

Your Comment on the Ashbourne substantive application

Please include all the contact details listed below with your comments and indicate whether you can receive further communications from us by email to substantive@fasttrack.govt.nz.

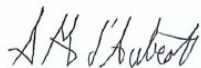
1. Contact Details			
Please ensure that you have authority to comment on the application on behalf of those named on this form.			
Organisation name (if relevant)	Waikato Regional Council		
First name	AnaMaria		
Last name	d'Aubert		
Postal address	[REDACTED]		
Home phone / Mobile phone		Work phone	[REDACTED]
Email (a valid email address enables us to communicate efficiently with you)	[REDACTED]		

2. We will email you draft conditions of consent for your comment			
<input checked="" type="checkbox"/>	I can receive emails and my email address is correct	<input type="checkbox"/>	I cannot receive emails and my postal address is correct

Please provide your comments below, include additional pages as needed.

In response to Minute 2 for application Ashbourne (FTAA-2507-1087) please find the attached evidence in response to the Hearing Panels request for comment from the Waikato Regional Council.

Regards



AnaMaria d'Aubert
 Manager – Regional Consents
 Resource Use Directorate
 Waikato Regional Council

Thank you for your comments

**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 SHERYL AROHA ROA ON BEHALF OF THE WAIKATO
REGIONAL COUNCIL**

Dated: 11th November 2025

1. SUMMARY OF EVIDENCE

- 1.1 Overall, the Waikato Regional Council (WRC) considers that whilst some matters can be adequately addressed via conditions of consent, there remains the need for further information with respect to some aspects of the application to ensure all matters are adequately addressed.
- 1.2 Concerns remain with the stormwater aspect of the proposal given the high groundwater table identified within areas of the site and the lack of specific details on the management of stormwater given the proposed late changes to the proposal. In the absence of these details WRC is not able to provide suitable conditions of consent to address the issues with the stormwater management.
- 1.3 Other matters that need to be addressed by the applicant relate to the location of the wastewater disposal area and whether the location of bore water supply will change, both of which I consider can be managed with the imposition of suitable conditions of consent. Additionally, one of the properties within the proposal has been identified by WRC as having Noogoora bur on the property (eradication pest plant in the WRC Regional Pest Management Plan). Careful management during the earthworks on this site (127 Station Road) is required to ensure this plant pest is not spread any further.

2. INTRODUCTION

- 2.1 My full name is Sheryl Aroha Roa.
- 2.2 I am a Principal Advisor within the Resource Use Directorate of the WRC.
- 2.3 I have over 25 years experience as a Project Manager and as a Consent and Monitoring Officer dealing with the Resource Management Act.
- 2.4 My qualifications and relevant experience are set out in Appendix A.
- 2.5 In preparing this evidence, I have reviewed the following reports and information:

Substantive application

- (a) Assessment of Environmental Effects
- (b) Volume 1 – Ashbourne Overview Report
- (c) Volume 2 - Assessment of Environmental Effects
- (d) Volume 4 – Assessment of Environmental Effects - Retirement Village

(e) Volume 5 – Assessment of Environmental Effects - Residential and Greenway

(f) Appendix 3L – Proposed Conditions – Solar Farms

(g) Appendix 4L - Proposed Conditions – Retirement Village

(h) Appendix 5O – Proposed Conditions – Residential and Greenway

2.6 I have not undertaken a site visit to the subject site.

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.

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 My evidence below addresses the following matters:

- (a) Activities requiring consent from the Waikato Regional Council for the proposal;
- (b) Earthworks activities;
- (c) The proposed wastewater disposal;
- (d) The proposed bore water supply for the retirement village;
- (e) Stormwater matters;
- (f) Other matters;
- (g) The applicant’s proposed consent conditions; and
- (h) Conclusion.

4.2 In summary:

The Council considers the proposal should consist of three separate and independent suites of consents for the three distinct parts of the project:

- a) The Solar Farms;
- b) The Retirement Village; and
- c) The Residential Subdivision and Greenway.

Having three separate sets of consents for the three aspects of this proposal provides for a nuanced monitoring regime for each site, for the consent holder to follow and the Waikato Regional Council to monitor. The suite of consents can provide for the three sites to be constructed separately, or two or more sites should circumstances dictate.

Consents Required from WRC

4.3 WRC considers that the following resource consents are required for each part of the project as follows:

(a) **Solar Farms**

- Placement of new culverts to convey up catchment flows - 4.2.9.3 Controlled Activity Rule - Culverts for Catchment Areas Not Exceeding 500 Hectares
- Drilling below the water table for dewatering spears - 3.8.4.7 Controlled Activity Rule – Drilling Below the Water Table
- Groundwater take dewatering both temporary and permanent - 3.3.4.24 Discretionary Activity Rule – Groundwater Takes

(b) **Retirement Village**

- Drilling below the water table for dewatering spears - 3.8.4.7 Controlled Activity Rule – Drilling Below the Water Table
- Groundwater take dewatering both temporary and permanent - 3.3.4.24 Discretionary Activity Rule – Groundwater Takes
- Groundwater take for potable and irrigation water use - 3.3.4.24 Discretionary Activity Rule – Groundwater Takes
- Earthworks including clean filling, sediment and dust discharges - 5.1.4.15 Discretionary Activity Rule – Soil Disturbance, Roding, Tracking, Vegetation Clearance, Riparian Vegetation Clearance in High Risk Erosion Areas

- On-site wastewater discharge - 3.5.7.7 Discretionary Activity Rule – Other On-Site Sewage Discharges
- Stormwater diversion and discharge - 3.5.11.8 Discretionary Activity Rule – Discharge of Stormwater

(c) **Residential Subdivision and Greenway**

- Drilling below the water table for dewatering spears - 3.8.4.7 Controlled Activity Rule – Drilling Below the Water Table
- Groundwater take dewatering both temporary and permanent - 3.3.4.24 Discretionary Activity Rule – Groundwater Takes
- Earthworks including cleanfilling, sediment and dust discharges - 5.1.4.15 Discretionary Activity Rule – Soil Disturbance, Roding, Tracking, Vegetation Clearance, Riparian Vegetation Clearance in High Risk Erosion Areas
- Stormwater diversion and discharge - 3.5.11.8 Discretionary Activity Rule – Discharge of Stormwater
- Diversion of existing drains and associated flows into Greenway - 3.6.4.13 Discretionary Activity Rule – Stopbanks, Diversions and any Associated Discharges of Water
- Damming of water associated with the Greenway - 3.6.4.9 Controlled Activity Rule – Offstream Damming and Damming Ephemeral Streams and Damming of Artificial Watercourses
- Bed disturbance associated with the construction of the outlet to the Waitoa Stream - 4.3.4.4 Discretionary Activity Rule – Bed Disturbance Activities
- Outlet structure to the Waitoa Stream - 4.2.4.4 Discretionary Activity Rule – Structures In, On, Under or Over the Beds of Rivers and Lakes

4.4 This list of consents has previously been sent to the applicant and WRC is not aware of any disagreement from the applicant with this list and the associated rules.

4.5 Given the recently supplied groundwater model, WRC understand that dewatering of the sites will be required beyond the original earthworks period. This activity has been added into the relevant groundwater activities detailed above.

- 4.6 The applicant has applied for a bore consent (well drilling) but it is unclear whether this is needed given there is an existing bore on site. The applicant is requested to advise whether new bores will be constructed in addition to the existing bore or if the existing bore will be utilised for the purposes stated in the application documentation.

Earthworks Activities:

- 4.7 No separate expert evidence from the Waikato Regional Council has been provided for the proposed earthworks activities for this project. I consider the proposed earthworks at each site to be relatively routine and generally any temporary effects during the earthwork stages can be adequately addressed via suitable plans to be certified by the Waikato Regional Council prior to the earthworks commencing.
- 4.8 I note that the earthworks associated with the Solar Farms are relatively small consisting of tracking, upgrading existing culverts and soil disturbance activities associated with the installation of the solar panel infrastructure. Having looked at the application documents and following advice from Hugh Keane (Team Leader at WRC) who attended a site visit WRC considers that the proposed earthworks for the Solar Farms fit within the Permitted Activity rule for earthworks as the site is not considered to be a high erosion site.
- 4.9 Potential adverse effects from the earthworks associated with the Retirement Village and Residential Development and Greenway can be suitably avoided and/or minimised with suitable consent conditions.

On-site Wastewater: Retirement Village

- 4.10 The on-site wastewater treatment and disposal has been assessed by WRC by Trisha Simonson a Senior Engineering Geologist at Ormiston Associates Ltd – her evidence and assessment can be found in Appendix B. Ms Simonson advises:

“In summary, on-site domestic wastewater treatment and disposal for the proposed retirement village is expected to be achievable in this location however there are many aspects of the proposal that warrant further consideration and potentially the provision of further information, including the following:

- a. *The design guideline used as a basis for the volume calculations and loading rates has not been defined.*
- b. *The appears to have been no specific site investigation in the location of the proposed disposal area to confirm soil types and depth to groundwater. The*

soil category has not been stated. This may impact the size of the disposal area which has been set aside. Previous investigations only provide geotechnical information which is not completely relevant to on-site wastewater design. Only one confirmed groundwater level is provided (25-p4) within the proposed disposal area. Standard on-site wastewater design would require multiple borehole investigation across the proposed disposal and reserve disposal areas.

