

T7 Properties Limited

Proposed Residential Subdivision -Southwest T7 Cell, Swarbrick Drive, Te Awamutu

Geotechnical Completion Report GENZHAMI14651AD

16 May 2016



Innovation is finding answers to questions no one has asked

Proposed Residential Subdivision - Southwest T7 Cell, Swarbrick Drive, Te Awamutu

Prepared for T7 Properties Limited PO Box 579 Te Awamutu

Attention: Andrew Fladgate

Prepared by Coffey Geotechnics (NZ) Ltd Level 1, 96 Cameron Road Tauranga, 3010 New Zealand t: +64 7 571 6081

16 May 2016

Document authorisation

Our ref: GENZHAMI14651AD

This report presents all supporting geotechnical data and our Suitability Statement in relation to land development works undertaken at the above location.

It has been prepared in accordance with instructions received from T7 Properties Limited and forms part of the documentation required by Waipa District Council, following recent earthworks to form the planned Southwest T7 Cell subdivision.

If you have any queries or you require any further clarification on any aspects of this report, please do not hesitate to contact the undersigned.

For and on behalf of Coffey

aurence Chal

Lawrence Charles Senior Geotechnical Engineer

Quality information

Revision history

Revision	Description	Date	Author	Reviewer	Signatory
0	GCR for the Southwest T7 Cell Subdivision	16/05/2016	L Charles	D Sullivan	L Charles

Distribution

Report Status	No. of copies	Format	Distributed to	Date
Final	01	PDF	T7 Properties Ltd	16/05/2016

Table of contents

1.	Introd	uction	.1
2.	Descr	iption of Subdivision	.1
3.	Relate	ed Reports	.3
4.	Earth	works Operations	.3
	4.1.	Plant	.3
	4.2.	Construction Programme	.3
5.	Qualit	y Assurance and Controls	.4
	5.1.	Site Observations and Testing	.4
	5.2.	Quality Control Criteria	.4
	5.3.	Quality Assurance Testing	.4
		5.3.1. Compaction	.4
6.	Projec	ct Evaluation	.5
	6.1.	Bearing Capacity of Building Foundations	.5
	6.2.	Land Drainage	.5
	6.3.	Settlement	.5
		6.3.1. Liquefaction-Induced Settlement	.5
		6.3.2. Fill-Induced Settlement	.6
	6.4.	Service Trenches	.6
	6.5.	Road Subgrades	.6
	6.6.	Topsoil	.6
	6.7.	Contractor's Work	.7
	6.8.	Suitability Statement	.7
7.	Future	e Work	.7
8.	Limita	tion	.7

Important information about your Coffey report

Appendices

- Appendix A Statement of Professional Opinion
- Appendix B RAD Surveying Limited As-Built Plans and Coffey Site Plan from 2014 Report Appendix C Field Density Test Summary Sheets Appendix D Post-Construction Test Locations and Data

- Appendix E Settlement Monitoring Locations
- Appendix F Approved Roadway Subgrade Locations and Test Data

1. Introduction

This Geotechnical Completion Report (GCR) has been prepared by Coffey Geotechnics (NZ) Limited (Coffey) for T7 Properties Limited as part of the documentation required to be submitted to the Waipa District Council following residential subdivisional development.

This report contains our Suitability Statement (in Appendix A), relevant test data and RAD Surveying Limited (RAD Surveying) as-built plans relating to the building platforms and road reserves of the Southwest T7 Cell Residential Subdivision as follows:

 Table 1.1: RAD Surveying Limited As-Built Plans Schedule

Title	Reference No.	Date
Scheme Plan	14/014, Sheet 1, Version 7	December 2015
Cut Fill Model	14/014, Sheet 1, Version 1	April 2016
Engineering Plan – Roading Layout	14/014, Sheet RD1, Version 3	March 2016

These as-built plans are included for reference in Appendix B.

This report covers the recent building platforms preparation for the new subdivision. The lots covered for this GCR are the entire subdivision, except Lots 21 and 100 (that is, Lots 1 through 20, Lots 22 through 80, and Lots 82 through 86), as depicted on the appended RAD Surveying scheme plan dated December 2015. Additional analysis is still to be completed on Lot 21, a GCR has already been completed for the Rest Home on Lot 100, and the road reserve lots are included as noted in Section 6.5 below.

This report is intended to be used for subdivision resource consent and pertains to earthworks observation and testing of the afore-mentioned lots.

2. Description of Subdivision

The Highfield Country Estate, Southwest T7 Cell Subdivision is located on Swarbrick Drive in Te Awamutu. The area is located between State Highway 3 (SH3) to the southwest, agricultural land to the southeast, and developed subdivisions to the north as indicated in Figure 2.1 and 2.2 below.

This stage of the subdivision is located at Swarbrick Drive and is formed by both cut and fill as can be seen in the cut/fill contour as-built plan in Appendix B. The subdivision site has been cut and filled to maximum depths of about 8m and 4m, respectively.



Figure 2.1 – Site Location (Google Earth 2016)



Figure 2.2 – Southwest T7 Cell Subdivision (from RAD Surveying, as edited by Coffey)

3. Related Reports

A Preliminary Geotechnical Assessment Report (PGAR) on the subject land was prepared by Coffey, reference GENZHAMI14651AD-AB dated 4 November 2014. The conclusions and recommendations of that report have been reviewed during the preparation of this document. The Site Plan (GENZHAMI14651AD, Figure 01) for this PGAR is included in Appendix B for reference. The site plan indicates original contours, lot layout, and numbering for the subdivision. It also includes locations of test pits and cone penetration tests (CPTs) from both the 2010 and 2014 investigations.

An Earthworks Specification Memorandum regarding the subject land was prepared by Coffey, reference GENZHAMI14651AD-AB dated 10 February 2015. The conclusions and recommendations of that report have been reviewed during the preparation of this document.

A specific GCR for the Rest Home on Lot 100 was prepared by Coffey, reference GENZHAMI14651AD-AG dated 24 June 2015. Construction for the Rest Home has recently commenced.

4. Earthworks Operations

4.1. Plant

The main items of plant used by the Contractor, Parkes Contracting Limited, were:

- 2 x Tractor with towed elevating scrapers;
- 1 x Tractor with towed 8 Tonne Sheepsfoot compactor;
- 1 x Hitachi excavator; and,
- 1 x Sumitomo excavator.

4.2. Construction Programme

Site earthworks operations for the subdivision commenced January 2015 and involved stripping of topsoil and removal from site. The natural subgrage soils were observed by Coffey and tested using shear vane and dynamic cone penetration (DCP) methods. The elevated ridge was cut up to a maximum depth of about 8m, as depicted on the appended RAD Surveying as-built plan titled 'Cut Fill Model' (reference 14/014, Sheet 1, Rev 1 dated May 2016). Materials generated by the cut were incorporated into fills within the southern and eastern portions of the site.

The majority of the subdivisional bulk earthworks within the vicinity of the proposed lots were completed in January 2016.

More recently, the majority of the services in the road reserves have been installed. The installation of services continues and Coffey can report on these items in an addendum report.

5. Quality Assurance and Controls

5.1. Site Observations and Testing

During the earthworks engineering observations and testing were undertaken on a regular basis to assess compliance with NZS 4431, and our project specific recommendations and specifications. Project specific observations were required on this stage of the development for:

- Assessment of cut materials for proposed fills;
- Filling compaction control; and,
- Post-earthworks construction testing to asses subsoils beneath the proposed lot building platforms.

5.2. Quality Control Criteria

Due to the varying soil types being used as fill, the compaction control criteria of minimum allowable shear strength and maximum allowable air voids were mainly used for quality assurances purposes.

Specification details were as follows:

Table 5.1: Minimum Shear Strength and Maximum Air Voids Method Requirements

(a)	Air Voids Percentage	
	(As defined in NZS 4402)	
	General Fill	
	Average value less than	10%
	Maximum single value	12%
(b)	Undrained Shear Strength	
	(Measured by Pilcon shear vane - calibrated using NZGS 2001 method)	
	General fill	
	Average value not less than	140 kPa
	Minimum single value	120 kPa

Note: The average value shall be determined over any ten consecutive tests

5.3. Quality Assurance Testing

5.3.1. Compaction

In-situ density monitoring was carried out as for the general fill areas. Regular in-situ density, strength and water content tests were carried out on all areas of the fill at or in excess of the frequency recommended by NZS 4431. A summary of the testing carried out during the placement of fill materials based on the original lot layout is summarised in Appendix C.

In-situ density Tests 8, 21 and 26 to 31 relating to the fill control testing carried out within Lot 21 and the Rest Home area (Lot 100) should be ignored.

Control tests carried out on the fill materials showed that on three occasions the required compaction standards were not achieved. Results of the test failures were relayed to the site foreman and/or his

staff, and the affected areas of fill were re-worked as necessary. Further testing was then carried out until compliance with the standards was achieved.

6. Project Evaluation

6.1. Bearing Capacity of Building Foundations

Following the staged completion of earthworks operations within the subdivision, we returned to site numerous times between October 2015 and March 2016 and carried out a series of post-construction CPTs and drilled hand auger boreholes within the approximate building footprints. These investigations generally varied between 1.5m and 3m below planned building platform levels and were completed to confirm bearing capacity for the lots. A total of 28 hand augers and 47 CPTs were carried out during this phase. The locations and results of the post-construction investigations are included in Appendix D.

It should be noted that there was a soft area that spanned across Lots 29 through 36. Woven geotextile fabric was placed in this area to provide additional support. Approximately 1m of fill materials were compacted and tested above this level. The approximate extent of this area is indicated on the marked up Scheme Plan included in Appendix D.

Based on the post-construction site investigation results and observations, at current platform levels, both the compacted fill material and undisturbed natural ground have a geotechnical ultimate bearing capacity of 300kPa within the depth of influence of conventional shallow residential building foundations.

Where any building platforms have been rutted by heavy machinery, or softened due to ponded rainwater, they should be trimmed back to competent ground and reinstated with compacted hardfill to design subgrade level prior to the commencement of building construction, or, alternatively, a lower bearing capacity used in the foundation design (e.g. use of Rib-Raft or similar foundations).

6.2. Land Drainage

Before work began on the subdivision, there was a pond on-site near the road reserve and Lots 70 and 71. The pond drained through a gully swale across some lots, but mainly on Lot 83, which is now a reserve area.

When construction began, this pond was emptied and the soft saturated soils were removed down to firm soil. Non-woven geotextile fabric was placed at the bottom of the exposed firm soil in the lower areas of Lot 83. Drainage rock was then placed prior to another layer of separating non-woven geotextile fabric to create an underfill drain (drainage blanket). Fill materials were then compacted above this level to form the existing contours. This drainage blanket was intended to intercept localised groundwater seepages during earthworks and to help general control over local groundwater levels and was installed as a precautionary measure, not as remedial works for any existing instability and it needs no specific maintenance. The approximate extents of these areas are indicated on the marked up Scheme Plan included in Appendix D.

6.3. Settlement

6.3.1. Liquefaction-Induced Settlement

Liquefaction assessments were carried out by Coffey in 2016 on the deeper CPT data results along the southeastern edge of the subdivision (i.e. CPT101 through CPT103). Liquefaction potential under

ultimate limit state (ULS) analysis indicates free-field settlement under these conditions to be less than 100mm. Serviceability limit state (SLS) indicates negligible free-field settlement. The settlements under liquefaction are anticipated to be relatively uniform and assessed to be acceptable.

6.3.2. Fill-Induced Settlement

Two settlement markers were installed at the approximate locations shown on the appended plan in Appendix E. It was attempted to undertake regular surveying to establish settlement trends in these areas. Unfortunately, Settlement Marker SM02 was destroyed in February 2015 after one week of operation and showed 1mm of settlement where about 2m of fill was placed. SM01, positioned where about 3m of fill was placed, was monitored for two full months and indicated about 5mm of settlement. Based on these results, we are satisfied that the majority of settlement has occurred.

As a result of our pre-fill inspections, quality control testing and the duration since the placement of the fill materials, we are of the opinion that induced differential settlements beneath or within the observed and tested fill materials due to its imposed weight should be insignificant with respect to conventional NZS 3604 or AS 2870 residential building development.

It should be noted that NZS 3604 only allows a maximum new fill depth of 600mm across the footprint of a building unless an Engineering design solution is proposed, on account of the risk of additional induced settlement of the subsoils caused by the weight of the new fill.

6.4. Service Trenches

As is normal on all subdivisions, building developments involving foundations within a 45 degree zone of influence from pipe inverts will require specific design by Coffey or other qualified chartered professional engineer with a view to extending foundation loads below this zone.

6.5. Road Subgrades

Road subgrade preparation, observations, and testing were carried out by Coffey. Initially, Coffey tested the exposed subgrade on the entire subdivision. Coffey used the DCP method per Waipa District Council as a guide, but due to the fine-grained nature of the subgrade soils this method may not be the most appropriate to test the subgrade. Regardless, Coffey used criteria of a minimum average of 3 blows per 100mm (ignoring the upper 100mm). Coffey retested in the immediate vicinity to gauge compliance with the criteria in areas that failed.

Subsequent to the above testing, utility services were installed in the roadway areas in the northwestern portion of the subdivision as these are the only roadways that will be developed at this time. The contractor then prepared these roadway subgrades, where possible. On 5 May 2016 Coffey field personnel observed proof rolling along the majority of these roadway subgrades and carried out a few additional tests. The proof rolling was carried out with a 12 tonne flat roller and indicated no discernible deflections. Coffey judges that the roadway subgrade, where indicated on the marked up Engineering Plan – Roading Layout that is included in Appendix F, is satisfactory for paving. The remaining area that was not observed and passed should be proof rolled and tested once utility services are installed and the subgrade soils have been prepared.

6.6. Topsoil

Topsoil had not been respread across the lots. However, there is some topsoil growth on Lots 1 through 13 at the time of preparing this report. Topsoil should be removed in the building areas prior to construction.

6.7. Contractor's Work

We have relied on the Contractor's diligence and construction observations to ensure that the works have been carried out in general accordance with NZS4431 and NZS4404, and with:

- (i) The approved Contract drawings and design details;
- (ii) The approved Contract specifications;
- (iii) Authorised Variations and Memorandums regarding particular earthworks details during the execution of the works;
- (iv) The conditions of Resource, Earthworks and Building Consents where applicable;
- (v) The relevant geotechnical investigation reports, recommendations and site instructions, and that all as-built information, and other details provided to the Client and/or Coffey Geotechnics (NZ) Limited are accurate and correct in all respects.

6.8. Suitability Statement

A copy of our statement of professional opinion as to the geotechnical suitability of the land for development in accordance with Waipa District Council requirements is attached.

7. Future Work

Lot owners should satisfy themselves that the bearing strength of subsoils within the building footprints have been preserved in lieu of the presence of topsoil and the exposed subgrade surfaces due to weather in the future.

8. Limitation

This report has been prepared on behalf of our client, T7 Properties Limited, its professional advisers and the relevant Territorial Authorities in relation to the specific project described herein. It is designed to give the local authority (Council) the foundation requirements needed for each section. No liability is accepted in respect of its use for any other purpose or by any other person or entity. All future owners of this property should seek professional geotechnical advice to satisfy themselves as to its on-going suitability for their intended use.

The opinions, recommendations and comments given in this report result from the application of normal methods of site investigation. As factual evidence has been obtained solely from visual observations and some shallow boreholes which by their nature only provide information about a relatively small volume of subsoils, there may be special conditions pertaining to this site which have not been disclosed by the investigation and which have not been taken into account in the report.

