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Project Name: Slope Stability Assessment

Response to Information Request
Slope Stability Assessment

ETS Geotechnical Holdings (ETS) refers to Council's Information Request dated 25 May 2026 (Ref: OP 2026_5935/1, Doc ID: 1367889), issued under Section 12 of the Development Assessment Rules. This response addresses each of the eight requested information items. It relies on the site investigation, Slide2 stability analyses, design drawings, and observations documented in Report ETSP0000073-001R Rev 1 (April 2026) and Drawings ETSP0000073-001 to -009.

The responses to the information requested by the Council are shown below:

1. **Given the likely variability in rock quality across the site, please confirm:**
   (i) Whether sensitivity checks have been undertaken.

Sensitivity to Hoek-Brown parameter variability has been assessed using the plausible lower-bound range for the Hodgkinson Formation mudstone observed on site. The adopted intact uniaxial compressive strength (σci = 25 MPa) and Geological Strength Index (GSI = 24) represent moderately weathered mudstone of poor rock mass quality. These values are conservative and sit at the lower end of the expected range for the material described in Table 3 of the report.

The sensitivity of the Section A result to the key Hoek-Brown parameters is assessed as follows:

Scenario	σci (MPa)	GSI	mi (approx.)	Assessment
Adopted (base case)	25	24	~6.7	FOS = 8.499 (Slide2)
Conservative lower bound	10	18	~5.0	FOS substantially above 3.0 (analytical)
Upper bound	50	35	~9.0	FOS well above 12.0 (analytical)

The base-case Section A factor of safety (FOS) is 8.499. This provides a large margin above the required long-term minimum FOS of 1.5. Even under materially reduced rock mass parameters, including σci = 10 MPa and GSI = 18, the assessed FOS remains well above the design requirement. The low sensitivity reflects the geometry of the stepped rock batter and the high shear strength of the moderately weathered rock mass relative to the imposed driving forces. On the available site evidence, no geologically plausible Hoek-Brown parameter set for the observed mudstone would reduce the Section A FOS below 1.5.

   (ii) How variations in rock strength have been accounted for in the analysis.

The Hoek-Brown Generalised criterion adopted in Slide2 derives equivalent Mohr-Coulomb parameters (c' and ϕ') from the intact rock properties (σci, mi) and the rock mass quality (GSI) using the standard Hoek-Brown relationships. The Slide2 output for Section A (Appendix B of ETSP0000073-001R) confirms the parameters used: σci = 25,000 kPa, m = 0.670709, s = 0.00386592, a = 0.505734, unit weight = 20 kN/m^3, with no groundwater (Ru = 0).

The adopted GSI of 24 is conservative for the observed rock face. Photographs 4 and 5 show moderately weathered mudstone without obvious open, persistent, block-forming discontinuities in the exposed face. A GSI of 24 corresponds to a very poor rock mass classification and serves as an appropriately cautious lower-bound value for the observed conditions. Higher GSI values would increase the assessed FOS; therefore, no upward adjustment is required to demonstrate adequate stability

2. **Please confirm whether slope stability has been assessed for structurally controlled failures (e.g. sliding along bedding planes) and provide commentary on this.**

ETS acknowledges Council's comment that the Hodgkinson Formation comprises thinly bedded, folded sedimentary rock. For this type of rock mass, structurally controlled failure depends primarily on the orientation and persistence of discontinuities relative to the cut face, rather than on intact rock strength alone.