- c. The required groundwater separation distance is not met by the proposal, however potential mitigation via raising the disposal area is available (although not currently proposed), and the effects of the discharge on groundwater have been assessed by the applicant's technical expert as less than minor. An assessment of the potential effects of the wastewater discharge on the production bore using the ESR 'Guidelines for separation distances based on virus transport between on-site domestic wastewater systems and wells' could further address this issue.*
- d. The use of a per capita flow rate of 165 litres per person per day requires the installation of water reduction fixtures which have not been specified.*
- e. The potential for pharmaceutical content in the wastewater to be higher than standard given the presence of the aged care hospital has not been noted in the treatment system design.*
- f. The location of the wastewater treatment plant has the potential to generate some odour when servicing and the management of this has not been addressed. I consider this should be addressed within the site management plan.*
- g. There is no designated reserve disposal area included in the design and shown on any site plan. I consider a reserve area equivalent to 100% of the primary disposal area is required.*
- h. The cumulative effects of the development in terms of the wastewater discharge, in particular the loads of nutrients discharged in comparison with current land use, have not been addressed.*
- i. The proffered consent conditions do not incorporate standard Waikato Regional Council conditions for on-site wastewater discharge."*

4.11 Ms Simonson's assessment has not been supplied to the applicant.

4.12 WRC request that the above matters raised by Ms Simonson be addressed by the applicant including confirmation of the location of the wastewater discharge.

4.13 The conditions proposed by Ms Simonson within her evidence are supported by WRC.

Bore Water Supply: Retirement Village

4.14 WRC considers that there are no issues with respect to water availability from the bore associated with the Retirement Village – refer to Nikki Wilson’s evidence in Appendix C.

4.15 WRC notes that there is some uncertainty within the application documentation on whether or not more bores will be constructed and what the water taken from these bores are to be used for. The applicant’s proposed consent conditions identifies that the bores will be used for domestic supply.

4.16 If the domestic water for the retirement village is taken from a different bore than identified within the application documentation then WRC considers that a condition(s) addressing this matter must be included in any water take consent granted. Specifically, WRC considers that the location of the bore/groundwater take must be located no closer to any existing bores on neighbouring properties and waterways that the assessment was undertaken under. A condition to address this matter is recommended to be included within the groundwater take consent.

Stormwater

4.17 WRC understand that a groundwater model has recently been developed for the site. Megan Wood has provided an assessment of the stormwater proposal – refer to Appendix D

4.18 The issues raised with her assessment are as follows:

“The applicant has included an allowance for climate change when assessing their pre-development peak flow rates as well as their post-development peak flow rates. This is contrary to relevant guidance documents in the Waikato. By including a climate change allowance in the pre-development peak flows, it means that the attenuation function for the stormwater management system has been under-sized. If the applicant was applying to Waikato Regional Council for resource consents, they would be required to reassess their proposal without a climate change allowance in their pre-development peak flows.

The applicant has designed a stormwater management system that relies on soakage of runoff on-lot for up to the 10-year ARI event, and centralised soakage basins for Catchments A, C and D that soak runoff from up to the 100-year ARI event to ground.

Through onsite monitoring, groundwater levels have been determined to be higher than the applicant expected. With elevated seasonal high groundwater levels, Basins C and D have lower infiltration rates than previously estimated. These findings mean that the applicant will not be able to rely on infiltration to manage stormwater runoff from new impervious surfaces across large areas of the site, as is currently proposed in the 'Stormwater Management Plan, Ashbourne Developments' (Maven, 30 May 2025). The applicant will need to reconsider their proposed stormwater management approach and provide an updated Stormwater Management Plan."

- 4.19 Given these matters remain outstanding, WRC request that the above matters raised by Ms Wood be addressed by the applicant.

Other Matters

- 4.20 The National Policy Statement for Highly Productive land. WRC has previously advised the applicant that this policy statement is applicable to the subject land. The implications of this relevant policy statement are to be addressed by the District Council.
- 4.21 The National Policy Statement for Freshwater and National Environmental Statement for Freshwater are relevant to this application. Since the application was lodged, WRC understands that there has been changes to the stormwater management which indicates that the discharge to the Waitoa River will occur more frequently than stated in the application documentation. No detail on the impact of this increased discharge to the Waitoa River has been supplied. Further information is requested from the applicant on the nature of the stormwater discharges to the Waitoa River.
- 4.22 Noogoora burr has been found within one of the properties, therefore compliance with Section 6.6 of the Waikato Regional Council's Pest Management Plan needs to occur. WRC has advised the landowners of 127 Station Road of these requirements earlier this year.

Applicant's Proposed Conditions

- 4.23 The applicants proposed consents within the application documentation do not align with WRC's assessment of consents required. For example, the applicant has provided consents relating to earthworks associated with the Solar Farms which WRC consider can be undertaken as permitted activities under the Waikato Regional Plan. No consent conditions have been provided relating to the ground water takes for the temporary and permanent dewatering activities for the drilling below the water table.

It is requested that the applicant provide a suite of consents aligned with WRC's assessment. However, I do have some general comments on the proposed consents conditions as follows:

- 4.24 The applicants proposed terrestrial ecology management plans e.g. lizard, bird, and bat management plans provided for within the application are not relevant for WRC consents rather these should form part of the District Councils land use consent.
- 4.25 The review clauses proposed do not align with WRC's general review clauses nor are the proposed review windows practicable. WRC would expect reviews to be provided for every five years and for the review to be enacted either anytime within that calendar year or within a 3-6 month window.
- 4.26 The proposed conditions associated with the wastewater discharge for the retirement village need to be aligned with Trisha Simonson's conditions.
- 4.27 The proposed stormwater discharge conditions need to be reviewed in light of the conclusions from the applicants groundwater model.
- 4.28 As per para 4.16 above if the domestic water for the retirement village is taken from a different bore than identified within the application documentation, then WRC considers that a condition(s) addressing this matter must be included in any water take consent granted. Specifically, WRC considers that the location of the bore/groundwater take must be located no closer to any existing bores on neighbouring properties and waterways that the assessment was undertaken under. A condition to address this matter is recommended to be included within the groundwater take consent.
- 4.29 The proposed Cultural Impact Assessment condition is generally supported but WRC queries whether the requirement for a Memorandum of Partnership or Kawenata between the parties needs to be included as a matter for WRC to assess compliance with. If it is, then there needs to be the requirement for the Consent Holder to send this document to WRC within 12 months of the commencement of the relevant consents to enable such an assessment to occur.
- 4.30 Given Noogoora burr has been found within one of the properties then a Biosecurity Management Plan must be submitted at least 30 working days prior to any earthworks commencing in accordance with Section 6.6 of the Waikato Regional Council's Pest Management Plan. A consent condition must be included within the relevant earthworks consents to enable this to occur.

5. CONCLUSION

- 5.1 WRC considers that the matters raised with respect to the Regional Council's functions can be addressed with further information and clarification from the applicant.
- 5.2 However, there are a number of matters the applicant needs to address to ensure that there is clarity around the activities for which consent is being sought, and appropriate and relevant consent conditions are applied. The applicant is requested to respond back on these matters.

A handwritten signature in black ink that reads "S. S. Roa". The signature is written in a cursive style with a large, looped 'R' at the end.

Sheryl Roa

APPENDIX A

Qualifications and Experience

1. I have a Bachelor of Science in Mathematics and Ecology and Masters of Science in Freshwater Ecology from the University of Waikato.
2. My relevant experience involves over 25 years of professional practice within the resource consenting and monitoring areas of the Resource Use Directorate of the Waikato Regional Council.
3. My project work includes consenting and monitoring of complex projects within the mining and large infrastructure areas.
4. I hold the Making Good Decisions Certification with the Chair endorsement.

APPENDIX B

**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 Trisha Simonson on behalf of the
WAIKATO REGIONAL COUNCIL**

On-site Wastewater Servicing

Dated 7 November 2025

Introduction

5. My full name is Trisha Lynley Simonson. I hold the position of Senior Engineering Geologist at Ormiston Associates Ltd, which is a consultancy specialising in geotechnical engineering, geology and on-site wastewater treatment and land disposal; a position which I have held since October 2017. Previously to that, I worked as a Senior Resource Officer - Infrastructure at Waikato Regional Council, for nine years.
6. I have been engaged by Waikato Regional Council to provide on-site wastewater technical advice regarding the proposal to establish a retirement village at 127 Station Road, Matamata, as part of the Ashbourne Fast-track application.
7. I am familiar with the area to which the application relates however I have not visited the specific site.
8. In preparing this evidence, I have reviewed the following geotechnical, groundwater and infrastructure specific reports and information:

Substantive application

- a. Appendix 1M – Geotechnical (CMW)
- b. Appendix 1N – Hydrogeological (WGA)
- c. Appendix 4D – Engineering drawings, infrastructure report - Retirement Village
- d. Appendix 4L - Proposed Conditions

Further information supplied post the Substantive application:

- e. Ashbourne Expert Panel Minute 2, dated 13th October 2025
- f. Response memo from Barker & Associates Limited to the Ashbourne Expert Panel Chair, dated 28th October 2025.
- g. WGA Technical Memorandum “Response to MPDC Review”, dated 31st October 2025.

