

BEFORE AN EXPERT CONSENTING PANEL

IN THE MATTER of the Fast-track Approvals Act 2024 (the **FTAA**)

AND

IN THE MATTER of Ashbourne (FTAA-2507-1087)

**STATEMENT OF EVIDENCE OF BRONWYN PATRICIA RHYND ON BEHALF
OF THE MATAMATA-PIAKO DISTRICT COUNCIL**

Stormwater and Flooding

Dated: 3rd November 2025

**BROOKFIELDS
LAWYERS**
A M B Green
Telephone No. (09) 979 2172
PO Box 240
DX CP24134
AUCKLAND

BROOKFIELDS
LAWYERS

1. SUMMARY OF EVIDENCE

1.1 The technical review of the applicant's substantive application and responses for the Ashbourne development identifies several unresolved concerns regarding stormwater infrastructure, particularly in relation to groundwater management and the suitability of proposed treatment, conveyance, and disposal methods. Key points from the review and subsequent applicant responses are summarised below:

- (a) Groundwater Investigation and Soakage: The reliance on soakage for stormwater disposal requires further investigation into site-specific groundwater conditions. Existing geotechnical and hydrogeological reviews confirm this necessity.
- (b) Design Review and Space Allocation: There is a need to confirm that sufficient space is available within soakage basins and road carriageways, and to verify adequate separation from the groundwater table.
- (c) Seasonal Groundwater Monitoring: Current groundwater monitoring has been limited to part of the year. Ongoing, year-round monitoring and adaptive management are recommended to address seasonal fluctuations and ensure robust design.
- (d) Greenway Flows and River Interaction: The appropriateness of the 80% pre-development/post-development flow threshold for Greenway flows must be reviewed. Additionally, the interaction between Greenway discharge and the Waitoa River requires further assessment prior to detailed design.
- (e) Design Methodology and Information Gaps: The applicant's memo outlines the intended approach for Greenway and Basin B infrastructure, referencing relevant regional guidelines. However, it does not provide new or sufficient detail to address technical concerns, particularly regarding groundwater table interaction and stormwater attenuation.
- (f) Proposed Design Changes: In response to observed seasonal high groundwater levels, the applicant proposes revised soakage locations (roadside trenches) and a continuous subsoil drainage network to manage peak groundwater. Despite these proposals,

detailed design information remains lacking, making it difficult to confirm the viability of these solutions within the proposed development footprint.

- (g) Long-Term Monitoring and Conceptual Testing: Integration of road, Greenway, and soakage basin designs with seasonal groundwater fluctuations requires extended monitoring and conceptual design testing at this stage, to ensure resilient outcomes and inform future resource consent decisions.
- (h) Greenway and Outlet Design Concerns: The current Greenway design and rip rap protection at the outlet raise concerns regarding flow velocity and effectiveness. Alternatives should be considered to achieve best practicable option.

1.2 In summary, while the applicant has responded to technical queries and recognises the need for design refinements, significant uncertainties remain regarding the long-term resilience and viability of the proposed stormwater management solutions. Comprehensive groundwater investigations, ongoing monitoring, and further conceptual design work are essential to provide confidence in the infrastructure's ability to manage fluctuating groundwater levels and deliver resilient outcomes.

2. INTRODUCTION

2.1 My full name is Bronwyn Patricia Rhynd.

2.2 I am a Director and Environmental Engineer at CKL NZ Ltd. I specialise in water resources, with a focus on stormwater treatment, disposal and management.

2.3 I have over 20 years of experience as an Environmental Engineer and have been involved in a wide range of environmental and civil engineering projects across New Zealand. I have worked at CKL for the past 10 years, where I have represented clients throughout the resource consenting process and presented expert evidence in the Environment Court.

