencing session;
- (b) They will comply with the relevant provisions of the Environment Court Practice Note 2023.

Matters Considered at Conferencing – Agenda and Outcomes

Preliminary Matter – Applicant presentation

- A. The Applicant experts to present a schematic overview of the hydraulic design concept and identify the key engineering drawings and intended structure levels that underpin the stormwater management strategy. Includes a summary of the development enabling earthworks associated with the construction of the attenuation basins and conveyance channels.

JP delivered a presentation outlining a high-level stormwater concept for the site, which included the following:

Eastern Catchment

- Discharges downstream to the Papakura Stream.
- Key Proposed Infrastructure:
 - Stormwater Ponds 1 and 2: These ponds are designed to attenuate peak flows

from a 100-year storm event to pre-development levels or lower. In addition, both ponds provide stormwater quality treatment for the Sunfield catchments that discharge into them.

-Eastern Diversion Channel: This channel diverts a significant portion of the upstream catchment around the site perimeter and discharges into Pond 1 and its spillway.

Western Catchment

- Discharges downstream to Pahurehure Inlet.
 - Sunfield proposes to discharge an additional 54.9ha into western catchment.
 - Key Existing Infrastructure:
 - Awakeri Wetlands Stage 1, McLennan Wetland, and the Artillery Drive Stormwater Tunnel.
 - Awakeri Wetlands Stages 2 and 3, which are consented but not yet constructed.
 - Key Proposed Infrastructure:
 - Stormwater Pond 4: This pond is designed to reduce peak flows from Sunfield to baseline levels for a 100-year, 24-hour storm event. This pond also provides stormwater quality treatment to the additional 54.9ha catchment.
- Stormwater design principles are in accordance with industry-accepted engineering practices.

Stormwater / Flooding

NB: For questions below, where any issue arises in discussions as to the adequacy of the information provided by the Applicant to date, please consider whether there is any further information that can reasonably be provided in the time available that would assist to resolve the matter.

- B. Clarification on number of stormwater attenuation basins:
- a. Are there three or four basins?

Response: **JP** states there are three basins.

All experts concur.

- b. Has Pond 3 been removed from the design, and if so, has this been accounted for in the hydraulic modelling report dated October 2025?

Response: **JP** acknowledges that the reference to Pond 3 is still in the stormwater report and will be updated to remove it.

- C. Are the [three / four] stormwater attenuation basins designed appropriately?

- a. Please ensure the answer addresses:

- i. The design intent, size and efficacy of each basin.

Response: **YW** states that Pond 1 located at the end of the eastern diversion channel. Purpose is to treat flow in wetland and discharged to the north. Behave as an offline peak diversion continuation system. Portion of the flow in the channel is diverted to the pond. A portion is diverted to the spillway in the north. Wetland discharges back into the eastern diversion channel.

M-C460-2 (engineering drawing of Pond 1)

M-C460-3 (section drawing of Pond 1)

AC & GB consider that Pond 1 will not work. They consider that the hydraulic solution is not feasible, due to the fact the existing land drains do not have capacity for a two-year event. The informal network of farm drains that this project relies on will not have capacity. Also noting that the 700m long weir structure will have a very low tolerance to vertical movement because of corresponding large changes in flow rate caused by that movement. **AC & GB** consider this tolerance will be exceeded. They also consider that the resilient solution is to construct a conveyance channel from the development to Papakura Stream including allowing for Airfield Road to be passable in a 10-year storm event.