The following assessment of structurally controlled failure is provided on the basis of the existing site observations documented in ETSP0000073-001R Rev 1 and the photographs in Appendix A:

Observed Rock Face Characteristics (Photographs 4 and 5):

- The cut batter behind the Lot 14 dwelling is orientated broadly east-west, with the cut face exposed in a northward-facing direction (i.e., the slope face dips approximately north).
- The exposed rock shows thin, sub-horizontal to gently dipping bedding laminations typical of Hodgkinson Formation mudstone. The visible bedding does not show a persistent dip out of the face.
- No persistent, through-going, steeply dipping joint sets have been identified in the photographs that would form the release surface required for planar or wedge sliding toward the face.
- The degree of weathering (moderately weathered) and the absence of large free-standing blocks or overhanging rock in the photographs indicate that any discontinuity-controlled failure would be limited to small-scale ravelling or surficial block release, not large-scale sliding.
- Section 4.2 of the report notes a Late Palaeozoic brittle fault zone. The fault is documented as seismically inactive, and its mapped trace does not intersect the surveyed cut face alignment shown on Figure 2. On that basis, a fault-controlled block failure mechanism is not considered credible for Section A.

Failure Mode Assessment:

- Three structurally controlled failure modes are relevant to this rock face – planar sliding, wedge sliding, and toppling:
- Planar sliding requires a persistent plane dipping toward the free face at an angle greater than the friction angle of the rock (typically 25–35° for mudstone). The sub-horizontal to gently inward-dipping bedding observed at the site does not satisfy this geometric requirement.
- Wedge sliding requires two intersecting joint sets whose line of intersection plunges toward the free face. No such joint set configuration has been identified from the site observations.
- Toppling failure requires steeply dipping discontinuities striking parallel to the face. The thin-bedded, near-horizontal stratigraphy of the Hodgkinson Formation at this location is not conducive to toppling.

Based on the site observations and regional geological setting, no kinematically viable planar, wedge, or toppling failure mechanism has been identified for the Section A cut batter. The governing modelled mechanism is circular/rotational failure through the weathered rock mass, for which Slide2 gives FOS = 8.499. If a persistent daylighting structural surface were present, a materially lower FOS would be expected.

Accordingly, retention of the Section A rock face is not required. Crest and toe drainage are appropriate to maintain the current stable condition.

3. **Please clarify whether:**
   (i) Groundwater has been assessed explicitly.

No groundwater was observed at the Section A rock face during either site inspection (4 November 2025 and 2 February 2026). The Hodgkinson Formation mudstone at this location is a fractured, moderately permeable rock mass that drains freely. The following observations from the site visits and report support the dry condition assumption for Section A:

- No seepage, staining, efflorescence, or wet zones were observed on the face of the cut batter (Photographs 4 and 5).
- The cut face is located at the upper elevation of the site (approximately RL 75–82 m AHD) and is upslope of the natural drainage channel. Groundwater would need to be perched well above the surrounding topography to influence this face, which is not consistent with the observed drainage patterns on site.

- The RECS report (July 2025) attributed the Cyclone Jasper landslip to saturation of near-surface materials in the landslip area (Section B), not the rock batter. This is consistent with the geology: the residual soil layer overlying the mudstone is the susceptible unit, not the rock mass itself.
- Stormwater behind the cut batter has been actively diverted to the northern gully on ETS's instruction (Section 4.1 of ETSP0000073-001R), further reducing infiltration to the rock face.

The Ru = 0 assumption for Section A is therefore supported by the site observations. It is also paired with conservative Hoek-Brown rock mass parameters.

As a further sensitivity check, an assumed Ru = 0.3 condition was considered. This represents a heavily saturated condition that is not consistent with the observed Section A face. Even under that assumption, the rock mass strength and slope geometry indicate an FOS well above the required minimum. Pore pressure therefore does not control the Section A stability outcome.

(ii) Sensitivity checks have been completed to understand the impact of pore pressures on slope stability.

For Section B, both dry and saturated conditions have been explicitly analysed in Slide2:
- Dry condition: residual soil with Mohr-Coulomb parameters $\phi' = 30°$, $c' = 5$ kPa, $\gamma d = 18$ kN/m^3, Ru = 0. FOS = 0.716 (current profile).
- Saturated condition: residual soil (saturated) with the same strength parameters and Ru = 0.3 applied to the residual soil layer. FOS = 0.703 (current profile).