2.4 My qualifications and relevant experience are set out in **Appendix 1**.

2.5 In preparing this evidence, I have reviewed the following Infrastructure and stormwater management specific reports and information:

Substantive application

- (a) Appendix 1M – Geotechnical (CMW)
- (b) Appendix 1N – Hydrogeological (WGA)
- (c) Appendix 3F - Engineering drawings Solar farms
- (d) Appendix 4D – Engineering drawings, infrastructure report - Retirement Village
- (e) Appendix 4G - SW O&M plan -Retirement Village
- (f) Appendix 4L – Proposed Conditions
- (g) Appendix 4M - Water management Plan (WGA)
- (h) Appendix 5F -Infrastructure report
- (i) Appendix 5F - Engineering drawings (various)
- (j) Appendix 5I - Stormwater Management Plan
- (k) Appendix 5J - SW operation and Maintenance plan
- (l) Terrane Consultants Ltd Geotechnical review 2nd September 2025

Further information supplied post the Substantive application

- (m) Maven Waikato Ltd Memorandum (26 September 2025) response to RFI's raised by MPDC – Consultant Specialist Group
- (n) Ashbourne Expert Panel Minute 2, dated 13th October 2025
- (o) Response memo from Barker & Associates Limited to the Matamata Piako District Council (MPDC), dated 20th October 2025,
 - (i) Attachment 2 Greenway memo, dated 23rd September 2025
 - (ii) Attachment 3 Geotechnical interpretive report: Geotechnical Investigation report, Ashbourne Development, Station Road, Matamata”, prepared by CMW Geosciences dated 17 October 2025, ref HAM2023-0124AI Rev 2
- (p) Response memo from Barker & Associates Limited to the Ashbourne Expert Panel Chair, dated 28th October 2025

- (i) Attachment 2 Landscape Drawings
- (ii) Attachment 4 Ecological memo
- (iii) Attachment 5 Hydrogeology Memo
- (iv) Attachment 6 Esplanade Reserve Plan

2.6 I attended a site visit on 21st August 2025, conducted by the applicant.

3. **CODE OF CONDUCT**

3.1 Although this matter is not before the Environment Court, I confirm that I have read the Code of Conduct for Expert Witnesses outlined in the Environment Court's Practice Note (2023) (**Code**) and have complied with it in preparing this statement of evidence. If a hearing is held, I also agree to follow the Code when presenting evidence to the Panel.

3.2 I confirm that the issues addressed in this brief of evidence are within my area of expertise, except where I state that I rely upon the evidence of other expert witnesses. I also confirm that I have not omitted to consider material facts known to me that might alter or detract from my opinions.

4. **EVIDENCE**

4.1 Please refer to my report in **Appendix 2**, which addresses the following matters with respect to stormwater management associated with the substantive application:

- (a) Primary network and conveyance
- (b) Secondary overland flow conveyance
- (c) Discharge of stormwater runoff to ground, via soakage
- (d) Effects of discharge to Waitoa River

4.2 Since receiving the substantive application there has been further information supplied to the Matamata Piako District Council's consultant team.

4.3 The applicant's response memo from Barker & Associates Limited to the Matamata Piako District Council (MPDC), dated 20th October 2025, provides a partial response to the technical review concerning the Ashbourne Substantive application stormwater management matters.