WM & JP & YW consider the stormwater ponds are sized appropriately and operate appropriately. The ponds have been designed to attenuate up to and including a 100-year storm event and reduces peak flows for 2, 10, and 100-year storm event. Stormwater modelling has been reviewed and confirmed by CKL. The applicant does not have the ability to modify the down stream farm drains on private land however the existing flooding situation should be improved as flows are reduced. We agree that the extension of the diversion channel on the eastern boundary to discharge north to Papakura Stream would form part of the wider catchment solution. This should be able to be constructed in the future as part of the MR2. Our development does not prevent this to be undertaken in the future. We have controlled flows on Airfield Road to less than predevelopment peak flow rates, we understand that this is a concern of Auckland Council, however a raising of this road at current time would have detrimental effects. We have addressed the 2-year flows. We believe that our development will not significantly increase traffic flows as Hamlin Road will be the main point of entry to the development and if Auckland Council do have concerns, then investigation into limiting traffic on Airfield Road could be undertaken. They also note the weir on Pond 1 would need to be designed and constructed appropriately which may entail concrete structure subsurface ground improvements and foundation considerations. Would also need to have an allowance for contingency and also a provision for monitoring.

RM considers the conveyance channel is limiting what the upstream catchment can do. Should take into account the future zoning allowance of 60% imperviousness for the sites upstream that fall within the 'Takanini Structure Plan Area 4'. How the upstream catchment can be developed is also important for flood implications.

WM considers it is not common practice to allow for the MPD of upstream land which is not currently zoned. The stormwater solution does not preclude development

upstream, upstream development will need to provide stormwater attenuation as necessary.

AC considers sensitivity testing for the upstream catchment a possible way to resolve this.

- ii. Whether the basins are suitable for dual use (if proposed) for public access. (This should include whether Pond 4 can accommodate attenuation, amenity, and ecological functions without compromising performance.)

Response: **RT** is concerned that the proposal cannot accommodate formal recreation spaces that are flood safe. Any maintenance issue will lead to prolonged closures of the field and reducing community access of services in the long term.

WM & JP notes that a limited number of pedestrian pathways are proposed through Pond 4, as shown on the additional open space plans provided in the applicant's response to comments. This approach is consistent with the design implemented for the completed and vested Awakeri Wetlands Stage 1 and the consented Stages 2 and 3. (Further information requested by minute 13 will be provided by the applicant)

AC is concerned that the maintenance of the proposed ponds and wetlands (Wetland 4 in particular) will be difficult due to the lack of gradient. The design shows that the ponds will be excavated below existing ground level therefore there is an increased risk of saturated ground conditions making machine access for dual use problematic.

WM & JP considers through detailed design including the use of slurry walls using a stable ground reinforcement and introducing some more gradient and/or sub-soils that the concerns of Council should be able to be addressed. A maintenance access track will be provided and detailed during the engineering approval stage.

- b. Has the perceived conflict in information been resolved regarding whether attenuation basins are designed to maintain permanent water levels or to operate as dry basins?

Response: **JP & WM** consider that the basins are designed to serve two functions: stormwater attenuation and water quality treatment. The attenuation portion does not maintain a permanent water level; it operates as temporary storage during storm events. In contrast, the treatment wetland within the basin has a permanent water level, which is set below the base of the attenuation storage zone. This configuration ensures that the upper volume of the basin remains fully available for stormwater attenuation while the wetland provides continuous water quality treatment.

- c. How does this design choice influence the geotechnical assessments, particularly in relation to groundwater drawdown, peat settlement, and infrastructure resilience?

Response: Refer to Geotechnical sections (J-K)

WM: Slurry walls will ensure that the basins remain dry.

- D. Issues relating to downstream conveyancing capacity:
 - a. Have the local overland flow paths, including through the proposed conditions of consent, been appropriately considered and are the effects acceptable?

Response: Refer to sections C(a(i)) in relation the northern discharge.

AC note that Auckland Council analysis of the local farm drains indicates that there will be increased nuisance flood to the landowners that have the farm drains and road table drains on their property from the proposed design. Nuisance is in relation to depth and extent from the pre-existing scenario.

WM & JP note that their modelling did not indicate any increase flooding downstream in terms of peak flow and duration. Our modelling indicates that peak flow and duration are closely matching the existing scenario. We do not believe we create more flood nuisance to downstream properties.

GB notes that insufficient information has been provided to demonstrate the duration of flooding in small scale events (up to 10-year event) has not been increased. The capacity of the drains has not been assessed in detail.

