

The Lakes (2012) Ltd

The Lakes - Stage 3I

Geotechnical Completion Report

19 January 2018



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The Lakes - Stage 3I

Prepared for The Lakes (2012) Ltd C/- Harrison Grierson Consultants Ltd PO Box 13 025 Tauranga 3141 Tauranga

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For and on behalf of Coffey

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1. Introduction & Scope

This Geotechnical Completion Report (GCR) has been prepared by Coffey Services (NZ) Ltd (Coffey) for the Lakes (2012) Limited following completion of earthworks for Stage 3I of the Lakes Subdivision and in general accordance with the conditions of Council resource consent number RC21332.

This GCR contains the results of site investigations together with as-built plans derived from Harrison Grierson Consultants Ltd (HGCL) topographical data. It describes bulk earthworks completed during the 2007-2008, 2014-2015, 2015-2016 and 2016-2017 earthworks seasons. It also summarises minor works completed within the development area such as walking tracks, a debris bund and a permanent stormwater pond ('Pond 2').

The extent of earthworks observed by Coffey is shown on the appended plans (Figures 1 to 5, Appendix A). A Statement of Professional Opinion (Form G2) and Summary of Technical Data (Form G3) for the works described herein are also appended.

2. Description of Subdivision

Stage3I of the Lakes subdivision is located near the intersection of Pyes Pa Road and Takitimu Drive (State Highway SH26) in Pyes Pa, Tauranga. The site location and original ground contours are shown on Figure 1 in Appendix A. Stage 3I consists a total of 85 lots new residential lots with associated reserves, roads and easements.

Before earthworks began, Stage 3I consisted of a low-lying valley orientated in a north-south direction parallel to Pyes Pa Road. The valley was bounded by steep slopes to the north, west and east. The valley originally extended to the south beyond the 3I boundary but this area was infilled during construction of Takitimu Drive (State Highway SH36). The southern boundary of Stage 3I is now marked by the highway.

During the 2007 to 2008 earthworks season, major works were undertaken within the Lakes area and to form the Takitimu Drive road alignment. These earthworks included placement of up to 15m of filling within the stage 3I area to form the current highway embankment. Cut and fill contours for these works are shown on Figure 2. The post earthworks ground surface (surveyed in 2010) is shown on Figure 3.

Earthworks recommenced in the summer of 2014-2015 with the placement of fill in the in the valley of Stage 3I. Filling continued during the 2015-2016 work season as further cut material was sourced from other stages within the Lakes Development. The ridge at the northern end of Stage 3I (referred to as the 'spur ridge' on the site plans) was excavated at this time. The total cut and fill contours from these work seasons are shown on Figure 4.

Earthworks were also carried out to form a permanent stormwater pond near the northern end of the stage (Pond 2), a debris bund along the toe of the eastern slope below Pyes Pa Road and a network of walking tracks on the slope to the west of the stage. Two earth-fill buttresses were also constructed below the collector road that accesses the site from the west. These structures are discussed in more detail elsewhere in this report.

Civil infrastructure for Stage 3I of the subdivision was installed in 2016 and 2017. The 2017 finished ground surface is shown on Figure 5.

3. Related Reports

The following documents were prepared prior to or during the design and development of Stage 3I:

- 1. *'Pyes Pa West Urbanisation Development, Tauranga Geotechnical Assessment Report'*, report prepared by S&L Consultants Ltd (Ref: 16944, dated October 2003).
- 2. 'Geotechnical Investigation Report for the Lakes Subdivision Stage 3 Zone 2 at Pyes Pa, Tauranga', report prepared by Coffey (Ref: GENZTAUC13086AK-AC, dated 7 April 2014).
- 3. 'Slip Debris Volume Calculations for Western Slope, The Lakes Subdivision Stage 3 Zone 2', memo prepared by Coffey (Ref: GENZTAUC13086AK-AD, dated 27 March 2014).
- 4. 'The Lakes Stage 3 Zone 3, Geotechnical Investigation Report (Addendum 1)', report prepared by Coffey (Ref: GENZTAUC13086AQ-AB, dated 10 July 2015).

The original geotechnical assessment for the Lakes subdivision was completed by S&L Consultants Ltd and contained an overview of geotechnical conditions for the entire Lakes project. The report concluded that the site was generally adequate for subdivision and residential development, subject to appropriate design and construction methods.

Subsequent geotechnical investigation reports by Coffey in April 2014 and July 2015 summarised additional investigations that were completed to specifically assess the Stage 3 area. These investigations generally confirmed the S&L conclusion that the site was adequate for subdivision. The Coffey assessments provided additional detail around potential slope stability risks, likely static settlements beneath the proposed fill areas and the risk of earthquake induced liquefaction within the development.

4. Investigations Completed

Geotechnical investigations have been undertaken on this and adjacent sites during each stage of the Lakes subdivision's design and construction. The investigations used for this report are listed below. Logs of each investigation are included in Appendix C.

2013 - 2014

- Four machine boreholes drilled to a maximum depth of 20.0m across the site. Standard Penetration Tests (SPT) were carried out at 1.5m intervals (Coffey, MH302 to MH305 on Figure 3);
- Thirteen Cone Penetrometer Tests to depths between 6.5 and 15.0 meters below the existing ground level using a truck mounted rig supplied by Geotech Drilling Limited (Coffey, CPT301 to CPT313 on Figure 3);
- Twenty-one trial pits excavated to a maximum depth of 5.8m depth to assess near surface soils and, particularly peat lenses within the floor of the Stage 3I valley (Coffey, TP301 to TP305 and TP308 to TP323 on Figure 3);
- Eight hand-auger boreholes drilled to a maximum depth of 5.0m (Coffey, HA304 to HA308, HA311 to HA312 and HA314 on Figure 3);

2015

• Fourteen hand-auger boreholes drilled to a maximum depth of 5.2m (Coffey, HA01-AQ to HA11-AQ and HA13-AQ to HA15-AQ on Figure 3).

On completion of the bulk earthworks in 2016, Coffey drilled a total of 162 hand-auger boreholes to assess finished subgrade conditions within the new lots. The locations of these boreholes are shown

on Figure 5. Although labels are not shown on the plan, the boreholes are numbered according to the relevant lot number. For example, the hand auger borehole on Lot 532 is referred to as HAL532. Boreholes located on the boundary between two lots are referenced with the lot number of both lots (e.g. HA152-153). Logs of these boreholes are included in Appendix D.

5. Earthworks Operations

5.1. Plant

Earthworks during the 2007-2008 season were completed by Bob Hicks Earthmovers Ltd. The earthworks contractor for the 2014-2017 period was JMC Civil Construction Ltd (JMC) and civil infrastructure was installed by Higgins Group Holdings Ltd (Higgins).

The main items of plant used during each of the bulk earthworks phase comprised motor-scrapers and bulldozer or tractor towed 'scoops', hydraulic excavators, bulldozers, articulated all-terrain dump trucks (ADT's) and sheep's-foot rollers.

5.2. Construction Programme

5.2.1. 2007 – 2008

Under ownership of Grasshopper Farms Ltd, earthworks during this period included filling of up to 15m under the lots at the southern extent of Stage 3I. This fill formed part of the construction for the Takitimu Drive road alignment. The fill materials were sourced from outside the Stage 3I area.

