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SITE CLASSIFICATION REPORT GT19-253-001R REV 1
LOT 16 MARLOW COURT, GEORGETOWN QLD 4871

CUSTOMER:	Etheridge Shire Council	**REPORT:**	GT19-253-001R Rev.1
POSTAL ADDRESS:	PO Box 12	**DATE:**	29th August 2019
	Georgetown QLD 4871	**ORDER No:**	84315/2
INSPECTION DATE:	28th August 2019	**RPEQ NO:**	4449

1. Authorisation and Scope

A site investigation was carried out at Lot 16 Marlow Court, Georgetown to determine the foundation conditions and classify the site for a proposed residence.

The investigation was requested and authorised by the customer.

The scope of the investigation allowed for augered boreholes to inspect the subsoil profile, with logging of soil types and evaluation of the subsoil density conditions. Allowable bearing values were determined by dynamic cone penetrometer testing to a depth of 2.5m or refusal.

The results of the field tests were to be evaluated, the site classification determined for the foundation, and a report provided to the customer.

2. Site Description

a. Vegetation: The proposed development site was covered by thick, short grass and sparse shrubs.

b. Slope: The proposed development area is described as slightly sloping at 5 degrees in the eastern direction.

c. Water Table: At the time of the investigation, groundwater was not encountered in the excavated boreholes. However, it should be noted, that groundwater levels are affected by climatic conditions, tidal fluctuations and by soil permeability, therefore groundwater levels may vary with time.

d. Other Significant Features: Nil.

e. Drainage: The site was assessed as comprising good drainage conditions.

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3. Site Investigation/Testing

Insitu testing was carried out by Dynamic Cone Penetrometer tests at locations P1 to P4 (see site plan and Dynamic Cone Penetrometer Report enclosed) to evaluate the foundation density conditions.

Two (2) boreholes were excavated using by drill rig to determine the soil profile and recover disturbed samples for laboratory testing (Marked BH1 and BH2 on the Site Plan).

4. Laboratory Testing

Disturbed material samples were recovered from the boreholes at the allotment and Atterberg Limits testing was performed on a selected sample.

The Atterberg Limits tests indicate the subsoil is **moderately** reactive to changes in moisture content with an estimated predicted ground surface movement (ys) within Class **M-D** category (>20mm to ≤40mm). This reactivity can damage buildings on light strip footings or unstiffened slabs (See A.S.2870 Table 2.1 and 2.2). It is noted that the site is located in a climatic zone with design depth of suction change (Hs) equal to 3.0 metres and as a consequence is subject to deep seated moisture changes.

5. Bearing Capacity

An allowable bearing capacity of 100kPa **was achieved** at the site. The assessment of bearing capacity is based on an assumed depth to width ratio equal to at least 1.

It is recommended that inspections be undertaken by a qualified geotechnical engineer to confirm adequate founding material prior to steel placement and concrete pouring.

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Photo of the allotment

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Site Classification

The Site may be classified **CLASS – M-D** for footings designed in accordance with Australian Standard 2870 "Residential Slabs and Footings – Construction".

Note: This classification does not take into consideration the influence of trees (existing and / or future).

Note: This classification is subject to review should any cut earthworks in excess of 0.4m or any filling be carried out.

Note: The Structural Engineer should adhere to the requirements of AS 2870 "Residential Slabs & Footings – Construction" in relation to the founding of footings below the line of influence of an existing feature/excavation (e.g. retaining walls, underground services, effluent pits, unsupported batters, creeks, etc).

Note: RESPONSIBILITIES. (A.S.2870 Supp 1). Footing design and construction involves a number of steps; site classification, selection of the footing system, structural design, construction in accordance with the required design details and construction methods, and proper maintenance. In addition to the builder, this process may involve an engineer, the Building Authority, the owner, and all parties who share responsibility for any failure. In particular, the owner has a responsibility to ensure the site is properly maintained.

NOTE: Because this investigation is limited in scope and extent, it is possible that areas may exist which differ from those shown on the test hole records and used in the site classification. Should any variation from the reported conditions be encountered during excavation work, a Building Services Authority Registered Site Classifier or a Registered Practising Engineer must be notified immediately so that reappraisal of the classification can be made. Attention is drawn to the present or any future owners of their responsibilities for foundation maintenance as detailed in A.S. 2870 (Appendix A) and CSIRO Brochure "Foundation Maintenance and Footing Performance: A Homeowner's Guide."

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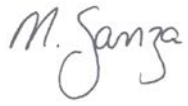

SIGNED: _____

Michael Ganza (RPEQ 4449)
MANAGING DIRECTOR

References:

1. A.S.1726 – Geotechnical Site Investigations
2. A.S. 2870 - 2011 Residential Slabs and Footings - Construction.
3. A.S. 3798 - Guidelines on Earthworks for Commercial and Residential Developments.