Qualifications and Experience

9. I have a Bachelor of Science in Earth Science and a Master of Science with First Class Honours in Earth Science from the University of Waikato.
10. My relevant experience involves over 27 years of professional practice including the investigation and design of on-site wastewater treatment and land disposal systems for individual dwellings, subdivisions, commercial establishments, and institutions, together with gaining resource consents.

11. I am regularly engaged to provide technical reviews of on-site wastewater designs for the Waikato Regional Council, Horizons Regional Council and Bay of Plenty Regional Council. I have provided evidence both at council hearings and in the Environment Court. My project work has included consent and plan change applications and providing technical advice (in the area of on-site wastewater) informing regional plan changes.
12. I am a past member of the Technical Committee of the New Zealand Land Treatment Collective and the Water New Zealand Small Wastewater & Natural Systems special interest group.
13. I have read and am familiar with the Environment Court's Code of Conduct for Expert Witnesses 2023 (the Code) and can confirm that I have abided by the Code in providing my expert advice in relation to this application.

Evidence

14. Please refer to my Review Memorandum in **Appendix 1**, which addresses the following matters:
 - a) A description of the proposal and receiving environment.
 - b) A description of the calculated wastewater discharge volume and rate.
 - c) A description of the proposed wastewater treatment and disposal methodology.
 - d) Technical comments regarding the design basis.
 - e) Technical comments regarding the discharge volume calculations
 - f) Technical comments regarding the wastewater treatment system
 - g) Technical comments regarding the treated effluent land disposal system
 - h) Comments on assessment of wastewater effects of the proposal.
 - i) Comments on proffered consent conditions.
 - j) Summary
15. In summary, on-site domestic wastewater treatment and disposal for the proposed retirement village is expected to be achievable in this location however there are many aspects of the proposal that warrant further consideration and potentially the provision of further information, including the following:

- a. The design guideline used as a basis for the volume calculations and loading rates has not been defined.
- b. It appears to have been no specific site investigation in the location of the proposed disposal area to confirm soil types and depth to groundwater. The soil category has not been stated. This may impact the size of the disposal area which has been set aside. Previous investigations only provide geotechnical information which is not completely relevant to on-site wastewater design. Only one confirmed groundwater level is provided (25-p4) within the proposed disposal area. Standard on-site wastewater design would require multiple borehole investigation across the proposed disposal and reserve disposal areas.
- c. The required groundwater separation distance is not met by the proposal, however potential mitigation via raising the disposal area is available (although not currently proposed), and the effects of the discharge on groundwater have been assessed by the applicant's technical expert as less than minor. An assessment of the potential effects of the wastewater discharge on the production bore using the ESR 'Guidelines for separation distances based on virus transport between on-site domestic wastewater systems and wells' could further address this issue.
- d. The use of a per capita flow rate of 165 litres per person per day requires the installation of water reduction fixtures which have not been specified.
- e. The potential for pharmaceutical content in the wastewater to be higher than standard given the presence of the aged care hospital has not been noted in the treatment system design.
- f. The location of the wastewater treatment plant has the potential to generate some odour when servicing and the management of this has not been addressed. I consider this should be addressed within the site management plan.
- g. There is no designated reserve disposal area included in the design and shown on any site plan. I consider a reserve area equivalent to 100% of the primary disposal area is required.
- h. The cumulative effects of the development in terms of the wastewater discharge, in particular the loads of nutrients discharged in comparison with current land use, have not been addressed.
- i. The proffered consent conditions do not incorporate standard Waikato Regional

Council conditions for on-site wastewater discharge.

Conclusions

16. Further information and clarification regarding the identified points above is necessary in order to confirm that the proposed on-site wastewater treatment and disposal system can effectively manage wastewater from the proposed retirement village on this site.
17. There remain concerns regarding the potential effects on the environment represented by the proposed discharge, and the level of information provided at present does not allow a conclusion regarding the scale of potential effects to be made.
18. The proffered draft conditions contain errors and do not address multiple standard conditions included in on-site wastewater discharge consents and are not supported at this stage.



Trisha Simonson

7 November 2025

APPENDIX 1:

ON-SITE WASTEWATER TECHNICAL REVIEW MEMO

Our Ref: 5733



Memo

To:	Hugh Keane – Waikato Regional Council
From:	Trisha Simonson - Ormiston Associates Ltd.
Date:	4 November 2025 – Version 2
Re:	Technical Comments Regarding the Fast Track Application by Matamata Development Ltd. To Discharge Treated Domestic Wastewater On-Site At 127 Station Road, Matamata: REF APP147564

Further to your request to undertake a technical review of the above listed application, please find outlined below our comments. This review is based on the application documents provided. A site visit has not been undertaken.

1. PROPOSAL

On 23 July 2025, Matamata Development Limited lodged an application with the Environmental Protection Authority (EPA) for the Ashbourne project under the Fast-track Approvals Act 2024 (the Act). The application included applying for the following:

- an approval described in section 42(4)(a) or (d) (resource consent or designation)

On 13 August 2025, the EPA determined that the application complied with section 46(2) of the Act. On 27 August 2025, the EPA decided under Ministerial delegation that the application does not have competing applications [or existing resource consents] under section 47 of the Act and has now referred the application to the Ashbourne expert panel (the Panel) for processing and decision. On 13 October the Panel invited Waikato Regional Council to comment on the above application under sections 53 and 54 of the Act.

The Ashbourne project includes development of a residential subdivision, retirement village including aged care home and solar farm on the outskirts of Matamata on Station Road.

On behalf of Waikato Regional Council, Ormiston Associates Ltd. provide technical comments regarding the proposed discharge of treated wastewater to land from the proposed retirement village component of the Ashbourne project.

The proposed retirement village will comprise:

- A total of 218 detached retirement villas of various sizes and designs

-
- A facilities building including café, lounge, library, swimming pool, gym, and associated outdoor recreational areas
 - An aged-care hospital incorporating 70-beds
 - Two four-bedroom dwellings for the purposes of staff accommodation
 - Associated landscaping and servicing infrastructure, including two stormwater basins, a wastewater treatment plant, and a water treatment plant for the provision of on-site, self-managed servicing.

The on-site wastewater system is to comprise conventional gravity sewer reticulation with a pump station transferring raw wastewater to an Advantex recirculating textile filter secondary treatment system discharging treated wastewater to a pressure compensating dripper irrigation (PCDI) disposal system.

2. PROPOSED RETIREMENT VILLAGE- ON-SITE WASTEWATER TREATMENT AND DISPOSAL

The design of the proposed on-site wastewater treatment and disposal systems has been undertaken by Innoflow Technologies Ltd. relying on information provided by Maven Matamata Ltd. and CMW Geosciences Ltd. An assessment of effects of the discharge of groundwater has been provided by WGA Ltd. There is no statement in the application outlining which design guideline has been followed in the preparation of this design. As noted in the Waikato Regional Plan, both the Australian/New Zealand Standard 1547:2012 On-site domestic wastewater management (the Standard) and Auckland Council's Technical Publication No 58 'On-site Wastewater Systems: Design and Management Manual 2004 (TP58) are considered acceptable design solutions.

Receiving Environment:

Shallow soil types at the site are described in the geotechnical report as comprising stiff silt soils, underlain by dense sands, however no classification on the basis of a soil category to determine appropriate loading rates has been provided. It does not appear that any specific borehole investigation has been undertaken within the proposed disposal area to confirm soil types and groundwater depths.

Groundwater was intercepted during recent investigations at 0.52m depth (piezometer 25-P4), while previous investigations concluded the relevant level was 1.3m depth.

The site is generally flat and drains to the north via open farm drains. The closest drain to the proposed wastewater disposal area is located approximately 300m to the east. The nearest named water course is the Waitoa River which is located approximately 400m west from the proposed disposal area. The river in this location has Contact Recreation, and Surface Water class designations under the WRP.

Two nearby water bores within the site (64_629 and 64_628) located 60 m and 160 m from the discharge area are to be removed during construction of Stage 2 of the retirement village. The nearest offsite bore (64_613) is located approximately 227 m to the northeast of wastewater disposal field and is hydraulically downgradient from the wastewater disposal field. The onsite production bore (72_12812) is approximately 50 m from proposed disposal field area and screened within deep aquifer strata (from about 108 to 120 m below ground level) below a sequence of confining aquifer and aquitard strata.

The applicant has confirmed that the retirement village site is not subject to flooding.

Wastewater Discharge Volume and Rate:

The design of the reticulation network and pump station by Maven Matamata Ltd. has been based on the Waikato Regional Infrastructure Technical Specification (RITS) Design Standards.