- b. Are informal farm drains sufficient to convey attenuated flows, or is formal infrastructure required?

Response: **AC & GB** state that the existing scenario shows that the drains are undersized for a 2-year event and above.

WM & JP states that this is an existing flow path within private land.

- c. What downstream assessment has been carried out as to the suitability of these table drains to act as the primary drainage network? (Please ensure the answer addresses conveyance capacity to the north.)

Response: **AC** notes Auckland Council does have powers to acquire the land for drainage purposes, however, the costs for undertaking this has not been forecast in Council's long-term plan. There is an alternative mechanism through the Infrastructure Funding and Financing Act (IFFA) could be a means to fund this type of capital investment.

- E. Issues relating to risk to McLennan Dam:
 - a. Has the applicant adequately assessed the risk to McLennan Dam (a high potential impact classification dam) from the proposed catchment diversion?

- b. Are the effects on McLennan Dam appropriately mitigated to ensure that the operation and structural integrity of the dam is appropriately maintained?

Response (a & b): **AC** states that the FUZ land has been anticipated but the additional catchment area has not. Therefore, the McLennan dam will need to be upgraded to meet the current dam safety standards and existing consent conditions, which is estimated to take 5-years to deliver (subject to funding).

AC would be satisfied with a condition that requires McLennan dam be brought up to the current dam safety standards, including analysis that includes the entire future development, prior to diverting additional catchment.

F. Flood risk to roads and dwellings:

- a. Are roads (including major culverts under important roads) and finished floor levels designed to avoid flood risk?

Response: **WM & JP** states that hydraulic modelling has been undertaken to assess overall stormwater performance and flood risk. The current modelling entails catchments draining to proposed swales, with roads and habitable land positioned above the swales with appropriate freeboard. The road network has been designed to delineate catchments and direct runoff into these swales. However, detailed modelling of local overland flow paths has not yet been completed. This will be addressed at the engineering approval stage, where detail design will ensure that overland flow paths are appropriately managed and any potential effects are mitigated in accordance with Auckland Council standards. This will all be addressed as part of the engineering plan approval.

GB notes that it is unclear how it can be confirmed that roads will safely convey overland flows if the road reserves and carriageways have not been modelled as part of the assessment on flood risk, or how the overland flow path management or discharge locations can be adjusted at detailed design if it is found that there are hazard flows within the carriageway when the boundaries of the development are set. Additionally, given the sensitivity of the flooding and the limited space allowed for the adjustment of the flood mitigation devices, the assertion that overland flow paths can be adjusted is questionable.

WM notes that the applicant is confident that any issues can be resolved as part of the engineering plan approval process and detailed design.

- b. Are the existing flooding effects appropriately addressed for Airfield Road and Hamlin Road?

Response: Refer to section C(a(i)) regarding Airfield Road

AC notes that Hamlin Road (to the eastern side of the development) has hazardous depth of flooding even in 2-year event, therefore would be unsuitable as a collector road in that direction.

WM & JP state they do not envisage a significant increase of traffic on Hamlin Road to the east of the site.

GB notes that modelling has shown the proposal will result in increased flooding in the Old Wairoa Road. The severity of the increase has not been fully assessed.

JP considers that the increase catchment is relatively minor. The overland flow path was considered and is proposed to be diverted via Mega Pit to ensure no increase of flow paths to the west.

- G. The Mill Road Stage 2 NoR and integration with stormwater management
- a. How are Sunfield and Mill Road Stage 2 stormwater systems integrated into a coherent strategy?

Response: **RS** notes the Mill Road corridor allows space for swales on both sides to serve the Mill Road impervious areas. The Mill Road Project will likely now rely on the proposed eastern diversion drain to discharge the NZTA swales eastern side into. There may be a need for the Sunfield stormwater system to receive flows from the NZTA swales on the west side of the MR2 expressway.

JP & WM consider that the applicant would be open to this proposal.