Attached:

1. Site Plan
2. Dynamic Cone Penetrometer Results
3. Borehole Logs
4. Understanding the Limitations of your Geotechnical Report

Additional Information – Separate Attachment:

CSIRO Brochure " Foundation Maintenance and Footing Performance: A Homeowner's Guide".

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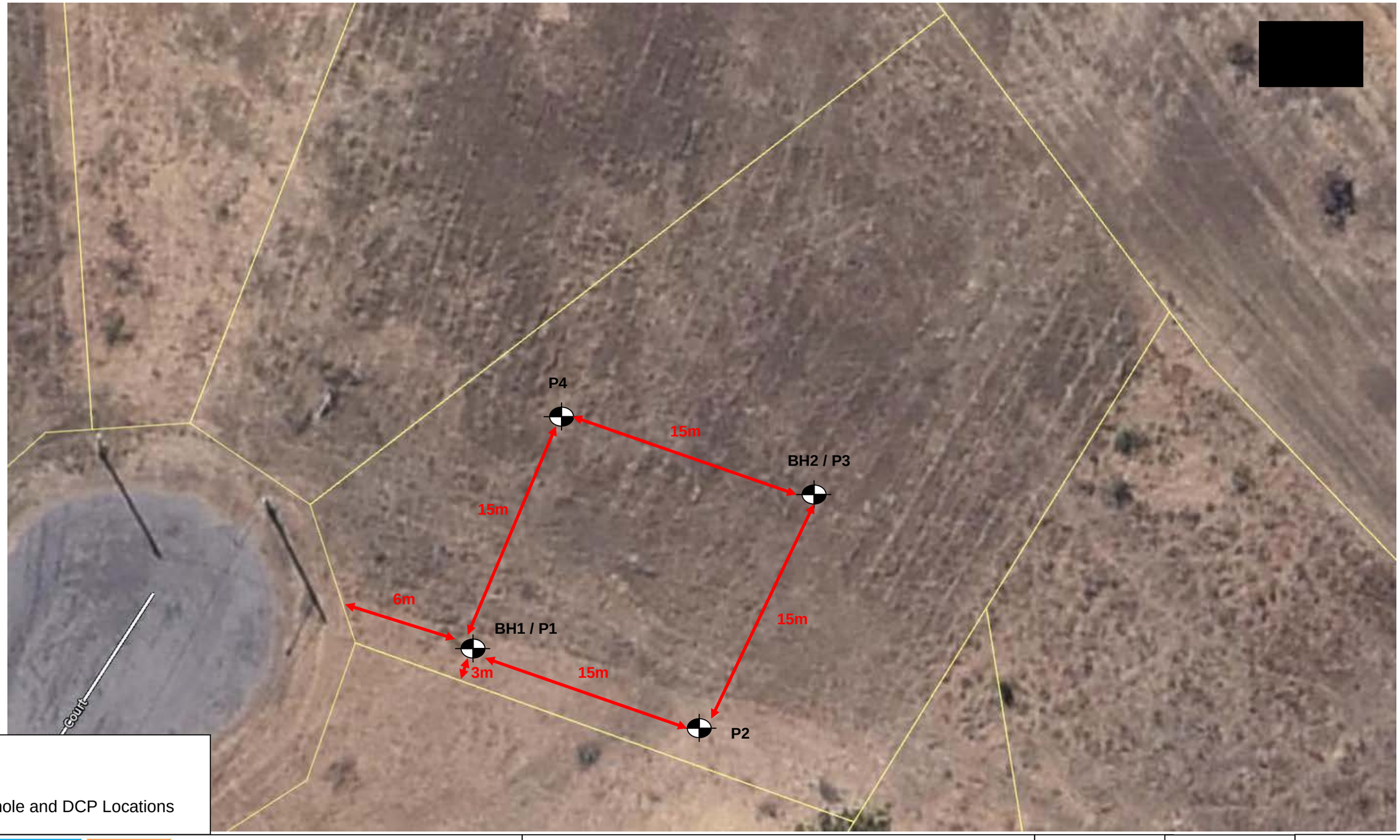

Legend

Borehole and DCP Locations

ETS GEOTECHNICAL

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TITLE:
SITE CLASSIFICATION
LOT 16 MARLOW COURT
GEORGETOWN QLD 4871

PROJECT NO.: GT19-253	**SCALE:** NTS	**DRAWN BY:** RR
DATE: 29/08/19	**OFFICE:** CNS	**APPROVED BY:** LJ

CLIENT: ETHERIDGE SHIRE COUNCIL

DRAWING NO.: GT19-253-001 DWG

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Dynamic Cone Penetrometer Report