Innoflow Technologies Ltd. have provided a calculated discharge quantity of 120,920 litres per day which has been based on bore water supply and on the basis of the following design flow allowances with an adjustment for infiltration and ingress (due to the gravity reticulation):

Source	Number	People Per Occupancy	Total People	Flow Allowance/Person (l/p/d)	Total (Litres/Day)
Villas	218	1.6	349	165	57,585
Care Rooms	72	1	72	220	15,840
Staff			34	50	1,700
Visitors			30	15	450
DESIGN DAILY FLOW					75,575 L/day
Design contingency for infiltration and ingress = 1.6 x ADWF					120,920 L/day
TOTAL DESIGN FLOW: 120,920 L/day					
Notes.					
1. ADWF = Average Dry Weather Flow.					

Wastewater Treatment and Disposal Methodology:

The proposed wastewater treatment and disposal system will comprise:

- 3 x 10m³ grease traps located at the facility kitchens
- A pump station which will pump wastewater to the secondary and tertiary treatment facilities.
- 12 x 25 m³ septic tanks providing primary treatment.
- 6 x 25 m³ pre-anoxic tanks.
- 5 x 25 m³ (Stage 1) recirculation tanks.
- 10 x AX100 (Stage 1) reactor pods.
- 2 x 25m³ (Stage 2) recirculation tanks.
- 3 x AX100 (Stage 2) reactor pods.
- 5 x 25m³ treated effluent tanks.
- A UV disinfection unit.
- Disposal system comprising 24,184 linear metres of sub-surface laid PCDI, at 1m centres providing a soakage area of 24,184 m². The disposal system will be divided in 6 sectors loaded via a sequencing valve. The overall loading rate is 5 litres/m²/day (5 mm/day). The disposal area is to be grassed and fenced.
- No reserve disposal area is provided.

It is noted that the wastewater treatment plant drawings provided with the substantive application and as Attachment 3 to the response to the Panel's request for further information do not appear to show the full proposed system, with the number of recirculation tanks, pre-anoxic tanks, treated

effluent tanks and treatment pods shown differing to the list above, and the 12 x 25m³ septic tanks also not shown.

3. COMMENTS

As per the technical review request, we provide the following comments:

Design Basis:

The application does not state which design manual has been utilised in the design; therefore, this assessment will address each design approach. While both of the guideline documents strictly apply to smaller scale residential developments, the guidance provided is used in the design of larger scale applications such as this proposal.

Discharge Volume:

The applicant has utilised a per capita flow allowance of 165 litres/person/day, based on bore water supply, for the retirement village occupants living in the villas. The rate used is that listed in Table H3 of AS/NZS 1547:2012 for households with standard water reduction fixtures. There is no specific guidance in the Standard regarding retirement village or rest home/hospital flow allowances. In comparison, TP58 recommends the use of 220 l/p/d for retirement villages, and 250 l/p/d for rest home/hospital residents. The design utilises a per capita flow allowance of 220 l/p/d for the hospital residents.

The use of 165 l/p/d in the design will require the installation of the following water reduction fixtures in every dwelling: dual flush water closets, shower flow restrictors, aerator faucets (taps) and low water use automatic washing machines. The installation of these fixtures should be reflected in consent conditions.

The flow allowances used for staff and visitors generally align with those listed in the Standard and TP58.

The staged nature of the proposal will allow for monitoring of the wastewater production volumes and adjustment of system design, if necessary, as the development progresses.

To quantify the actual loading, it is recommended that the wastewater discharge is metered, and the records reported to Council on a regular basis.

Wastewater Treatment:

Innoflow Technologies Ltd as the New Zealand suppliers of Orenco's Advantex wastewater treatment system have determined the size of the secondary treatment system. The AX100 system is a larger scale system for residential and commercial use and as such this particular wastewater treatment system has not been tested in the OSET-National Testing Programme treatment system trial. The AX100 is installed in many locations throughout New Zealand and has been proven to achieve the required secondary treatment quality, however it is considered prudent to recommend regular treated wastewater quality monitoring.

It is noted that the system design information does not mention the potential impact of pharmaceutical inputs. In this development, wastewater is to be sourced from domestic showers, laundries, kitchens, and toilets and can be expected to be similar in strength to domestic sourced wastewater. However, the wastewater can be expected to include antibiotics and other pharmaceutical products which may impair microorganism health in the primary treatment stage. The

treatment system design does not mention that it makes allowance for the potential increased wastewater strength resulting from pharmaceuticals.

The provision of 300,000 litres of primary treatment (septic tanks) along with 150,000 litres of pre-anoxic primary treatment (pre-anoxic tanks) provides approximately 3.75 days residence time at peak flows in this treatment stage, which meets the recommendations of both the Standard and TP58.

The provision of 24 hours emergency storage within the system is in line with recommended guidelines (AS/NZS 1547:2012 Part 5.4.2.2.1c) to ensure sufficient storage is available in the event of pump or power failure.

Treated Effluent Land Disposal:

Soil types at the site are described in general as silts overlying sands, however no soil category in accordance with either the Standard or TP58 has been assigned. An assigned soil category is the basis of determining an acceptable loading rate or design irrigation rate for a disposal system.

Groundwater levels are located at 0.52m below the ground surface however raising or mounding of the system is required to achieve groundwater separation has not been proposed. It is recommended that this be considered as a mitigation measure.

The area of the total proposed system is 24,184m², hence the loading rate is 120,920 litres/24,184 m²=5 litres/m²/day (5 mm/day). The design loading rate of 5 mm/day (5 litres/m²/day) is the maximum loading rate for pressure compensating dripper irrigation recommended by the Standard, for any soil type. Should the soil type differ in the location of the disposal system, this rate may be too high, and the disposal area may become overloaded with time.

No reserve disposal area has been designated. A reserve disposal area is recommended by both the Standard and TP58 and is required to be available for use in the event of system failure or underestimation of daily wastewater production. Given that the design and implementation process is not an exact one, a reserve area allocation is always required as an element of the design process. The reserve area is set aside for future extension of the land disposal system, and in this instance is considered appropriate given the use of the maximum proposed loading rate on the basis of limited soils information.

As noted in TP58 Table 5.3: Reserve Disposal Area Requirements, the recommended reserve area for subsurface PCDI ranges from 33% to 100%, however the explanatory notes state that:

Note 5: Where design flow is based on assumption of water reduction fixtures, more than 50% reserve should be provided due to uncertainty concerning long term water production.

Note 7: Additional reserve area must be allocated where there is doubt concerning the actual water usage and/or there is a possible lack of conservatism in the establishment of the design flow volume.

The Standard recommends a reserve area of 100% in Section 5.5.3.4 however this can be reduced if “an improved wastewater treatment and improved land application system is provided”.

Given that the design relies upon water reduction fixtures and utilises the maximum disposal area loading rate, in our opinion a reserve area of at least 100% should be allocated on site and excluded from further development.

Assessment of Effects:

Groundwater quality

The guidance documents include varying approaches to limiting the effects of wastewater discharge on groundwater quality. The recommended vertical separation distance between winter groundwater and a wastewater discharge is 0.6-1.5m according to AS/NZS Table R1. TP58's Table 3.2 recommends a minimum separation distance of 600-1000mm for UV disinfected wastewater, depending on soil category - which is not stated in the application.

In this proposal, the disposal system installation depth is not stated in the application, however the standard depth is 150mm which would require a minimum separation distance to groundwater of 750mm in accordance with AS/NZS 1547:2012. PCDI lines can also be installed on the ground surface which would then require a separation distance of 600mm. Winter groundwater levels were intersected at 0.52m depth within the disposal area, hence the recommended minimum clearance distance is not met. Mitigation could be achieved by raising the ground surface prior to installation of the disposal system to provide additional separation distance. It is recommended that the standard consent condition requiring a 600mm clearance to the winter groundwater table is imposed. Given the difference in recorded levels, there is the risk that the groundwater regime at this site may include even higher groundwater levels than currently recorded, which would require further assessment.

In terms of human health risk, the nearest water supply bore is the site bore at approximately 50 metres in distance, which meets the recommended horizontal separation distances to a water bore recommended by AS/NZS 1547:2012 of 15-50 metres (Table R1) and TP58 of 20 metres (Table 3.2). The nearest bore outside the site is some 227m from the disposal area.

WGA Ltd. have provided an effects assessment which calculates that the lateral distance from the discharge site at which faecal coliform counts drop below 1 cfu/100mL is calculated to be approximately 30 m from the point of discharge. There are no shallow bores within the vicinity of the discharge. The risks to the production bore are described by WGA Ltd as less than minor due to the disinfected wastewater, attenuation of contaminants within the underlying sediments, and multiple clay layers which will prevent water moving vertically. WGA Ltd. have provided an assessment based on published data from Pang (2009)¹, however further assessment via application of the ESR 'Guidelines for separation distances based on virus transport between on-site domestic wastewater systems and wells' (2010)² would provide additional certainty regarding this matter.

Surface water quality

In this case the wastewater disposal system is located approximately 400m away from the nearest watercourse. This separation distance complies with the range of recommended horizontal separation distances recommended by AS/NZS 1547:2012 of 15-100 metres (Table R1) and the minimum 5-10 metres setback distance recommended by TP58 Table 3.2 for disinfected wastewater. Given the flat site overland flow is highly unlikely.

Soil quality

¹ Pang L 2009. Microbial removal rates in subsurface media estimated from published studies of field experiments and large intact soil cores. *Journal of Environmental Quality*. 38: 1531-1559.