If variations in the subsoils occur from those described or assumed to exist then the matter should be referred back to us immediately.

For and on behalf of Coffey

Prepared By:

Caurence Chal

Lawrence Charles Senior Geotechnical Engineer

Reviewed and Authorised By:

David Sullivan Principal Geotechnical Engineer



Important information about your Coffey Report

As a client of Coffey you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by Coffey and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking Coffey to assess how factors that changed subsequent to the date of the report affect the report's recommendations. Coffey cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. 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, owners should retain the services of Coffey through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.

Interpretation by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other project design professionals who are affected by the report. Have Coffey explain the report implications to design professionals affected by them and then review plans and specifications produced to see how they incorporate the report findings.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way.

Logs, figures, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples.

These logs etc. should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Geoenvironmental concerns are not at issue

Your report is not likely to relate any findings, conclusions, or recommendations about the potential for hazardous materials existing at the site unless specifically required to do so by the client. Specialist equipment, techniques, and personnel are used to perform a geoenvironmental assessment. Contamination can create major health, safety and environmental risks. If you have no information about the potential for your site to be contaminated or create an environmental hazard, you are advised to contact Coffey for information relating to geoenvironmental issues.

Rely on Coffey for additional assistance

Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a project, from design to construction. It is common that not all approaches will be necessarily dealt with in your site assessment report due to concepts proposed at that time. As the project progresses through design towards construction, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than the design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.

Appendix A – Statement of Professional Opinion

STATEMENT OF PROFESSIONAL OPINION AS TO THE GEOTECHNICAL SUITABILITY OF LAND FOR DEVELOPMENT

ISSUED BY:	Coffey Geotechnics (NZ) Limited (Construction Review Firm)
TO:	T7 Properties Limited (Owner / Developer)
TO BE SUPPLIED TO:	Waipa District Council (Local Authority)
IN RESPECT OF:	Geotechnical Completion Report – Southwest T7 Cell Subdivision (Lots 1 to 20, 22 to 80, and 82 to 86) (Description of Relevant Development)
AT:	Swarbrick Drive, Te Awamutu (Location)
COUNCIL FILE NUMBER BO	C/RC No: LU/0049/45
L Devid Culliver Drineire	A Controlymical Engineer of Coffee Controlymics (NIZ) Lineited

 I ... David Sullivan, Principal Geotechnical Engineer of Coffey Geotechnics (NZ) Limited

 (Full Name)
 (Qualifications)

 (Name & Address of Firm)

Hereby confirm that;

1. I am a professional person appropriately qualified in geomechanics to ascertain the suitability of the land for building development and was retained as the geotechnical consultant for the above development.

2. An appropriate level of site investigation has been carried out under my direction and is described in the report titled, "Geotechnical Completion Report for Proposed Residential Subdivision – Southwest T7 Cell, Swarbrick Drive, Te Awamutu, reference GENZHAMI14651AD, dated 16 May 2016".

3. I am aware of the details of the proposed plan of development and of the general nature of the proposed engineering works as shown on the following drawings:

- Scheme Plan, reference number 14/014, dated December 2015;
- Cut Fill Model, reference number 14/014, dated April 2016; and,
- Engineering Plan Roading Layout, reference number 14/014, dated March 2016.

4. Lots 1 to 20 and 22 to 80 have reached compaction requirements that are suitable for standard NZS 3604 and AS 2870 concrete floor foundations.

5. In my professional opinion, not to be construed as a guarantee, I consider that the proposed works give due regard to land slope and foundation stability considerations and that the land is suitable for the proposed development provided that the recommendations of the above referenced report are adhered to.

6. This professional opinion is furnished to the Council, the owner, and future owner(s) for their purpose alone on the express condition that it will not be relied upon by any other person.

Signed

Date 16 May 2016

For and on behalf of Coffey Geotechnics (NZ) Ltd

Appendix B – RAD Surveying Limited As Built Plans and Coffey Site Plan from 2014 Report

3) TOTAL AREA: 4) ZONE: AREAS SHOWN J A	RES	9.0196 ha. IDENTIAL (PDP ON LOT 10 AN) ID AREAS L	AND M ON	
LOT 11 ARE SUBJE					1
		SERV. TENE.	SHOWN	DOM. TENE	
RIGHT OF WAY RIGHT TO CONVEY WATER, SEWAGE, STORMWATER, ELECTRICITY, TELECOMMUNICATI AND COMPUTER M	ONS	LOT 86 HEREON	Y	LOTS 41 and 42 HEREON	
]
PURPOSE		ERV. TENE		DOC.	
-	LOT	1 HEREON	A		
	LOT	3 HEREON	В		
	LOT	4 HEREON	С		
	LOT	5 HEREON	D		
	LOT	5 HEREON	E		
	LOT	6 HEREON	F		
	LOI	7 HEREON	G		
RIGHT TO CONVEY	LOT	8 HEREON	Н	H.798697	
	LOT	9 HEREON	I		
	LOI	10 HEREON	J		
		11 HEREON			
			N		
		14 HEREON	0		$ / \rangle$
	LOT	15 HEREON	R		
	LOT	16 HEREON	S		
	LOT	17 HEREON	Т		1 /
	LOT	18 HEREON	U		
	LOT	19 HEREON	V		
	LOT	20 HEREON	W		`×´
	LOT	21 HEREON	x		
			SEMENTS I DERED	IN GROSS	
PURPOSE	S	ERV. TENE.	SHOWN	DOC.	
RIGHT TO CONVEY NATURAL GAS	LOI	84 HEREON	Ρ	H.798697	
AMALGAMATIC PURSUANT TO SECT THAT LOT 86 (LEGAL UNDIVIDED ONE-HAL 41 AND 42 HEREON / TITLE BE ISSUED IN	ON C ION 2 ACCE F SHA AND TI ACCO	ONDITION 20 1)b)iv) RMA 1 SS) HEREON B RES BY THE ON HAT INDIVIDUAL RDANCE THERE	991 E HELD AS TC WNERS OF LC - CERTIFICAT EWITH	D TWO DTS ES OF	

07 843 1587 027 411 8496 237 DIXON ROAD, RD 2 HAMILTON troy@radsurveying.co.nz Designed. TDR 29 June 2014

PREPARED FOR: T7 PROPERTIES LTD

SCALE: 1:2000 @ A3

COPYRIGHT: The copyright for the information shown on this plan remains the right of Rad Surveying Ltd. It may not be reproduced (wholly or in part), without consent from Rad Surveying Ltd.

		12 DP 483139
	1 ,709m2 743m2 743m2	Igntield Country Estat
ENE	3 820m2 78 720m2 78	
	4 820m2 76 700m2 80 630m2	
	5 725m2 725m2 725m2 725m2 725m2 725m2 74 73 74 73 74 73 74 73	
SS	6 676m2 70 70 676m2 70 70 70 70 70 70 70 70 70 70 70 70 70	ater)
	7 676m2 676m2 676m2 676m2 72 676m2 72 656m2 72	
	8 676m2 675m2 675m2 68	
	676m2 10 602m2	
7	55 11 55 55	
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	3)
	6 4 200 nd 54 547m2 609m2 64 905m2 63 747m2 609m2 13 609m2 53 59 69 69 609m2 63 747m2 609m2 63 747m2 609m2 63 742 39 808m2	
	1395m2 62 576t/12 114 40 103 52 60 610m2 610m2 43 103 114 872m2 610m2 610m2 43 103	34 688m2
	84 214m2 15 15 760m2 700m2 700000 70000000000	05 35 686m2
	(Pedestrian) 16 857m2 10 10 10 10 10 10 10 10 10 10	803m2 9007
	17 17 49 601m2 40 604m2 604m2 60538 ha 29 605m2 659m2	geotech
	18 657m2 19 27 659m2 27 659m2 27 659m2 26 659m2 27 659m2 26 85 85 85 85 85 85 85 85 85 85	
	857m2 20 20 22 23 659m2 (Pedestrian) 22 659m2 (Pedestrian)	
7	21 640m2 830m2	
	SCHEME PLAN PROPOSED T7 SUBDIVISION	
	SWARBRICK DRIVE, TE AWAMUTU	









3/10/2014F:\GENZ\20 HAMI PROJECTS\14651AD HIGHFIELD COUNTRY ESTATE T7 & T8\DRAWINGS\CGL DRAWINGS\WORKING\14651AD SITE PLAN 2014.10.21.DWG

Appendix C – Field Density Test Summary Sheets



	Coffey Geotechnics NZ Ltd Coffey Geotechnics NZ Ltd PO Box 19062, Hamilton 3244 Family Value Approvide Approvide														ct No:		GE	GENZETAM00989AD-00	
	Test Me	thods : Shear S acc	Strength (usin cordance with	ng field Shear var nNZS 4402:1986	ie in accordance v Test 2.1): Density	vith NZGS 2001): / Calculations (in	Nuclear Denso accordance wit	meter Testing (in h NZS 4402:1986	accordance 5 Tests 4.1.	e with NZS 4 1.5(b))	4407:1991 1	"est 4.2.1): V	Vater Content Testing (in						
Client:	Coffey Geotech PO Box 19062,	nics NZ Ltd															Tests not ac	indicated as ccredited are outside	
.	Hamilton 3244																the se	cope of the	
Principal:	Daniel Vincent													ACCREDITED LABORATORY					
c.c. io.	GENZHAMI14651AD - HIGHFIELD COUNTRY ESTATE T7 AND T8													Approved Signatory: Hong Huang					
Project:	GENZHAMI146	STAD - HIG	HFIELD C	OUNTRYES	IATE 17 AND	18								Approved Signatory Signatur	e:			1 mg	
Project Location:	cation: T7 and T8 Cell												Date of Issue:			18/06/2015			
	-	1		Wet	Over	Der	Calid	0.14		Eiz	ald				12	ANZ Accred	ated Laboratory N	imber:105	
Data	Wet Oven Dry Solid Air Field															Mate			
Date	Work Order :	Pu	Test No.	Density	Vvater	Density	Density	Voias		Shear a	kDo		Test Location	GPS	Locations	RL	rial 1	Comments	
		Бу		(Um)	Content (%)	(Um ⁻)	(Um ⁻)	70	INT = No	III I		constrata)		Client Cassidia		(m)	feste		
27/01/2015	ETAM15W00347	DV	1	Not tested	Not tested	Not tested		Not tested	fres - fac	ricalca, o m		Jeneraney	TZ Call	175 22005	and supplied				
27/01/2015	ETAM15W00347	DV	2	Not tested	Not tested	Not tested	120	Not tested		-			T7 Cell	175.33205	38.02291		SIITY SAND	~0.5m of fill. Refer to Scala 1.	
27/01/2015	ETAM15W00347	DV	2	Not tested	Not tested	Not tested		Not tested	-				T7 Cell	175.33211	38.02308	7	SIITY SAND	~0.5m of fill. Refer to Scala 2.	
27/01/2015	ETANA EN/00347	DV	3	Not tested	Not tested	Not tested	9 5 3	Nottested		-			T7 Cell	175.33223	38.02335	-	Silty SAND	~0.7m of fill. Refer to Scala 3.	
27/01/2015	ETAM15000347	DV	4	Not tested	Not tested	Not tested	18	Not tested	(<u>*</u>)		-	-	T7 Cell	1/5.3319/	38.02337	-	Silty SAND	~0.7m of fill. Refer to Scala 4.	
27/01/2015	ETAM15W00347	DV	5	Not tested	Not tested	Not tested	1.00	Not tested				-	T7 Cell	175.3318	38.02323	-	Silty SAND	~0.5m of fill. Refer to Scala 5.	
27/01/2015	E1AM15W00347	DV	6	Not tested	Not tested	Not tested	-	Not tested	-	-	-	-	17 Cell	175.33168	38.02304		Silty SAND	~0.4m of fill. Refer to Scala 6.	
29/01/2015	ETAM15W00347	DV	7	1.54	52.9	1.01	2.7	9.2	14/	140	152	157	LOT 30	175.33230	38.02337	4	Silty CLAY	0.5m above original. Retest of No. 3	
29/01/2015	ETAM15W00347	DV	8	Not tested	Not tested	Not tested	-	Not tested	NT	NT	NT	NT	LOT 29	175.33205	38.02340		SILT	0.5m above original.	
29/01/2015	ETAM15W00347	DV	9	1.51	54.1	0.98	2.7	11	168	215+	UTP	UTP	LOT 24	175.33202	38.02321		Clayey SILT	1.3m above original	
29/01/2015	ETAM15W00347	DV	10	1.36	52.8	0.89	2.7	20	-	(#) 2014		-	LOT 25	175.33228	38.02302		Clayey SILT	1.0m above original	
4/02/2015	ETAM15W00436	AWDC	11	1.55	74.1	0.89	2.7	1.2	152	192	144	155	LOT 24	1804694	5789043	-	Clayey SILT	1.3m above original. Retest of No.9	
4/02/2015	ETAM15W00436	AWDC	12	1.66	33.8	1.24	2.7	12	163	157	152	195	LOT 25	1804718	5789064	-	Clayey SILT	1.0m above original. Retest of No.10	
10/02/2015	ETAM15W00501	AWDC	13	1.75	39.3	1.26	2.74	4.8	UTP	UTP	UTP	179	LOT 29	1804696	5789022		Silty CLAY	~1.0m above original ground	
10/02/2015	ETAM15W00501	AWDC	14	1.63	40.4	1.16	2.74	11	UTP	UTP	225	176	LOT 30	1804711	5789029	-	Silty CLAY	~1.0m above original ground	
10/02/2015	ETAM15W00501	AWDC	15	1.45	55.6	0.93	2.74	14	167	172	196	182	LOT 31	1804725	5789028		Silty CLAY	~0.9m above original ground	
11/02/2015	ETAM15W00505	AWDC	16	1.59	54.4	1.03	2.74	6.7	204+	204+	204+	204+	LOT 31	1804725	5789028	*	Silty CLAY	~0.9m of fill	
11/02/2015	ETAM15W00505	AWDC	17	1.59	57.7	1.01	2.74	5.3	154	198	159	186	LOT 26	1804692	5789041		Silty CLAY	~1.0m of fill	
11/02/2015	ETAM15W00505	AWDC	18	1.55	55.8	0.99	2.74	8.3	163	204+	146	1/8	LOT 24	1804667	5789039	-	Silty CLAY	~1.0m of fill	
11/02/2015	ETAM15W00505	AWDC	19	1.49	38.0	1.08	2.74	20	204+	204+	UIP	186	LOT 22	1804683	5789062		Silty CLAY	~1.0m of fill	
11/02/2015	ETAM15W00505	AWDC	20	1.58	51.7	1.04	2.74	8.0	170	204	204	204	LOT 20	1804658	5789059	-	Silty CLAY	1.0m below FL	
12/02/2015	ETAM15W00539	AWDC	21	1.81	60.8	1.13	2.74	0.0	154	169	150	179	Northern corner	1804825	5879265	-	Silty CLAY	~ 1.0m of fill	
12/02/2015	E (AM15W00539	AWDC	22	1.66	40.3	1.18	2.74	9.0	204	223+	163	UTP	LOT 24 / LOT 25	1804679	5789073		Silty CLAY	~ 1.6m of fill	
12/02/2015	ETAMISMUODOS AVUDO 23 1.04 52.8 1.07 2.74 4.3 2234 215 187 UIP LOT2					LOT 20 / LOT 21	1804695	5789044		Silty CLAY	~ 1.6m of fill								
16/02/2015	E (AM15W00603	LPM	24	1.65	52,7	1.08	2.74	3.9	223+	223+	223+	223+	See plan	1804696	5789043		Silty CLAY	~ 2.6m of fill	
16/02/2015	ETAM15W00603	LPM	25	1.59	58.4	1.01	2.74	4.6	223+	206	223+	215	See plan	1804678	5/89073	1525	Silty CLAY	~ 2.6m of fill	
16/02/2015	E (AM15W00603	LPM	26	1.60	44.5	1.11	2.74	10.2	223+	223+	223+	223+	Northern corner	1804827	5879265		Silty CLAY	~ 2.0m of fill	
18/02/2015	ETAM15W00634	AWDC	27	1.65	75.0	0.94	2.74	0.0	195	139	156	177	Northern corner	1804830	5789256	-	Silty CLAY	~3.0m of fill	



