PIK/L10015-5/mw

30 July 2025

Expert Panel
Sunfield Fast-track Application
FTAA – 2503 -1039

RE: SUNFIELD FAST-TRACK APPLICATION: RESPONSE TO MINUTE 5 OF THE EXPERT PANEL

I, Michelle Willis of Earthtech Consulting Limited, confirm that the reports I prepared, for the Sunfield Fast-track Application, being the:

- Sunfield Groundwater Dewatering and Ground Settlement Effects[1], and
- Sunfield Groundwater and Settlement Monitoring Plan[2].

were prepared in accordance with the Environment Court Practice Note 2023 (Code of Conduct for Expert Witnesses).

As requested by the Expert Panel, details of my qualifications and relevant experience accompany this letter in Appendix A.

Yours faithfully

Michelle Willis

M L WILLIS
Director and Senior Geotechnical Engineer
EARTHTECH CONSULTING LTD

[1] *Groundwater Dewatering and Ground Settlement Effects Assessment Review of Awakeri Wetlands Stage 1 Construction and Assessment for Stages 2 and 3*. Prepared for Winton Limited, ref. R10015-1 Rev. B, dated 13 June 2024.
[2] *Awakeri Wetlands Stages 2 and 3 Construction Groundwater and Settlement Monitoring and Contingency Plan*. Prepared for Winton Limited, ref. R10015-2 Draft Rev. B, dated 24 June 2024.

Sunfield Fast Track Application

Response to Minute 5 of the Expert Panel

Appendix A

Qualifications and Relevant Experience

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Qualifications and Relevant Experience

1.1 My name is Michelle Lynn Willis. I live in Takanini, Auckland.

1.2 I am a Groundwater and Geotechnical Engineer, and a Director of Earthtech Consulting Limited.

1.3 I have the following qualifications and experience relevant to the subject matter of the reports I have prepared:

(a) My professional qualifications are a Bachelor of Engineering (Hons.) and a Master of Engineering (Hons.), both from the University of Auckland.
(b) I am a Chartered Professional Engineer registered with Engineering New Zealand, and the scope of my registration includes environmental engineering as it relates to groundwater assessments.
(c) I have fourteen years of experience working in the fields of groundwater engineering and geotechnical engineering.
(d) My experience relevant to this matter includes:
    i. I am a hydrogeology technical reviewer on the Auckland Council Specialist Panel, and have assessed numerous groundwater take and dewatering Resource Consent applications across the Auckland Region over the last eight years. These assessments include the drafting of consent conditions with appropriate groundwater monitoring. The range of applications which I have recently assessed include the dewatering of numerous deep basements located in CBD areas, the Northern Interceptor Phase 2 pipeline, the Southern Redhills wastewater pipelines A, B and D, Khyber Pass Stormwater Upgrades, and various subdivision developments.
    ii. I have assessed groundwater travel, including contaminant fate and transport, within groundwater systems at the Bonny Glen Landfill in Marton, the Levin Landfill, and a composting facility in the Horowhena District. These assessments were carried out using finite-element groundwater modelling and analytical calculations.
    iii. I have been involved with establishing groundwater monitoring, and carrying out groundwater modelling to ensure the maintenance of groundwater protection systems at the North Waikato Regional Landfill at Hampton Downs.
    iv. I have been involved with the design, environmental assessment, and consenting of numerous groundwater takes and dewatered excavations across Auckland, Waikato and the Bay of Plenty.

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Michelle Lynn Willis

GEOTECHNICAL MANAGER AND SENIOR GROUNDWATER ENGINEER

QUALIFICATIONS

BE (Hons) (2010)
ME (Hons) (2012)

PROFESSIONAL REGISTRATIONS

Chartered Professional Engineer (CPEng)
Producer Statement Author for Auckland Council

SPECIALISATIONS

Geotechnical Engineering and Groundwater Engineering

MEMBERSHIPS

Engineering New Zealand and New Zealand Geotechnical Society

ADDITIONAL TRAINING

Courses completed: 12th Pacific Conference on Earthquake Engineering, Auckland (2011), FEFLOW Groundwater Modelling Course, Brisbane (2013), New Zealand Geotechnical Society 19th Symposium, Queenstown (2013), SRIT Fundamentals of Groundwater Course, Hamilton (2014), Mechanically Stabilised Earth Walls and Reinforced Soil Slopes Workshop, Auckland (2015), Workshop on the Flat Dilatometer and Seismic Dilatometer, Auckland (2016), NZGS Mini-Symposium, Auckland (2018), GIS for Geotechnical Professionals, Auckland (2019), Northland/Auckland Young Geotechnical Professionals Symposium, Auckland (2019 and 2021), New Zealand Geotechnical Society 21st Symposium, Dunedin (2021), Advanced FEFLOW Training (2022), In-Situ Seismic Investigation Methods for Site Classification Course (2023), International Association of Hydrogeologists (NZ) Conference (2023).

SUMMARY

Over 14 years of experience working in the fields of geotechnical engineering and hydrogeology. Experience includes managing geotechnical and groundwater related projects from procurement and field investigations through to analysis, reporting and consenting.