Client :	**Etheridge Shire Council**	Report Number:	**GT19-253-001 DCP**
Client Address:	**PO Box 12 Georgetown QLD 4871**	Report Date:	**29/08/2019**
Job Number :	**GT19-253-001**	Order Number:	**84315/2**
Project :	**Site Classification**	Test Method:	**AS1289.6.3.2**
Location :	**Lot 16 Marlow Court, Georgetown**		**Page 1 of 1**

Sample Number :	-		-		-		-	
Test Number :	**P1**		**P2**		**P3**		**P4**	
Date Tested :	**28/08/2019**		**28/08/2019**		**28/08/2019**		**28/08/2019**	
Lot Number :	**16**		**16**		**16**		**16**	
Sample Location :	**54K** **768919m E** **7975275m S**		**54K** **768933m E** **7975270m S**		**54K** **768941m E** **7975281m S**		**54K** **768929m E** **7975288m S**	
Soil Condition :	**Dry - Moist**		**Dry - Moist**		**Dry - Moist**		**Dry - Moist**	
Soil Description :	**See Borehole Log**		**See Borehole Log**		**See Borehole Log**		**See Borehole Log**	
	Depth	Blows	Depth	Blows	Depth	Blows	Depth	Blows
	0.00 - 0.10	**8**	0.00 - 0.10	**7**	0.00 - 0.10	**10**	0.00 - 0.10	**6**
	0.10 - 0.20	**5**	0.10 - 0.20	**12**	0.10 - 0.20	**8**	0.10 - 0.20	**9**
	0.20 - 0.30	**9**	0.20 - 0.30	**10**	0.20 - 0.30	**7**	0.20 - 0.30	**15**
	0.30 - 0.40	**12**	0.30 - 0.40	**10**	0.30 - 0.40	**7**	0.30 - 0.40	**11**
	0.40 - 0.50	**12**	0.40 - 0.50	**10**	0.40 - 0.50	**9**	0.40 - 0.50	**10**
	0.50 - 0.60	**15**	0.50 - 0.60	**5**	0.50 - 0.60	**9**	0.50 - 0.60	**10**
	0.60 - 0.70	**10**	0.60 - 0.70	**5**	0.60 - 0.70	**12**	0.60 - 0.70	**8**
	0.70 - 0.80	**8**	0.70 - 0.80	**6**	0.70 - 0.80	**10**	0.70 - 0.80	**5**
	0.80 - 0.90	**8**	0.80 - 0.90	**5**	0.80 - 0.90	**10**	0.80 - 0.90	**5**
	0.90 - 1.00	**13**	0.90 - 1.00	**9**	0.90 - 1.00	**8**	0.90 - 1.00	**9**
	1.00 - 1.10	**15**	1.00 - 1.10	**15**	1.00 - 1.10	**7**	1.00 - 1.10	**20**
	1.10 - 1.20	**21**	1.10 - 1.20	**18**	1.10 - 1.20	**6**	1.10 - 1.20	**Refusal**
	1.20 - 1.30	**Refusal**	1.20 - 1.30	**12**	1.20 - 1.30	**9**	1.20 - 1.30	
	1.30 - 1.40		1.30 - 1.40	**12**	1.30 - 1.40	**8**	1.30 - 1.40	
	1.40 - 1.50		1.40 - 1.50	**15**	1.40 - 1.50	**12**	1.40 - 1.50	
	1.50 - 1.60		1.50 - 1.60	**18**	1.50 - 1.60	**11**	1.50 - 1.60	
	1.60 - 1.70		1.60 - 1.70	**22**	1.60 - 1.70	**13**	1.60 - 1.70	
	1.70 - 1.80		1.70 - 1.80	**Refusal**	1.70 - 1.80	**15**	1.70 - 1.80	
	1.80 - 1.90		1.80 - 1.90		1.80 - 1.90	**22**	1.80 - 1.90	
	1.90 - 2.00		1.90 - 2.00		1.90 - 2.00	**20**	1.90 - 2.00	
	2.00 - 2.10		2.00 - 2.10		2.00 - 2.10	**20**	2.00 - 2.10	
	2.10 - 2.20		2.10 - 2.20		2.10 - 2.20	**18**	2.10 - 2.20	
	2.20 - 2.30		2.20 - 2.30		2.20 - 2.30	**12**	2.20 - 2.30	
	2.30 - 2.40		2.30 - 2.40		2.30 - 2.40	**10**	2.30 - 2.40	
	2.40 - 2.50		2.40 - 2.50		2.40 - 2.50	**8**	2.40 - 2.50	
	2.50 - 2.60		2.50 - 2.60		2.50 - 2.60		2.50 - 2.60	
	2.60 - 2.70		2.60 - 2.70		2.60 - 2.70		2.60 - 2.70	
	2.70 - 2.80		2.70 - 2.80		2.70 - 2.80		2.70 - 2.80	
	2.80 - 2.90		2.80 - 2.90		2.80 - 2.90		2.80 - 2.90	
	2.90 - 3.00		2.90 - 3.00		2.90 - 3.00		2.90 - 3.00	
Remarks :								