	Test Me	thods : Shear ac	Strength (usis	EA ng field Shear var 1 NZS 4402:1986	RTHWO	RKS FIL with NZGS 2001): Calculations (in	L REPC	DRT neter Testing (In h NZS 4402:1986	accordance Tests 4.1.	e with NZS 4 1.5(b))	4407:1991 `	Test 4.2.1); '	Water Content Testing (in	Proje	ct No:		G	GENZETAM00989AD-00		
Client: Coffey Geotechnics NZ Ltd PO Box 19062, Hamilton 3244														Tests indicated as not accredited are outside the scope of the						
Principal:	Daniel Vincent													ACCREDITED LABORATORY laboratory's accreditation						
c.c. to:														Approved Signatory:			Hong Huang	A. M		
Project:	GENZHAMI14651AD - HIGHFIELD COUNTRY ESTATE T7 AND T8											Approved Signatory Signature:								
Project Location:	T7 and T8 Cell													Date of Issue:			18/06/2015			
																IANZ Accre	dited Laboratory	Number:105		
Date	Work Order :	Tested By	Test No.	Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (t/m ³)	Solid Density (t/m ³)	Air Voids %		Field Shear Strength in kPa		Test Location	GPS	Locations	RL (m)	Material Te	Comments			
									(NT = N	ot fested, UTF	P = Unable to	penetrate)		Client Coordinates supplied			sted			
23/02/2015	ETAM15W00739	LPM	28	1.63	48.4	1.10	2.74	6.6	223+	223+	223+	167	Northern corner	1804832	5789260	-	Silty CLAY	4.0m fill		
25/02/2015	ETAM15W00803	AWDC	29	1.57	68.2	0.93	2.74	2.6	151	151	208	195	Northern corner	1804830	5789251	-	Silty CLAY	~4.0m above original ground		
25/02/2015	ETAM15W00803	AWDC	30	Not tested	Not tested	Not tested	-	Not tested	87	116	131	125	Northern corner	1804800	5789244	-	Silty CLAY			
26/02/2015	ETAM15W00853	AWDC	31	1.64	57.4	1.04	2.74	1.9	244+	164	190	171	Northern middle area	1804803	5789242	-	Silty CLAY	4.0m fill. Retest of No.30		
26/03/2015	ETAM15W01294	AWDC	32	1.68	57.7	1.06	2.74	0.0	205	153	172	165	SW Corner of T7	1804743	5789097	-	Silty CLAY	~0.8m fill		
26/03/2015	ETAM15W01294	AWDC	33	1.71	51.0	1.14	2.74	0.7	183	210	199	160	SW Corner of T7	1804752	5789068	-	Silty CLAY	~0.8m fill		



East Tamaki Laboratory Coffey Geotechnics NZ Ltd 144 Cryers Road, East Tamaki NZ 201 P O Box 58877, Botany Manukau 2163 Telephone: +64 9 272 3376 Facsimile: +614 9 272 3378

DETE	RMINAT	ION OF	THE P SOIL	ENETR	ATION	OF A	Project No: Work Order: Sample No: Page No:	GENZETA ETAM15W ETAM15S 3 of 16	M00989AD /00347 -00657	00					
Client: Address:	Coffey Geote PO Box 1906	chnics NZ Lto 2, Hamilton 3	1 244						Tests inc	licated as	-14-				
Principal:	Daniel Vincer	it				ACCREDITED	LABORATOF	the scop	edited are out: e of the ry's accreditati	on					
C.C.: Project:	- CENZHAMI1	4651AD - HIG		INTRY EST	TE T7 AND			à	ana_						
Floject.	GENZHAMIT	100170 - 1110		SMITT LON					10						
Location:	T7 Cell						Approved Signate	ory:		Hong Huang					
Material:	Silty SAND				Date of Issue:		18/0	06/2015							
Tested by:	D	V	Date:		IANZ Accred	ited Laboratory	Number:105								
Sample Details															
Test method: NZS 4402 : 1988 Test 6.5.2 - Hand method using a dynamic cone penetrometer Equivalent CBR values are reported to Austroads 2012. Conversion to CBR values are not IANZ endorsed as part of this report															
DEPTH	DEPTH NO. OF EQUIV DEPTH NO. OF EQUIV DEPTH NO. OF EQUIV BLOWS CBR DEPTH BLOWS CBR DEPTH NO. OF EQUIV														
No	0.1: ~0.5m o	f fill	No.	2 : ~0.5m c	of fill	N	o. 3 : ~0.7m of	fill	No.	4 : ~ 0.7m c	of fill				
175	.33205 : 38.0	2291	175.3	33211 : 38.0	2308	17	5.33223 : 38.02335 175.33197 : 38.02337								
100	3	5.5	100	7	15	100	3	5.5	100	3	5.5				
200	5	10	200	7	15	200	3	5.5	200	5	10				
300	9	20	300	6	13	300	3	5.5	300	5	10				
400	7	15	400	6	13	400	3	5.5	400	5	10				
500	6	13	500	6	13	500	3	5.5	500	4	8				
600	5	10	600	4	8	600	4	8	600	6	13				
700	5	10	700	4	8	700	3	5.5	700	7	15				
800	4	8	800	3	5.5	800	6	13	800	5	10				
900	3	5.5	900	2	3.5	900	5	10	900	2	3.5				
No). 5 : ~0.5m o	f fill	No.	6 : ~0.4m c	of fill	<									
175	5.33180 : 38.0	2323	175.	33168 : 38.0	2304										
100	6	13	100	3	5.5		\sum								
200	5	10	200	9	20										
300	5	10	300	5	10										
400	4	8	400	4	8										
500	3	5.5	500	8	18				\sum						
600	3	5.5	600	8	18										
700	4	8	700	5	10										
800	3	5.5	800	5	10										
900	3	5.5	900	4	8						\sim				
Comments															

LPS-07F3 Issue date : 03/02/2015







East Tamaki Laboratory

Coffey Geolechnics NZ Lld 144 Cryers Road, East Tamaki NZ 201 P O Box 58877, Botany Manukau 2163 Telephone: +64 9 272 3375 Facsimile: +614 9 272 3378

DETE	RMINAT	ION OF	THE P SOIL	Project No: Work Order: Sample No: Page No:	GENZETA ETAM15W ETAM15S 5 of 16	M00989AD- 700347 -00792	00								
Client: Address:	Coffey Geote PO Box 1906	chnics NZ Lto 2, Hamilton 3	d 244			Tests ind	licated as edited are outs	side							
Principal: c.c.:	Daniel Vincer -	nt				ACCREDITED	ABORATOR	the scop laborator	e of the y's accreditation	on					
Project:	GENZHAMI1	4651AD - HIC	GHFIELD COU	UNTRY EST	TE T7 AND			1	3						
Location:	T7 Cell					Approved Signato	ry:		Hong Huang						
Material:	Silty SAND				Date of Issue:		18/0	6/2015							
Tested by:	D'	V	Date:			IANZ Accredi	ted Laboratory	Number:105							
Sample Details															
	Test method: NZS 4402 : 1988 Test 6.5.2 - Hand method using a dynamic cone penetrometer Equivalent CBR values are reported to Austroads 2012. Conversion to CBR values are not IANZ endorsed as part of this report														
DEPTH	DEPTH NO. OF EQUIV DEPTH NO. OF EQUIV DEPTH NO. OF EQUIV 0														
	No. 8		C.	No. 10											
175	533205 : 38.0	2340	175.3	33228 : 38.0	2302										
100	5	10	100	4	8					_					
200	3	5.5	200	8	18										
300	3	5.5	300	5	10										
400	4	8	400	6	13										
500	4	8	500	5	10										
600	4	8	600	6	13										
700	4	8	700	5	10										
800	4	8	800	5	10										
900	4	8	900	4	8										
		/													
		/													
			/												
										~					
											~				
Comments	The second second		R. 857												

LPS-07F3 Issue date : 03/02/2015










































Appendix D – Post-Construction Test Locations and Data



COPYRIGHT: The copyright for the infor onsent from Rad Surveying Ltd

NOTE: 1) LAYOUT, AREAS SURVEY AND APPF	AND DIMENSIONS SU	BJECT TO FI PA DISTRICT	NAL F COUNCIL	
LOT 13 DP 483139 (CT.)			APPROXIMATE EXTENT
3) TOTAL AREA:	9.0196 ha.			OF SOFT SATURATED
4) ZONE:	RESIDENTIAL (PDP)			
AREAS SHOWN J	AND K ON LOT 10 AN ECT TO LAND COVEN	D AREAS L		APPROXIMATE
PURPOSE				FORMER POND
RIGHT OF WAY RIGHT TO CONVEY WATER, SEWAGE, STORMWATER, ELECTRICITY, TELECOMMUNICAT AND COMPUTER M	LOT 86 HEREON	Y	LOTS 41 and 42 HEREON	820m2 4 820m2 5 101 550m2 75 725m2 101 576m2 74 73 10 10 10 10 10 10 10 10 10 10
		EMENTS	IN GROSS	6 676m2 676m2 676m2 654m2 654m2 654m2
PURPOSE	SERV. TENE.	SHOWN	DOC.	70 TO Page
	LOT 1 HEREON	A		676m2
	LOT 3 HEREON	B		8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
	LOT 4 HEREON			676m2 69 675m2 68 4946 mz Rec.Res
	LOT 5 HEREON	E		9 676m2 67 670m2 67
	LOT 6 HEREON	F		10 Additional Addition
	LOT 7 HEREON	G		
RIGHT TO CONVEY	LOT 8 HEREON	Н	H.798697	11 55 F 954m2
NATURAL GAS	LOT 9 HEREON	I		6/6m2 56 640m2 57 65
	LOT 10 HEREON	J		$12 \\ 676m^2 \\ 102 \\ 54 \\ 532m^2 \\ 58 \\ 874m^2 \\ 61 \\ 61 \\ 61 \\ 61 \\ 61 \\ 61 \\ 61 \\ 6$
	LOT 11 HEREON	L		10,6200 ha Jun 547 m2 547 m2 644 905 m2 39
	LOT 13 HEREON	N 0		13 195m2 Vest 53 195m2 640m2 640m2 63 442 195m2 714m2 10 808m2 10 10 10 10 10 10 10 10 10 10
	LOT 14 HEREON	0		52 60 610m2 Nett 40 701m2 103 3
	LOT 15 HEREON	R		14 872m2 5 40mz 43 627m2 Road to 688m
	LOT 16 HEREON	S		84 214m2 15 61 627m2 627m2 627m2 627m2 627m2 627m2 627m2 627m2 627m2 627m2 627m2 627m2
	LOT 17 HEREON	т		L.P.Res (Pedestrian) 50 40 609m2 46 609m2 46 609m2 46 609m2 46 56/86 32 603pr.
	LOT 18 HEREON	U		916m2 47 916m2 47 101 47 101 47 101 9ectegr 680/n2 9c
	LOT 19 HEREON	V		48 022112 104 2 200 genteen 30 65912 50 genteen 30 65912 9€
	LOT 20 HEREON	W		601m2 601m2 28 05m2
	LOT 21 HEREON	X		27 659m2 26 659m2 26 659m2 51.19
	DF EXISTING EAS TO BE SURREND	EMENTS ERED	N GROSS	19 19 19 19 10 10 10 10 10 10 10 10 10 10
RIGHT TO CONVEY	OLIVI, ILILL			
NATURAL GAS	LOT 84 HEREON	Р	H.798697	GEOTEXTILE F/
AMALGAMATIC PURSUANT TO SEC THAT LOT 86 (LEGA UNDIVIDED ONE-HA 41 AND 42 HEREON TITLE BE ISSUED IN	ON CONDITION TION 220 1)b)iv) RMA 19 L ACCESS) HEREON BE LF SHARES BY THE OW AND THAT INDIVIDUAL ACCORDANCE THERE	91 : HELD AS TC /NERS OF LC CERTIFICAT WITH) TWO)TS ES OF	
RAD	SURV	EYII Ited	NG	SCHEME PLAN PROPOSED T7 SUBDIVISION SWARBRICK DRIVE, TE AWAMUTU
07 843 1587 027 237 DIXON ROAD, RD troy@radsurveying.co.r	411 8496 2 HAMILTON nz			PREPARED FOR: T7 PROPERTIES LTD SCALE: 1:2000 @ A3
Designed. TDR 29 Jun	ie 2014			COPVRIGHT. The convright for the information shown on this plan remains the right of Rad Surveying Ltd. It may not be reproduced (wholly or in part) without consent from Rad Surveying L

COPYRIGHT: The copyright for the information shown on this plan remains the right of Rad Surveying Ltd. It may not be reproduced (wholly or in part), without consent from Rad Surveying Ltd.