Fill compaction testing for the highway was carried out by Coffey.

5.2.2. 2014 to 2017 Earthworks Seasons

In 2012 ownership of the Lakes subdivision passed from Grasshopper Farms Ltd to The Lakes (2012) Ltd. Earthworks under The Lakes direction began in 2014. The early works included the excavation of peat lenses and colluvial soils which were identified by Coffey's site investigations. From late 2014, filling commenced in the valley with material sourced from other earthworks stages within the Lakes Development. Filling continued during early 2015 and into the 2015-2016 earthwork period that followed. In total up to 5m of fill was placed across the valley floor as shown on Figure 4.

In October and November of 2015, topsoil stripping of the western slope in the vicinity of the earth fill buttresses and the spur ridge to the north of Stage 3I took place, followed by the excavation of the spur ridge into the summer of 2015-2016. Although not shown on Figure 4, some lots in the area of the spur ridge were excavated below finished ground level and then filled to current levels. Reference should be made to the borehole logs in Appendix D to confirm specific ground conditions in this area.

The two buttress fills were constructed on the western slope during March and April of 2016. Minor excavations were also carried out above these buttresses to reduce overall slope gradients. Cut and fill depths from these earthworks can been seen on Figure 4.

Construction of the debris bund along the eastern site boundary took place in stages from late 2015, beginning at the northern end of Stage 3I. The fill contour depths between the toe of the eastern slope and the adjacent lot boundaries can be seen in Figure 4 and the extent of the completed debris bund is shaded on Figure 5.

The installation of civil infrastructure and the construction of the western slope walking tracks were completed by Higgins in 2017.

6. Quality Control

6.1. Site Preparation Observations

During 2014-2017, Coffey undertook regular observations of fill areas to ensure topsoil, vegetation or unsuitable materials had been removed before filling. Coffey also provided laboratory testing services for the earlier earthworks during construction of the Takitimu Drive embankment.

6.2. Fill Control

The fill placed within Stage 3I in the 2007-2008 earthworks season was tested using a Nuclear Density Meter (NDM), laboratory moisture content and undrained shear strength tests. NDM tests from 2014 onwards were undertaken by Fulton Hogan on behalf of JMC Limited. Undrained shear strength tests or Dynamic Cone Penetration Tests (DCP or 'Scala') were also carried out, depending on the fill being tested.

The locations of tests completed in 2007-2008 are shown on Figure 2, with test results represented with the letter 'A' (e.g. A-319). Tests undertaken from 2014 onwards are shown on Figure 4, with test results represented with the letter 'B' (e.g. B-157).

6.2.1. Compaction Control Criteria

The compaction control criteria for this project were specified using the 'minimum allowable shear strength and maximum allowable air voids' method as defined below:

- Air voids percentage (defined in NZS 4402:1986 and as measured by NDM) targeting an average value less than 10% over any 10 consecutive tests and maximum single value no greater than 12%.
- Undrained shear strength measured by hand held shear vane calibrated using the NZGS 2001 method. A single undrained shear strength 'test' was defined as the average of four individual shear vane readings at each NDM location. The target test values were an average value greater than 150kPa and minimum single value no less than 140kPa.

6.2.2. Test Results

Summary tables showing the results of the laboratory fill tests for bulk earthworks at Stage 3I are included in Appendix E and the locations of the tests are shown on Figures 2 and 4. The majority of tests met or exceeded the compaction control criteria given above. Failed tests are shown in red on the relevant figures.

All tests undertaken during the 2007-2008 earthworks period were deemed to have met the above criteria. Fourteen tests during the 2014-2017 season did not meet the required test values.

Following the failed results the filling at test locations B-37, B-60A, B-61A, B-64A, B-70 and B-71 was reworked and retested. The filling at test locations B-45, B-137, B-255, B-259, B-260, B-263, B-290 and B-292 was observed by Coffey using either test pits or hand-auger boreholes. It was concluded that the 'failed' results in these areas were due to variable sand content within the fill leading to inaccurate shear strength or DCP results.

7. Engineering Evaluation

7.1. Fill Quality

Based on the appended earth fill quality control test data and reliance on the diligence of the bulk earthworks contractor at times when engineering staff were not present on site, results indicate that the compaction control criteria were generally met during the bulk earthworks periods.

It should be understood however that, due to the variability of the source materials used, it is possible that discrete pockets or layers of less than optimally compacted fill or sensitive natural soils may be encountered within individual lots. Any questionable or unsuitable ground conditions encountered during construction and/or during the normal Council site inspections must be brought to the attention of a geotechnical engineer.

7.2. Static Settlement

Most of the Stage 3I area is located on engineered filling placed over variable alluvial soils. Static settlements beneath the filling were monitored at a total of eleven survey points shown as 'SM1' to 'SM11' on Figure 4. The monitoring points consisted of steel rods attached to plates installed at the base of the filling. Plots of the data for these points are provided in Appendix F.

The individual points were surveyed for a period of at least 6 months and until the data at each location indicated consolidation settlements were effectively complete (i.e. 'T90'). Most points were then monitored for a further 6 to 12 months to assess the long term 'creep' or residual settlements at each location.

The data indicate that total settlements beneath the majority of the filled area ranged from approximately 20mm to 90mm (SM1 to SM9) over the monitoring period. At the northern end of the site, pre-subdivision analyses indicated that Lots 532, 543 and 544 may be affected by significant differential settlements as these lots spanned across the boundary between filling and excavated ground. These lots were therefore surcharged with 2m of loose fill (equivalent to approximately 25kPa) between March 2016 and February 2017. Data from SM10 and SM11 indicate the filling and surcharge induced up to 150mm of total settlement within these lots.

The probable long-term residual settlements (i.e. 'creep') at each of the monitoring locations have been assessed by extrapolating the settlement data out for a period of 50 years. These calculations indicate likely total residual settlements within Stage 3I will be less than 50mm. Differential settlements within each of the new lots are expected to less than 25mm per 6m horizontal length and within the maximum limits required by the New Zealand Building Code and Tauranga City Council Infrastructure Development Code.

7.3. Slope Stability

The stability of slopes within and adjacent to Stage 3I was assessed during the initial pre-subdivision site investigation. Three possible areas of instability were identified and are discussed below.

7.3.1. Eastern Slope

This slope rises approximately 15m above the site's eastern boundary to Pyes Pa Road. Along most of its length the slope below Pyes Pa Road is in its natural or pre-subdivision state and was not significantly altered as part of this development. The southern end was cut into an approximately 1V:2.5H (22°) batter during construction of the nearby highway in 2007-2008. The northern end was also cut into a 1V:2.5H batter with an approximately 10m wide bench half-way up during the 2015-2016 work season.

Several previous landslides were identified along the natural part of the eastern slope during the site assessment in 2014. Subsequent analyses indicated this slope may have a low factor of safety during

elevated groundwater (i.e. storm) and seismic conditions. A debris bund consisting of nominally compacted earth fill was therefore constructed at the foot of this slope to reduce the risk to adjacent lots. The completed bund is shown on Figure 5.