- 4.4 However, there are unresolved concerns for the Ashbourne development, with respect to managing stormwater infrastructure risks (particularly related to groundwater), and confirming the suitability of the site's stormwater treatment, conveyance and disposal. These matters are outlined as follows:
- (a) Groundwater Investigation for Soakage; Reliance on discharge to soakage requires further investigation into groundwater conditions, an observation also confirmed by the geotechnical review.
 - (b) Soakage Design Review: A review of the soakage design is needed to ensure sufficient space is provided within the soakage basins and road carriageway, and to confirm separation to the groundwater table.
 - (c) Groundwater Monitoring: Observations of the groundwater table have been limited to only part of the year, suggesting groundwater monitoring should be maintained during the design and construction phases, accompanied by adaptive management to react to higher groundwater conditions
 - (d) Greenway Flows and River Interaction: The assessment of flows within the Greenway needs to be reviewed to ensure the 80% pre-development/post-development flow threshold is appropriate. Furthermore, the Greenway discharge flow and its interaction with the Waitoa River must be reviewed prior to detailed design
- 4.5 The applicant's MPDC response memo has an attachment, Attachment 2 memo, titled "Ashbourne – Greenway Design Memo," which outlines the design methodology, parameters, and results for the proposed Greenway and Basin B infrastructure associated with the Ashbourne development. This infrastructure is designed to provide both conveyance and attenuation for upstream catchments, in accordance with the TR20-06 and TR20-07 Waikato Regional Council's stormwater guidelines.
- 4.6 Whilst this memo outlines the design and scope of the Greenway and Stormwater Basins it does not provide any further or new information than that provided in the substantive application documentation.
- 4.7 It does however reinforce that the technical matters of groundwater table interaction, stormwater flow attenuation and management need to be investigated further to provide confidence that the overarching stormwater

management philosophy is viable in the long term for a resilient outcome for the proposed subdivision and development..

- 4.8 With respect to the Expert Panel's Minute 2, dated 13th October and the applicants' response, which was provided within the Barkers and Associates memo dated 28th October, I have reviewed the stormwater management, hydrogeology, landscape and geotechnical information.
- 4.9 Section 2.2 of the memorandum addresses Item 2(d) from the Expert Panel, which requested technical advice on the long-term viability of stormwater disposal (up to the 10-year ARI rainfall event) via soakage to ground. This advice specifically needed to cover groundwater mounding, winter high groundwater levels, climate change considerations, vertical clearance to the groundwater table, and the effect of infilling existing drains.
- 4.10 Further investigation by the applicant's consultants has highlighted that groundwater monitoring data, collected during the recent winter season, indicates elevated levels, representing a 'seasonal high' condition. This elevated groundwater has resulted in reduced vertical clearance in some areas. However, it is expected that the required vertical clearances will be achieved once groundwater levels return to typical conditions.
- 4.11 My review of this technical information has highlighted that the stormwater management system design must take into consideration seasonal high groundwater conditions when relying on discharge via soakage
- 4.12 The applicant's consultants have considered that there need to be design changes in order to mitigate this groundwater effect. These design changes and considerations include:
- (a) Contingencies: The design includes contingencies to accommodate the elevated groundwater conditions.
 - (b) Revised Soakage Location: As a result of the updated testing, soakage of the 10-year ARI rainfall is now proposed to occur within roadside trenches. These trenches are located above and upstream of the proposed soakage basins, the Greenway, and existing drainage channels.
 - (c) Subsoil Drainage Network: A continuous network of subsoil drains is proposed throughout the development. This network will daylight

(discharge) into the basins, the Greenway, and existing drainage channels which flow into the Waitoa River. This system is intended to manage and control groundwater levels, effectively limiting the peak groundwater levels during winter.

(d) Drain Infilling: The ongoing groundwater level modelling incorporates the proposed roadside soakage trenches and the infilling of existing drains

- 4.13 The applicant is confident that the new approach and data obtained through groundwater testing will allow them to proceed to detailed design while achieving reasonable vertical clearances to the groundwater table, through all season variations.
- 4.14 There are no details in the application of these design considerations within the new information supplied therefore I have been unable to understand the design outcomes. As such I have little confidence that the Greenway and soakage basin designs can be realised within the footprints that have been presented in the information supplied to date.
- 4.15 The proposed changes to the stormwater management rely on integrating the roads, Greenway and soakage basin designs therefore it is very important to understand how these infrastructure elements behave with the groundwater seasonal fluctuations. Therefore, it is my opinion that there needs to be monitoring undertaken over a longer period of time that takes into consideration all seasons and the subsequent groundwater fluctuations to ensure robust design.
- 4.16 Whilst the applicant recognises that there need to be design alterations and is currently conducting ongoing groundwater level modelling and mounding assessments, incorporating the roadside soakage trenches and the infilling of existing drains, there is no further design information to support the stormwater design that would need refinement of the proposed soakage trenches and basins.
- 4.17 Although there will be design review and refinement in the detailed design stage it is my opinion that at least testing, by conceptual design, should be undertaken at this stage to ensure resilient outcomes in the future.
- 4.18 With respect to the Greenway design the various concerns raised within the technical memo to MPDC and the response to the Expert Panel Minute 2,