- H. Vesting of stormwater land / channels, and vesting mechanism:
- a. Is the extent of land to be vested for stormwater purposes acceptable for public ownership?
- b. What mechanism will be used to agree land vesting for stormwater management under the RMA process?

Response (a & b): **WM & AC** consider that vesting of assets to Council can be covered through conditions and land extents, maintenance periods, and other standards of assets that need to be negotiated.

RS suggests that the corridor for the eastern channel between the Mill Road corridor and eastern boundary should be vested in Auckland Council and he understands that any required engineering works for the channel will be undertaken within that available space.

- I. Is the proposed stormwater management strategy for the Sunfield development feasible and resilient whereby the adverse effects can be appropriately managed?

Response: **AC & GB** consider there is a number of significant unresolved issues regarding the proposed design constructability and overall efficacy of the northern conveyance system that have not been adequately addressed. Noting there are a number of other issues raised that also need resolution.

WM & JP considers that there have been a number of issues raised that have been addressed in the information supplied as part of the resource consent. Stormwater modelling has shown the proposed stormwater management to limit downstream effects by providing attenuation to predevelopment levels as per standard engineering practice. We consider that the stormwater solution is appropriate and can be refined as part of future detailed design.

RS considers with respect to the eastern channel, that a condition of consent is required in the current process for further analysis and confirmation of the design approach.

Groundwater / Geotechnical

J. Has sufficient assessment been provided to confirm the level of adverse effects on structures and services along Old Wairoa Road (the section between the roads and junctions of Pākaraka Drive and Nola Dawn Avenue)?

Response: **KM** notes the assessment is based on a machine bore hole called Machine Hole number 6 (MH06) which confirms the presence of over-consolidated East Coast Bays formation (ECBF) residual soils. At the location of this bore hole the approximate cut depth is 6 metres. Transition to bedrock material has been confirmed at 3.4m at MH06. Therefore, it is expected the bulk cuts will expose this relatively incompressible material as such it is expected that any ground water draw-down occurring as a result of this cut will be negligible, conservatively estimated to be in the order of 12mm or less. **KM** concludes, given the geology in this location that the settlement will be less than 12mm between any structures and services in Old Wairoa Road as draw-down depths will decrease from the maximum cut. Quantitative assessment has been completed to support this conclusion. MH06 is representative of the soil conditions in this area and there are other geotechnical tests which validate this assumption. The length of the cut is approximately 150m however the depth of cut at the boundary is 0m at the road interface.

GM considers that ECBF is not an over-consolidated soil, it is a residual soil.

SL notes ECBF residual soils in his experience would exhibit over-consolidated behaviour if tested in a laboratory.

MW agrees with **KM**'s settlement predictions at Old Wairoa Road (between Pākaraka Drive and Nola Dawn Avenue).

RS notes that the space available between the Mill Road corridor and the eastern boundary at Hamlin Road is constrained and he has concerns whether a channel with the assumed 3H:1V batters will be able to fit when further design and investigation is undertaken.

AC shares **RS**'s concern through design of a maintainable slide-slope, the channel will be wider if a maintenance bench is included in the section, than indicated on the channel drawing on C-452-8.

KM & WM understand the corridor for NZTA is fixed and could not be encroached. There shouldn't be any stability issues through the 3H:1V batter with the appropriate geotechnical approach. If not suitable the applicant will entail other methods to install the channel to maintain stability within the boundary.

WM notes that the 3H:1V batters used in the Awakeri Stage 1 has guided the applicant's approach and acknowledges that he will look into how these will be designed and maintained.

K. Will the proposed groundwater drawdown affect the ability to develop the land?
(Please ensure the answer addresses the eastern area in particular)

L. If so, how is this proposed to be managed?

Response (K & L): **KM** notes that in the north-eastern area his opinion is that ground water drawdown is insignificant as described in (J) above. Within the south-eastern development area potential drawdown settlements are likely to be in the range of 65-320mm noting that consideration of historic seasonal wetting and drying cycles are likely to result in settlements trending towards the lower bound of this range. From a geotechnical perspective these settlements should not affect the ability to develop this land.