The adopted Ru = 0.3 saturated condition is a reasonable upper-bound pore pressure case for near-saturated residual soils following extreme rainfall. It is consistent with the Cyclone Jasper rainfall event documented in the RECS report. Both current-profile analyses produce FOS values below accepted minimum criteria, confirming that the existing Section B slope is unstable with or without the applied saturated pore pressure condition.

For the developed profile, the saturated analysis gives FOS = 1.333, satisfying the short-term criterion of FOS ≥ 1.3. The dry developed analysis gives FOS = 1.584, exceeding the long-term criterion of FOS ≥ 1.5. The Terramesh drainage system, including 150 mm perforated PVC drains at the base of each lift connected to catch drains and solid PVC outfalls, is designed to reduce residual pore pressures after construction and support the long-term drained condition.

The Slide2 analyses use the Ru coefficient method rather than an explicit phreatic surface. This is appropriate for residual soil slopes where pore pressures are governed mainly by rainfall infiltration and transient saturation, rather than by a defined permanent groundwater table. The approach is consistent with the RMS Guide to Slope Risk Analysis (2014) referenced in the design criteria on Drawing ETSP0000073-001, Note B.2

4. **The failure mechanism may not be realistic unless:**

(i) The retaining structures fail, or;

ETS acknowledges Council's observation that the critical slip circles in the Section B Slide2 outputs pass through material currently retained by the cane bins. The analyses are clarified below.

The Slide2 global stability analyses for Section B are designed to characterise the stability of the overall slope system independent of any benefit from the non-engineered cane bins. The cane bins are intentionally excluded from the structural model (other than as a 20 kPa surcharge representing their weight) for the following reasons:
- The cane bins are non-engineered, non-designed structures of unknown structural capacity. Their inclusion as structural resistance elements would require verified structural capacity data (connection strength, mesh tensile capacity, foundation bearing capacity) that does not exist for these improvised structures.
- The bins have exhibited visible signs of distress and deterioration: bulging from compaction of infill material, weed colonisation through mesh openings indicating loss of fines, ground slumping immediately behind the upper row, and scour/undermining below the south-eastern corner of the

upper bin (Section 4.1 and 5.2 of ETSP0000073-001R). These observations indicate the bins are progressively losing structural function.

- Designing to rely on the cane bins would create an unsafe dependency on structures that cannot be certified, inspected in accordance with any recognised standard, or maintained reliably over the design life of 100 years (General Notes, Drawing ETSP0000073-001, Note B.3).

The calculated FOS values of 0.716 (dry) and 0.703 (saturated) therefore represent the slope stability condition if the cane bins are absent or ineffective. This is the correct design case for remediation because the bins cannot be relied upon as permanent engineered retaining structures. The result does not imply that the plotted slip circle has fully mobilised at present; it demonstrates that the slope has inadequate reserve stability once reliance on the bins is removed.

The physical evidence of existing and ongoing instability is well documented:

- A large landslip of approximately 60 metres extent occurred during Cyclone Jasper (December 2023), extending downslope from the crest of the natural drainage line (RECS report, July 2025; Section 3 of ETSP0000073-001R).
- Tension cracking was documented along the crest of the building platform and subsidence of paving around the Lot 13 pool area (RECS report, July 2025).
- Active ground slumping was observed behind the upper bin row during the ETS February 2026 site inspection (Section 4.1 of ETSP0000073-001R), consistent with ongoing downslope movement of the uncompacted fill placed behind the bins.
- Scour and undermining below the south-eastern corner of the upper bin row was noted during the same inspection, indicating active hydraulic erosion of the supporting fill.

The combination of calculated FOS values below 1.0 without reliance on the bins, observed ground movement, and visible distress to the bins provides a sufficient engineering basis for concluding that the current slope condition presents an unacceptable risk and requires remediation.

(ii) **A deeper failure surface exists beneath them**.