there has been no further design response than that provided in the applicant's SMP to support the substantive application. With the groundwater fluctuations and other design considerations this Greenway design may need substantial redesign to ensure the functionality of the stormwater management strategy can still be realised and delivered with confidence to mitigate detrimental effects.

- 4.19 The proposed outlet for the Greenway rip rap protection is located on the embankment and as well has a steeply contoured alignment to the river. This rip rap is substantially thick and of limited width which leads me to believe the velocity is a concerning element/characteristic to the design. Therefore, alternatives to the location and design of this protection should be considered to establish the fit for purpose and best practicable option is to be achieved.
- 4.20 It is my opinion that further design needs to be undertaken for this Ashbourne substantive application to provide a robust, resilient and fit for purpose stormwater management strategy.

5. **CONCLUSION**

- 5.1 In conclusion, while the applicant has supplied additional information in response to technical queries regarding stormwater management for the Ashbourne development, significant uncertainties remain.
- 5.2 The reliance on soakage for stormwater disposal necessitates comprehensive groundwater investigations, ongoing monitoring across all seasons, and adaptive design responses to ensure long-term viability.
- 5.3 Current documentation does not sufficiently demonstrate that the proposed infrastructure, particularly the Greenway and soakage basins, can reliably manage fluctuating groundwater levels and deliver resilient outcomes within the presented design footprints.
- 5.4 It is recommended that further conceptual testing and design refinement be undertaken prior to detailed design, with particular attention paid to the integration of road, Greenway, and basin elements.
- 5.5 Additionally, alternative approaches to outlet protection should be considered to address potential velocity issues.

- 5.6 Overall, further work is required to establish a robust, fit-for-purpose stormwater management strategy that can confidently mitigate adverse effects and support the resource consent application

Bronwyn Rhynd

3rd November 2025

APPENDIX 1

QUALIFICATIONS AND EXPERIENCE

BRONWYN RHYND



Qualifications & Training

NZCE, BE, MEnvEngSc,

CPEng, IntPE, FEng

MBIE -Making good decisions

Career history:

Chartered Professional Environmental Engineer

- 2015–Present CKL NZ Ltd:

Director, Environmental engineer

Location: Auckland, Hamilton, Tauranga & Te Awamutu

- 2004-2015 Stormwater Solutions Consulting Ltd:

Director, Environmental engineer

Location: Auckland

- 2001-2004 Self-employed; Environmental

Engineering Consultant

Location Auckland

- 1998-2001 Pattle Delamore

Partners Ltd: Environmental engineer

Location: Auckland

Technical & Management Skills

Bronwyn is a chartered engineer with and has over 20 years professional experience in the water resource area. Her expertise is in that area, with a focus on stormwater treatment, disposal, and management, as well as experience and expertise in flood management and regulation. She has been involved in many projects that have required an assessment of effects with regard to stormwater, flood and overland flow path management for projects and catchments that are either greenfields or have established land uses which vary from residential, commercial, and industrial. These projects have been throughout New Zealand. She has regularly liaised with other industry professionals and territorial authorities regarding appropriate stormwater and flood management solutions.

APPENDIX 2
3 Waters Initial Assessment

MEMO

To: Susanne Kampshof, MPDC
From: John Sternberg, Bronwyn Rhynd
Reviewed: Bronwyn Rhynd
Re: Ashbourne Substantive Application: SW, WS & WW - Initial Assessment

Date: 2/9/2025
CC: Marius Rademeyer
CKL Ref: B25118

1 Introduction

CKL has been engaged by Matamata Piako District Council (MPDC) to review the substantive application to MBIE, with respect to the Fast Track legislation, for the Ashbourne Development.