² Moore, C., Nokes, C., Loe, B., Close, M., Pang, L., Smith, V., & Osbaldiston, S. (2010). Guidelines for separation distances based on virus transport between on-site domestic wastewater systems and wells: ESR Client Report No. CSC1001. Porirua, New Zealand: Environmental Science & Research Limited. ISBN 978-1-877166-08-2.

Treated effluent from the proposed source is not expected to contain heavy metals and environmentally harmful compounds in concentrations likely to lead to soil contamination or cause problems that would render the soil unusable.

Amenity effects – odour and public health

Wastewater discharges may contain very high concentrations of pathogens which may have human health-related effects if people are exposed to the effluent. Contact with effluent could occur if it were to run across the ground surface, or when partially treated effluent enters surface or groundwater. The potential for these types of effects typically arises when a system provides only limited treatment, when the system is not properly designed, installed or maintained, or a combination of these factors.

It is considered in this case that public health effects have been limited by the proposed wastewater treatment system, which includes UV disinfection to reduce pathogens, and that the disposal system will be subsurface, and fenced to prevent public access.

Offensive odours can emanate from processes which occur within both the treatment and disposal of wastewater. The further information response notes that the treatment system will be fitted with activated carbon filters on the tank vents, along with a small fan, and that the tank lids and risers are sealed. This will likely address day to day odour production; however, this does not address odour production when the system is opened for servicing or the tanks are cleaned, which is likely to produce short term, reasonably intense odour.

Cumulative effects:

The potential cumulative effects related to the change in land use from rural use to residential uses has not been addressed in terms of the on-site wastewater discharge. This should take the form of a comparison between the proposed loads of contaminants (particularly nutrients) from the development and the existing land use, to confirm that the proposal does not create additional cumulative effects.

4. CONSENT CONDITIONS

The proffered consent conditions do not follow the standard layout of Waikato Regional Council on-site wastewater discharge consent conditions; however, some similar aspects are covered. Conditions providing controls on water reduction fixtures, disposal system loading rates, installation requirements, odour and complaint management have not been included. There are also numerous references to stormwater, and an MBR which are likely to be errors. It is also noted that the conditions proffer a treated wastewater quality Total Nitrogen (TN) limit of 40 mg/L however this is not mentioned in the Innoflow Technologies design and should be confirmed as the system does not appear to be specifically configured to remove nitrogen. A potential set of alternative draft conditions has been appended.

5. SUMMARY

In summary, on-site domestic wastewater treatment and disposal for the proposed retirement village is expected to be achievable in this location however there are many aspects of the proposal that warrant further consideration and potentially the provision of further information, including the following:

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- The design guideline used as a basis for the volume calculations and loading rates has not been defined.
 - It appears to have been no specific site investigation in the location of the proposed disposal area to confirm soil types and depth to groundwater. The soil category has not been stated. This may impact the size of the disposal area which has been set aside. Previous investigations only provide geotechnical information which is not completely relevant to on-site wastewater design. Only one confirmed groundwater level is provided (25-p4) within the proposed disposal area. Standard on-site wastewater design would require multiple borehole investigation across the proposed disposal and reserve disposal areas.
 - The required groundwater separation distance is not met by the proposal, however potential mitigation via raising the disposal area is available (although not currently proposed), and the effects of the discharge on groundwater have been assessed by the applicant's technical expert as less than minor. An assessment of the potential effects of the wastewater discharge on the production bore using the ESR 'Guidelines for separation distances based on virus transport between on-site domestic wastewater systems and wells' could further address this issue.
 - The use of a per capita flow rate of 165 litres per person per day requires the installation of water reduction fixtures which have not been specified.
 - The potential for pharmaceutical content in the wastewater to be higher than standard given the presence of the aged care hospital has not been noted in the treatment system design.
 - The location of the wastewater treatment plant has the potential to generate some odour when servicing and the management of this has not been addressed. I consider this should be addressed within the site management plan.
 - There is no designated reserve disposal area included in the design and shown on any site plan. I consider a reserve area equivalent to 100% of the primary disposal area is required.
 - The cumulative effects of the development in terms of the wastewater discharge, in particular the loads of nutrients discharged in comparison with current land use, have not been addressed.
 - The proffered consent conditions do not incorporate standard Waikato Regional Council conditions for on-site wastewater discharge.

RECOMMENDED CONSENT CONDITIONS:

General

1. The discharge of wastewater to land authorised by this consent shall be undertaken in general accordance with the following application documentation:
 - References

Subject to the resource consent conditions below which shall prevail in the event of any inconsistency between the aforementioned documentation and the conditions.

2. The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulations made under section 360 of the Resource Management Act.
3. The consent holder shall ensure contractors and workers are made aware of the conditions of this resource consent and ensure compliance with those conditions.

Reticulation

4. All wastewater pipework and pump stations serving the development shall be constructed and installed in accordance with the latest version of the Waikato Local Authority Shared Services Regional Infrastructure Technical Specifications.

Discharge of Wastewater

5. The maximum volume of treated wastewater discharged on-site must not exceed 120,920 litres per day (120.92 cubic metres per day), as measured over any 24-hour period.

Note A: The consent holder shall ensure that water reduction fixtures are installed in the buildings serviced by the wastewater treatment and land application systems. Water reduction fixtures include, but are not limited to, the following: dual flush water closets, shower flow restrictors, aerator faucets (taps) and low water use automatic washing machines.

6. The consent holder shall ensure that the quality of the treated wastewater discharged to the ground shall comply with the following limits:
 - a) The concentration of five-day Biochemical Oxygen Demand must not exceed 20 milligrams per litre (20mg/l BOD₅),
 - b) The concentration of Total Suspended Solids must not exceed 30 milligrams per litre (30mg/l TSS).
 - c) 40 grams per cubic metre in terms of Total Nitrogen (40 g/m³ TN).
 - d) 200 cfu/100mL in terms of *Escherichia coli* (200 cfu/100mL *E.coli*).

Note B: All quality analyses shall be undertaken by an IANZ accredited or equivalent laboratory. All methods used shall be appropriate for the analyses undertaken.

7. Treated wastewater shall be discharged into the ground via pressure compensating dripper irrigation at an areal loading rate that does not exceed 5 millimetres per day (i.e. 5 litres per square metre) or the absorptive capacity of the soils, whichever is the lesser.
8. The treated wastewater shall not be discharged into any soakage system at such a rate so as to exceed the absorptive capacity of the soils.

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9. The discharges shall be uniformly distributed over the disposal system.
 10. The consent holder shall ensure that a reserve wastewater disposal area of not less than one hundred percent (100%) of the duty disposal area shall be available all times. To this end the consent holder shall ensure that no permanent hard surface (for example concrete) shall be placed over the reserve disposal area for the duration of this consent.
 11. The consent holder shall ensure that there is a minimum vertical separation distance of at least 600 millimetres of unsaturated soil between the base of any disposal system and the ground water table at all reasonable times. The term “at all reasonable times” implies that the specified vertical distance is maintained during the wettest months of the year immediately following a typical short duration rainfall event (e.g. a 6-month return period event).
 12. There shall be no breakout (uncontrolled discharge) of wastewater onto the ground surface from any part of the wastewater treatment system or the disposal area that results in visible ponding of the wastewater on the ground surface and/or an overland discharge of wastewater.
 13. Surface stormwater and stormwater runoff shall be directed away from the wastewater treatment system and disposal area, as extensively as practicable.
 14. All components of the treatment system (including reticulation) shall be maintained in as watertight a condition as practicable to prevent the ingress of stormwater or groundwater into the system.
 15. The consent holder shall ensure that there is no activity undertaken on top of the treatment system or disposal area that may cause damage to the disposal system (e.g. stock grazing, deep rooting trees or car parking etc.).
 16. Where the disposal area is to be grassed, the grass must be mown regularly to ensure it continues to grow and take up nutrients. Where the disposal area is to be planted, the plants shall be weeded and maintained regularly, and only suitable plants shall be used.
 17. An audible or visual high water level emergency alarm system shall be located within the new wastewater treatment system, to warn of a sewage pump failure. The alarm(s) shall be in a prominent position to ensure it is noticed if activated.
 18. The consent holder shall maintain signs at the entrance to the Wastewater Treatment Plant and at the disposal area which provides the appropriate contact telephone numbers in the event of an emergency, complaint or enquiry. The signs shall also include the words ‘warning-health risk’, along with ‘wastewater treatment plant’ or ‘wastewater disposal area’.
 19. The discharge shall not result in any objectionable effects from odour beyond the boundary of the subject property.

Management, Monitoring and Maintenance

20. Within one month of the completion of the installation the new wastewater treatment and disposal systems, the consent holder shall submit to the Waikato Regional Council the following:
 - a) An ‘as built’ plan of the treatment and disposal system; and
 - b) Verification from the installer of the system that it has been installed in accordance with the information submitted in support of the application and best practice.