The cut batters at the northern and southern ends of the slope are considered adequately stable for residential development below this slopes. No additional protection measures were considered necessary in these areas.

7.3.2. Western Slope

This approximately 35m high escarpment rises to the west of the site and up to previous stages of the Lakes subdivision. This slope is also understood to have a low factor of safety under elevated groundwater and seismic conditions. However, analyses by Coffey during the planning stages of Stage 3I indicated that, in the event of instability, the debris from this slope would likely be contained within the stream channel at the foot of the escarpment. The debris would not be expected to impact on the nearby properties.

This slope also underlies the collector road connecting Stage 3I with the previous Lakes stages. Analyses indicated that parts of the slope below the road were overly steep in their previous state and were not sufficiently stable to support this key access. Two earth-fill buttresses were therefore designed in this area and were constructed from engineered fill during the Stage 3I works. The buttress fills are shown on Figure 4. The steeper natural slopes above these buttresses were also regraded (cut) to a more stable slope angle.

Stability calculations indicated that the buttress fills and minor regrading of the natural slopes were sufficient to achieve minimum factors of safety of 1.5 under prevailing groundwater conditions, 1.2 under elevated groundwater conditions and 1.0 under seismic loads as required by the TCC IDC.

7.3.3. Lot 537

Lot 537 at the northern end of the development is located above a steep slope which falls approximately 5m to the Nanako Stream. Any future development works including construction or filling within 5m of the crest of this slope must be approved by a geotechnical engineer (TCC Category 1 or 2). A Building Restriction Line (BRL) has been defined on this lot and is shown on Figure 5 to illustrate this area.

Stormwater from paved or impermeable surfaces including roofs and driveways on this lot must also be directed away from the slope and BRL.

7.4. Liquefaction

The Geotechnical Investigation Report for this stage of the Lakes subdivision concluded that there was a low risk of significant liquefaction within Stage 3I during a 1 in 25 year return period earthquake (equivalent to the Serviceability Limit State of 'SLS' event for residential development). There is a moderate to high risk of liquefaction during a 1 in 500 year event (i.e. the Ultimate Limit State or 'ULS" earthquake) within lots underlain by alluvial soils.

However, the finished lots which may be affected by liquefaction are now underlain by between 2m and 5m of engineered filling. This crust of non-liquefiable material would be expected to reduce the effects of liquefaction as observed at the ground surface and the majority of the new lots are therefore considered adequate for dwellings designed to current New Zealand standards and NZS 3604.

The exception to this is the lots adjacent to Pond 2 (Lots 522 to 533, 535 and 536), where the analyses indicated a possible risk of horizontal ground deformation or 'lateral spreading' around the pond embankments. The dwellings on these lots should be supported on specifically designed foundations which are capable of safely supporting up to 500mm of horizontal stretching beneath the building platform. Foundation design recommendations are given in Section 7.6 below.

7.5. Maximum Excavation Depths

Based on the results of the earthworks testing and subsequent post-subdivision testing by Coffey, the finished subgrade conditions within Stage 3I are considered adequate for residential development with excavations to a maximum of 1.5m depth below current ground level.

Any future development which entails excavations of more than 1.5m depth below current ground levels must be subject to additional investigation and assessment by a TCC Category 1 or 2 Geo-Professional at the design/building consent stage The additional analyses should confirm the bearing capacity of founding soils and parameters for the specific design of retaining walls where required.

7.6. Foundation Design & Bearing Capacity

7.6.1. Lots 522 to 533, 535 and 536

As discussed above, dwellings on Lots 522 to 533, 535 and 536 must be supported by specifically designed foundations which can safely support up to 500mm of horizontal ground stretching in the event of a ULS earthquake. Solutions may include the 'enhanced foundation slab' options developed for the TC2 area of the Canterbury Rebuild.

These foundations may be designed for a geotechnical ultimate bearing capacity of 300kPa.

7.6.2. Remaining Lots

Subject to the maximum excavation depths discussed in Section 7.5, the subgrade conditions beneath the remaining lots are adequate for shallow foundations designed in accordance with NZS 3604 or for 'waffle-slab' type foundations (e.g. Rib-raft). A geotechnical ultimate bearing capacity of 300kPa may be assumed for these foundations.

8. Additional Works

In addition to the bulk earthworks, several minor structures have also been constructed within the development area and for which Coffey provided geotechnical advice or observations. These structures are summarised below.

8.1. Western Slope Walkway

A network of pedestrian walkways have been constructed on the western slope to connect Stage 3I with previous stages of the Lakes subdivision. The walkways are shown on Harrison Grierson drawings ref: 139618-AB401 to -404 Appendix G. Typical cross sections and construction details are shown on drawing 137845-01-668.

The northern section of the walkway (approx. CH490m to CH650m on drawing AB404) follows the alignment of a pre-existing farm track. Construction of this section required only minor earthworks to level the existing track and to install stormwater drainage. Stormwater from the drains is directed to a series of culverts beneath the path and then piped to disposal points below any steep slopes.

The middle walkway section (approx. CH490m to CH300m on drawing AB404) was formed across the foot of a steep slope and does not follow a pre-existing alignment. The width of the track on this section has therefore been reduced to 0.75m to minimise excavations into the slope which may otherwise lead to instability. As shown on drawing 668 (detail B) the path has been graded so that stormwater 'sheet-flows' off the track and is not concentrated on the slope below.

The southern walkway section (CH0 to CH300 on drawing AB404) follows a natural, gently sloping bench or terrace approximately mid-way up the western slope. This portion of the walkway required only minor earthworks to create a level surface with minimal excavation into the slope.

8.2. Pond 2

The completed structure for Pond 2 is shown on HGCL drawings 135952-AB401 to –AB403 and – AB411 in Appendix G. The southern and eastern pond embankments were constructed from nonstructural filling placed during the main Stage 3I earthworks. The northern end of the pond was excavated into natural soils. The western pond embankment was formed from engineered fill.

The original pond design include a clay core along the embankment length. Testing and observations by Coffey however indicated that the general fill materials used were placed and compacted to achieve an acceptably low permeability for the pond design. The clay core was therefore not installed.

Settlements below the western embankment were monitored at three locations for a period of six months from April to October 2016. The monitoring points are shown as SM12 to SM14 on Figure 4 and the surveyed data for these points are presented in Appendix F. The results show the embankment did not settle significantly over the survey period. Future long-term settlements below the pond embankment are also expected to be minimal.

8.3. Noise Fence

A timber noise-fence has been constructed along the boundaries of Lots 577 to 588 and the adjacent highway. This fence was designed by others. It is understood that the as-built drawings and completion documents will be provided by Harrison Grierson.

The fence has been designed and built with a 50mm to 100mm gap at ground level to avoid collecting or concentrating stormwater from the batter below the highway. Future owners will need to maintain this gap.

8.4. Lot 588

As well as the noise-fence, an approximately 3m high timber pole retaining wall has been constructed around the western and northern boundaries of Lot 588. This wall was designed by Coffey. The design calculations included a 12kPa surcharge to account for future development or vehicle loads on this site.