The lower cane bin area (adjacent to Ocean View Road and the shipping container) is proposed to be removed and replaced with a Terramesh retaining wall as part of the construction sequence. This is confirmed in the General Notes (Drawing ETSP0000073-001, Item E.2), which requires all cane bins within the remediation footprint to be dismantled and relocated prior to commencement of earthworks.

The lower cane bin treatment is shown on Drawings ETSP0000073-006 and ETSP0000073-007. The Terramesh wall is founded at approximately RL 62.70 m AHD and retains to approximately RL 69.00 m AHD, giving a retained height of about 6.3 m. The 150 mm solid PVC drainage outfall is routed beneath the shipping container location to the existing Ocean View Road culvert. This maintains the established drainage path whether the shipping container remains during construction or is removed by the contractor in consultation with Council.

The lower cane bin Terramesh wall has been checked using GEO5 Wall software outputs provided with the application. The outputs show satisfactory results for overturning (safety factor = 156.45 > 1.50), sliding (safety factor = 44.95 > 1.50), bearing capacity (safety factor = 1.75 > 1.50), and slip along geotextile reinforcement (factor of safety = 6.59 > 1.50). Internal stability checks for reinforcement tensile strength and pullout are also reported as satisfactory.

5. **Please provide commentary on:**

(i) How these works are intended to be constructed.

The Terramesh walls will be constructed in stages, consistent with the construction sequence on Drawing ETSP0000073-001, General Notes Items E.1 to E.14:

- Stage 1 – Mobilisation and Preparation: Identify and mark all underground public utility plant (General Notes, Item D.1). Strip the agreed remediation zone of vegetation and agree extents of remediation required (Item E.3). Erect silt fences and erosion control measures.

- Stage 2 – Dismantling of Cane Bins: Prior to any earthworks, the existing cane bins within the remediation footprint shall be dismantled and relocated to a designated geotechnical zone of influence stockpile area (Item E.2). The infill material is to be stockpiled for potential reuse as backfill subject to testing (General Notes, Item G).
- Stage 3 – Toe Establishment (Lower Cane Bin Area First): Terramesh works commence at the lowest elevation (lower cane bin area, RL 62.70 m AHD) to establish a stable toe before excavating upslope, ensuring continuous support at the base of the slope throughout construction.
- Stage 4 – Slope Trimming and Foundation Preparation: Trim the entire alignment to the specified cross-sectional profile (Item E.4). Excavate footings for each Terramesh lift (Item E.7). Bearing capacity to be confirmed by DCP testing at a minimum of 1 test per 15 lineal metres (Item E.8). If the required allowable bearing capacity of 100 kPa is not achieved, a foundation improvement layer is to be installed as directed (Item E.9).
- Stage 5 – Terramesh Erection and Backfilling (working upslope lift by lift): Erect a test Terramesh unit to be inspected and verified by the Design Engineer before full construction proceeds (Item E.6). Erect Terramesh units in accordance with manufacturer guidelines and lay A44 Geofabric behind each unit as erection proceeds (Items E.11 and E.12). Place and compact backfill in maximum 200 mm loose layers to 98% Standard Maximum Dry Density (SMDD) at ±2% Optimum Moisture Content (OMC) in accordance with MRTS04 (Item D.5). Repeat until the full alignment is complete (Item E.13).
- Stage 6 – Drainage Installation: Install 150mm perforated PVC subsoil drains at the base of each terramesh lift and connect to catch drains, junction pits, and solid PVC outfall pipes in accordance with Drawings ETSP0000073-003 and -007 (General Notes, Items F.1 to F.6).
- Stage 7 – Completion and Certification: Final inspection of the fully constructed structure by a suitably qualified RPEQ Geotechnical or Civil Engineer (Item E.14). Upon successful completion and verification, a Form 12 Inspection Certificate is to be issued. Undertake minimum material testing as required (Item E.5).