PROFESSIONAL EXPERIENCE – GROUNDWATER

Groundwater Investigations and Analysis	• Organising, supervising and carrying out groundwater investigations. Managing drilling contractors for production bore and monitoring piezometer projects. • Assessments of bore yield, groundwater availability, groundwater drawdown and saline intrusion risk. • Analysing pump tests, stream base flows and groundwater chemistry.
Hydrogeology	• Assessing groundwater drawdown effects on bores and surface water. • Conceptual and numerical groundwater model development, including advanced groundwater modelling in FEFLOW, Seep/W and Seep3D. • Preparation of Groundwater Assessment of Environmental Effects reports for consenting. • Groundwater system management for wetlands rehabilitation.
Local Authority Technical Reviewer	Specialist review of groundwater dewatering and diversion consents for Auckland Council, including writing consent conditions. Projects include: 110-116 Carlton Gore Road, Kitchener Road Stormwater Upgrades, Northern Interceptor Phase 2 Pipeline, Redhills Gravity Wastewater Pipelines, Khyber Pass Stormwater Upgrades, plus numerous earthworks and basements application across Auckland.
Expert Testimony Support Work	Preparation of evidence, caucusing with other parties, and hearing support work for groundwater related hearings.
Groundwater Software	The operation of groundwater software: FEFLOW, Seep/W and Seep3D.

PROJECT EXPERIENCE – GROUNDWATER

Paewira Waste to Energy Plant, Te Awamutu (2024 to 2025)

Assessment of groundwater contamination risk due to Paewira Plant air discharge, including drafting of conditions of consent. Preparation of evidence and expert witness for the applicant during EPA Hearing.

Collins Road Wastewater Facility Dewatering Design, Hamilton (2024 and ongoing)

Detailed design of a dewatering system for a large 9m deep excavation and shaft. Complex dewatering system consisting of nine abstraction bores, and five injection bores to offset dewatering effects on a nearby stormwater main and neighbouring properties. Preparation of Groundwater and Settlement Monitoring and Contingency Plan.

Awakeri Wetlands Stage 2 and 3, Takanini (2024 and ongoing)

Detailed assessments of groundwater dewatering and resulting ground settlement effects in compressible Takanini peat, for stormwater channel construction. Preparation of Groundwater and Settlement Monitoring and Contingency Plan. Reporting to support consenting.

Levin Landfill, Horowhenua (2023 to 2024)

Groundwater modelling of contaminant fate and transport, due to contamination sourced for an old and unlined part of the landfill. Design of a dewatering system to abstract contaminated groundwater for treatment.

Marsden Cove Building C Dewatering (2021 to 2023)

Dewatering design for construction of a large basement located within 30m of a tidal canal in high permeability sands. Analysis and design of the dewatering system, edge stability with respect to the nearby canal, and excavation stability with respect to piping and machinery access.

Hahei Community Potable Groundwater Supply (2021 to 2023)

Analysis of pump test data, and assessment of environmental effects for a 120,000m^3/yr potable groundwater supply. Take located in a sensitive coastal environment and challenging fractured rock geology.

Te Maunga Wastewater Treatment Plant Dewatering, Tauranga (2021 to 2022)

Peer review of dewatering design for a 4m deep and 140m long excavation for a new bioreactor in Papamoa, Tauranga. The dewatering required specific consideration of adjacent sensitive wastewater treatment plant structures, the nearby harbour, and interactions with installed ground improvements.

North Waikato Regional Landfill, Hampton Downs (2021 and ongoing)

Groundwater modelling to check groundwater catchment divides and flow directions for future landfill Stages 4 to 6. Groundwater divides must be maintained to preserve the 'hydraulic trap', which is a redundancy system to capture contaminated groundwater under the landfill, if contaminant leakage were to occur. Ongoing input into groundwater monitoring on site.

110 – 116 Carlton Gore Road Basement Dewatering Review, Newmarket (2019 to 2022)

Specialist review of a dewatered basement excavation on behalf of Auckland Council. The 9.3m deep basement was located in variable ground conditions, with existing sensitive masonry buildings located immediately above the excavation wall, in an area known to be prone to dewatering related ground settlement. Scope of work included technical review of the dewatering proposals, preparation of dewatering consent conditions, and advice to Auckland Council during the dewatering works.

Kingseat Village Potable Groundwater Supply (2020)

Groundwater assessment for a 260,610m^3/yr take for subdivision potable supply located adjacent to saline water and the Manukau Harbour. Development of a 3D groundwater model in FEFLOW to assess take sustainability.

Pukekohe Municipal Supply (2020)

Groundwater investigations and FEFLOW groundwater modelling for a large 2,400,000m^3/yr take.

Waiuku Municipal Supply (2014 to 2016)

Conceptual and numerical groundwater modelling and assessment of effects for 1,453,000m^3/yr take for Watercare from three production bores.

Te Arai Links and Tara Iti Coastal Development (Various Projects, 2012 to present)

Golf course irrigation and potable supplies. Groundwater investigations, analysis and consenting for a 795m^3/d water supply for a village and the Tara Iti golf course, and a 1,910m^3/d and 248,300m^3/yr groundwater supply for two southern Te Arai Links golf courses. Groundwater abstractions located in a sensitive coastal environment, with nearby lakes of regional significance.

Tapora Avocado Partnership (2021 to 2022)

310,360m^3/yr groundwater take in a sensitive coastal environment.