Coffey has undertaken observations and testing during the construction of the retaining wall. A separate construction report and producer statement (PS4 – Construction) will be provided in due course to be added to the property file.

9. Variable Ground Conditions

It should be understood that due to the volcanic nature of the natural soils on this site, it is possible that local soil conditions may vary from those discussed above. It is therefore important that any potentially soft or unsuitable soils encountered in the foundation excavations are brought to the attention of a geotechnical professional.

10. Re-Subdivision

Per the Section DS-10.12 of the TCC IDC, any re-subdivision or infill subdivision of the lots described in this report will need to be reviewed by a TCC Category 1 Geo-Professional prior to the resource consent application.

11. Conclusion

Based on the observations and investigations presented in this report and with reliance on the diligence of the earthworks contractors, it is concluded that the earthworks and subdivision of Stage 3I of the Lakes development has been completed in general accordance with previous recommendations, NZS 4431 and the Tauranga City Council Infrastructure Development Code.

12. Limitations

This report has been prepared solely for the use of the client, The Lakes (2012) Limited, their professional advisers and the relevant Territorial Authorities in relation to the specific project described herein. 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 ongoing 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 the post construction factual evidence has been obtained solely from boreholes and test pits, 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.

For and on behalf of Coffey

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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.



Important information about your Coffey Report

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.

* For further information on this aspect reference should be made to "Guidelines for the Provision of Geotechnical information in Construction Contracts" published by the Institution of Engineers Australia, National headquarters, Canberra, 1987.

Appendix A - Figures

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Appendix B - Geotechnical Suitability Statement & Geotechnical Data Summary Table

	CERTIFICATION G2
	SSIONAL OPINION AS TO THE
COUNCIL FILE NUMBER RC No:	
ENGINEER RESPONSIBLE FOR	
DEVELOPMENT:	
QUALIFICATIONS:	
I <u>Rob. Telford</u> of (Full Name) Hereby confirm that:	(Name & Address of Firm)
1. I am a professional person, appropriately qu	alified with experience in geotechnical engineering
to ascertain the suitability of the land for building	development and was retained as the Soils
Engineer to the above development.	
2. An appropriate level of site investigation and	d construction supervision has been carried out
under my direction and is described in my develo	opment evaluation report dated: 7 April 2014
3. In my professional opinion, not to be constru	ued as a guarantee, I consider that;
a) Every part / the area shown in my report date	d19/11/2018 of each new allotment is
suitable for the erection thereon of the building ty	pes appropriate to the zoning of the land, provided
that: cfer to bestechnical C	mydetion Report ref
773-TR66513086Af	2-AM dated 19/1/2018
b) The earth fills shown on the attached Plan No	Fig. 1 to 5. have been placed in accordance
with the requirements of the Infrastructure Develo	opment Code.
c) The completed works give due regard to all la	nd slope and foundation stability considerations.
d) The filled ground is suitable for the erection the	ereon of residential buildings not requiring specific
design in terms of NZS 3604: 2011 and related d	ocuments provided that: Refer to
e) The original ground not affected by filling is	suitable for the erection thereon of residential
- buildings not requiring specific design in terms of	NZS 3604: 2011 and related documents provided
.that lefer to bestechnical	Completion Report dated 19/1/2018
4. This professional opinion is furnished to the	Council and the owner for their purpose alone, on
the express condition that it will not be relied upo	n by any other person and does not remove the
necessity for the normal inspection of foundation	conditions at the time of erection for any dwelling.
O TINI	
Signed	Date1.9/1/2018
SUITABILITY OF LAND FOR	STATEMENT R BUILDING DEVELOPMENT G2
TaurangaCity INFRASTRUCTURE	DEVELOPMENT CODE VERSION 1 1 July 2011 1

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No	Area (n	Shear	Subc	Subsu division	rface data Natural	Na	tural	Foundati Conventional	ons Specific Design	Building Restriction	S/W Specific Desigr	S/W Soakage	S/W Reticulate	Designated Building	Minimum Building	Compressible Soils	On-Site Effluent Dis	Consent Notice	
	n²)	(kPa) at 0.5m depth	Y/N	Depth (m)	Unworked	Earth Y/N	Depth (m)	Foundation to NZS 3604:2011	V/N/NA					g Platform	Platform		oosal		Comments
					1/11				I/II/IIA										comments
504	657	DCP	Y	4	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
505	643	DCP	Y	4	Y	N	-	Y	N	N	N	Ν	Y	Ν	Ν	N	Ν	Y	
506	600	157 – UTP	Y	5	Y	N	-	Y	N	N	N	Ν	Y	Ν	Ν	N	Ν	Y	
507	600	157 – UTP	Y	6	Y	N	-	Y	N	N	N	Ν	Y	Ν	Ν	N	Ν	Y	Cuitable for standard foundations designed in
508	637	143 – UTP	Y	6	Y	N	-	Y	N	N	N	Ν	Y	Ν	Ν	N	Ν	Y	accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing
509	461	141 – UTP	Y	3	Y	N	-	Y	N	N	N	N	Y	Ν	Ν	N	N	Y	capacity of 300kPa.
510	450	147 – UTP	Y	4	Y	N	-	Y	N	N	N	N	Y	Ν	Ν	N	N	Y	Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of
511	512	UTP	Υ	4	Y	Ν	-	Y	N	Ν	N	Ν	Y	Ν	Ν	Ν	Ν	Y	Cottey GCR ret: GENZTAUC13086AP-AM.
512	551	179	Y	4	Y	Ν	-	Y	N	N	N	Ν	Y	Ν	Ν	N	Ν	Y	
513	552	179 - 213	Y	3	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
514	500	213	Υ	4	Y	Ν	-	Y	Ν	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	



INFRASTRUCTURE DEVELOPMENT CODE

SUMMARY OF GOTECHNICAL DATA FOR INDIVIDUAL LOTS

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m²)	Shear Strength (kPa)	Subc Fi	Subsu division lling	rface data Natural Topography Unworked	Na Topo Earth	atural ography worked	Foundati Conventional Shallow Foundation to NZS	ons Specific Design	Building Restriction Line	S/W Specific Design	S/W Soakage	S/W Reticulate	Designated Building Platfor	Minimum Building Platform	Compressible Soils	On-Site Effluent Disposal	Consent Notice	
		at 0.5m depth	Y/N	Depth (m)	Y/N	Y/N	Depth (m)	3604:2011 Y/N/NA	Y/N/NA					В					Comments
515	350	158 – 196	Y	4	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	
516	350	157 - >247	Y	3	Y	N	-	Y	N	N	N	N	Y	Ν	N	N	N	Y	Suitable for standard foundations designed in
517	807	179 - >247	Y	3	Y	N	-	Y	N	Ν	Ν	N	Y	Ν	Ν	Ν	N	Y	accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing
518	356	153 – 179	Y	3	Y	Ν	-	Y	N	N	N	N	Y	Ν	Ν	N	N	Y	capacity of 300kPa.
519	358	153 – UTP	Y	3	Y	Ν	-	Y	N	Ν	N	N	Y	Ν	N	N	N	Y	Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of
520	507	179 – UTP	Y	2	Y	N	-	Y	N	N	N	N	Y	Ν	Ν	N	N	Y	COTTEY GCR PET: GENZIAUCI3086AP-AM.
521	533	147 - >247	Y	3	Y	Ν	-	Y	N	Ν	Ν	N	Y	Ν	Ν	N	Ν	Y	
522	548	>213 – UTP	Y	3	Y	Ν	-	N	Y	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	Specifically designed foundations per Section
523	550	>213 – UTP	Y	3	Y	Ν	-	N	Y	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	7.6.1 of Coffey GCR ref: GENZTAUC13086AP-AM.
524	550	140 – >213	Y	3	Y	N	-	N	Y	Ν	N	N	Y	Ν	Ν	N	N	Y	Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of
525	548	>213	Y	3	Y	N	-	N	Y	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	Coney GCK PET: GENZIAUCT3086AP-AM.