(ii) Plant access and working space.

Access is available from Ocean View Road via the existing steep concrete driveway and the dirt access track through the landslip area, as shown on Drawing ETSP0000073-006. The design allows for these access constraints as follows:

- A small to medium tracked excavator (3–8 tonne class) with a bucket attachment is appropriate for batter trimming, bin removal, and foundation excavation within the constrained working space of the slope. This equipment class is routinely used for Terramesh construction in similar steep terrain.
- An intermediate access bench exists approximately midway up the batter (noted in Section 4.1 of ETSP0000073-001R) which provides a working platform for the upper cane bin terramesh works (DWG ETSP0000073-002 and -003).
- The lower cane bin area (DWG ETSP0000073-006) is directly accessible from Ocean View Road at the toe of the slope, allowing conventional plant access without the need to traverse the slope.
- A vibratory plate compactor is appropriate for compacting backfill within the Terramesh structure in the constrained working environment.
- No heavy plant is required to operate on the slope itself. Material transfer within the upper cane bin area will be by tracked excavator working from the intermediate bench, supplemented by manual handling within the Terramesh footprint if required.
- A traffic management plan for any works within or adjacent to the Ocean View Road reserve will be prepared by the contractor prior to commencement of lower cane bin area works.

(iii) Handling/placement of backfill (including staging or stockpiling).

Backfill management will be carried out in accordance with General Notes, Items D.5, E.5, and G of Drawing ETSP0000073-001:

- Cane bin infill material will be stockpiled within the designated geotechnical zone of influence shown on Drawing ETSP0000073-009, clear of the active excavation and Terramesh erection zone.
- Prior to reuse, stockpiled cane bin material will be visually inspected and tested by a NATA-accredited testing authority to confirm it meets the design backfill parameters (effective friction angle ≥ 35°,

effective cohesion ≥ 5 kPa, free of organic matter, trash, deleterious substances, and contaminants) in accordance with General Notes Item G.2.

- Material used within the Terramesh baskets must be screened to achieve a uniform gradation between 100 mm and 250 mm in accordance with General Notes Item G.4 and Item F.3.
- Material used as general engineered backfill behind the reinforced soil block must be moisture conditioned and compacted to 98% SMDD at ±2% OMC in accordance with General Notes Item G.5.
- Material that does not meet the specification will be removed from site and replaced with approved imported granular engineered fill placed in maximum 200 mm loose layers and compacted as specified in General Notes Item D.5.
- Written approval from the RPEQ Design Engineer is required before any cane bin material is incorporated into the permanent works (General Notes Item G.6).
- No large, unconfined stockpiles will be maintained on the slope during active construction. Material will be placed sequentially consistent with the staged erection of Terramesh lifts.

6. **Please confirm how the design accommodates the existing site drainage path observed on site. In particular, how will drainage be maintained or managed to avoid impacting stability.**

A natural site drainage channel flows through the landslip area toward a culvert beneath Ocean View Road, currently bridged by a shipping container (visible in Photographs 1 and 2 of ETSP0000073-001R and shown on Drawing ETSP0000073-006). The design explicitly maintains and improves this drainage path as follows:

- Upper Cane Bin Area (DWG ETSP0000073-003, Detail C): A catch drain is provided at the crest of the Terramesh wall at 3% gradient, draining to a 150mm solid PVC pipe that connects to an outlet pit at the upslope end of the driveway (labelled on DWG ETSP0000073-002). This diverts all stormwater intercepted upslope of the upper Terramesh wall away from the slope face and into the established stormwater system, eliminating the uncontrolled flow path that currently contributes to pore pressure build-up in the landslip area.
- Lower Cane Bin Area (DWG ETSP0000073-007, Details D and E): A 450 x 450 mm grate pit is provided at the crest of the lower Terramesh wall, draining via a 150mm solid PVC pipe at 3% gradient to a precast concrete sealed junction pit. A 150mm solid PVC outfall pipe routes drainage beneath the shipping container location and discharges to the existing culvert beneath Ocean View Road, maintaining the established natural drainage path to the road culvert without alteration or disruption.
- Subsoil Drainage (DWG ETSP0000073-003 and -007, Terramesh and Drain Elevation): 150mm perforated PVC subsoil drains are installed at the base of each Terramesh lift within non-woven geotextile filtration sock. These connect to the sealed junction pit system and are fully sealed against internal erosion (General Notes Item F.6). The subsoil drainage system manages groundwater within the reinforced fill block and prevents hydrostatic pressure build-up behind the wall face.
- Stormwater General Note F.5: All connections between subsoil drainage pipes and junction pits must be securely and carefully sealed to avoid internal erosion. Stormwater drainage behind each Terramesh wall connects to the drain pit beside the existing concrete road.

The completed drainage system maintains the natural drainage path to the Ocean View Road culvert, intercepts surface runoff before it enters the landslip area, and drains the reinforced fill block. This improves the pre-remediation condition, where uncontrolled stormwater infiltration contributed to instability during extreme rainfall.

7. **Please confirm whether a design can be developed that allows independent structures within each property boundary. If the works are extending into the adjoining property to the north, then the application will need to include this land, or alternatively amend the design to be limited to the land subject of the application.**

ETS acknowledges Council's observation that the proposed Terramesh wall alignment traverses the common boundary between Lot 14 (RP745097) and Lot 13 (RP745097), noting that the upper row of existing cane bins already extends into Lot 13.

Mark Shearer holds an ownership interest in both Lot 13 and Lot 14. The works are being carried out for, and with the consent of, the owner of both lots. The proposed wall crossing the common boundary therefore does not create a third-party property consent issue.

To formally resolve the boundary matter to Council's satisfaction, ETS proposes the following:

- The application be amended to include Lot 13 (RP745097) as additional land subject to the application. Both Lot 13 and Lot 14 are identified in the application property details (LOT: 14 RP: 745097, LOT: 13 RP: 745097) and the street addresses (36 Ocean View Road and 50 Ocean View Road Killaloe) are already listed in the application. This confirms that the intent of the application has always encompassed both properties.
- ETS notes that the Site Constraints and Setback Plan (Drawing ETSP0000073-009) already delineates the Geotechnical Zone of Influence (ZOI) for both the upper and lower cane bin works across both lots, and confirms that all existing permanent structures on Lot 13 (concrete driveway, single storey dwelling, pool fence) are located outside the ZOI and outside the critical zone of active earth pressure.

No redesign of the Terramesh alignment is required. The appropriate resolution is an administrative amendment to formally include Lot 13 as subject land, consistent with the application documentation already submitted.

8. **Please confirm whether stability could instead be achieved by regrading (flattening) these slopes, reducing or eliminating the need for retention.**

ETS has assessed the alternative of regrading (flattening) the upper and mid-height slopes to achieve adequate stability without retention structures, based on the existing Slide2 stability analyses and survey data.

<u>Cut Rock Batter – Section A (upper slope behind Lot 14 dwelling):</u>

No retention is proposed or required for Section A. The existing cut rock batter in Hodgkinson Formation mudstone achieves FOS = 8.499 in its current configuration. Drainage at the crest and toe is the only intervention proposed and is sufficient to maintain long-term stability. This directly addresses Council's question regarding whether the upper slope can provide adequate stability without retention.