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21. Within one month of commissioning of the new wastewater treatment systems, the consent holder shall to the satisfaction of Waikato Regional Council, provide evidence that a maintenance contract or maintenance programme for the system exists, and which is to be applied for the duration of consent.
22. The consent holder shall retain and update as necessary a Wastewater Management Plan for the site. The following matters shall be addressed, as a minimum:
- a) An inspection programme designed to verify the correct functioning of all components of the wastewater treatment system; and
 - b) A schedule or checklist of maintenance requirements for all reticulation, and the wastewater treatment and disposal system. The maintenance requirements shall also specify that the systems shall be maintained on a minimum six-monthly frequency; and
 - c) A copy of the names of the appropriate contact people in the event of system malfunction including contact telephone numbers; and,
 - d) Monitoring and reporting requirements, and
 - e) A contingency plan for action to be taken in the event of wastewater breakout from the treatment system and/or disposal areas.
 - f) A plan to be enacted should replacement of the disposal system be required.

The Management Plan, along with any notification of any changes made to it, shall be provided to the Waikato Regional Council within 3 months of exercising the consent or making changes to the Management Plan.

23. The consent holder shall ensure that the wastewater treatment and disposal system is properly operated and maintained at all times.
24. The treatment system shall be de-sludged as necessary and in particular within one month of receipt of notice in writing from the Waikato Regional Council to do so.
25. The following maintenance requirements are specified:
- a) The grease trap/s shall be inspected every three months for the duration of this consent and cleaned out when 50 % filled with scum and/or sludge.
 - b) The outlet filter/s shall be cleaned every six months.
 - c) The dripper lines shall be flushed out every twelve months.
 - d) The consent holder shall replace the UV treatment bulbs by the 1 February every year (not including the first year of the consent being issued). All records of UV treatment bulbs being replaced shall be provided to Waikato Regional Council within five working days of a request.
26. The consent holder shall keep a written record of the date and details of maintenance events, such as pump-outs, servicing, inspections, stoppages, faults, and any remedial action taken on the structures authorised by this consent and these records shall be included in the annual reporting required by this consent, and made available to the Waikato Regional Council within 5 working days of request.

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27. The consent holder shall ensure that a flow meter is available to record the total quantity of treated wastewater discharged on site on a cumulative daily basis. The meter shall have a reliable calibration to flow, which shall be maintained to an accuracy of +/- 5%. The total flow used every day shall be recorded. Access to the meter shall be available to Waikato Regional Council staff at all reasonable times.
28. The consent holder shall sample the combined treated effluent prior to discharge on two occasions each year within the months of March and September. The sample shall be analysed for the following parameters:
- (i) Biochemical Oxygen Demand (BOD₅).
 - (ii) Total Suspended Solids (TSS).
 - (iii) Total Nitrogen (TN)
 - (iv) Ammoniacal Nitrogen (NH₄-N) and
 - (v) *Escherichia coli* (*E. coli*).c
- Refer Advice Note B.*
29. If sampling results show the effluent quality standards in condition 6 have not been met, the consent holder shall take all practicable measures to remedy the exceedance and shall repeat sampling as required by condition 28 until the discharge quality is within the limits required by condition 6.
30. The consent holder shall report to the satisfaction of the Waikato Regional Council, the water usage volume and quality monitoring records required by conditions 27 and 28 via electronic means on a quarterly basis for the duration of this consent.
31. The consent holder shall provide to the Waikato Regional Council a written report by 30 November each year, addressing the following:
- a) a. A summary of all monitoring results required by conditions of this resource consent for the year ending 30 June.
 - b) Critical analysis of the monitoring data collected and comments on any emerging trends.
 - c) Comment on compliance with the conditions of this resource consent.
 - d) Comment on the performance and adequacy of the disposal system, matters of compliance.
 - e) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this resource consent and a description of and a summary of the efficacy of any remedial works undertaken; and
 - f) Any other issue considered relevant to the consent holder
32. The consent holder shall notify the Waikato Regional Council within 24 hours (where practicable) of the consent holder becoming aware of any occasion when the limits specified in conditions 6 and 7 of this resource consent being exceeded, or any accidental discharge, plant breakdown or other circumstance which is likely to result in the limits of this consent being exceeded. The consent holder shall, within 10 working days of the incident occurring, provide a written report to the Waikato Regional Council, identifying the non-compliance,

possible causes and steps to ensure future compliance, which may include but not be limited to an investigation of the treatment plant operation and capabilities, bore monitoring and the implementation of remedial action to prevent recurring non-compliance.

33. The consent holder shall maintain and keep a Complaints Register for all complaints made about the treatment and discharge operations received by the consent holder. The Register shall record:

- a) The date, time and duration of the alleged event/incident that has resulted in the complaint
- b) The location of the complainant when the alleged event/incident was detected
- c) The possible cause of the alleged event/incident.
- d) The weather conditions and wind direction at the site when the event/incident allegedly occurred, if significant to the complaint.
- e) Any corrective action undertaken by the consent holder in response to the complaint.

The Register shall be made available to the Waikato Regional Council at all reasonable times. Complaints which may indicate non-compliance with the conditions of this resource consent shall be forwarded to the Waikato Regional Council within 5 working days of the complaint being received.

APPENDIX C

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 Nicola Jane Wilson on behalf of the
WAIKATO REGIONAL COUNCIL**

Bore Water Supply

Dated 10 November 2025

1. SUMMARY OF EVIDENCE

- 1.1 I have reviewed supporting information related to a groundwater take and dewatering activities provided with an application by Matamata Developments Limited.
- 1.2 The assessments provided by the applicant's consultant are fit for purpose, methodologically sound and appropriate for the scale and nature of the proposed activities.
- 1.3 I have no concerns over the effect on other groundwater users, surface water, and aquifer sustainability from the proposed groundwater take via existing bore 72_12812 and the dewatering associated with construction activities.

2. INTRODUCTION

- 2.1 My full name is Nicola Jane Wilson
- 2.2 I am currently employed by the Waikato Regional Council as a Senior Groundwater Scientist and have more than 20 years' experience in groundwater science. Prior to working for the Waikato Regional Council (WRC), I was employed by the Canterbury Regional Council, Environmental Resources Management (ERM) in the UK and Australia, and Harrison Grierson Consultants NZ. I hold a Bachelor of Science majoring in Geology and Mathematics, a Bachelor of Science with Honours (First Class) in Geology, a post-graduate Certificate in Geography (GIS specialisation), and a Master of Science – Research (First Class Honours) in Earth Sciences. These degrees were obtained from Victoria University of Wellington and The University of Waikato.
- 2.3 I have reviewed the following documents in preparing this evidence:
 - WGA, June 2025. Ashbourne Development Hydrogeological Effects Assessment. WGA references WGA241087, WGA241087-RP-HG-0002_C, WRC reference 32765622
 - Barker and Associates Limited, 15 July 2025. Appendix 4L – Proposed Conditions of Consent. Ashbourne Retirement Village Fast Track Approvals Substantive Application. B&A reference 20592, WRC reference 32767189

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 have read the Code of Conduct for expert witnesses and agree to comply with it. I confirm that my evidence is within my area of expertise as a Groundwater Scientist, except where I

state that I am relying on the evidence of another person. As an expert witness, I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express.

4. BACKGROUND

4.1 Matamata Developments Limited have applied for various consents related to the establishment of a residential development, retirement village, and solar farm at Station Road, Matamata. The applications are listed under the Fast-Track Approvals Act 2024.

4.2 This evidence provides high level technical expertise related to the proposed groundwater take via existing bore 72_12812 and the dewatering associated with construction activities. Abstraction volumes being sought from bore 72_12812 are a maximum daily volume of 336 m³d⁻¹, with an annual volume of 92,308 m³yr⁻¹. The site is located on the western edge of the Matamata township.

5. ASSESSMENT OF GROUNDWATER TAKE FROM BORE 72_12812

5.1 Bore 72_12812 is screened between 107.6 and 120 m below ground level (bgl) in “green pumice, sand and gravel”, and has a static water level at 6.83 m bgl. A constant rate aquifer test was undertaken on the bore to support the application. Aquifer parameters of $T = 74.1 \text{ m}^2\text{d}^{-1}$ and $S = 0.0001$ were derived from this test and used to model the assessment of effects (pg. 229 of the application). Aquifer parameters are reasonable, and the test had a good response, although it is noted that no observation bores were monitored over its duration, and the test only ran for 9 hours.

5.2 **Interference on neighbouring wells:** Using the aquifer parameters above, an assessment of effects on neighbouring bores has been undertaken by the applicant’s consultant (pg. 230 of the application). This assessment considered all bores within 2 km of the proposed take, and considered their individual attributes (i.e. depth, static water level etc.). Appropriate assumptions have been made where this information was absent. The assessment indicates that there will be no adverse effects on surrounding bores. I agree with this assessment, although it is noted that bore 72_13002 was not included in the assessment as it was only recently added to WRC’s database. 72_13002 is shallow (6-8m), and in aquifer 1 (as described in the application), thus is unlikely to be affected by this take.

5.3 **Effect on surface water:** Effects on surface water have been considered in the application (pg. 236). The closest surface water body is the Waitoa River, located 545 m west, there is also a wetland located 450m west of the production bore. I agree with the consultant’s assessment and conclusion that due to the depth of the production bores, and the confining layers observed in the sub surface, the effects on surface water will be minimal.