INFRASTRUCTURE DEVELOPMENT CODE

SUMMARY OF GOTECHNICAL DATA FOR INDIVIDUAL LOTS

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m²)	Shear Strength ((Pa))	Subc Fi	Subsu livision lling	rface data Natural Topography	Na Topo	itural ography	Foundati Conventional Shallow	ons Specific Design	Building Restriction Li	S/W Specific Design	S/W Soakage	S/W Reticulate	Designated Building P	Minimum Building Pla	Compressible Soils	On-Site Effluent Dispc	Consent Notice	
		at 0.5m depth	Y/N	Depth (m)	Y/N	Y/N	Depth (m)	NZS 3604:2011 Y/N/NA	Y/N/NA	ne				latform	Itform		osal		Comments
526	530	>213 -	Y	3	Y	N	-	N	Y	N	N	N	Y	N	N	N	N	Y	
527	540	>247 215 - >247	Y	4	Y	N	-	N	Y	N	N	N	Y	N	N	N	N	Y	
528	549	143 - >224	Y	4	Y	N	-	N	Y	N	N	N	Y	N	N	N	N	Y	
529	550	143 - 247	Y	4	Y	N	-	N	Y	N	N	N	Y	N	Ν	Ν	N	Y	7.6.1 of Coffey GCR ref: GENZTAUC13086AP-AM.
530	550	199 - >247	Y	4	Y	Ν	-	N	Y	Ν	N	N	Y	N	Ν	Ν	N	Y	Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of
531	524	>213 - >247	Y	4	Y	N	-	N	Y	Ν	N	N	Y	N	Ν	Ν	Ν	Y	Coffey GCR ref: GENZTAUC13086AP-AM.
532	545	179 - >247	Y	4	N	Y	4	N	Y	Ν	N	N	Y	N	Ν	Ν	N	Y	
533	517	143 – 179 & DCP	Y	>2	N	Y	15	N	Y	Ν	Ν	N	Y	N	Ν	Ν	Ν	Y	
534	523	DCP	Y	>2	Ν	Y	19	Y	N	N	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing capacity of 300kPa. Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM.

Tourser	SUMMARY OF GOTECHNICAL DATA FOR INDIVIDUAL LOTS	G3	
auranga City		VERSION 1	1
	INFRASTRUCTURE DEVELOPMENT CODE	Julv 2011	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m²	Shear Strength	Subc	Subsu division Iling	rface data Natural Topography	Na Topc	itural ography	Foundati Conventional Shallow	ons Specific Design	Building Restriction I	S/W Specific Design	S/W Soakage	S/W Reticulate	Designated Building	Minimum Building P	Compressible Soils	On-Site Effluent Disp	Consent Notice	
		(kPa) at 0.5m depth	Y/N	Depth (m)	Unworked Y/N	Earth Y/N	worked Depth (m)	Foundation to NZS 3604:2011 Y/N/NA	Y/N/NA	line				Platform	latform		osal		Comments
535	699	DCP	Y	>2	N	Y	13	N	Y	N	N	N	Y	N	N	N	N	Y	Specifically designed foundations per Section 7.6.1 of Coffey GCR ref: GENZTAUC13086AP-AM.
536	618	193 & DCP	Y	>2	N	Y	8	N	Y	N	N	N	Y	N	N	N	N	Y	Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM.
537	739	150 & DCP	Y	>2	Ν	Y	4	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing capacity of 300kPa. Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM. Development subject to BRL restrictions per Section 7.3.3 of Coffey GCR ref: GENZTAUC13086AP-AM.
538	590	150 & DCP	Y	>2	Ν	Y	17	Y	N	N	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing capacity of 300kPa. Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM.

Termenter	SUMMARY OF GOTECHNICAL DATA FOR INDIVIDUAL LOTS	G3	
		VERSION 1	
	INFRASTRUCTURE DEVELOPMENT CODE	Julv 2011	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Ŀ	An			Subsu	rface data			Foundati	ons	Building Restri	S/W Specific D	S/W Soakage	S/W Reticulate	Designated Bu	Minimum Build	Compressible S	Consent Notice On-Site Effluent		
ot No:	ea (m²)	Shear Strength (kPa)	Subc Fi	livision Iling	Natural Topography Unworked	Na Topc Earth	itural ography worked	Conventional Shallow Foundation to	Specific Design	ction Line	esign			Iding Plat	ding Platf	soils	ıt Disposa	, U	
		at 0.5m depth	Y/N	Depth (m)	Y/N	Y/N	Depth (m)	NZS 3604:2011 Y/N/NA	Y/N/NA					tform	orm		_		Comments
	[1		1	1		-		1	-	1	1	1	1	-	
539	576	DCP	Y	>2	N	Y	4	Y	Ν	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
540	540	DCP	Y	>2	N	Y	12	Y	Ν	Ν	Ν	Ν	Y	N	Ν	Ν	Ν	Y	
541	540	DCP	Y	>2	N	Y	20	Y	N	N	Ν	Ν	Y	N	Ν	Ν	Ν	Y	
542	540	>213 - >247 & DCP	Y	1	N	Y	20	Y	N	N	Ν	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in
543	543	>213 - >247	Y	>2	N	Y	13	Y	N	N	N	Ν	Y	N	N	Ν	Ν	Y	foundations, for a geotechnical ultimate bearing
544	543	196 - >213 & DCP	Y	4	Y	N	-	Y	N	Ν	N	Ν	Y	N	Ν	Ν	Ν	Y	Additional geotechnical review required if
545	592	>213 & DCP	Y	4	Y	Ν	-	Y	Ν	Ν	Ν	Ν	Y	N	Ν	Ν	Ν	Y	excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM.
546	686	161 - >213 & DCP	Y	4	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
547	699	UTP & DCP	Y	4	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	N	Ν	Ν	Ν	Y	
548	677	>247 – UTP & DCP	Y	4	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	N	Ν	Ν	Ν	Y	



DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m	Shear Strength	Subo	Subsu division lling	rface data Natural Topography	Na Topo	tural	Foundati Conventional Shallow	ons Specific Design	Building Restriction	S/W Specific Design	S/W Soakage	S/W Reticulate	Designated Building	Minimum Building P	Compressible Soils	On-Site Effluent Disp	Consent Notice	
	2)	(kPa) at 0.5m depth	Y/N	Depth (m)	Unworked Y/N	Earth Y/N	worked Depth (m)	Foundation to NZS 3604:2011 Y/N/NA	Y/N/NA	Line				Platform	latform		oosal		Comments
549	623	>247 –	Y	3	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	
550	558	161 – 111 –	Y	3	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	
551	500	161 - >247	Y	2	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	
552	427	>213 - >247	Y	2	Y	N	-	Y	N	N	N	Ν	Y	N	N	N	N	Y	Cuitable for stored and foundations designed in
553	412	>213 - >247	Y	2	Y	N	-	Y	N	N	N	Ν	Y	Ν	Ν	Ν	Ν	Y	accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing
554	455	>213 – UTP	Y	3	Y	N	-	Y	N	N	N	Ν	Y	Ν	Ν	N	Ν	Y	capacity of 300kPa.
555	551	>247 – UTP	Y	3	Y	N	-	Y	N	N	N	Ν	Y	Ν	Ν	N	Ν	Y	Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of
556	593	179 - >247	Υ	3	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	Correy GCR Pet: GENZIAUC13086AP-AM.
557	556	179 – UTP	Υ	3	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
558	536	213 – UTP	Υ	3	Y	Ν	-	Y	Ν	Ν	Ν	Ν	Υ	Ν	Ν	Ν	Ν	Y	
559	506	162 - UTP	Y	3	Y	Ν	-	Y	Ν	Ν	Ν	Ν	Υ	Ν	Ν	Ν	Ν	Y	



INFRASTRUCTURE DEVELOPMENT CODE

SUMMARY OF GOTECHNICAL DATA FOR INDIVIDUAL LOTS

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

_	Þ			Subsu	rface data			Foundati	ons	Building Restr	S/W Specific [S/W Soakage	S/W Reticulat	Designated Bu	Minimum Bui	Compressible	On-Site Efflue	Consent Notic	
_ot No:	rea (m²)	Shear Strength (kPa)	Subo Fi	division Iling	Natural Topography Unworked	Natural Topography Earthworked		Conventional Shallow Foundation to NZS	Specific Design	iction Line	Design		e	uilding Platf	Iding Platfo	Soils	nt Disposal	ë	
		at 0.5m depth	Y/N	Depth (m)	Y/N	Y/N	Depth (m)	3604:2011 Y/N/NA	Y/N/NA					orm	rm				Comments
		>215 -																	
560	461	UTP	Y	3	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	
561	452	192 – 231	Y	4	Y	N	-	Y	N	N	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
562	507	165 - >247	Y	5	Y	N	-	Y	N	N	Ν	N	Y	N	N	Ν	Ν	Y	
563	529	164 – UTP	Y	6	Y	N	-	Y	N	N	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	Suitable for standard foundations designed in
564	493	>213 - UTP	Y	5	Y	N	-	Y	N	N	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	foundations, for a geotechnical ultimate bearing capacity of 300kPa.
565	451	140 - >247	Y	3	Y	N	-	Y	N	N	Ν	N	Y	N	Ν	Ν	Ν	Y	Additional geotechnical review required if
566	401	140 – UTP	Y	2	Y	N	-	Y	N	N	N	N	Y	N	N	Ν	N	Y	excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM.
567	400	224 – UTP	Υ	1	Y	N	-	Y	N	N	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
568	424	UTP	Y	1	Y	Ν	-	Y	N	N	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
569	434	>213 – UTP &	Y	1	Y	N	-	Y	N	N	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	



DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot	Area	Shear	Subc	Subsu	rface data	Na	tural	Foundati	ons Specific	Building Restrict	S/W Specific Des	S/W Soakage	S/W Reticulate	Designated Builc	Minimum Buildii	Compressible So	On-Site Effluent	Consent Notice	
No:	- (m²)	Strength (kPa)	Fi	lling	Topography Unworked	Topo Earth	ography worked	Shallow Foundation to NZS	Design	ion Line	ign			ling Platfc	ng Platfor	sli	Disposal		
		at 0.5m depth	Y/N	Depth (m)	Y/N	Y/N	Depth (m)	3604:2011 Y/N/NA	Y/N/NA					orm	m				Comments
570	429	175 & DCP	Y	2	Y	N	-	Y	N	N	N	N	Y	Ν	N	Ν	Ν	Y	
571	429	175 - >213 & DCP	Y	3	Y	Ν	-	Y	Ν	N	N	Ν	Y	Ν	N	Ν	Ν	Υ	Suitable for standard foundations designed in
572	486	198 - UTP & DCP	Y	5	Y	Ν	-	Y	Ν	N	N	Ν	Y	Ν	N	Ν	Ν	Υ	accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing
573	800	198 – UTP	Y	4	Y	Ν	-	Y	N	N	N	N	Υ	Ν	N	Ν	Ν	Y	capacity of 300kPa.
574	681	>247 - UTP	Y	7	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM.
575	607	196 - UTP	Y	6	Y	Ν	-	Y	Ν	Ν	N	Ν	Y	Ν	N	Ν	Ν	Y	
576	572	209 - >247	Y	6	Y	Ν	-	Y	Ν	Ν	N	Ν	Y	Ν	Ν	Ν	Ν	Y	
577	1208	144 - UTP	Y	15	Y	N	-	Y	Ν	N	N	N	Y	Ν	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing capacity of 300kPa. Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM.

Trungung Chu	SUMMARY OF GOTECHNICAL DATA FOR INDIVIDUAL LOTS	G3	
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DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

_	A			Subsu	irface data			Foundati	ons	Building Restr	S/W Specific E	S/W Soakage	S/W Reticulat	Designated Bu	Minimum Buil	Compressible	On-Site Efflue	Consent Notic	
ot No:	rea (m²)	Shear Strength (kPa)	Subo Fi	livision Iling	Natural Topography Unworked	Na Topo Earth	itural ography worked	Conventional Shallow Foundation to	Specific Design	iction Line	Design		Ū	uilding Pla	ding Platf	Soils	nt Disposi	ë	
		at 0.5m depth	Y/N	Depth (m)	Y/N	Y/N	Depth (m)	NZS 3604:2011 Y/N/NA	Y/N/NA	ιυ				tform	orm				Comments
578	630	144 - >213	Y	16	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
579	622	125 - >213	Y	15	Y	N	-	Y	N	N	N	N	Y	Ν	N	N	N	Y	
580	598	125 - >213	Υ	15	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
581	630	161 – 231	Υ	15	Y	Ν	-	Y	N	N	N	Ν	Y	Ν	Ν	N	Ν	Y	Suitable for standard foundations designed in accordance with NZS 3604 or 'waffle-slab' type
582	610	161 - >247	Υ	13	Y	Ν	-	Y	Ν	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	foundations, for a geotechnical ultimate bearing capacity of 300kPa.
583	610	196 - >247	Υ	12	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	Additional geotechnical review required if excavation depth >1.5m, per Section 7.5 of
584	629	122 - 196	Υ	11	Y	Ν	-	Y	Ν	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	Coffey GCR ref: GENZTAUC13086AP-AM.
585	612	83 - >247	Υ	12	Y	Ν	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
586	630	83 – UTP	Y	11	Y	N	-	Y	N	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Y	
587	630	>182 - 222	Y	10	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	



DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot N	Area (Shear	Subc	Subsu livision	rface data Natural	Na	atural	Foundati Conventional	ons Specific	Building Restrictio	S/W Specific Desig	S/W Soakage	S/W Reticulate	Designated Buildir	Minimum Building	Compressible Soils	On-Site Effluent Di	Consent Notice	
0.	m²)	(kPa)	FI		Unworked	Earth	ograpny worked	Foundation to NZS	Design	n Line	G			ıg Platfo	Platfor		sposal		
		at 0.5m depth	Y/N	Depth (m)	Y/N	Y/N	Depth (m)	3604:2011 Y/N/NA	Y/N/NA					rm	п				Comments
					.,			.,,	.,,										
588	830	107 - >182	Y	10	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604 or 'waffle-slab' type foundations, for a geotechnical ultimate bearing capacity of 300kPa. Additional geotechnical review required if
																			excavation depth >1.5m, per Section 7.5 of Coffey GCR ref: GENZTAUC13086AP-AM.

Key:

DCP – Dynamic Cone Penetration Test

UTP – Unable To Penetrate

SUMMARY OF GOTECHNICAL DATA FOR INDIVIDUAL LOTS	G3	
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Appendix C - Pre Development Investigation Data



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С	lie	nt:	_		Т	ΉE	LAK	ES	LTD (2012)								Date s	start	ed:		1	14.1.2014			
Ρ	rin	cipa	al:														Date of	com	plet	ed:	: 1	14.1.2014			
Ρ	roj	ect	:		S	TA	GE 3	3 - Z	ONE 2								Logge	d b	y:		ŀ	KMJ			
N	lac	hin	e Bo	orehole	s	out	h of	Spi	ır Ridae								Check	ed	bv:		ļ	RBT			
Γ	rill r	nod	el &	mounting:	T2 T	racto	r Mou	nt	Ea	asting: 36	9029.	196 n	ı	Slope	: -90°	•	F	R.L. 8	Surfa	ce:	28 m	Vane No	:		
н	ole	dia	mete	er: mm		D	rilling	fluid:	No	orthing: 79	99744	.166	m	Beari	ng:		0	Datu	n: x	/y =	BOPC20	000, z = Moturiki			
Ľ	lint	lin	g inf	formatior	ו		mat	erial	substance Material Description	on	1		i			1	. 73	+	roc	k n	nass de	fects defect des	cription		
stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recover	classification symbol	Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, cei defects. Origin, additional obse Rock name; grain size & type, co inclusions & minor components. N moisture, strength, defec	g, colour, e, sensitivity, mentation, ervations. blour, fabric, Weathering, cts.	moisture condition	consistency/ density index	weathering alteration	estin stre	iated ngth ີ≤ ໑ ໑ ໑	25	vane sheal vane sheal vane sheal vane vane sheal vane	175	recovery %	% nov	defect spacing mm	number, type, orie roughness, ap description (re description expla particular	entation, shape, erture, infill fer to defect anation sheet) general		
TS	ТТ	С				-		OL	Organic SILT, no plasticity, black-brown, organic odor.	rootlets.	М	VS													
					<u>_</u> 27.5	0 <u>.5</u>		× ML × ×	Sandy SILT, no plasticity, g orange streaks, strong org; rootlets; sand is fine graine	grey, anic odor, ed.															
					<u>_</u> 27.0	- 1 <u>.0</u> -		××××	- becoming brown-grey, de sand content	ecreasing									87						
					_26.5	- 1 <u>.5</u>		SM	Silty SAND, fine to medium	n grained,	W	L	_												
				SPT 3,3,2 N*=5	26.0	26.0 2 <u>.0</u> >	<		grey, sub-angular, black sp sensitive. - becoming white-grey	becks,													-		
Ņ					25.5	2.5	<	والمعادية والمعارفة المراجع											80						
AL DEPOSIT					25.0	- - 3.0			- increasing silt content																
ALLUVI				SPT 0,1,0 N*=1		-	× ×	ML	SILT, low plasticity, grey-wl black specks, occasional o staining, sensitive; minor fir	hite, orange ne sand.		S											-		
					_24.5	3 <u>.5</u> -	× × × × × × × × × × × × × × ×	SM	Silty SAND, fine to medium	n grained,									100						
					<u>2</u> 4.0	4 <u>.0</u> -	<pre>< X X X X X X X X X X X X X X X X X X X</pre>	ML	sile grey, black specks. SILT, low plasticity, grey-wi minor black specks.	hite,	M-W	_													
			_	- SPT	_23.5	4 <u>.5</u>	× × × × × × × × × × × × × × ×	M	- increasing sand content											_			-		
			14/01/2014	0,0,0 N*=0	_23.0	5 <u>.0</u>		× × ×	green-grey, organic odor; s fine grained.	sand is									100				-		
					22.5	5.5		X X X															-		
	method Image: Compare the image of the i					r U U U U	ciassific soil des based o New Zea notes, s J ₅₀ J ₆₃ D N*	cation : criptio n Field aland C ample undist undist disturt SPT - SPT w	symbols and n Description of Soil and Rock, Seotechnical Society Inc 2005 s, tests urbed sample 50mm diameter urbed sample 63mm diameter bed sample sample recovered <i>i</i> th solid cone	water	10/ on wa pai cor ure di m	/1/98 v date s ter infl rtial dri mplete ry ioist	vater le hown ow Il fluid I drill flu	evel loss lid loss		cons S F St VSt H VL L MD	consistency/ density index /S very soft S soft firm firm St stiff /St very soft H hard /L very loose loose loose				Weat UW SW MW HW CW RS rock EW VW W W	<pre>unweathered slightly weath moderately v hightly weath completely w residual soil (mass strength extremely we very weak weak moderately s</pre>	l nered veathered ered eathered eak trong		
	× »×	pea pea	ak ak gre able †	eater than 20	00kPa	E	Bs E	bulk s enviro	ample nmental sample	W S	W Sa	et aturate	d		,	D VD	۵ ۱	dense /ery (e dense		e MS moderately strong S strong VS very strong				