Collectively, Ashbourne provides capacity for approximately 520 dwellings, 20 ha retirement village (comprising 218 retirement living units, a 70-bed aged-care hospital), open space, and two solar farms. The Ashbourne project proposal is a Referred Project under the FTAA (Fast Track Approval Act 2024). Maven Matamata Ltd have been engaged by Unity Developments Ltd to undertake the infrastructure design in support of the 20ha Ashbourne Retirement Village development at Station Road, Matamata comprising 218 villas, an aged care hospital and other supporting facilities. The retirement village is a part of a broader development comprising additional residential units and two solar farms.

This initial assessment is based on a broad assessment of the key information pertaining to stormwater, water supply and wastewater for the retirement village and stormwater management for the residential and solar farms to ascertain whether sufficient information is available for a review and/or identification of any obvious fatal flaws. The key information assessed is as follows, together with site visit undertaken on 21/08/2025:

- a. Appendix 1M – Geotechnical (CMW)
- b. Appendix 1N – Hydrogeological (WGA)
- c. Appendix 3F - Engineering drawings Solar farms
- d. Appendix 4D – Engineering drawings, infrastructure report -Retirement Village
- e. Appendix 4G - SW O&M plan -Retirement Village
- f. Appendix 4L – Proposed Conditions
- g. Appendix 4M - Water management Plan (WGA)
- h. Appendix 5F -Infrastructure report
- i. Appendix 5F - Engineering drawings (various)
- j. Appendix 5I - Stormwater Management Plan
- k. Appendix 5J - SW operation and Maintenance plan
- l. Terrane Consultants Ltd Geotechnical review 2nd September 2025

2 Wastewater

The Retirement Village wastewater review references the information within Maven’s infrastructure design report, Appendix 4D and Terrane’s geotechnical review (2 September 2025).

2.1 Summary of key Observations

- a. MPDC have confirmed that the public wastewater system does not have enough capacity to service this development. This means all wastewater infrastructure within the development will not be vested in council and will be required to be managed and treated on site.
- b. The proposal is for wastewater to be reticulated to a pumpstation at the corner of the site and conveyed to the proposed wastewater treatment plant (WWTP) situated in the NW part of the development (stage 2 but built in stage 1).
- c. Treated wastewater is to be pumped to a 2.4ha (approx.) land drip line disposal system located at the western boundary of the site.
- d. Terrane Geotechnical report "The water levels visible in open drains and encountered by the hand auger boreholes is consistent with a shallow groundwater table. It has not been shown whether the high groundwater levels are due to almost fully saturated conditions or one or more perched aquifers"

2.2 Comment

- There are no obvious gaps in information although some information will require clarification.
- Appendix 4L (proposed conditions) notes standards for treatment and monitoring requirements – which look reasonable. However, as WW treatment and disposal will not be vested in council, an additional consideration will be the ongoing operation, maintenance and compliance reporting to the regional and district council, as well as an O&M agreement and responsibility/obligation associated with the overall WW reticulation, treatment and disposal process,
- Whilst CMW's Geotech report does not identify any potential soakage/discharge issues for treated WW, feedback from Terraine (14 July and 2nd September, 2025) implies WW disposal in the proposed area is not ideal and, due to potential perched water tables, the need to punch through these and potential implications (e.g. short circuiting) needs further consideration. This issue requires clarification as it could have a significant impact on location and/or sizing and type of disposal beds/method. It would be recommended to have some certainty around this at this stage and/or have an alternative contingency disposal arrangement, should disposal in this vicinity be found to be unsuitable (following further investigations).
- With reference to Appendix 1M, ground water varies between 1.6 and 2.6 below ground level – this will require consideration for;
 - Minimising deep gravity sewers to minimise I/I and hence total WW flows, pumping capacity and treatment/disposal volumes – e.g. consider the alternative of small-bore low-pressure sewer reticulation, as proposed by Innoflow; Buoyancy compensation for deep pumpstations and potentially treatment plant and/or other chambers
 - Land disposal of treated effluent (further to the above comment re perched water tables)
- Maven have allowed for 2.4ha for land disposal. However, based on a dripline feed of 5mm/d, this may not include reserve area. Generally, numbers differ between Maven, Innoflow and WGA reports - this requires clarification in order to assess land availability and suitability for disposal of treated WW, including planned redundancy/ footprint.
- Innoflow is a commonly used (and acceptable) system in NZ which is modular and can be adapted to provide appropriate levels of treatment.