ATETR	A TECH	COMP	ANY							Bore	hole ID.	HA11
5-				~		~=	1			shee	t:	1 of 1
Er	ıgı	ne	erin	<u>g I</u>	<u> </u>	<u>g -</u>	на	na Auger		proje	ct no.	GENZHAMI14651AD
clien	t:	T 7	Proper	ties	Lim	ited				date	started:	30 Oct 2015
princ	ipal:	-								date	complete	d: 30 Oct 2015
proje	ect:	So	uthwes	t T7	Cell	, Swa	arbrio	ck Drive, Te Awamutu		logge	ed by:	SLC
locat	ion:	Lo	t 80							checl	ked by:	RBT
positio	on: E:	14992	21; N: 6732	17 (NZ	ZTM)			surface elevation: Not Specified	angle	from he	orizontal: 9	0°
drill m	odel: H	and A	Auger					drilling fluid:	hole c	liamete	r : 40 mm	vane id.: 1447
drilli	ng info	rmati	on	1		mate	rial sub	ostance		È		standard and
lethod & upport	penetratior	ater	samples & field tests	r (m)	epth (m)	raphic log	assificatior /mbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	ioisture	onsistency / lative densit	vane shear ⊕remoulded ⊚peak (kPa)	structure and additional observations
E ळ ▲ ▲	9 /9 -	3		£	ð	5	sy	Silty CLAY: low to medium plasticity, brown	E 8 M	ଞ <u>୭</u> VSt	8 20 25 28	FILL
			VS 171/		-			mottled pale brown.				-
		tered	46 kPa		-						(¶) (¶) (¶) (¶) (¶) (∏) (∏) (∏) (∏) (∏) (∏) (∏) (∏) (∏) (∏	-
		ncount	VS 151/		-	\bigotimes						-
₩ Z		Not E	35 kPa		0.5-							
			VS 164/ 25 kPa		-			SILT: non plastic, orange brown, with minor fine		VSt		RESIDUAL SOIL -
			u		-			granieu Saliu.				-
 + +			VS 145/ 27 kPa		1.0	1					0 0	
					-			Target depth				-
					-	1						-
202					-							-
2016 12					1.5-							-
790/01					-	1						-
					-							-
rawing					-							-
					2.0-							-
AD.GF					-							-
14651					-							-
OKEN	İİİ				2.5-							-
NON					-							-
HOLE					-							-
BORE					-	-						-
D D D D					3.0-							-
AM LO												-
LB rev:					-							-
AKY.G					-							-
					3.5-							-
					-							-
5					-							-
									classificat	ion sym	bol &	
AD AS	od auger	drilling screwi	• •	Sup M	port mud	N	nil	samples & field tests B bulk disturbed sample	soil de	on Unifie	n ed	Consistency / relative density VS very soft
HAW	hand a washb	uger ore	.9	pen	etration	ı		E environmental sample	Classifica	ation Sys	stem	F firm
HA	hand a	uger			- 0 0 -	no res	istance g to	U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moisture D drv			VSt very stiff H hard
*	hit sho	wn by	suffix	wat	er	refusa	lÍ	N standard penetration test (SPT) N* SPT - sample recovered	M moist W wet			Fb friable VL very loose
e.g. B	AD/T blank b	it				el on date ter inflow	shown	Nc SPT with solid cone VS vane shear; peak/remouded (kPa)	Wp plastic li WI liquid lin	mit nit		L loose MD medium dense
T V	TC bit V bit			-	- d wat	ter outflov	v	R refusal HB hammer bouncing				D dense VD very dense



A TETR	A TECH	COMP	ANY							E	Boreh	ole ID.		HA1	2
	hai	no	orin	~ I	~	N	ปล	nd Augor		s	heet	:		1 of 1	
	igi	ne	enn	y ı	-0(<u>J</u> -	Па	nu Auger		p	orojec	t no.		GENZ	ZHAMI14651AD
clien	it:	T 7	Proper	ties	Limi	ted				C	late s	started:		30 Oc	ct 2015
princ	cipal:	-								С	late o	complet	ed:	30 Oc	ct 2015
proje	ect:	So	uthwes	t T7	Cell	, Swa	arbrio	ck Drive, Te Awamutu		le	ogge	d by:		SLC	
locat	tion:	Lot	t 74							с	heck	ed by:		RBT	
positi	on: E:	44988	38; N: 6731	99 (NZ	ZTM)			surface elevation: Not Specified	а	ngle fro	om ho	rizontal:	90°		
drill m	nodel: H	land A	Auger					drilling fluid:	h	ole dia	meter	: 40 mm	1		vane id.: 1447
ariii		ormati	on			mate	Fiai Sub	material description			sity /	vane		str	ucture and
method & support	penetratio	water	samples & field tests	RL (m)	depth (m)	graphic log	classificati symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	condition	consistency relative dens	shear ⊕ remoulded ⊚ peak (kPa) 0 0 0 0 0		addition	nal observations
		Not Encountered w	VS 129/ 28 kPa VS 181/ 54 kPa VS 175/ 52 kPa					Silty CLAY: low to medium plasticity, brown mottled pale brown. Hand Auger HA12 terminated at 1.2 m Target depth		8 M			FILL		
meth AD AS HA W HA * e.g. B T V	bit sho ADATE blank to Y bit sho	drilling screwir uger ore uger wn by s	* ng* suffix	sup M I C Q pen wat	port mud casing etration er er er ↓ 10- lev wat wat	N no ress rangin refusa Oct-12 wa el on date er inflow er outflow	nil istance g to ater shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	class s bi Class moistur D dry M mo W we Wp pla WI liqu	ification oil desc ased on asification e , ist t stic limit id limit	n symt cription Unifie on Syst	l pol & n d em	CO VS S F St VS H Fb VL L MI D VC	nsistency	/ relative density very soft soft firm stiff very stiff hard friable very loose loose medium dense dense very dense



A	ETRA	A TECH	COMP	ANY							Bore	hole	e ID.		HA13	
	Ξn	ai	no	orin	~ I		N _	ปวเ	nd Augor		shee	t:			1 of 1	
_		iyi	ne	enni	y ı	-0(<u>J -</u>	Па	na Auger		proje	ct n	0.		GENZH	AMI14651AD
С	lient	t:	T 7	Propert	ties	Lim	ited				date	star	ted:		30 Oct	2015
р	rinci	ipal:	-								date	con	nplet	ed:	30 Oct	2015
р	roje	ct:	So	uthwest	t T7	Cell	, Sw	arbric	ck Drive, Te Awamutu		logge	ed b	y:		SLC	
lo	ocati	ion:	Lo	t 75							checl	ked	by:		RBT	
р	ositio	on: E: 4	44986	63; N: 67320	06 (NZ	ZTM)			surface elevation: Not Specified	angle	from he	orizc	ontal:	90°		
d	rill mo	odel: H	and A	Auger					drilling fluid:	hole o	diamete	r:4	0 mm	I	va	ine id.: 1447
ŀ	drillir	ng info	rmati	on			mate	erial sub	stance		≥					huma an d
م ح	s t	tration		samples & field tests		E)	c log	icatio	material description	e u	ency / densit	S ⊕re	ane hear		additional	observations
the the	oddns	pene	vater		SL (m	depth	graphi	classif symbo	colour, secondary and minor components	noistu	consist elative		иреак kPa) SSSS			
	1	<u>9 0 7</u>	pa		-			0	Silty CLAY: low to medium plasticity, brown	M	VSt	<u> </u>		FILL		
			counter	VS 155/		-										-
- HA -	z		lot Enc	21 кра		-							@ 			-
				VS 102/ 18 kPa		0.5-			SILT: non plastic, orange brown, with minor fine grained sand.				 ⊕	RESID	UAL SOIL	
ŀ			-			0.0			Hand Auger HA13 terminated at 0.6 m				<u> </u>			
		İİİ				-			Target depth			ļį.	i i i			-
						-						li.	i i i			-
						1.0-										-
						-										-
						-										-
40.0		İİİ				-						lį.	İİİ			-
						1.5-						li.				_
000						-										-
						-										-
		ÌÌÌ				20-						ļį.				-
5							-					li.	İİİ			-
						-										-
						-										-
						2.5-										-
		ÌÌÌ				-						ļį.	İİİ			-
												li.	i i i			-
						-										-
20						3.0-										_
						-										-
						-						lį.	İİİ			-
						35-										-
						-	-									-
						-										-
3						-	1					ļ				-
\vdash				T		<u> </u>				classificat	tion sym		••• ••• •••	<u> </u>		
	nethc AD AS	auger of auger of	drilling screwi	* na*	Sup M I	port mud	N	nil	samples & field tests B bulk disturbed sample	soil de based	escriptio	on ed		VS	sistency / re	elative density very soft soft
	HA N	hand a washbo	uger	5	pen	etration	1		E environmental sample	Classific	ation Sys	stem		F St	f	firm stiff
	HA	hand a	uger			3 2	no res	istance g to	U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moisture D drv				VSt H		very stiff hard
		hit sho	wn by	suffix	wat	er	refusa	lī ater	N standard penetration test (SPT) N* SPT - sample recovered	M moist W wet				Fb VL	1	friable very loose
	e.g. 3	AD/T blank h	oit	Julia			el on date	shown	Nc SPT with solid cone VS vane shear; peak/remouded (kPa)	Wp plastic li WI liquid lin	ımit nit			L MD	1	oose medium dense
	Г /	TC bit	-			- wat	er outflow	v	R refusal HB hammer bouncing					D VD		dense very dense



A TETRA TE	CH CO	IPANY								Bore	hole ID		HA14
Enc	nin	oorin	al		N _	ปวเ	nd Augor			shee	t:		1 of 1
	JIII	eenn	<u>y</u>	LUį	<u>y -</u>	Па	lu Augel			proje	ct no.		GENZHAMI14651A
client:	Т	7 Proper	ties	Lim	ited					date	started	:	30 Oct 2015
principa	ul: -									date	comple	eted:	30 Oct 2015
project:	S	outhwes	t T7	Cell	, Sw	arbrio	ck Drive, Te Awamutu			logge	ed by:		SLC
location	: L	ot 78								chec	ked by:		RBT
position:	E: 449	876; N: 6732	26 (N	ZTM)			surface elevation: Not Specified	â	angle	from h	orizontal	: 90°	
drill mode drilling i	inform	ation			mate	rial sub	drilling fluid: stance		hole d	liamete	r : 40 m	m	vane id.: 1447
					 ວາ	tion	material description			y / nsity	vane		structure and
method & support	2 penetrat 3 water	field tests	RL (m)	depth (m)	graphic lo	classificat symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	and the second se	moisture condition	consistency relative der	Shear ⊕ remould ● peak (kPa)	8d	additional observations
		VS 168/ 44 kPa		-			Silty CLAY: low to medium plasticity, brown mottled pale brown.		М	VSt	 ⊕ ℗ 	FILL 	
4 Z		28 kPa		0.5-							⊕ ⊙		-
		VS 184/					SILT: non plastic, grange brown, with minor fine						
		40 KPd					grained sand.	*				2 KE3 	
* *		21 kPa		1.0-			Hand Auger HA14 terminated at 1.0 m						
				-								 	
				1.5-									-
				2.0-									-
				2.5-								 	-
				3.0-									-
					-								
				3.5-									-
method AD aug AS aug HA har W wa: HA har	ger drillin ger scre nd auge shbore nd auge	ng* wing* r	sur M C per	pport mud casing netration	N no res rangir	nil istance g to	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	Class class class cla Cla moistu D dr	sificat soil de based assifica ure	ion sym escriptic on Unifie ation Sys	bol & on ed stem	Ca V S F S V H	onsistency / relative density S very soft soft firm t stiff St very stiff hard
* bit e.g. AD B bla T TC V V b	shown b D/T Ink bit 5 bit Dit	oy suffix	wat -	ter Ilo- lev wai wai	Poct-12 we opt-12 we el on date ter inflow ter outflow	il ater shown v	N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	D dry M moist W wet Wp plastic limit WI liquid limit				FI V L D V	b friable L very loose loose ID medium dense dense D very dense



A TETRA	TECH	COMF	ANY							Bore	hole ID.	HA15
En	ai	n 0	orin	~ I		N	ปล	nd Augor		shee	et:	1 of 1
	igi	ne	enn	y ı	<u> </u>	<u>J</u> -	Па	na Auger		proje	ect no.	GENZHAMI14651AD
client	:	T 7	Proper	ties	Limi	ited				date	started:	06 Nov 2015
princi	pal:	-								date	completed:	06 Nov 2015
proje	ct:	So	uthwes	t T7	Cell	, Swa	arbrio	ck Drive, Te Awamutu		logge	ed by:	SLC
locati	on:	Lo	t 70							chec	ked by:	RBT
positio	n: E:	44984	12; N: 6731	65 (NZ	ZTM)			surface elevation: Not Specified	angl	e from h	orizontal: 90°	
drill mo	odel: H	Hand A	Auger					drilling fluid:	hole	diamete	er : 40 mm	vane id.: SL588
drillir	ng info ⊊	ormati	on			mate	rial sub ⊊	stance material description		. <u>₹</u>	vane	structure and
method & support	1 2 penetratio	water	samples & field tests	RL (m)	depth (m)	graphic log	classificatic symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative dens	shear ⊕remoulded ⊚peak (kPa) ⊛ ♀ ♀ ♀	additional observations
					-			Clayey SILT: low plasticity, brown.	M	VSt	FIL	L .
		itered	VS 117/ 28 kPa		-						 ⊕ © 	
		Not Encoul	VS 132/ 42 kPa		0.5-						 ⊕ ⊙ 	-
			VS 141/ 26 kPa		-						⊕ <mark> </mark> ⊕ <mark> ●</mark> 	-
* *	+++				1.0-			Hand Auger HA15 terminated at 1.0 m				
												- - - - - - - - - - - - - - - - - - -
					- 3.5 - -							- - -

				-
method AD auger drilling* AS auger screwing* HA hand auger W washbore WA washbore	support M mud N nil C casing penetration	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample	classification symbol & soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff
 HA nand auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit 	water I0-Oct-12 water level on date shown water inflow water outflow	U## undisturbed sample ##nm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	moisture D dry M moist W wet Wp plastic limit WI liquid limit	VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense



ATETF	A TECH	COMP	ANY								Bore	hole ID.		HA16	; ;
г.	:			~	-						shee	t:		1 of 1	
	ngi	ne	erin	g I	-0(g -	на	na Auger			proje	ct no.		GENZ	HAMI14651AD
clier	nt:	T 7	Propert	ties	Lim	ited					date	started:		06 No	v 2015
prind	cipal:	-									date	complete	ed:	06 No	v 2015
proie	ect:	So	uthwesi	t T7	Cell	. Sw	arbrid	:k Drive. Te Awamutu			loaae	ed bv:		SLC	
loca	tion:	Loi	+ 70		••••	,		,			chec	ked by:		PRT	
nositi		14083	1. Nº 67316	31 (NZ	7TM)			surface elevation: Not Specified		analo	from b	orizontal:	٥n°		
drill n	nodel: H	Hand A	Auger	51 (142	,			drilling fluid:		hole of	liamete	er : 40 mm	00	١	ane id.: SL588
drill	ing info	ormati	on			mate	rial sub	stance							
ood & oort	netration		samples & field tests	Ê	(m) H	hic log	sification bol	material description SOIL TYPE: plasticity or particle characteristic,		ture lition	stency / ve density	vane shear ⊕ remoulded ⊛ peak		stru additiona	cture and al observations
meth supp	1 2 per	wate		RL (r	depth	graph	class symt	colour, secondary and minor components		mois cond	consi relativ	(kPa) 500 (kPa)			
		Not Encounter	VS 115/ 15 kPa VS 177/ 59 kPa					Hand Auger HA16 terminated at 0.55 m Target depth							
metti AD AS HA W HA * e.g. B T V	hand a washb hand a bit shc AD/T blank TC bit V bit	drilling' screwir auger oore auger own by s	, ng* suffix	sup M I C C pen wat	port mud casing etration er er ↓ 10- lev wat ↓ 10- wat	no restrangir rangir refusa Oct-12 w el on date ter inflow ter outflow	nil istance ig to ater e shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS spilt spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	mois D M W Wp WI	assificat soil de based Classifica dry moist wet plastic li liquid lin	ion sym escriptic on Unifie ation Sys	h bol & n ed stem	CC VS F SI VS H Ft VI L M D VI	presistency / S S St D D	relative density very soft soft firm stiff very stiff hard friable very loose loose medium dense dense very dense