5.4 **Aquifer sustainability:** The groundwater take is located in the Southern Hauraki Aquifer Management Zone which is not fully allocated. Therefore I have no concerns over the long-term sustainability of the take.

6. ASSESSMENT OF DEWATERING ACTIVITIES

6.1 Dewatering is occurring in the location of the Greenway, the wastewater pipeline and the pump station. These areas have been assessed individually by the consultant. Expected worst case groundwater levels have been thoroughly investigated and hydraulic conductivity in the shallow aquifer estimated from falling head permeability and soakage testing. Groundwater inflows expected during dewatering have been assessed using industry standard methodologies. Dewatering is unlikely to affect deeper bores so only shallow bores accessing the water table aquifer would need consideration and structures that come within the extent of groundwater drawdown. Conservative assumptions have been applied to the modelling undertaken to assess dewatering activities. The modelling undertaken is appropriate, thorough, and I agree with the estimates of drawdown and influence.

7. CONCLUSION

7.1 The assessment is fit for purpose, is methodologically sound and appropriate for the scale and nature of the proposed activities.

7.2 Although the aquifer test undertaken does not strictly meet WRC recommendations for aquifer tests to support consent applications (e.g. at least 24 hours and with the monitoring of observation bores), the response observed in the pumped bore was enough to estimate the transmissivity value with confidence, and an appropriately conservative default storativity value was used in the effects assessment.

7.3 I notice in the proposed consent conditions that there is no mention of the groundwater take from 72_12812, but general bore drilling conditions relating to the water supply for dust protection, dewatering, ongoing irrigation and domestic water supply. A condition of an ongoing groundwater take for irrigation and/or domestic supply (if this is from a different bore(s) to 72_12812) should include that an assessment of effects be undertaken for neighbouring bores, surface water and aquifer sustainability be undertaken and approved by WRC.

7.4 I have no concerns over effects on neighbouring bores, surface water and aquifer sustainability related to the proposed groundwater take from 72_12812.

7.5 I agree with the predicted drawdowns and their extents modelled by the consultant related to dewatering activities at the site. I have no concerns over the effect on existing groundwater

users and surface water from the dewatering activities. The effect of these drawdowns on structures would need to be assessed by a geotechnical expert.

A handwritten signature in black ink that reads "Nicki Wilson". The signature is written in a cursive, flowing style.

Nicki Wilson

10 November 2025

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 MEGAN ANDREA WOOD ON BEHALF OF THE WAIKATO
REGIONAL COUNCIL**

STORMWATER MANAGEMENT

Dated: 10 November 2025

Wainui Consulting Limited
PO Box 32268
Raglan
Waikato 3265
Mobile no. 021 407 754

1. SUMMARY OF EVIDENCE

- 1.1 There remain concerns with the stormwater aspect of the proposal as follows:
- 1.2 The applicant has included an allowance for climate change when assessing their pre-development peak flow rates as well as their post-development peak flow rates. This is contrary to relevant guidance documents in the Waikato. By including a climate change allowance in the pre-development peak flows, it means that the attenuation function for the stormwater management system has been under-sized. If the applicant were applying to Waikato Regional Council for resource consents, they would be required to reassess their proposal without a climate change allowance in their pre-development peak flows.
- 1.3 The applicant has designed a stormwater management system that relies on soakage of runoff on-lot for up to the 10-year ARI event, and centralised soakage basins for Catchments A, C and D that soak runoff from up to the 100-year ARI event to ground. Through onsite monitoring, groundwater levels have been determined to be higher than the applicant expected. With elevated seasonal high groundwater levels, Basins C and D have lower infiltration rates than previously estimated. These findings mean that the applicant will not be able to rely on infiltration to manage stormwater runoff from new impervious surfaces across large areas of the site, as is currently proposed in the '*Stormwater Management Plan, Ashbourne Developments*' (Maven, 30 May 2025). The applicant will need to reconsider their proposed stormwater management approach and provide an updated Stormwater Management Plan.

2. INTRODUCTION

- 2.1 My full name is Megan Andrea Wood.
- 2.2 I am Owner and Director of Wainui Consulting Limited, a consultancy specialising in providing specialist stormwater management advice and review support to Waikato Regional Council. I am based in Raglan and work primarily in the Waikato region.
- 2.3 I have over 25 years of experience working as an environmental and stormwater engineer, both in New Zealand and overseas. I have worked in a review capacity for the regulatory directorate of the Waikato Regional Council since 2014 and have accumulated a detailed knowledge of stormwater management issues and land development requirements.
- 2.4 My qualifications and relevant experience are set out in **Appendix 1**.
- 2.5 In preparing this evidence, I have reviewed the following stormwater management and hydrogeological reports:

Substantive application

(i) Appendix 5I - Stormwater Management Plan

Further information supplied post the Substantive application:

(j) Ashbourne – Station Road Project Greenway Design Memo (Maven, 23 September 2025)

(k) WGA Technical Memorandum “*Response to MPDC Review*,” dated 31st October 2025.

2.6 My knowledge of the site comes from review of historic stormwater documents prepared by Matamata Piako District Council over the years and resource consent applications within the local area.

3. CODE OF CONDUCT

3.1 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 After reviewing the applicant’s Stormwater Management Plan, I conveyed the following summary of the proposed stormwater management system to Waikato Regional Council.

4.2 The applicant is proposing a stormwater management system that relies on infiltration devices, including both private on-lot devices and vested centralised devices.

4.3 On-lot infiltration trenches are proposed to soak up to the 10-year ARI event runoff volumes (including an allowance for climate change) to ground.

4.4 Runoff from trafficked areas is proposed to be treated in raingardens in the roading corridor, which are integrated with soakage trenches, which have been designed to soak runoff volumes for the contributing catchment area for up to the 10-year ARI events (including climate change) to ground.

4.5 The applicant is proposing dry soakage basins in Catchments A, C and D, which provide full storage and soakage for flows from the contributing catchment area for up to the 100-year ARI event (including climate change).

4.6 The applicant is proposing a dry attenuation basin for Catchment B, where groundwater levels are elevated, hence precluding the use of soakage. The attenuation basin is proposed to attenuate post-development peak flows back to 80% of pre-development peak flow rates

for the 100-year ARI event before releasing the attenuated flows to the proposed new greenway that is proposed to discharge to the Waitoa River.

4.7 A greenway is proposed to be constructed in the southern portion of the site, conveying flows from Catchment B to the Waitoa River.

4.8 External flows affect Catchment B, C and D, and are proposed to be managed as outlined below:

(a) Catchment B is the southern catchment, flows are to be collected in a channel, and conveyed along the southern boundary, then discharged into the solar park site, and eventually to the Waitoa River via the greenway.

(b) Catchment D, flows are to be captured in a channel and conveyed along the eastern boundary of the site. Once ponding reaches RL65.6, the channel will overflow to Basin D. The basin also receives runoff from Catchment D, and is designed with a soakage base, similar to Basins A and C, allowing for further storage for all inflows into Basin D.

(c) Catchment C, flows are to be captured and conveyed along the western boundary before entering the northern natural stream, as per the existing situation.

4.9 The applicant has designed the system assuming that 100-year ARI event climate change flows can be soaked to ground via the three soakage basins: Basins A, C and D. They state that this is a conservative approach for sizing the basins and means that there is the potential to optimize the basin sizings in the future, so that they discharge at 80% of pre-development peak flow rates instead of having discharge from the basins in up and including the 100-year ARI event.

4.10 Some comments that I have raised and communicated to Waikato Regional Council on the proposed system are outlined below:

(a) The applicant has included an allowance for climate change when assessing their pre-development peak flow rates as well as their post-development peak flow rates. This is contrary to what is required in Waikato Regional Council's Waikato Stormwater Management Guideline, and the Waikato Regional Infrastructure Technical Specification. Both of these guidelines require that pre-development peak flows do not include climate change and that post-development peak flows do. By including a climate change allowance in the pre-development peak flows, it means that the attenuation function for the stormwater management system has been under-sized. If the applicant were applying for a resource consent from Waikato Regional Council,

they would be required to reassess their proposal without a climate change allowance in their pre-development peak flows.

- (b) The geotechnical assessment states that groundwater levels are between 1.4 - 4.2m below ground level across the site. It has not been confirmed whether these are seasonal high groundwater levels. It is important that the applicant determines what seasonal high groundwater levels are expected to be at the site. They also need to ensure that at least 1m clearance is provided between seasonal high groundwater levels and the inverts of all soakage devices to ensure that the devices are able to function effectively all year round.
- (c) The applicant notes that the soakage rates are low in the vicinity of Basins D and C. The applicant is to ensure that a conservative approach is taken to designing these basins, to ensure that they can infiltrate design flows despite the low soakage rates present. It is noted that an external catchment is directed to Basin D, hence the applicant needs to ensure that Basin D is appropriately sized considering this external input and the low soakage rates present at this location.

4.11 Subsequent to my review of the Stormwater Management Plan, I was provided with the Technical Memorandum Document No. WGA241087-MM-HG-0006_A (WGA, 31 October 2025). This document outlines the findings of more recent groundwater monitoring, which has found the groundwater levels at the site, recorded in September 2025, to be higher than previously observed. The applicant states that these levels are likely a good indication of seasonal high groundwater levels.