- The RITS Wastewater Design Standard has been adopted as a design basis so pumpstations and reticulation will be designed accordingly.

3 Water Supply

The Retirement Village water supply review is with reference to Maven's infrastructure design report, Appendix 4D.

3.1 Summary of key Observations

- MPDC have confirmed that the existing water supply network in Matamata will not have enough capacity to service the retirement village. This means that no water supply infrastructure within the development will be vested to be council and will therefore need to be managed and treated on site.
- The proposed bore can (WGA) support a maximum of 336m³/d. The estimated potable demand is 183m³/d.
- The retirement village will be serviced by a proposed 120m deep borehole located near the western boundary, approximately 50m from the indicative wastewater treatment and disposal field. The groundwater will be extracted from the borehole and distributed through a network of 16 water tanks and a treatment facility (noted as *if required*) before being pumped via a 200mm OD HDPE PN 12.5 main from a pump station to the supporting riser main, ensuring a reliable and potable water supply for development.
- Water will be distributed through a pump station and a 200mm OD water reticulation system. The primary water network will comprise of 180mm OD mains, reducing to 125mm OD for subsequent development stages.
- The Maven report confirms that boreholes and storage tanks have sufficient capacity to support the development up to Stage 10, including all associated fire flow requirements.
- Terrane's geotechnical review (2nd September 2025) indicates a need for further bore investigation to confirm yield.

3.2 Comment

- There are no obvious gaps in information although some information will require clarification.
- Bore supply.
 - The bore appears to be far enough from the proposed WW disposal field (approx. 50m). The WGA report notes that the impact of WW disposal on the ground water will be less than minor.
 - The WGA report also notes that the impact of the borehole drawdown will be less than minor.
 - As noted above, Terrane's feedback (2nd September review) indicates that further bore water investigation is required to confirm yield.
- Potable water
 - The WGA report provides details of a water analysis, indicating generally good quality with little need for treatment (i.e. low iron and Manganese, suitable alkalinity, hardness and pH) . However, disinfection (at least) will be required to ensure safe drinking water. More detail can be supplied at design stage.
- Regulatory obligations

- Appendix 4L (proposed conditions) refers to a water management plan – demand management, education etc. which is good. However, no mention is made of regulatory compliance.
- As a water services provider there will be formal obligations and registration with Taumata Arowai (water regulator) to ensure compliance with the drinking water standards and the regulators requirements relating to the provision of safe drinking water, regular monitoring and reporting. Consideration should be given to the establishment of a water (and wastewater) management “organisation” with appropriate contracts in place and obligations/responsibilities clearly outlined. This should be added to the consent conditions.
- Fire
 - There is mention of the care facility being sprinkler protected. What is unclear is how that water will be provided – presumably by dedicated local storage and boosting – to be confirmed nearer building consent stage. If the latter, adequate space needs to be designated as well as provision for backflow protection.
 - Firewater booster pumps will likely need a diesel standby unless the broader site is to be protected by a diesel generator set.

4 Stormwater

These comments combine the initial review of retirement village, residential and solar farms documentation.