TETRA	TECH	COMF	PANY							Bore	hole ID.	HA17
C~		n -	orin	~ I		2	Lم	nd Augor		shee	t:	1 of 1
EN	Igi	ne	erin	<u>g</u> I	ΓΟĆ	g -	па	na Auger		proje	ect no.	GENZHAMI14651AI
client	:	T 7	Propert	ties	Limi	ited				date	started:	30 Nov 2015
princi	pal:	-								date	completed:	30 Nov 2015
proje	ct:	So	uthwest	t T7	Cell	, Sw	arbri	ck Drive, Te Awamutu		logge	ed by:	SLC
ocati	on:	Lo	t 55							chec	ked by:	RBT
oositio	n: E:4	1498 [.]	11; N: 67308	38 (N	ZTM)			surface elevation: Not Specified	angle	from h	orizontal: 90°)
irill mo	odel: H	and /	Auger			-		drilling fluid:	hole	diamete	er : 40 mm	vane id.: 2244/01
drillir	ng info	rmat	ion			mate	erial sul	ostance				
lethod & upport	penetration	ater	samples & field tests	r (m)	epth (m)	raphic log	assification /mbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	loisture	onsistency / lative density	vane shear ⊕ remoulded ⊛ peak (kPa)	structure and additional observations
	0 0 - 0 - 0	3		R	ō	5 XXX	00	Clayey SILT: non plastic, brown.	<u>Е 8</u> D-М	vSt	FI	LL
			VO - 404 HD-		-							
			VS >181 KPa		-			SILT: non plastic, pale brown with mottled brown.				
	iii iii		VS 167/		-							
			45 KPa		0.5-							-
			VS 122/ 31 kPa		-							
					-							
		p	VS >181 kPa		1.0-							-
	iii	ountere			-							
 z 		ot Enco	VS >181 kPa	1	-						0	
		z			-							
			VS >181 kPa	1	1.5-							-
			VS >181 kPa									
	İİİ		VO 2 IUT KEA		-							
			VS >181 kPa	1	-							
					2.0-	\bigotimes						-
			VS >181 kPa		-							
								SILT: non plastic, brown to pale brown.				ESIDUAL SOIL
*		-			2.5	╏╵╵╵		Hand Auger HA17 terminated at 2.5 m	_			
						1		Target depth				
					-	-						
					-							
					3.0-]						-
					-	-						
					-							
					3.5-]						-
					-	-						

CDF_0_9_06_LIBRARY.C					
Met AD AS HA W HA * e.g. B T V	 thod auger drilling* auger screwing* hand auger washbore hand auger bit shown by suffix AD/T blank bit TC bit V bit 	support M mud N nil C casing penetration penetration ranging to refusion refusion refusion refusion refusion refusion level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit	consistency / relative densityVSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense



A TETRA TEC	HCOMP	ANY							-	Borel	nole ID.		HA18
Eng		orio	~ 1	~		Lla				sheet	t:		1 of 1
Eng	ine	erin	g L	-0(J -	на	na Auger			proje	ct no.		GENZHAMI14651AD
client:	T 7	Propert	ties l	Limi	ited					date	started:		30 Nov 2015
principal:	-									date	complet	ted:	30 Nov 2015
project:	So	uthwest	t T 7	Cell	. Swa	arbrie	ck Drive. Te Awamutu			loaae	d by:		SLC
location:	Lot	69		,	,					check	ed by:		RRT
position: E	- 44982	7: N: 67313	32 (N7	TM)			surface elevation: Not Specified	ar	nale f	from h		۹۵°	
drill model:	Hand A	luger	2 (112	,			drilling fluid:	hc	ole di	amete	r : 40 mm	1	vane id.: 2244/01
drilling in	formati	on			mate	rial sub	ostance						
& ation		samples &		(c	boj	ation	material description		c	ncy / ensity	vane shear		structure and additional observations
method support ¹ 2 penetr	water	field tests	RL (m)	depth (n	graphic	classific symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	conditio	consister relative d	● remoulded ● peak (kPa) 2 0 0 0 00	1	
		VS >181 kPa VS 150/ 38 kPa VS 174/ 52 kPa VS >181 kPa VS >181 kPa					Clayey SILT: non plastic, brown.	D -	м	VSt		RES	- - - - - - - - - - - - - - - - - - -
							Target depth						- - - - - - - - - - - - - - - - - - -
method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger W washbore HA hand auger W bit shown by suffix e.g. AD/T B biank bit				oort nud asing tration v ∞ r leve leve wat	N no res rangin refusa Oct-12 wa el on date er inflow	nil istance g to l ater s shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa)	classii so ba Clas Clas D dry M moi W wet Wp plas WI liqui	fication fil des sed of sification sification stication stication stication	on sym scriptio on Unifie tion Sys nit	bol & n ed tem	CC V S F S V H F I V L	onsistency / relative density S very soft soft firm t stiff St very stiff hard b friable L very loose loose ID medium dense

D VD

dense very dense

SS U## HP N N* Nc VS R HB

refusal hammer bouncing

e.g. B T

AD/T blank bit TC bit V bit

water outflow



A TETRA TECH CO	MPANY							Borel	hole ID.		HA19
Engin	oorin	a l		N _	ปว	nd Augor		sheet	t:		1 of 1
	eenn	<u>y</u> 1	LOĆ	<u>J -</u>	i ia	liu Augei		proje	ct no.		GENZHAMI14651AD
client: T	7 Propert	ties	Limi	ted				date	started:		30 Nov 2015
principal: -								date	complete	ed:	30 Nov 2015
project: S	outhwest	t T7	' Cell,	, Swa	arbrio	ck Drive, Te Awamutu		logge	ed by:		SLC
location: L	ot 70							checl	ked by:		RBT
position: E: 449	9850; N: 67317	78 (N	ZTM)			surface elevation: Not Specified	angle	from ho	orizontal:	90°	
drill model: Han	d Auger					drilling fluid:	hole d	liamete	r : 40 mm		vane id.: 2244/01
drilling inform	ation			mate	rial sub	stance					
method & support 1 2 penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) S		structure and additional observations
HA H H H H H H H H H H H H H H H H H H	VS 135/ 34 kPa VS >181 kPa VS >181 kPa VS >181 kPa VS >181 kPa		0.5			Clayey SILT: brown. Hand Auger HA19 terminated at 1.0 m Target depth	M D - M	VSt		FILL	- - - - - - - - - - - - - - - - - - -

CDF_0_9_06_LIBRARY.GLB rev:AM_Log_COF BOREHOLE: NON CORED_14651AD.GPJ_<<DrawingFile>> 10/05/2016 13:52

				-
				- - - - - - - - - - - - - - - - - - -
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T T C bit V V bit	support M mud N nil C casing penetration ranging to refused	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense



bit shown by suffix AD/T blank bit TC bit V bit

A TETRA	TECH	COMPANY									Boreh	nole ID.		HA20	1
En	ina	noor	ind	a I	~	N _	Ha	nd Augor			sheet	:		1 of 1	
	iyi	lieei		<u>y</u> 1	-0(<u>J</u> -	IIa	liu Augei			proje	ct no.		GENZ	HAMI14651AD
client		T7 Pro	pert	ties	Limi	ited					dates	started:		30 Nov	/ 2015
princi	ipal:	-									date o	complet	ed:	30 Nov	/ 2015
proje	ct:	Southv	vest	t T 7	Cell	, Sw	arbrio	ck Drive, Te Awamutu			logge	d by:		SLC	
locati	on:	Lot 74									check	ked by:		RBT	
positio	n: E:	449892; N:	67319	92 (NZ	(MT			surface elevation: Not Specified		angle	from ho	orizontal:	90°		
drill mo	odel: H	land Auger				i		drilling fluid:		hole o	liametei	r : 40 mm		Va	ane id.: 2244/01
drillir	drilling information material substance v u u u u u u u u u u u u u u u u u u u u u u u <t< td=""><td>Vana</td><td>1</td><td>otru</td><td>aturo and</td></t<>											Vana	1	otru	aturo and
ethod & Ipport	penetratio	samp field	oles & tests	(m)	epth (m)	aphic log	assificatio mbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components		oisture	nsistency / lative densi	shear ⊕remoulded ⊚peak (kPa)		additional	observations
£∂ A A	- ~ ~ ~	Ň		R	de	Б ХХХ	sy ĉi	Clavey SILT: brown.		έ8 M	ଃ ହ VSt	50 20 40	FILL		
		VS >11 VS 05 VS 50 VS >11	81 kPa 167/ kPa 150/ kPa 81 kPa					Hand Auger HA20 terminated at 1.0 m Target depth							- - - - - - - - - - - - - - - - - - -
method AD AD AD AS HA W HA * e.g. B T	IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIIII IIIII IIIIIIII IIIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII						I nil sistance ng to al ater e shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Class Class D d M n W p W l W l ii	ssificat soil de based lassifica vet lassic li quid lin	ion symi sscriptio on Unifie ation Sys mit nit			onsistency / I S t St b L L D	relative density very soft soft firm stiff very stiff hard friable very loose loose medium dense dense very dense



A TETR	A TECH	COMP	ANY							E	Boreh	nole ID).	HA21	
۲r	hai	no	orin	~ I	~	N _	Ha		s	sheet	:		1 of 1		
<u> </u>	iyi		enni	y ı	-0(<u>J</u> -	ı ia	nu Auger		Ŗ	orojeo	ct no.		GENZHAMI1465	1AD
clien	t:	T 7	Propert	ties	Limi	ted				C	date s	started	1:	13 Jan 2016	
princ	cipal:	-								c	date o	comple	eted:	13 Jan 2016	
proje	ect:	So	uthwest	t T7	Cell,	, Sw	arbrio	ck Drive, Te Awamutu		le	ogge	d by:		SLC	
locat	tion:	Lo	t 29 / Lo	ot 30)					c	check	ked by:		RBT	
positi	on: E:	45001	I0; N: 67296	68 (NZ	ZTM)			surface elevation: Not Specified	а	ngle fr	om ho	orizontal	l: 90°		
drill m	ina info	land A	Auger			mat	erial sub	drilling fluid:	h	ole dia	Imeter	r : 40 mi	m	vane id.: 2244/01	1
	tion					ກ	tion	material description			y / nsity	vane		structure and	
method & support	1 2 penetra	water	field tests	RL (m)	depth (m)	graphic lo	classifica symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	condition	consistenc relative der	ତ peak (kPa) ନ୍ତୁ ହୁନ୍ଦୁ	ed 002		
			VS 135/ 31 kPa		-		- - - -	Sandy SILT: non plastic - low plasticity, pale grees sand is fine to medium grained.	ey,		VSt		TAI	URANGA GROUP ALLUVIU	M
HA N		3/01/16			0.5			PEAT: fibrous. 0.5 m: becoming wet							
⊈ ℤ ↓ ↓ ↓								Sandy SILT: non plastic - low plasticity, pale grey sand is fine to medium grained. Clayey SILT: medium plasticity, pale grey, limon staining.	ey, nite			 ⊕ @			-
			VS 150/		-	1.1 m: becoming grey green with pale brown mottles and some limonite staining									-
	VS 150/ VS 150/ VS 150/ VS 150/ 1111 15- 1.5- 1							Flooding							
method AD auger drilling* AS support M AS auger crewing* HA C W washbore HA penetration water * bit shown by suffix e.g. M/T B blank bit T T V V bit water					port mud casing etration er er leve wat	no re rangii ◄ refus Oct-12 w el on datu er inflow er outflo	I nil sistance ng to al vater e shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	class ba Class moistur D dry M mo W we Wp pla WI liqu	ificatio oil desc ased or ssificatio e vist t stic limi uid limit	n syml cription n Unifie on Syst	bol & n d tem	F F F L L	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense	



ATETR	A TECH	COMF	ANY							Bore	ehole ID.	HA22
Fr	nai	no	orin	n I		n _	Ha	nd Auger		shee	et:	1 of 1
	iyi			<u>y</u>	-0(<u>J</u> -	i ia			proje	ect no.	GENZHAMI14651AD
clien	it:	T 7	Proper	ties	Limi	ited			date	started:	13 Jan 2016	
princ	cipal:	-								date	complete	ed: 13 Jan 2016
proje	ect:	So	uthwes	t T7	Cell	, Sw	arbri	ck Drive, Te Awamutu		logg	ed by:	SLC
locat	tion:	Lo	t 28							cheo	cked by:	RBT
positi	on: E:	44998	81; N: 6729	60 (N	ZTM)			surface elevation: Not Specified	an	gle from h	norizontal:	90°
drill m drilli	ina info	land A	Auger on			mat	erial sub	drilling fluid: stance	hol	e diamet	er : 40 mm	vane id.: 2244/01
	tion		samples &			ŋ	tion	material description		y / nsity	vane	structure and
method & support	1 2 penetra	water	field tests	RL (m)	depth (m)	graphic lo	classifica symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	consistenc relative der	€ Fremoulded ● remoulded ● peak (kPa) 00	
			VS >180 kPa	a	-			SILT: non plastic - low plasticity, pale grey, limonit staining. Trace of fine grained sand.	te D-	M VSt		TAURANGA GROUP ALLUVIUM
					- 0.5			0.3 m: minor clay becomes present				-
			VS 88/ 23 kPa		-						⊕∣⊙	-
			VS 52/		-			Clayey SILT: medium plasticity, pale grey, limonit staining.	te M	St		-
- HA		3/01/16	14 kPa		1.0			1.0 m: becomes wet	w			
		-			- - 1.5-		c c	Gravelly SILT : low plasticity, pale grey, limonite staining. Gravels are fine to medium grained. Mino sand. Moderatly weathered. 1.3 m: becoming grey green	or			
•					-		c c	1.75 m: poor recovery				-
					- 2.0			Hand Auger HA22 terminated at 2.0 m Flooding				
					2.5							-
					-							-
0					3.0-							
					-							-
					3.5-							-
1					-							-
1											-	
meth AD AS HA	method support AD auger drilling* M mud AS auger screwing* C casing HA hand auger HA						 J nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample	classifi soi bas Class	consistency / relative density VS very soft S soft F firm		
W HA	washb hand a bit sho	ore iuger wn by	suffix	per wat	etration - ∾ ∞ er u10-	no re rangii refusi Oct-12 w	sistance ng to al vater	SS split spon sample U## undisturbed sample ##mm diameter HP hand penetration test (SPT) N* SPT - sample recovered	moisture D dry M mois W wet	t limit		St stiff VSt very stiff H hard Fb friable VL very loose
e.g. B T V	AD/T blank I TC bit V bit	bit			✓ leve Wat	el on dat er inflow er outflo	e shown w	Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	wp plast WI liquid	l limit		L loose MD medium dense D dense VD very dense



T7 Properties Limited client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

1 -+ 22

	ocat	ion:	on: E: 449,905; N: 673,197 (NZTM vdel: Hand Auger Ig information						спескед by:	RBI	
р	ositio	on: E:	449,9	005; N: 673, ²	197 (NZ	ZTM)			surface elevation: Not Specified	angle from horizontal: 90)°
d	rill m	odel: H	and	Auger					drilling fluid:	hole diameter : 40 mm	vane id.: 2244/01
	drilli	ng info	rmat	ion			mate	rial sub	stance		
mothod 8	support	1 2 penetration 3	water	samples & field tests	RL (m)	depth (m)	graphic log	class ification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	and the second structure and structure condition moisture condition and second structure se	structure and additional observations
ingFile>> 10/05/2016 13:52			Not Encountered	VS 160/ 43 kPa VS >181 kPa VS >181 kPa VS >181 kPa VS 142/ 68 kPa VS 143/ 36 kPa VS >181 kPa					Clayey SILT: non plastic - low plasticity, brown and pale brown, minor fine mica flecks. 1.3 m: minor dark brown mottles become presen	D VSt D-M 0 0 0 0 - M 0 0 0 - M 0 0 0 - M 0 0 0 - M 0 0 0 - M 0	AURANGA GROUP ALLUVIUM
CDF_0_9_06_LIBRARY.GLB rev:AM_Log_COF_BOREHOLE: NON CORED_14651AD.GPJ_< cPra	V I VS >181 kPa 2.0 I I - - I <					2.0 - - 2.5 - - - - - - - - - - - - - - - - - - -	22.22.2		Hand Auger HA23 terminated at 2.0 m Target depth		- - - - - - - - - - - - - - - - - - -
	method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger W washbore HA hand auger W washbore HA hand auger W washbore HA hand auger W washbore HA hand auger W water U water 10 lev Water uwater T TC bit					ort nud asing tration r leve wate	 no res rangin refusa Oct-12 wa al on date er inflow er outflow 	nil istance g to i ater e shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS van e shear; peak/remouded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Borehole ID. HA23 1 of 1 sheet: GENZHAMI14651AD project no. date started: 28 Jan 2016 date completed: 28 Jan 2016 logged by: SLC & ODS прт