4.12 I had previously commented that the applicant needed to determine seasonal high groundwater levels to ensure they were able to provide a minimum 1m clearance between seasonal high groundwater levels and the inverts of all proposed soakage devices, to confirm that the soakage devices would be able to function effectively all year round. Note that assessment of groundwater mounding for the seasonal high groundwater condition would also be necessary to inform design of appropriate clearance to the invert of soakage devices. I also advised that soakage rates were low at Basins D and C hence a conservative approach would need to be taken to ensure these soakage basins could function adequately. The WGA technical memorandum addresses these matters.

4.13 WGA have now determined through further groundwater monitoring (up to September 2025) that groundwater levels are higher than the applicant expected, with groundwater levels within 0.5m below ground level in the northern areas of the planned retirement village and the residential area. It has also been determined that with the elevated seasonal high groundwater levels, Basins C and D have half the allowable mounding depth as previously

modelled, hence infiltration rates are lower than previously estimated. These findings mean that the applicant will not be able to rely on infiltration to manage stormwater runoff from new impervious surfaces across large areas of the site, as is currently proposed in the '*Stormwater Management Plan, Ashbourne Developments*' (Maven, 30 May 2025). The applicant will need to reconsider their proposed stormwater management approach and provide an updated Stormwater Management Plan.

4.14 I have reviewed the provided Greenway Design Memo and advised Waikato Regional Council the following:

- (a) The proposed greenway design looks generally acceptable, assuming that the applicant's modelling is correct, and subject to detailed design information being provided.
- (b) The table in Section 1.4 states that the 100-year ARI event orifice at the outlet is 900mm diameter, however, it appears from the figure provided and other text in this section that the outlet pipe is a proposed to be a 1050mm diameter pipe.
- (c) A riprap lined channel is proposed at the outlet of the proposed greenway to convey flows to the Waitoa River. The applicant would need control over this land to be able to install this channel in this location.
- (d) The riprap lined channel needs to be softened into the environment with riparian vegetation along its entire length.

4.15 In summary:

Allowance for climate change in pre-development peak flow rates: The applicant has included an allowance for climate change when assessing their pre-development peak flow rates as well as their post-development peak flow rates. This is contrary to relevant guidance documents in the Waikato. By including a climate change allowance in the pre-development peak flows, it means that the attenuation function for the stormwater management system has been under-sized. If the applicant were applying to Waikato Regional Council for resource consents, they would be required to reassess their proposal without a climate change allowance in their pre-development peak flows.

Elevated groundwater levels and reduced infiltration rates: Through onsite monitoring, groundwater levels have been determined to be higher than the applicant expected, with groundwater within 0.5m of ground level in the northern areas of the planned retirement village and the residential area. With elevated seasonal high groundwater levels, Basins C and D have lower infiltration rates than previously estimated. These findings mean that the applicant will not be able to rely on infiltration to manage stormwater runoff from new

impervious surfaces across large areas of the site, as is currently proposed in the ‘*Stormwater Management Plan, Ashbourne Developments*’ (Maven, 30 May 2025). The applicant will need to reconsider their proposed stormwater management approach and provide an updated Stormwater Management Plan.

5. CONCLUSION

- 5.1 The applicant has included an allowance for climate change when assessing their pre-development peak flow rates as well as their post-development peak flow rates. This is contrary to relevant guidance documents in the Waikato. By including a climate change allowance in the pre-development peak flows, it means that the attenuation function for the stormwater management system has been under-sized. If the applicant were applying to Waikato Regional Council for resource consents, they would be required to reassess their proposal without a climate change allowance in their pre-development peak flows.
- 5.2 The applicant has designed a stormwater management system that relies on soakage of runoff on-lot for up to the 10-year ARI event, and centralised soakage basins for Catchments A, C and D that soak runoff from up to the 100-year ARI event to ground. Through onsite monitoring, groundwater levels have been determined to be higher than the applicant expected. With elevated seasonal high groundwater levels, Basins C and D have lower infiltration rates than previously estimated. These findings mean that the applicant will not be able to rely on infiltration to manage stormwater runoff from new impervious surfaces across large areas of the site, as is currently proposed in the ‘*Stormwater Management Plan, Ashbourne Developments*’ (Maven, 30 May 2025). The applicant will need to reconsider their proposed stormwater management approach and provide an updated Stormwater Management Plan.



Megan Andrea Wood

10 November 2025

APPENDIX 1

QUALIFICATIONS AND EXPERIENCE

Qualifications

Graduate Diploma in Integrated Water Management (Water Sanitation and Hygiene specialisation), International Water Centre, Griffith University, Brisbane, AUSTRALIA (completed 2023, to graduate in 2024). Received a full scholarship to study this course from the International Water Centre, Griffith University, Brisbane, AUSTRALIA.

Bachelor of Technology in Environmental Engineering (Honours), Massey University, Palmerston North, NEW ZEALAND (graduated 1998).

Memberships

Member of Engineering New Zealand, Water New Zealand, and Water New Zealand's Stormwater Special Interest Group

Experience

June 2014 – current: Wainui Consulting Limited, Raglan, NEW ZEALAND
Director

Founder of Wainui Consulting Limited, a company specialising in providing technical leadership and support to regulatory authorities for water resource management projects. Key recent projects:

- Provision of leadership, specialist technical advice, and support to the Waikato Regional Council on all urban stormwater management issues in the region. Role includes review of the stormwater design for all major developments in the Waikato Region seeking resource consent and consulting with developers and territorial authorities on behalf of Waikato Regional Council.
- Project managed the preparation of the *Waikato Stormwater Management Guideline* and *Waikato Stormwater Runoff Modelling Guideline* for the Waikato Regional Council. Role included peer review of the guidelines, input to guideline content, consulting with key stakeholders, stakeholder engagement and managing the project timeline and budget.
- Preparation of strategic reports to assist the Waikato Regional Council with managing the effects of urban land use change and associated stormwater runoff on council administered rural drainage areas. Reports include *Managing Land Use Change and Council's Administered Drainage Areas* and *Rural Drainage Services Stocktake and Initial Review*.
- Preparation of a set of Three Waters Management Practice Notes for Hamilton City Council, to help with the implementation of new requirements to install water efficiency measures with a stormwater focus on all new lots in Hamilton.

May 2007 – May 2014: Waikato Regional Council, Hamilton, NEW ZEALAND Senior
Environmental Engineer, River & Catchment Services

Responsible for providing technical leadership, project management and support to river and catchment management programmes across the Waikato Region in New Zealand. Including the design and implementation of flood protection schemes in five at-risk communities on the west coast of the Coromandel Peninsula. Responsible for providing technical leadership and support to Council's regulatory team to support the review and approval process of resource consent applications relating to water resource management. Providing a leadership role in terms of providing advice on urban stormwater management to council's regulatory arm.

Aug 05 – March 07: Hamilton City Council, Hamilton, NEW ZEALAND
Planning Engineer, Water & Waste Services

Responsible for gaining resource consents for infrastructure projects relating to key growth of Hamilton City. Responsible for the preparation of submissions to Government on any changes to national legislation of potential impact to Water & Waste Services. Responsible for developing a range of strategic reports, including Hamilton's *Water Demand Management Plan*, *Te Awa O Katapaki Catchment Management Plan*, and various reports relating to the closure of Hamilton City Council's main landfill – Horotiu Landfill.

March 05 - July 05: Maunsell Limited, Auckland, NEW ZEALAND
Environmental Engineer

Responsible for project management and project work on water related projects, including developing flood mitigation options for under capacity reticulation, sediment control plans for landfills and resource consent applications for stormwater discharges.

July 03 - Nov 04: WSP Development, Hertford, ENGLAND
Engineer (extended short-term contract)

Responsible for the development of Drainage Strategies, Flood Risk Assessments, and input into Environmental Statements for mixed use developments (2,000 - 8,000 dwellings) located in flood sensitive areas, to support planning applications.

March 02 – April 03: Anders Elite, London, ENGLAND
Design Engineer (short term contracts)

Responsible for the detailed design of combined sewer upgrades to mitigate residential flooding in the western provinces of the Thames Water region. Responsible for the detailed design of combined sewer overflows for Southern Water to upgrade the existing combined sewer system and to ensure compliance with Environment Agency objectives.

March 01 - Aug 01: New South Wales Environment Protection Authority, Sydney, AUSTRALIA
Projects Officer, Stormwater Management Team

Managed local government projects funded by state government and facilitated by the Environment Protection Authority to provide innovative solutions to flooding and stormwater quality issues in urban catchments in New South Wales. Responsible for reviewing Catchment Management Plans prepared by Territorial Authorities in NSW.

May 98 - Dec 00: URS New Zealand Limited, Auckland, NEW ZEALAND
Engineer, Water & Waste Team

Responsible for project management/work on water related projects. Work included developing Catchment Management Plans to define stormwater management issues and options to address them. Developing Assessment of Environmental Effects for stormwater discharges, closed landfills, and wastewater treatment plants to gain resource consents from local government. Water quality monitoring at closed landfills to assess downstream effects. Hydrological and hydraulic modelling to assess rivers and associated flood risk.