4.1 Summary of key Observations

- With respect to the geotechnical investigations, Geotechnical investigation report Rev 1 dated 22 May 2025, the following ground water table observations need to be included in any soakage design parameters:
 - Residential: perched GWT at 1.0m-2.5m BGL and global GWT 3.5m-8.3m BGL
 - Retirement Village: global GWT 1.6m-2.6m BGL
- The overarching stormwater framework is provided in the Stormwater Management Plan, Rev A, dated 30 May 2025 (SMP).
- 2D hydraulic model has been developed to assess the existing and proposed surface flow regime. The model build report has not been provided therefore not reviewed for this review.
- Primary level of service 10yr ARI with disposal via soakage trench, SMP does not seem to apply 50% reduction to soakage rates (Table 5) for residential areas, however further within the SMP reference is for 50% reduction in rates, therefore clarity of the actual soakage rates utilised for design should be requested.
- The Retirement Village has soakage trenches under road carriageways, the longevity of these trenches and the interdependencies of the civil infrastructure should be assessed.
- Mounding assessment has been provided, however not investigated for this review. Geotechnical soakage testing has confirmed that the site is suitable for raingardens and attenuation ponds.
- Raingardens have an assume depth of 1.0m however given that the typical GWT is between 1.0m-2.5m for the residential areas, this information needs to be incorporated into the design to ensure there is sufficient separation between base of raingarden and the groundwater table.

- The absence of 24-hour rainfall intensities in the MPDC manual (page 40, SMP) is noted; however, this design should reference RITS. Accordingly, updates to the design are recommended to incorporate design parameters and rainfall data based on RITS guidance.
- Secondary system is road network to stormwater basin. There are 4 SW basins for residential development and raingardens designed to RITs standard.
- The OLFP management is through road carriageways and the proposed greenway, of which there are modelling outcomes within the reporting, however the model not supplied.
- Reference to the exceedance of standards is stated within the SMP and further flood hazard assessment undertaken.
- Discharge from the Greenway is to 80% of pre- development flows to Waitoa River. There is an acknowledgement of increase in flood depth regarding the Greenway flow, however uncertain as to the location of this increase (refer SMP Section 8.1 pg. 49). Further review of information required.
- The connectivity of the Waitoa River from the Greenway has been shown as a rip rap lined swale of 3m width in the Maven drawing set C4000, however this has not been detailed. However, as observed during the site visit there is an elevation difference that should be addressed. This information would typically be included in a substantive (or resource consent) application.
- Staging of the developments have been considered with connection points presented within the reporting.

4.2 Comment

- The information supplied provides an overview of the approach to stormwater and overland flow path management. The initial overview has identified that there are some areas of clarification required such as soakage rates and 2D modelling.
- Reliance on discharge to soakage requires further investigation into groundwater conditions. This observation is also confirmed by the Geotechnical review by Terrane Consultants Ltd, dated 2nd September 2025.
- The overarching stormwater management provided within the SMP report has not been reviewed against the engineering plans provided in detail. This is to be undertaken post this review.
- Primary network/conveyance:
 - On lot management descriptions within the report needs to be verified against the plans proposed. For example, roof runoff does not have any pretreatment, e.g. sump, prior to on-lot soakage trench.
 - Review of soakage design is to be undertaken to ensure sufficient space is provided within the soakage basins and road carriageway and separation to the groundwater table.
 - Observations of the groundwater table are limited to only part of the year, rather than provide testing for the calendar year. Suggestion is to maintain groundwater monitoring whilst in the design and construction phase. This would be accompanied by adaptive management of the design should this be required to react to higher groundwater conditions.
- Secondary /Overland flow path conveyance
 - Flows within the carriageway modelling have been undertaken in 1D assessment. Verification in 2D model would provide more dynamic result and confirm the 1D assessment at next stage of design.

- Assessment of flows within the Greenway need to be reviewed, to ensure the 80% pre-development/post development threshold is appropriate (or necessary).
 - Greenway discharge flow and interaction with Waitoa River is to be reviewed, as outlined above. This is to occur for this substantive application review, and prior to detailed design.
- Operation and Maintenance Plan has not been reviewed as part of this review, however appreciated that this is included in the package of information.