CAPABILITY STATEMENT

Geotechnical Engineering

WHO WE ARE

GWE Consulting Engineers is highly experienced in geotechnical, environmental, civil infrastructure, stormwater, wastewater and drinking water engineering, with an established and expanding capability in Geotechnical Engineering. We work closely with architects, planners, surveyors. owners and developers to provide clients with the technical resources required to design and deliver successful projects.

Our team has the skill and experience to deliver projects across a range of specialist areas, including geotechnical investigation, foundation engineering, earthworks design and support, liquefaction assessment, slope stability, ground support systems, soil–structure interaction, groundwater assessment and certification. Where required, we integrate geotechnical with infrastructure engineering, stormwater interfaces, and pavement design to support efficient, buildable outcomes.

Our delivery is grounded in our LIFT values: we Listen to understand the site conditions, stakeholders and consent constraints; Innovate to develop practical, cost-effective ground solutions; Follow Through with rigorous investigation, analysis, documentation and construction verification; and Team Up with clients and partners to keep projects moving and outcomes defensible.

Our brand promise is clear: when others stall, we solve, bringing calm, clarity and rigour to complex sites and challenging consenting pathways. We do the hard work, so your project doesn't get harder.

WHAT WE DO

GWE Consulting Engineers has built a reputable track record in Geotechnical Engineering, with a team of accredited and certified technical engineers.

We offer a diverse range of geotechnical services across residential, commercial, industrial and community Infrastructure projects throughout New Zealand.

Te Kowhai Tidal Gate Project - Design & Construction

We undertake the following Geotechnical related work:

- Geotechnical Investigation
- Liquefaction Assessment
- Slope Stability
- Ground Support System Design
- Soil Interaction
- Groundwater Assessment
- Dams and Water Retaining Structures
- Site Supervision and Certification

We offer a diverse range of geotechnical engineering services across residential, commercial, industrial and community infrastructure projects throughout New Zealand.

We collaborate with partners, whose work meets our standards, offering clients the highest level of skill required for each project.

VALUE DELIVERED

- Clear, site-specific ground models and practical investigation scope/reporting aligned to consent pathways, constructability and project constraints
- Robust liquefaction, slope stability and groundwater assessments to reduce risk and safeguard performance
- Appropriate foundation, ground support and soil–structure interaction design, integrated across earthworks, infrastructure, stormwater and pavement interfaces to minimise redesign and rework
- Rigorous site supervision and certification, calm problem-solving when conditions change, and collaborative delivery to keep projects moving with defensible decisions and reliable outcomes

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OUR SERVICES

Geotechnical Investigation and Interpretation

GWE has extensive experience in designing and undertaking site investigations that provide the right information in an economic way. We target investigation that will look after overall project budget and minimise surprises. We work closely with specialist subcontractors who provide drilling, cone penetration and other specialist site testing. We take geotechnical interpretation seriously with our team of engineering geologists and engineers turning subsurface investigation and observations into meaningful and accurate ground models for geotechnical design.

Slope Stability

Assessment of slope stability starts with solid geomorphic understanding of the landscape, where our engineering geologist team excel. Working with investigation findings we use cutting edge software to develop slope stability models and calibrate with our observations in the field. Where needed, a range of stability improvement methods are designed and detailed to fit in with our overall project needs.

Soil Structure Interaction

We can help your project take full advantage of the soil properties at your site by understanding the interaction between the structure and the soil using numerical analysis calibrated with site observation. This approach is critical in understanding effects on adjacent properties and how your structure will perform over time and in extreme loading events.

Groundwater Assessment

Thorough understanding of the groundwater regime is critically important to your site's performance. GWE has the experience and skills needed to design monitoring installations, undertake monitoring, and model groundwater changes and effects on structures and neighbouring properties. This feeds into settlement effects assessment and related.

Liquefaction Assessment

We live in a seismically active country and liquefaction effects can be damaging. GWE uses the latest software technology combined with practical geologic assessment to evaluate the potential for liquefaction. Solutions are developed to provide reliable and economic foundations for your project.

Dams and Water Retaining Structures

GWE has significant experience in all civil/geotechnical aspects of dam engineering. Including managing and undertaking geotechnical investigations, feasibility level and resource consent design, detailed design, construction management and safety review and rehabilitation. Our staff have been in senior design roles for large dam and hydroelectric structures in New Zealand and in the Asia Pacific region.

Site Works Supervision and Certification

We can undertake specification, supervision and certification of site works, including earthworks compaction control and subgrade testing.

Ground Support System Design

Where your development needs to be built in the ground, we can help with a full of ground retention systems. From modest timber walls to multi-level soldier piles we use Wallap, Finite element and inhouse developed software to design and detail the retention systems that meet your needs.

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RELEVANT PROJECT EXPERIENCE

City Rail Link – Owner Compensation

GWE used our geotechnical, GIS and 3D solid modelling skills to develop underground models of basements and foundations as well as the proposed CRL works, and the complex NoR land transfer and restriction extents. We used the models to advise our clients of potential effects from the tunnel and underground station construction, and the consequences of future limitations on their property. This led directly into assisting assessing compensation for underground land requirement.