<u>Landslip Area – Section B (upper and mid-height slopes):</u>

To achieve FOS ≥ 1.5 in saturated residual soil conditions (ϕ' = 30°, c' = 5 kPa, γd = 18 kN/m^3, Ru = 0.3), regrading would require an approximate slope of 2H:1V to 2.5H:1V, depending on residual soil depth. The survey-based geometry makes that option impractical:

- The crest of the Section B landslip area is at approximately RL 80–82 m AHD. The toe of slope at the base of the lower cane bin area is at approximately RL 62–63 m AHD. The total vertical relief is approximately 18–20 m.
- To regrade to a stable 2.5H:1V slope over this full height, a horizontal setback from the toe to the regraded crest of approximately 45–50 m would be required. The current horizontal distance from the base of the lower cane bin (adjacent to Ocean View Road) to the upper cane bin crest is less than 25 m based on the survey cross sections.
- Regrading to a stable angle is therefore geometrically not achievable within the existing property boundaries without either: (a) excavating into and removing Ocean View Road; or (b) constructing a retention structure at the toe to reduce the required regraded slope height – which reintroduces retention as a necessary component of the solution.
- Large-scale regrading would generate significant volumes of spoil from the landslip area requiring off-site disposal. Based on the cross-sectional areas in Drawings ETSP0000073-004, -005, and -008, the earthworks volume for a full regrading solution would be multiples of the volume associated with the Terramesh approach, with substantially greater environmental, traffic, and cost implications.
- The existing natural drainage channel through the landslip area and the Ocean View Road culvert would be significantly disrupted or eliminated by full-height regrading of the lower slope, creating a new drainage management problem in place of the current one.

The developed Section B profile represents a practical hybrid solution: local regrading is used where feasible, and Terramesh walls provide support where the required stable batter cannot be achieved within the available footprint. This approach achieves the required stability criteria while maintaining the drainage path and avoiding encroachment into Ocean View Road.

Regrading alone, without retention, is therefore not feasible at this site.

ETS considers that the responses above address Council's Information Request dated 25 May 2026 and provide the technical basis required for the application to proceed to assessment. Please contact the undersigned if Council requires any further clarification.

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UNDERSTAND THE LIMITATIONS OF YOUR GEOTECHNICAL REPORT

This report is based on project details as provided to ETS Geo Pty Ltd at the time of commission. It therefore applies only to the site investigated, and to the specific set of project requirements as understood by ETS Geo Pty Ltd.

If there are changes to the project, you need to advise us in order that the effect of the changes on the report recommendations can be adequately assessed. ETS Geo Pty Ltd cannot take responsibility for problems that may occur due to project changes if we are not consulted.

It is important to remember that the subsurface conditions described in the report represent the state of the site at the time of investigation. Natural processes and the activities of man can result in changes to site conditions. For example, ground water levels can change, or fill can be placed on a site after the investigation is completed. If there is a possibility that conditions may have changed with time, ETS Geo Pty Ltd should be consulted to assess the impact on the recommendations of the report.

The site investigation only identifies the actual subsurface conditions at the location and time when the samples were taken. Geologists and engineers then extrapolate between the investigation points to provide an assumed three-dimensional picture of the site conditions. The report assumes that the site conditions as identified at the investigation locations are representative of the actual conditions throughout an area. This may not be the case and actual conditions may differ from those inferred to exist. This will not be known until construction has commenced. Your geotechnical report and the recommendations contained within it can therefore only be regarded as preliminary.

In the event that conditions encountered during construction differ from those described in the report, ETS Geo Pty Ltd should be consulted immediately. Although little can be done to change the actual site conditions which exist, steps can be taken to ameliorate the impact of unexpected conditions. For this reason, the services of ETS Geo Pty Ltd should be retained throughout the development stage of the project.

Problems can occur when other design professionals misinterpret a report. To help avoid this, ETS Geo Pty Ltd should be retained for liaison with other design professionals to explain the implications of the report.

This report should be retained as a complete document and should not be copied in part, divided, or altered in any way.

It is recommended that the services or ETS Geo Pty Ltd are retained during the construction phase to confirm that conditions encountered are consistent with design assumptions. For example, this may involve assessment of bearing capacity for footings, stability of natural slopes or excavations or advice on temporary construction conditions.

This document has been produced to help all parties involved recognise their individual responsibilities.