MW notes that ground settlements within the site boundaries can be addressed by the developer as part of the subdivision geotechnical design, staging, wetland and stormwater designs. Therefore, this is not expected to affect the ability to develop the Sunfield site. If there are any areas of concern in terms of offsite ground water drawdown effects, these can be addressed through;

- Point 1: further ground water level monitoring in these areas to inform effects assessments.
- Point 2: if warranted, mitigation through groundwater cut-off walls similar to those used in Awakeri stage 1.
- Point 3: if warranted, ground water level and ground and building settlement monitoring of neighbouring properties.

SL considers that an existing damage survey on neighbouring properties and associated infrastructure (including drainage, roads, kerbs, channels) prior the channel being excavated should be in the conditions.

All experts agree that prior to engineering plan approval (EPA), further analysis of ground water drawdown and associated ground settlement needs to be undertaken to determine the extent of the slurry walls. Conditions similar to Awakeri wetland consent are required to address drawdown risks.

AC notes that in particular, the diversion channel on the eastern boundary and Swale 2 on the western boundary have invert levels below the long-term ground water levels and will need to be addressed specifically.

JP states that recharge pits will be installed wherever impervious surfaces are proposed to capture runoff and infiltrate into the peat to recharge the localised groundwater table. Recharge pits will be designed to retain the stormwater runoff from all impervious areas from the first 15mm of any rainfall event.

M. Are proposed mitigation measures sufficient to avoid, remedy or mitigate settlement effects from groundwater drawdown and proposed earthworks on existing and proposed buildings, structures and infrastructure (including stormwater and roading)?

Response: **KM** notes the proposed mitigation measures in peat soils for consolidation settlements will include ground improvements such as localised undercutting and replacement or preloading. These mitigation measures where required are consistent with other subdivisions on the same soils where these measures have been documented as appropriate to mitigate consolidation settlement and have been verified by 5-year post construction ground water and settlement monitoring on some subdivisions as required by resource consent.

GM seeks clarification of the relativity between previous developments and this one. In previous examples what was the general increase in ground level to building platform compared to this one? What was the assumed general ground water drawdown compared to this one?

WM looked at surrounding developments and maximum fills previously used to help design maximum fill limitation within the development. **WM** states that in cut and fill areas, fill will be used in similar areas, e.g. peat to peat / clay to clay.

RT expects that the proposed mitigation measures in peat soils will include appropriate measures to ensure planting can be stabilised in the ground and be maintainable. **RT** expects that foundations for park infrastructure will also be suitable.

All experts refer to earlier responses from J-L in terms of drawdown induced ground settlement.

Confirmed in person: 21 November 2025

Expert's name and expertise	Party	Expert's confirmation
Will Moore (WM)	Sunfield	Yes
Jignesh Patel (JP)	Sunfield	Yes

Shane Lander (SL)	Sunfield	Yes
Kyle Meffan (KM)	Sunfield	Yes
Yotsak Wansong (YW)	Sunfield	Yes
Michelle Willis (MW)	Sunfield	Yes
Zeb Worth (ZW)	Sunfield	Yes
Andrew Chin (AC)	Auckland Council	Yes
Griffin Benton-Lynne (GB)	Auckland Council	Yes
Dr Roja Tafaroji (RT)	Auckland Council	Yes (parts relating to urban/environmental design)
Grant Murray (GM)	Auckland Council	Yes (Geotechnical matters)
Roger Seyb (RS)	NZTA	Yes
Jason Keyte (JK)	NZTA	Yes
Rose Mason (RM)	897 Alpha Ltd	Yes

Observers: Ian Smallburn (Planner, Sunfield) and Karl Anderson (Planner, Auckland Council)

Note: Auckland Council as a Party includes all constituents of the Auckland Council ‘family’ of organisations.