T7 Properties Limited client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

location: Lot 80

	locat	tion:	Lo	t 80						checked by:	RBT
ſ	positi	on: E:	449,9	919; N: 673,2	210 (N	ZTM)			surface elevation: Not Specified	angle from horizontal: 9	90°
┟	drill m	nodel:	Hand	Auger			moto		drilling fluid:	hole diameter : 40 mm	vane id.: 2244/01
ł	unin	л у пл					mate		material description	_ ∑ ig vane	structure and
	method & support	1 2 penetratio	water	samples & field tests	RL (m)	depth (m)	graphic log	classificatio symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition (eday) 200 (eday) 200 (eday) 200 (eday) 200 (eday) 200 (eday)	additional observations
1AD.GPJ < <drawingfile>> 10/05/2016 13:52</drawingfile>	A H H H H H H H H H H H H H H H H H H H		Not Encountered wa	VS >183 kPa VS 154/ 22 kPa VS >183 kPa VS 149/ 68 kPa VS 156/ 44 kPa VS >183 kPa		<u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u></u></u>		syr	Clayey SILT: non plastic - low plasticity, brown and pale brown, minor fine mica flecks. Hand Auger HA24 terminated at 1.5 m Target depth	D-M VSt □ 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 000 0 0 0 0	TAURANGA GROUP ALLUVIUM
0_9_06_LIBRARY.GLB rev.AM Log COF BOREHOLE: NON CORED 14651	2.5									- - - - - - - - - - - - - - - - - - -	
CDF	IIII Support Mager drilling* Minud AD auger drilling* Minud AS auger screwing* Minud HA hand auger Penetration W washbore Penetration HA hand auger water e.g. AD/T Bit shown by suffix B blank bit Tin TC bit V Vit* Vit*				port nud asing etration er ₽r leve wat	N no res rangini ◄ refusa Oct-12 wa el on date er inflow er outflov	iistance ig to ater e shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit W1 liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense	

Borehole ID.

sheet:

project no.

date started:

logged by:

date completed:

HA24

28 Jan 2016 28 Jan 2016

SLC & ODS

GENZHAMI14651AD

1 of 1



_

A TETRA TECH	COMPANY		Borehole ID.	HA25
Enai	nooring Lo	Uand Augar	sheet:	1 of 1
Engi	neening Loo	J - Hand Auger	project no.	GENZHAMI14651AD
client:	T7 Properties Limi	ted	date started:	28 Jan 2016
principal:	-		date completed:	28 Jan 2016
project:	Southwest T7 Cell	Swarbrick Drive, Te Awamutu	logged by:	SLC & ODS
location:	Lot 74		checked by:	RBT
position: E:	449,892; N: 673,207 (NZTM)	surface elevation: Not Specified	angle from horizontal: 90°	
drill model: I	Hand Auger	drilling fluid:	hole diameter : 40 mm	vane id.: 2244/01
drilling inf	ormation	material substance		

drill	rilling information			mate	rial sub	stance							
iethod & upport	penetration	ater	samples & field tests	L (m)	epth (m)	raphic log	assification /mbol	material description SOIL TYPE: plasticity or particle characteristic colour, secondary and minor components	,	ioisture ondition	onsistency / lative density	vane shear ⊕remoulded ⊚peak (kPa)	structure and additional observations
	3 3 1 1 1 1 <t< th=""><th>Not Encountered wate</th><th>VS >183 kPa VS 149/ 47 kPa VS 147/ 51 kPa VS 130/ 28 kPa</th><th>Br(</th><th></th><th></th><th>class sym</th><th>Clayey SILT: non plastic, orange brown mottle brown, minor fine grained sand. Hand Auger HA25 terminated at 1.0 m Target depth</th><th>ed</th><th></th><th>suoo VSt</th><th></th><th>TAURANGA GROUP ALLUVIUM</th></t<>	Not Encountered wate	VS >183 kPa VS 149/ 47 kPa VS 147/ 51 kPa VS 130/ 28 kPa	Br(class sym	Clayey SILT: non plastic, orange brown mottle brown, minor fine grained sand. Hand Auger HA25 terminated at 1.0 m Target depth	ed		suoo VSt		TAURANGA GROUP ALLUVIUM
metil AD AS HA W HA * e.g. B T	bit show AD/T blank bi TC bit	rilling crewi uger re uger vn by t	∗ ng* suffix	supp M r C c pen wate	port mud casing etration er er ■ 10. lev wa wa	N no res rangin Oct-12 we let on date ter inflow ter outflow	nil istance g to ater shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	cla D M W Wp Wl	assificati soil de based o Classifica ture dry moist wet plastic lim liquid lim	ion sym scriptio on Unifie tion Sys nit it	 	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense



A TETR	A TECH (COMF	PANY							Borel	hole ID.	HA26
C۲	adi	2	orin	~	~	~	La	nd Augor		shee	t:	1 of 1
	igii	IE	enné	<u>y i</u>	-0(<u>y -</u>	Па	na Auger		proje	ct no.	GENZHAMI14651AD
clien	it:	T 7	Propert	ties	Lim	ited				date	started:	28 Jan 2016
princ	cipal:	-								date	complete	ed: 28 Jan 2016
proje	project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu											SLC & ODS
locat	tion:	Lo	t 74							chec	ked by:	RBT
positi	position: E: 449,880; N: 673,193 (NZTM) surface elevation: Not Specified angle fro											90°
drill m	nodel: H	and	Auger					drilling fluid:	hole of	liamete	r : 40 mm	vane id.: 2244/01
drilli	ing info	rmat	ion			mate	rial sub	ostance				
method & support	¹ ² penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) 000000000000000000000000000000000000	structure and additional observations
▲ I I I I I I I </td <td>- - - 0.5</td> <td></td> <td></td> <td>Clayey SILT: non plastic, orange brown mottled brown, minor fine grained sand.</td> <td>D - M</td> <td>VSt</td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td>TAURANGA GROUP ALLUVIUM</td>				- - - 0.5			Clayey SILT: non plastic, orange brown mottled brown, minor fine grained sand.	D - M	VSt	· · · · · · · · · · · · · · · · · · ·	TAURANGA GROUP ALLUVIUM	

3:52	
10/05/2016 1	
< <drawingfile>></drawingfile>	
14651AD.GPJ	
NON CORED	
F BOREHOLE:	
og CO	
3 rev:AM L	
RY.GLE	
LIBRA	
90-06	

			49 kPa	_				-
			VS 2103 KP2	1.0	××××	Hand Auger HA26 terminated at 1.0 m Target depth		
0/05/2016 13:52				- 1.5—				-
AD.GPJ < <drawingfile>> 10</drawingfile>				2.0				
IOLE: NON CORED 14651/				- 2.5— -				- - - -
rev:AM Log COF BOREH				3.0				
9_06_LIBRARY.GLB				3.5				
CDF_								-
	meth AD AS HA W HA	od auger dril auger scr hand aug washbore hand aug	ling* ewing* er er	support M mud C casing penetration	N nil ⊢ no resistance	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter	soil description based on Unified Classification System moisture	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff
6 1 -	* e.g. B T V	bit shown AD/T blank bit TC bit V bit	by suffix	water	ranging to	HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	D dry M moist W wet Wp plastic limit WI liquid limit	H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
-								



T7 Properties Limited client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

1 -+ 20 . - 41 -

loca	ation:	Lo	t 20										checł	ked by:		RBT		
posi	tion: E	:: 449,8	29; N: 672,§	916 (N	ZTM))		surface	elevation: Not	Specified		angle	from ho	orizontal	i: 90°			
drill I	model:	Hand	Auger					drilling flu	uid:			hole d	liameter	r : 40 mr	m	V	ane id.: 224	14/01
arıı	ling in	format	ion T		 	mate	rial sup	stance	material	description			₹	Vane		etru	eturo and	
method & support	1 2 penetratio	3 water	samples & field tests	RL (m)	depth (m)	graphic log	classificatio symbol	SOIL co	. TYPE: plasticity lour, secondary a	or particle characteristic, and minor components	5	moisture condition	consistency / relative densi	varie shear ⊕ remoulde ⊚ peak (kPa)	500 500	additiona	l observatior	1S
-OLE: NON CORED 14651AD.GPJ < <drawingfile>> 10/05/2016 13:52</drawingfile>			VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa				Sy Clear Stream St	Clayey SI brown, mir 0.4 m: 50r plasticity. 0.7 m: No Hand Aug Target de;	LT: non plastic for fine grained mm pockets of more clay pock er HA27 termir pth	, orange brown mottle I sand. clay, orange, low-mec kets	dium	<u>ё</u> 8 D-M	VSt		Image: Normal Science of the second science of th	JRANGA GF	ROUP ALLU	VIUM
CDF_0_9_06_LIBRARY.GLB rev.AM Log COF BORE	3.0- 1.11			3.0 — - - 3.5 — - - - - - - -														
met AD AS HA W HA * e.g. B T V	method AD support AS auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger V washbore HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T T C bit			xort nud asing stration xr yr leve wat wat	N no resis rangin refusa Oct-12 we el on date er inflow ter outflov	nil istance g to ater : shown	sampi B D E SS U## HP N N* Nc VS R HB	les & field tests bulk disturbed disturbed sam environmenta split spoon sa undisturbed s hand penetro standard pen SPT - sample SPT with solic vane shear; p refusal hammer bour	I sample ple l sample mple ample ##mm diameter meter (kPa) etration test (SPT) recovered d cone weak/remouded (kPa) ncing	ci moi: D M W Wp WI	lassificat soil de based Classifica sture dry moist wet plastic lin liquid lin	ion symi »scriptio on Unifie ation Sys mit	bol & n ⊰d .tem	C S S V F F V L L L L	onsistency / /S : : : : : : : : : : : : : : : : : :	relative dens very soft soft firm stiff very stiff hard friable very loose loose medium der dense very dense	ity	

Borehole ID.

sheet:

project no.

date started:

logged by:

date completed:

HA27 1 of 1

GENZHAMI14651AD

28 Jan 2016

28 Jan 2016

SLC & ODS



T7 Properties Limited client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

location: 1 of 19

Desilience: E-448.08.08. If C2.241 (NZTM) surface elevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified angle from hotocents of the dameter : 40 mm and celevation: Not Specified Image: Specified in the specified is th	locatio	on: L	.ot 19							check	ed by:	RBT
drift model: Hand Auger drifting lifermation material subclasses reling lifermation material subclasses reling lifermation material subclasses reling lifermation material subclasses reling lifermation material subclasses reling lifermation material subclasses reling lifermation material subclasses reling lifermation material subclasses reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole Trifle indexion reling reling lifermation sole trifle indexion reling reling lifermation sole trifle indexion reling reling lifermation sole trifle indexion reling reling lifermation <t< td=""><td>position</td><td>n: E:449</td><td>9,808; N: 672,</td><td>941 (NZT</td><td>Μ)</td><td></td><td></td><td>surface elevation: Not Specified</td><td>angle</td><td>from ho</td><td>orizontal: 9</td><td>90°</td></t<>	position	n: E:449	9,808; N: 672,	941 (NZT	Μ)			surface elevation: Not Specified	angle	from ho	orizontal: 9	90°
americal substance material substance material substance vi	drill mod	del: Han	nd Auger					drilling fluid:	hole d	iameter	: 40 mm	vane id.: 2244/01
The second construction Second construct	ariiing				-	mate	riai sub	stance material description		j≩	vane	structure and
Image: Sector	method & support	¹ 2 penetratio	samples & field tests	RL (m)	depth (m)	graphic log	classificatio symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative dens	shear ⊕remoulded ⊚ peak (kPa) 05 00 05	additional observations
method AD support auger drilling* support M mud samples & field tests classification symbol & soil description consistency / relative densistive VS very soft AS auger screwing* M mud N nil B bulk disturbed sample based on Unified S soil description HA hand auger D disturbed sample Classification symbol & S soft W washbore penetration SS split spoon sample Classification System F firm HA hand auger penetration SS split spoon sample moisture VSt very stiff HA hand auger ranging to refusal HP hand penetrometer (kPa) D dry H hard HA hand auger N standard penetration test (SPT) M moist Fb fraible			VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa VS >183 kPa	a a a a a a a a a a a a a a a a a a a				SILT: non plastic, orange brown with mottled brown, minor fine grained sand. 0.4 m: mottling becoming pale brown and brown Possibly old filling from road construction. Hand Auger HA28 terminated at 2.5 m Target depth	D - M	VSt		TAURANGA GROUP ALLUVIUM
* bit shown by suffix e.g. AD/T water N* SPT - sample recovered W Wet VL very loose B blank bit blank bit VS vane shear; peak/remouded (kPa) WI iquid limit L loose T TC bit Fitsal R refusal D dense	method AD a AS a HA h W w HA h * b e.g. A B b T T	d auger drill auger scro hand augo washbore hand augo bit shown AD/T blank bit C bit	ling* ewing* er er by suffix	support M mud C casin penetra water	t ng ation 	N no res rangin refusa ct-12 wa on date r inflow	nil istance g to l ater shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered VS vane shear; peak/remouded (kPa) R refusal	classificati soil de based (Classifica noisture) dry A moist V wet V p plastic lin VI liquid lim	ion syml scription on Unifie tion Syst	bol & n d tem	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense

Borehole ID.

sheet:

project no.

date started:

logged by:

date completed:

HA28

28 Jan 2016 28 Jan 2016

SLC & ODS

GENZHAMI14651AD

1 of 1



T7 Properties Limited client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

	locati	on:	Lo	t 18		_	_					check	ked by:	RBT
ſ	positio	n: E:	149,7	90; N: 672,9	966 (N	ZTM)			surface elevation: Not Specified		angle	from ho	orizontal: 9	90°
┟	drill mo	odel: H	and A	Auger					drilling fluid:		hole d	iamete	r : 40 mm	vane id.: 2244/01
ł	ariiiir		rmat	on			mate	iriai sub	stance material description			ţ,	vane	structure and
	method & support	1 2 penetratio	water	samples & field tests	RL (m)	depth (m)	graphic log	classificatio symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components		moisture condition	consistency / relative densi	shear ⊕remoulded ⊚peak (kPa) 03 00 05 00	additional observations
CDF_0_9_06_LIBRARY.GLB rev.aM_Log_COF BOREHOLE: NON CORED_14651AD.GPJ_ <cdrawingfile>>_10.052016_13:53</cdrawingfile>			Not Encountered	VS >183 kPa VS >183 kPa VS 149/ 27 kPa VS >183 kPa VS >183 kPa VS >183 kPa	supj				SILT: non plastic, orange brown with mottled brown, minor fine grained sand.	cla	D - M	VSt		TAURANGA GROUP ALLUVIUM
	metho AD AS HA W HA * e.g. B T	auger of auger of hand a washbo hand a bit shoo AD/T blank t TC bit	drilling screwi uger ore uger wn by it	* ng* suffix	supj M r C c pend wate	etration	In no reservation in the second s	i nil sistance ng to al rater e shown	samples & rield tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/remouded (kPa) R refusal	moist D (M) Wp WI	soil de based o Classifica ture dry moist wet plastic lin liquid lim	nit	n ed tem	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense

Borehole ID.

sheet:

project no.

logged by:

date started:

date completed:

HA29 1 of 1

28 Jan 2016

28 Jan 2016

SLC & ODS

GENZHAMI14651AD



T7 Properties Limited client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

	locat	ion:	Lo	t 42							chec	ked by:	RBT
ſ	positio	on: E	449,9	956; N: 673,0)35 (N	JZTM)			surface elevation: Not Specified	anç	gle from h	orizontal: 9	90°
	drill m	odel:	Hand	Auger			<u> </u>		drilling fluid:	hol	e diamete	er : 40 mm	vane id.: 2244/01
ł	drilli	ng ini	ormat	lion			mat	cerial sub	stance		Ę	Vana	of musture and
	method & support	1 2 penetratio	° water	samples & field tests	RL (m)	depth (m)	graphic log	classificatio symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	consistency / relative densi	varie shear ⊕remoulded ⊛peak (kPa) ୠ ⊕ ♀ ୠ	additional observations
CDF_0_0_06_LIBRARY.GLBrev/AM_Log_COF_BOREHOLE:NON CORED_14651AD.GPJ_< <dramingfile>> 10.052016_13:53</dramingfile>				VS 152/ 21 kPa VS >183 kPa VS 149/ 37 kPa VS 151/ 55 kPa VS 138/ 49 kPa VS 151/ 64 kPa					SILT: non plastic, orange brown with mottled brown, minor fine grained sand. 0.8 m: some clay Hand Auger HA30 terminated at 1.5 m Target depth	D - 1	VSt		TAURANGA GROUP ALLUVIUM
	meth AD AS HA W HA * e.g. B T	od auge auge hand wash hand bit sh AD/T blank TC bi	drilling screwi auger bore auger own by bit	j⁺ ing* suffix	sup M r C c pen wat	port mud casing etration er er er leve wat	 no re rang refus Oct-12 v ≥l on da er inflov er outflo 	N nil esistance ing to sal water te shown v	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered NC SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	classifi soil bas Classi moisture D dry M mois W wet Wp plasti Wi liquid	cation syn I descriptid ed on Unifi fication Syn fication Syn c limit limit	n bol & on ed stem	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Borehole ID.

sheet:

project no.

date started:

logged by:

date completed:

HA30 1 of 1

28 Jan 2016

28 Jan 2016

SLC & ODS

GENZHAMI14651AD



Engi	nooring Log Hor		sheet:
Engi	пеенну соу - наг	lu Auger	project no.
client:	T7 Properties Limited		date started:
principal:	-		date completed:
project:	Southwest T7 Cell, Swarbric	k Drive, Te Awamutu	logged by:
location:	Lot 42		checked by:
position: E:	449,979; N: 673,048 (NZTM)	surface elevation: Not Specified	angle from horizontal: 90°

Borehole ID.

HA31 1 of 1

28 Jan 2016 28 Jan 2016

SLC & ODS

RBT

GENZHAMI14651AD

ſ	positi	on:	E: 44	9,9	79; N: 673,0	48 (N	ZTM)			surface elevation: Not Specified	an	gle from h	orizontal	: 90°
	drill n	node	l: Ha	nd A	uger			-		drilling fluid:	hol	e diamete	er : 40 mi	m vane id.: 2244/01
ļ	drill	ing i	nfor	nati	on			ma	iterial su	bstance				
	method & support	nenetration	beneriation	vater	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture	consistency / elative density	vane shear ⊕ remoulde ⊚ peak (kPa)	structure and additional observations
ľ		 		>	VS >183 kPa	Ľ				SILT: non plastic, orange brown with mottled brown, minor fine grained sand.	D -	M VSt	 @ 	TAURANGA GROUP ALLUVIUM
	- HA -			ot Encountered	VS >183 kPa VS >183 kPa		- 0.5							
				Z	VS >183 kPa VS 149/ 49 kPa		- 1.0 — -			Clayey SILT: low plasticity, brown and dark brow	wn. M		 ⊕ ⊕	
6 13:53					VS 154/ 61 kPa		- - -1.5							-
CDF_0_9_06_LIBRARY.CLB rev.AM_Log_COF BOREHOLE: NON CORED_14651AD.CPJ_< <drawingfile>> 10/05/2016</drawingfile>					0 K 2		1.5 - - - - - - - - - - - - - - - - - - -			Hand Auger HA31 terminated at 1.5 m Target depth	olassifi			
	meth AD HA W HA * e.g. B T V	bit s AD/ blar TC V b	ger dr ger so nd aug shbor nd aug shown /T nk bit bit it	lling* rewir ger ger	ng* suffix	supr M n C c pene wate	etration	- no ran ⊲ refi Oct-12 el on d er inflo er outf	N nil resistance ging to isal water ate shown w low	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	classifi bas Class Class D dry M mois W wet Wp plast WI liquic	cation syn I descriptid ed on Unifi ffication Sy ffication Sy t t t t t t t ic limit	nbol & on ed stem	consistency / relative densityVSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense



A TETRA TECH	COMPANY		Borehole ID.	HA32
Enai	nooring log l	land Augar	sheet:	1 of 1
Engi	neering Log - r	hand Auger	project no.	GENZHAMI14651AD
client:	T7 Properties Limited		date started:	28 Jan 2016
principal:	-		date completed:	28 Jan 2016
project:	Southwest T7 Cell, Swa	rbrick Drive, Te Awamutu	logged by:	SLC & ODS
location:	Lot 41		checked by:	RBT
position: E:	450,003; N: 673,066 (NZTM)	surface elevation: Not Specified	angle from horizontal: 90°	
drill model: I	Hand Auger	drilling fluid:	hole diameter : 40 mm	vane id.: 2244/01

ł			anu /							nole u	nameter	. +0 11111	varie iu 2244/01
	arilli	ng into	mat	ion			ma	erial sub					
	method & support	1 2 penetration 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) B	structure and additional observations
6 13:53	H H H H H H H H H H H H H H H H H H H		Not Encountered wat	VS >183 kPa VS >183 kPa VS 151/ 55 kPa VS >183 kPa VS 140/ 45 kPa VS >183 kPa	ЪГ С	ig -	gra	syn	SILT: low plasticity, brown with mottled orange brown, trace of fine grained sand. Some clay.	M	VSt	$\begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \\ \end{array} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} $	TAURANGA GROUP ALLUVIUM
DLE: NON CORED 14651AD.GPJ < <drawingfile>> 10/05/2016</drawingfile>						- - - 2.0 - - - - - - - - - - - - - - - - - - -			Hand Auger HA32 terminated at 1.5 m Target depth				- - - - - - - - - - - - - - - - - -
CDF_0_9_06_LIBRARY.GLB rev:AM Log COF BOREH						- 3.0 - - 3.5 - - - - -							- - - - - - - - - - - - - - - - - - -
	meth AD AS HA W HA * e.g. B T V	od auger c auger s hand au washbc hand au bit show AD/T blank b TC bit V bit	rilling crewi iger iger iger <i>i</i> n by	* ng* suffix	supp M r C c pend wate	etration	 no r rang refu Oct-12 el el on da er inflow er outflo 	N nil esistance ing to sal water te shown v	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	classificat soil de based Classifica D dry M moist W wet Wp plastic lin WI liquid lim	ion syml escription on Unifie ation Syst	d tem	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense



A TETRA TECH	HCOMPANY		Borehole ID.	HA33
Enai	incoring Loc	Land Augar	sheet:	1 of 1
Eng	ineering Loc	J - Hand Auger	project no.	GENZHAMI14651AD
client:	T7 Properties Limi	ted	date started:	28 Jan 2016
principal:	-		date completed:	28 Jan 2016
project:	Southwest T7 Cell,	Swarbrick Drive, Te Awamutu	logged by:	SLC & ODS
location:	Lot 37		checked by:	RBT
position: E	: 450,022; N: 673,077 (NZTM)	surface elevation: Not Specified	angle from horizontal: 90°	
drill model:	Hand Auger	drilling fluid:	hole diameter : 40 mm	vane id.: 2244/01
drilling inf	formation	material substance		

	drill	ing info	rmat	ion			ma	ater	ial sub	ostance						
	method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log		class ification symbol	material description SOIL TYPE: plasticity or particle characteristic colour, secondary and minor components	\$ 5	moisture condition	consistency / relative density	Va sh ⊕rer ⊛ (k ⁰⁰	ane near ^{moulded} peak (Pa)	structure and additional observations
	A A		ountered	VS >183 kPa VS 136/ 41 kPa	a	0.5				SILT: low plasticity, brown with mottled orange brown, trace of fine grained sand. Some clay.	2	D - M	VSt			TAURANGA GROUP ALLUVIUM - - - - -
13:53	► HA		Not Enco	VS 147/ 39 kPa VS 147/ 48 kPa VS >183 kPa VS 125/	a					Clayey SILT: low plasticity, orange brown with mottled brown. SILT: non plastic, brown, minor fine sand.	n	M		+		
CDF_0_9_06_LIBRARY.GLB.rev.AM_Log_COF BOREHOLE: NON CORED_14661AD.GPJ_< <drawingfile>>_10/05/2016</drawingfile>				42 11 - 42						Hand Auger HA33 terminated at 1.5 m Target depth		assificat				
	AD AS HA W HA * e.g. B T	auger auger hand a washb hand a bit sho AD/T blank t TC bit	drilling screw uger ore uger wn by bit	ı* ing* suffix	pen wat	nud asing etration er er ↓ 10-(leve wat ↓ wat	oct-12 Poct-12 on d er inflo er outf	N resis iging usal 2 wat late s ow flow	nil tance to ter shown	B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	mois D M W Wp WI	soil de based Classifica sture dry moist wet plastic lin liquid lim	scriptio on Unifie tion Sys nit it	n ed .tem		VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense



Engineering Log - Hand Auger T7 Properties Ltd client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

Lot 32 location:

lo	catior	n: I	Lot	: 32							chec	ked by:	LC
ро	sition:	E: 4	50,0	91; N: 673,0	17 (N	lount E	den Ci	rcuit)	surface elevation: Not Specified	ang	e from h	orizontal: 90)°
dri	ill mod	el: Ha	nd A	luger					drilling fluid:	hole	diamete	er : 40 mm	vane id.:
d	rilling	infor	mati	on			mate	erial sub	stance				
method &	support 1	² penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) ₀₂ 000 02	structure and additional observations
2016 15:36 HA			Not Encountered	VS 156/ 49 kPa VS >202 kPa		- - - 0.5 — - -		ML	SILT: non plastic to low liquid limit, dark grey.	D	VSt H	· · · · · · · · · · · · · · · · · · ·	FILL -
9-3-16.GPJ < <drawingfile>> 12/05/2</drawingfile>				VS UTP VS UTP		- 1.0— - -		ML	SILT: low liquid limit, pale brown.			У\$ UTP	TAURANGA GROUP ALLUVIUM
CDF_0_9_06_LIBRARY.GLB rev:AM_Log_COF BOREHOLE: NON CORED_LOT HAND AUGERS SWH						1.5			Hand Auger HA34 terminated at 1.4 m Refusal				
m A A H W H * e B T	nethod D au S au IA ha V wa IA ha IA ha IA ha IA ha IA ha	uger dr uger so and au ashbor and au t show D/T ank bit C bit	illing' rewir ger ger	, ıg* suffix	supp M r C c pene wate	etration	N no ress rangin refusa Oct-12 wa el on date er inflow er outflow	nil istance g to l ater e shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample S split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	classific soil base Classifi D dry M moist W wet S satura Wp plastic Wi liquid	ation sym descriptio d on Unifi- cation Sys ted limit imit	nbol & n ed stem	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense

Borehole ID.

sheet:

project no.

date started:

logged by:

date completed:

HA34

09 Mar 2016 09 Mar 2016

GENZTHAMI14651AD

1 of 1

SWH



T7 Properties Ltd client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

locat	tion:	Lot	t 63							checł	ked by:	LC
positi	on: E:4	49,9	57; N: 673,0	030 (N	1ount E	Eden Ci	rcuit)	surface elevation: Not Specified	angle	from ho	orizontal: 9	90°
drill m	nodel: Ha	and A	Nuger				<u> </u>	drilling fluid:	hole d	iamete	r : 40 mm	vane id.:
drilli	ing info	rmati	on			mate	erial sub			≿		
method & support	1 2 penetration 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classificatio symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative densit	vane shear ⊕remoulded ⊛peak (kPa) _S 00 00 00	structure and additional observations
HA H		Not Encountered	VS >202 kPa VS >202 kPa VS 125/ 46 kPa VS >202 kPa VS >202 kPa VS 177/ 63 kPa VS 130/ 46 kPa				ML	SILT: non plastic to low liquid limit, dark grey-brown. 0.4 m: becoming brown SILT: low liquid limit, brown-orange. 1.6 m: becoming dark brown Hand Auger HA35 terminated at 2.0 m Target depth	D	H VSt H	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	FILL
meth AD AS HA W HA * e.g. B T	od auger d auger s hand au washbo hand au bit show AD/T blank bi TC bit	rilling crewir uger re uger vn by t	, ıg* suffix	sup M r C c pen wate	port mud casing etration er er ∎ ∎ lev wat	no ret rangir refuse Oct-12 w el on date ter inflow	i nil sistance ig to al ater e shown	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal	Classificati soil de based o Classifica D dry M moist W wet S saturated Wp plastic lir WI liquid lim	don sym scriptio on Unifie tion Sys d nit it	bol & n d tem	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense

Borehole ID.

sheet:

project no.

date started:

logged by:

date completed:

HA35

09 Mar 2016 09 Mar 2016

GENZTHAMI14651AD

1 of 1

SWH



A TETRA TE	FECH COMPANY				Borehole ID.	HA37
End	ainoorin		d Augor		sheet:	1 of 1
<u> </u>	gineenn	y Log - Hall	u Augei		project no.	GENZTHAMI14651AL
client:	T7 Proper	ties Ltd			date started:	09 Mar 2016
principa	oal: -				date completed:	09 Mar 2016
project:	t: Southwes	t T7 Cell, Swarbrick	Drive, Te Awamutu		logged by:	SWH
location	n: Lot 56				checked by:	LC
position:	: E: 449,818; N: 673,0	086 (Mount Eden Circuit)	surface elevation: Not Specified	angle	from horizontal: 90°	
drill mode	del: Hand Auger	matorial subst	drilling fluid:	hole d	iameter : 40 mm	vane id.:
unning	5		material description		√ tig vane	structure and
method & support	samples & field tests	RL (m) depth (m) graphic log classificati symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	Sologia Solog	additional observations
	I I I I I I I I VS UTP I I VS 202/ 66 kPa I I VS 202/ 66 kPa I I VS >202 kPa I I VS >202 kPa I I VS >202 kPa I I VS >202 kPa I I VS >202 kPa I I VS >202 kPa I I VS >202 kPa I I VS >202 kPa	0.5 ML 5	SILT: non plastic to low liquid limit, grey-brown.	D	Н	LL
method AD au AS au HA ha W wa B bla * bit		2.0 2.0 2.5 2.5 2.5 4 2.5 5 2.5 4 5 1 1 1 1 1 1 1 1 1 1 1 1 1	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample U# undisturbed sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/remouded (kPa) R refusal	Classificati soil de based o Classifica Moisture D dry M moist W wet S saturate Wy plastic lir Wy plastic lir Wi liquid lim	I I I I I I	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense



Engineering Log - nanu Auger	Engineering	Log - Hand Auger
------------------------------	-------------	------------------

T7 Properties Ltd client:

principal: -

project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu

location: Lot 13 checked by:										LC				
positi	ion: E:4	49,7	25; N: 673,0	946 (N	lount E	den C	ircuit)	surface elevation: Not Specified	angle	from he	orizontal: 9	0°		
drill n	nodel: Ha	and A	Auger					drilling fluid: hole diameter : 40 mn				vane id.:		
								ostance						
method & support	 penetration 	water attor water (m) depth (m) graphic log			graphic log	Bit Bit Bit Bit Display Display Display Display Display Display Display Display Display Display <td>consistency / relative densit</td> <td>vane shear ⊕remoulded ⊚peak (kPa) & 00 92 80</td> <td>structure and additional observations</td>			consistency / relative densit	vane shear ⊕remoulded ⊚peak (kPa) & 00 92 80	structure and additional observations			
							ML	SILT: low liquid limit, brown-orange.	D	VSt		TAURANGA GROUP ALLUVIUM		
			VS 177/ 66 kPa		-						 ⊕ ⊙ 	-		
			VS 142/ 44 kPa		0.5						 			
- HA		Not Encountered	VS 170/ 49 kPa	1.0-								-		
			VS 156/ 52 kPa								$\begin{array}{c} & & & \\ & & & \\ & & & \\$	-		
			VS 163/ 55 kPa		1.5			1.6 m: becoming brown			+ + + + + + + + + + + + + + + + + + +	-		
			VS 133/ 44 kPa					Hand Auger HA38 terminated at 2.0 m			 ⊕ © 	-		
1					2.5			Hand Auger HA38 terminated at 2.0 m Target depth				- - - - - - - - - - - - - - - - - - -		
method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger W washbore HA hand auger W washbore HA hand auger W washbore HA hand auger W washbore HA hand auger Washbore water Water water I Ier B blank bit T TC bit				port nud xasing etration er er ↓ 10-4 leve wat	no re rangi refus Oct-12 v el on dat er inflow er outflo	V nil sistance ng to al vater se shown v	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	classifical soil d based Classific D dry M moist W wet S saturate Wp plastic I WI liquid lin	tion sym escriptio on Unific ation Sys ed mit mit	bol & n ed tem	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense			

Borehole ID.

sheet:

project no.

date started:

logged by:

date completed:

HA38

09 Mar 2016 09 Mar 2016

GENZTHAMI14651AD

1 of 1

SWH



A TETRA TECH COMPANY										Bore	hole ID.	HA39		
											t:	1 of 1		
Engineering Log - Hand Auger											ct no.	GENZTHAMI14651AD		
client:	nt: T7 Properties Ltd date started:										09 Mar 2016			
princip	oal:	al: - date comple										1: 09 Mar 2016		
project: Southwest T7 Cell, Swarbrick Drive, Te Awamutu										logge	ed by:	SWH		
location: Lot 5 checked by:									ked by:	LC				
position: E: 449,816; N: 673,211 (Mount Eden Circuit) surface elevation: Not Specified angle from horizontal: 90°									0°					
drill model: Hand Auger drilling fluid: hole diameter : 40 mm									vane id.:					
drilling information material substance														
hod & port	netration	-a	samples & field tests	(m)	th (m)	ohic log	sification	material description SOIL TYPE: plasticity or particle characteristic, colour, secondar, and migor components	sture dition	sistency / ive density	vane shear ⊕ remoulded ⊛ peak	structure and additional observations		

	method & support	1 2 penetrati 3	water	samples & field tests	RL (m)	depth (m)	graphic loç	classificati symbol		SOIL TYPE: plasticity or particle chara colour, secondary and minor compo	acteristic, onents	moisture condition	consistency relative den	Sh ⊕rer ● (k 05	near moulded peak (Pa)	additional observations
						-		ML	SILT:	low liquid limit, brown-orange.		D	Н			TAURANGA GROUP ALLUVIUM
				VS >202 kPa		-									 @ 	-
15:36				VS >202 kPa		-			0.5 m	: becoming orange-brown					 ⊕ 	-
-ile>> 12/05/2016	HA		t Encountered	VS >202 kPa		- - 1.0										-
NH 9-3-16.GPJ < <drawingf< td=""><td></td><td></td><td>N</td><td>VS 184/ 69 kPa</td><td></td><td>-</td><td></td><td></td><td>1.2 m</td><td>: trace of fine grained sand</td><td></td><td rowspan="2">VSt</td><td>VSt</td><td></td><td></td><td>-</td></drawingf<>			N	VS 184/ 69 kPa		-			1.2 m	: trace of fine grained sand		VSt	VSt			-
D LOT HAND AUGERS SV				VS 166/ 66 kPa	2.0	1.5			1.6 m	: becoming brown, sand absent				 	 • • 	-
E: NON COREL				VS 142/ 52 kPa					Hand	Auger HA30 terminated at 2.0 m				 ⊕ 	 @ 	-
g COF BOREHOL									Targe	Target depth						-
BRARY.GLB rev:AM Lo						- 2.5—										-
CDF_0_9_06_L						-										-
	meth AD AS HA W HA	od auger d auger s hand au washbo hand au	irilling crewi uger ore uger	* ng*	support M mud N nil C casing penetration ranging to refusal water level on date shown water inflow water outflow			N nil	S S U	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample Itter undisturbed sample fittmm diameter	ameter moi	lassificat soil de based Classifica	ion sym escriptio on Unifie ation Sys	bol 8 n ed tem	•	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff
	* B T V	bit show AD/T blank bi TC bit V bit	vn by it	suffix				water ate shown low	H N N N N N N N N N N N N N N N N N N N	HP hand penetrometer (kPa) N standard penetrometer (kPa) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing		dry moist wet saturate plastic lii liquid lim	d mit nit			HhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense


























































































































































































Appendix E – Settlement Monitoring Locations



Appendix F – Approved Roadway Subgrade Locations and Test Data



PENETRATION RESISTANCE TEST RESULTS NZS 4402:1988 TEST 6.5.2 Equivalent CBR Values using AUSTROADS Correlation JOB NO GENZHAMI14951AD PROJECT SWARBRICK DRIVE SUBDIVISION **T7 PROPERTIES LTD** CLIENT ROAD SUBGRADE MATERIAL / LAYER 14/03/2016 - 05/05/2016 DATE TESTED Test No SC01 SC02 SC03 SC03a SC03b Test Area SWARBRICK DRIVE **Test Location** ROAD SUBGRADE Test Depth 600mm Depth Range Equiv No of Equiv No of No of Equiv No of Equiv No of Equiv No of mm Blows CBR Blows CBR Blows CBR Blows CBR Blows CBR Blows 0 - 100 4 8 3 6 3 6 3 6 4 8 100 - 200 3 2 5 10 6 4 3 6 4 8 200 - 300 4 8 3 6 2 4 2 4 3 6 300 - 400 3 5 10 6 2 4 2 4 2 4 400 - 500 6 13 3 6 2 4 2 4 2 4 500 - 600 5 10 3 6 2 4 3 6 3 6 AVERAGE 5 10 3 6 2 4 2.4 4 2.8 5 2.8 Test No SC03d SC04 SC05 SC06 SC07 Test Area SWARBRICK DRIVE **Test Location** ROAD SUBGRADE Test Depth 600mm Depth Range No of Equiv No of Equiv No of Equiv No of Equiv No of Equiv No of mm Blows CBR Blows CBR Blows CBR Blows CBR Blows CBR Blows 0 - 100 4 8 7 15 5 10 3 6 4 8 100 - 200 3 6 5 10 3 6 4 8 4 8 200 - 300 3 6 5 10 4 8 3 6 4 8 300 - 400 3 6 5 10 4 8 3 6 3 6

Sheet 1 of 1

SC03c

3

3

3

3

2

3

6

5

5

4

5

5

4.8

SC/SWH/NM

LC

Equiv

CBR

6

6

6

6

4

6

5

Equiv

CBR

13

10

10

8

10

10

10

SC08

PeneTable1000v6bec1206

400 - 500

500 - 600

AVERAGE

3

3

3

coffey ? geotechnics

6

6

6

4

3

4.4

8

6

9

4

4

3.8

Tauranga

8

8

8

141 Cameron Road

2

3

3

3110

4

6

6

3

2

3.2

TESTED BY

CHECKED

6

4

6

This report may only be reproduced in full.

is report may only	be reprodu	uced in full									Shee	t 1 OT	
		PENE	TRAT	ION R	ESIST 4402:198	TANCE B8 TEST	E TES 6.5.2	TRES	SULTS				
· · · · · · · · · · · · · · · · · · ·			Equiv	alent CBR	Values usir	ng AUSTRO	ADS Correl	lation					
		JOB NO						GENZHAN	114951AD	(
		PROJECT					SWARE	BRICK DRI	VE SUBDI	VISION			
				Т	7 PROPE	RTIES LTI	C						
		MATERI	AL / LAYEI	R	ROAD SUBGRADE								
	DATE TESTED 14/03/2016 - 05/05/2016												
Test No	SC	C09 SC10 SC010a SC10b SC11								SC11a			
Test Area	SWARBRICK DRIVE												
Test Location	ROAD SUBGRADE												
Test Depth	600mm												
Depth Range mm	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	
0 - 100	6	13	3	6	7	15	2	4	2	4	3	6	
100 - 200	3	6	3	6	4	8	3	6	2	4	4	8	
200 - 300	2	4	2	4	3	6	4	8	2	4	2	4	
300 - 400	3	6	3	6	3	6	4	8	3	6	3	6	
400 - 500	2	4	2	4	4	8	4	8	3	6	3	6	
500 - 600	2	4	3	6	4	8	4	8	2	4	4	8	
AVERAGE	2.4	4	2.6	5	3.6	7	3.8	8	2.4	4	3.2	6	
Test No	SC	SC11b SC11c SC12 SC13 SC14 SC14z											
Test Area						SWARBR	ICK DRIVE						
Test Location						ROAD SI	UBGRADE						
Test Depth				1	· · · · · ·	600	0mm		1		1	1	
Depth Range mm	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	
0 - 100	3	6	2	4	3	6	5	10	2	4	9	20	
100 - 200	2	4	3	6	4	8	6	13	2	4	6	13	
200 - 300	3	6	3	6	4	8	4	8	2	4	5	10	
300 - 400	3	6	3	6	4	8	3	6	2	4	4	8	
400 - 500	3	6	3	6	2	4	3	6	3	6	4	8	
500 - 600	4	8	3	6	2	4	2	4	2	4	3	6	
AVERAGE	3	6	3	6	3.2	6	3.6	7	2.2	4	4.4	9	
coffey	> geo	technie	cs		141 Taurang	Cameron ga	Road 3110		TESTED	BY S ED	SC/SWH/N LC	IM	

nis report may only	y be reprod	uced in full									Shee	t 1 of	
		PENE	TRAT	ION R NZS	ESIS7 4402:198	FANCE B8 TEST	E TES 6.5.2	T RES	SULTS	5			
			Equiv	alent CBR	Values usir	ng AUSTRC	ADS Corre	lation					
		JOB NO)	GENZHAN	/II14951AD				
PROJECT							SWARE	BRICK DRI	VE SUBDI	VISION			
CLIENT							٦	7 PROPE	RTIES LTI	D			
		MATERI	AL / LAYE	R				ROAD SL	JBGRADE				
		DATE T	ESTED				14	4/03/2016	- 05/05/20				
Test No	SC	14b	SC	215	SC15a SC15b				SC	:16			
Test Area	SWARBRICK DRIVE												
Test Location	ROAD SUBGRADE												
Test Depth	600mm												
Depth Range mm	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	
0 - 100	7	15	2	4	3	6	3	6	2	4	2	4	
100 - 200	7	15	2	4	2	4	3	6	3	6	2	4	
200 - 300	4	8	3	6	2	4	3	6	3	6	1	2	
300 - 400	4	. 8	3	6	3	6	3	6	3	6	2	4	
400 - 500	3	6	3	6	2	4	3	6	3	6	2	4	
500 - 600	3	6	4	8	2	4	3	6	3	6	3	6	
AVERAGE	4.2	8	3	6	2.2	4	3	6	3	6	2	4	
Test No	SC16a SC16b SC37 SC38 SC39										sc	SC39a	
Test Area						SWARBR	ICK DRIVE	-					
Test Location						ROAD SU	JBGRADE						
Test Depth						600)mm						
Depth Range mm	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	
0 - 100	2	4	8	17	5	10	8	17	4	8	8	17	
100 - 200	1	2	7	15	3	6	4	8	3	6	5	10	
200 - 300	2	4	5	10	3	6	3	6	3	6	6	13	
300 - 400	2	4	3	6	3	6	3	6	3	6	5	10	
400 - 500	2	4	3	6	4	8	4	8	2	4	4	8	
500 - 600	2	4	4	8	3	6	4	8	3	6	3	6	
AVERAGE	1.8	3	4.4	9	3.2	6	3.6	7	2.8	5	4.6	9	
coffey	> geo	technie	cs		141 Taurang	Cameron ga	Road 3110		TESTED	BY S	SC/SWH/N LC	M	

This report may only be reproduced in full.

		PENE	TRAT	ION R NZS	ESIST 4402:198 Values usin	ANCE B8 TEST	E TES 6.5.2 ADS Corre	T RES	SULTS	;				
		JOB NO				5		GENZHAN	114951AD)				
PROJECT							SWARE	BRICK DRI	VE SUBD	VISION				
CLIENT							1	7 PROPE	RTIES LTI	C				
MATERIAL / LAYER						ROAD SUBGRADE								
		DATE T	ESTED				14	4/03/2016	- 05/05/20	16				
Test No	SC	39b	SC	:40	SC41 SC42				SC43					
Test Area	SWARBRICK DRIVE													
Test Location	ROAD SUBGRADE													
Test Depth	600mm													
Depth Range mm	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR		
0 - 100	3	6	10	20+	6	13	4	8	8	17				
100 - 200	3	6	8	17	8	17	5	10	6	13				
200 - 300	4	8	9	20	7	15	3	6	4	8				
300 - 400	3	6	5	10	5	10	3	6	4	8				
400 - 500	3	6	5	10	4	8	4	8	4	8				
500 - 600	3	6	6	13	4	8	4	8	4	8				
AVERAGE	3.2	6	6.6	14	5.6	12	3.8	8	4.4	9				
Test No														
Test Area						SWARBR	ICK DRIVE	Ξ						
Test Location						ROAD SU	JBGRADE							
Test Depth						600)mm				×			
Depth Range mm	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR	No of Blows	Equiv CBR		
0 - 100														
100 - 200														
200 - 300														
300 - 400														
400 - 500														
500 - 600														
AVERAGE														
coffey	> geo	technie	cs		141 Taurang	Cameron ja	Road 3110		TESTED CHECKI	BY S ED	SC/SWH/N LC	IM		