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Accredited for compliance with ISO/IEC 17025 - Testing

APPROVED SIGNATORY

Darren Koch

Senior Geotechnician
Cairns Laboratory
NATA Accreditation No. 20026

FORM NUMBER

FM-RP-110-4

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Site Investigation Report

Customer:	Etheridge Shire Council	**Report Number:**	GT19-253-001 LOG
Job Number:	GT19-253	**Report Date:**	29-Aug-19
Project:	Site Classification	**Order Number:**	84315/2
Location:	Lot 16 Marlow Court, Georgetown		**Page 1 of 2**

BOREHOLE NO: 1

Depth (m)	Description of Subsoil	Consistency	Moisture Condition	Ground Water Level (m)	Sample Type & Depth (m)
0 - 0.35	Silty Sandy CLAY (CL): low plasticity, grey brown, fine to course grained sand.	Stiff to Very Stiff	Dry	Ground Water Not Encountered	Disturbed Material Sample @ 0.1m-0.3m
0.35 - 1.1	Sandy CLAY (CL-CI): low to medium plasticity, brown, medium to coarse grained sand, trace of fine to medium grained gravel.	Very Stiff	Moist		Disturbed Material Sample @ 0.5m-0.7m
1.1 -1.8	Gravelly Sandy CLAY (CL-CI): low to medium plasticity, fine to coarse grained gravel, brown mottled pale brown, medium to coarse grained sand.	Very Stiff	Moist		Disturbed Material Sample @ 1.1m-1.2m Disturbed Material Sample @ 1.5m-1.7m
1.8 - 3.0	Sandy CLAY (CL-CI): low to medium plasticity, pale yellow brown, medium to coarse grained sand, trace of fine to coarse grained gravel.	Very Stiff to Hard	Moist		Disturbed Material Sample @ 2.0m-2.1m Disturbed Material Sample @ 2.8m-3.0m
3.0	Borehole Terminated at Target Depth.				

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Site Investigation Report

Customer:	Etheridge Shire Council	**Report Number:**	GT19-253-001 LOG
Job Number:	GT19-253	**Report Date:**	29-Aug-19
Project:	Site Classification	**Order Number:**	84315/2
Location:	Lot 16 Marlow Court, Georgetown		**Page 2 of 2**

BOREHOLE NO: 2

Depth (m)	Description of Subsoil	Consistency	Moisture Condition	Ground Water Level (m)	Sample Type & Depth (m)
0 - 0.35	Silty Sandy CLAY (CL): low plasticity, grey brown, fine to course grained sand.	Stiff to Very Stiff	Dry	Ground Water Not Encountered	Disturbed Material Sample @ 0.1m-0.2m
0.35 - 1.1	Sandy CLAY (CL-CI): low to medium plasticity, brown, medium to coarse grained sand, trace of fine to medium grained gravel.	Very Stiff	Moist		Disturbed Material Sample @ 0.8m-1.0m
1.1 -1.8	Gravelly Sandy CLAY (CL-CI): low to medium plasticity, fine to coarse grained gravel, brown mottled pale brown, medium to coarse grained sand.	Very Stiff	Moist		Disturbed Material Sample @ 1.5m-1.7m
1.8 - 3.0	Sandy CLAY (CL-CI): low to medium plasticity, brown, medium to coarse grained sand, trace of fine to coarse grained gravel.	Very Stiff to Hard	Moist		Disturbed Material Sample @ 2.0m-2.2m Disturbed Material Sample @ 2.8m-3.0m
3.0	Borehole Terminated at Target Depth.				

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UNDERSTAND THE LIMITATIONS OF YOUR GEOTECHNICAL REPORT

This report has been based on project details as provided to us at the time of the commission. It therefore applies only to the site investigated and to a 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 they 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 is based on the assumption 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 are different to those described in the report, ETS Geo Pty Ltd should be consulted immediately. Nothing can be done to change the actual site conditions which exist but steps can be taken to reduce the impact of unexpected conditions. For this reason, the services of ETS Geo Pty Ltd should be retained through the development stage of a project.

Problems can occur when other design professionals misinterpret a report. To help avoid this, ETS Geo Pty Ltd should be retained for work 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 ETS Geo Pty Ltd is 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 involve recognise their individual responsibilities.