City Rail LInk, underground modelling

Edgecumbe Stopbank Failure Assessment

Following catastrophic failure of the stopbanks at Edgecumbe an analysis of reasons for failure was undertaken, including upstream dam operation, hydraulic characteristics of the river and geotechnical conditions and design. Responsibility for analysis, report preparation and provision of expert witness evidence and advice on legal action.

Landslip Remediation, Northland

Involvement with specific geotechnical engineering design of landslide remediation retaining structures and drainage across Northland and the Far North for various residential, commercial and infrastructure sites. Works were follow-on from EQC assessments and included geotechnical investigation, design and reporting.

Te Kowhai Tidal Gate Project - Design & Construction

This project involved preliminary design, resource consenting, detailed design, contract documentation, tender assessment, engineer to contract, and supervision for an in-stream gate structure in the Ruawai area. GWE provided all design and contract management services (except structural which was subcontracted), and subcontracted and managed consultants for consenting (ecology, planning, coastal processes).
The purpose of the project is to protect the Ruawai area from flood waters and sea level rise effects in the Kaipara Harbour and Wairoa River.
The structure, along with the stopbank system offers flood protection, while allowing local catchment floods to pass, and allowing for fish passage in both directions.
The structure consists of separate precast concrete panels, assembled on-site over driven piles in an extremely weak foundation. Automatically actuating steel flap gates (bespoke and designed by GWE) are located on the downstream face and hydraulically actuated vertical steel sluice gates (bespoke and designed by GWE) are located on the upstream face. The sluice gates are intended to assist with sediment management in the river.

Te Kowhai tidal gate, construction below river level

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Avondale Multi-Purpose Community Facility

The Avondale MPCF project involves development of a central community facility for the Avondale area. GWE had responsibility for geotechnical and land contamination aspects throughout concept, resource consenting, detailed design and construction.

Dargaville Wastewater Treatment Plant Flood Protection

This project was for a 750m protection stopbank surrounding the Dargaville wastewater treatment ponds with borrow sourced from on-site areas, and included a new spillway culvert with flap gate. GWE undertook geotechnical investigation, preliminary design, resource consent application, managed planning subconsultant, and detailed design with preparation of tender documentation. GWE was part of the tender evaluation team and contract award. We provided designer involvement during construction and MSQA services. Despite challenging winter conditions at the outset of construction, the project was completed on schedule.

Dargaville wastewater treatment plant flood protection

The site was challenging geotechnically and several options were explored for managing the weak and compressible foundation materials. GWE undertook extensive groundwater assessment including Resource Consent documentation and management plans, for effects related to excavations below groundwater.
We undertook detailed design of tied back retaining walls to manage the complex project geometry and soils.

Avondale multi-purpose community facility

Stopbank Design and Construction Guidelines, Kaipara

This was a constructor/designer led initiative to develop consistent design guidelines for stopbank works in the Wairoa River region of Kaipara District. GWE and Jenyns & Jenyns Construction jointly developed stopbank design and construction guidelines that were appropriate to the geotechnical and environmental conditions in the region. The initiative was triggered by a few construction projects having differing standards and approaches leading to inconsistency.
GWE and Jenyns & Jenyns worked together to develop the initial guideline draft, then worked with Kaipara District Council and Local Drainage Boards to develop a guideline that was suitable for publishing as a KDC document,

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Kaipara, stopbank design and construction guidelines

Opua Marina Development, Bay of Islands

Geotechnical investigation and reporting for ancillary buildings and commercial units to the Opua Marina extended development. Geotechnical design included settlement and liquefaction potential analysis.

Rangitane River Park Subdivision, Kerikeri

Geotechnical investigation and reporting for a proposed 200 lot subdivision near Kerikeri. Work included preliminary settlement and stability analysis for roading cuts and fills of up to 6 m.

Arvida Retirement Village, Kerikeri

Detailed geotechnical investigation and reporting for 300-unit retirement village in Kerikeri. Included geotechnical design of mechanically stabilized earth walls to form a culverted access road.

KEY PEOPLE

Robin Dawson, Technical Director

Robin is highly experienced with over 30 years of innovative and hands-on approach to civil and geotechnical engineering. Extensive specialist expertise and management of complex dam and hydroelectric engineering projects. Former Director of one of New Zealand's largest consultancies, working on large projects in New Zealand, Australia, Asia and the Pacific.

Geraint Walters, General Manager

Geraint is GWE's General Manager in the Waikato office, providing senior oversight and review of technical deliverables.

Stephen Parkes, Senior Engineering Geologist

Stephen is a Senior Engineering Geologist with extensive experience in land development and construction projects, specialising in geotechnical investigations, complex ground modelling, slope stability and remediation design, construction risk management, and multidisciplinary stakeholder coordination.

Matt Strain, Team Manager

Matt has been with GWE's Auckland office for six years, starting as a University of Auckland engineering geology intern, he now leads multidisciplinary geotechnical projects across the Auckland region, supporting clients with practical, buildable ground engineering solutions.

Doug Harbutt, Technical Director

Based in Tauranga, Doug is GWE's Technical Director in Geotechnical, a Chartered Professional (CPEng) Geotechnical Engineer, Tauranga City Council accredited Category 1 (complex sites). With 15+ years' geotechnical consulting experience and 7 years' construction experience, he brings strong capability in natural hazards assessments (liquefaction/lateral spreading, slope stability and settlement).