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stratigraphy method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Descript Soil name; plasticity or gradi secondary components. Moistu strength. Structure, bedding. o defects. Origin, additional ob: Rock name; grain size & type. (inclusions & minor components moisture, strength, def	ion ng, colour, re, sensitivity, ementation, servations. colour, fabric, . Weathering, ects.	moisture condition	consistency/ density index	weathering alteration	estim stren	ated ngth	25 50 vane shear	100 (remoulded 125 /peak) kPa	175 recoverv %	RQD %	de spa r 100	efect acing nm	number roug descri particu	fect des , type, orie ghness, ap cription (re ption expla ular	ertiption entation, shape erture, infill fer to defect anation sheet) genera
TI	ГС	;			-	× × × × × ×	ML (cont)	Sandy SILT, no plasticity, green-grey, organic odor;	mottled sand is	M-W	S												
				_22.0	6 <u>.0</u>	(× × × × < ×	SM	fine grained. <i>(continued)</i> - increasing sand content - becoming green-grey Silty SAND, fine to coarse	arained.	w	VL-L						100						-
			SPT 1,3,2 N*=5			<``× `× <``×		black & pink mottles, with blue-grey gravel.	some fine														
				_21.5	6 <u>.5</u>	<																	-
						(- increasing silt content									8						
				_21.0	1 <u>.0</u> -	< × < ×																	-
				_20.5	7.5																		_
			SPT 2,2,2		-	× × ×																	
			N*=4	_20.0	8 <u>.0</u>	$\langle \ \times \ $		- occasional coarse grave	el														-
				_19.5	8 <u>.5</u>												80						_
ALL					-		ML	Silty SAND/Sandy SILT, r plasticity, pink-grey; sand grained; sensitive.	io is fine	M-W	VS												
			SPT	_19.0	9 <u>.0</u>	× × × × ×	SM	Silty SAND, fine to mediu blue-grey, orange mottles inclusion: with minor med	m grained, , white ium to	W	L												_
			2,3,4 N*=7	_18.5	9 <u>.5</u>	<^× × < ×		coarse gravel.															_
					-	<											67						
				_18.0	10 <u>.0</u> 	<																	-
			007	_17.5	10 <u>.5</u>		ML	- yenow staining Sandy SILT, no plasticity, occasional yellow staining	pale grey, ; sand is		S												_
			SP1 2,4,7 N*=11	17 0	11 0			very fine grained. - mottled orange									67						
meti AD OB TT W supp N C vane ◆ × ≫×	hod a tr port n c e sh rei pe	uger o ppen b riple tu vashbo t asing mear (k mould eak eak are	Irilling arrel be ore Pa) ed eater than 20)0kPa	n B D D D D D D D D D D D D D D D D D D	lassific oil desc ased or lew Zea otes, sa J ₅₀ J ₆₃) l ⁶ as	ation s cription Field land G amples undistu disturb SPT - S SPT w bulk sa	symbols and Description of Soil and Rock, exotechnical Society Inc 2005 s, tests urbed sample 50mm diameter urbed sample 63mm diameter ed sample sample recovered th solid cone imple	water	10/ on par cor u re dr m we	1/98 w date si ter inflo tial dril nplete y oist et	ater leve nown w I fluid los drill fluic	el ss I loss	C S S S V V L L L L	consis /S S St /St I /L MD) (D	tency/ vi si si si vi ha vi lo m	densit ery so oft m iff ery stil ery loc ose nedium ense	ft ft ose n dens	ex se	wea UW SW MW HW CW RS rocl EW VW W S S S	thering / unv / slig / mo / hig / cor res k mass st / ext / ver we mo stro	weathered htly weath derately w hly weath npletely w idual soil rength remely we y weak ak derately so ong	l hered weathered ered weathered wak trong



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stratigraphy	method	support	water	notes samples	, RL	depth metres	graphic log	classification	Material Descriptic Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, cer defects. Origin, additional obse Rock name; grain size & type, co inclusions & minor components. V	on g, colour, s, sensitivity, mentation, ervations. blour, fabric, Weathering,	moisture condition	consistency/ density index	weathering alteration	estim strer	ated ngth 2. ທຸທ	vane shear (remoulded peak) kPa	5 2000/001/0/	RQD %	defect spacing mm	defect desc number, type, orient roughness, aper description (refer description explan	ription ation, shape, ture, infill to defect ation sheet)
F	TT	C		10313, 010	,	-	×∵×	ML	moisture, strength, defect Sandy SILT, no plasticity, p	ots. Dale grey,	W	S		ш><≥	ε ο > μ	25 75 10 15 15 15	1		8585		general
					_16.5	- - 11 <u>.5</u> - -		× (cont) × × × ×	occasional yellow staining; very fine grained. (continue	sand is ∍d)							67	70			
				SPT	16.0	12 <u>.0</u> -		×											-		
				8,12,18 N*=30	15.5	- 12.5	- × × - × × - × ×	×													-
						-	× × × × × × × × × × × × × × × × × × ×	ML	SILT, no plasticity, pale gre pale orange staining.	y, some	M-W										-
					15.0	- 13.0	× × × × ×										à	0			-
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POSITS				SPT	14.5	- 13 <u>.5</u> -	- X X X X X X X X X X X X X X X X X X X	SW	SAND, fine to coarse grain	ied,	W	VD	-						-		- -
/IAL DE			1	8,28,22=35r N*=R	nm	-			black & orange.	a grey a											-
ALLU					14.0	14 <u>.0</u> -	× × > × × > × × >	ML	SILT, no plasticity, pale gre fine sand.	∍y, some	_	S									
						-		GW	- yellow staining - increasing sand content	/			-				6	5 2			-
					_13.5	14 <u>.5</u> -		• ML	Gravel, fine to coarse grain mottled grey & white, orang staining, angular to sub-any with some silt	ied, je gular,	М	S									
					13.0	- 15.0	× × × × × ×		SILT, non to low plasticity, grey-brown, black specks,	1											-
				SPT		-			orange-brown mottles; with very fine sand.	I some											-
				5,7,12 N*=19	40.5	155	× × > × × > × × >														-
					_12.5	-			- becoming yellow-brown, r with fine grained, sub-angu	mixed ular gravel											
					_12.0	16 <u>.0</u>			- heavy orange staining @	15.7m							60	0° 0			-
						-	× × > × × > × × > × × >														-
					11.5	16.5	× × × × × × × ×														-
	neth JD JB T	od au op trii	iger c ben ba	drilling arrel ibe			classifi soil des based o New 7-	cation scriptio on Field	symbols and n Description of Soil and Rock, Seotechnical Society Inc 2005	water	10/ on	/1/98 v date s	/ater le	evel		consistency/ o /S ve S so	dens ery so oft	ity ind oft	iex UV SV	W unweathered W slightly weather W moderately we	red athered
v s	v upp	wa	ashbo	ore		F	notes,	sample	s, tests		wa pa	ter infle rtial dri	ow II fluid I	loss	l S	= fir St st	rm tiff		H\ C\	W highly weather W completely wea	ed athered
N C	1 ;	nil ca	ising				U ₅₀ U ₆₃	undist undist	urbed sample 50mm diameter urbed sample 63mm diameter		COI	mplete	drill flu	ud loss		/St ve H ha	ery st ard	utt	ro F\	ck mass strength	(
	ane	she ren	ear (k	: Pa) ed			D N*	aisturt SPT -	sample recovered	D M	ure di	ry voict			l	/L V6 _ lo	ery lo lose	iose		W very weak weak	`
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stratigraphy	method	water	notes samples, tests, etc	RL	depth metres	graphic log core recove	classificatio symbol	Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, ce defects. Origin, additional obse Rock name; grain size & type, cc inclusions & minor components. moisture, strength, defer	g, colour, e, sensitivity, mentation, ervations. lour, fabric, Weathering, cts.	moisture condition	consistency density inde	weathering alteration	esur stre	ength	25 50 75 100 (remoulde 125 /beak) kP	175	recovery % RQD %	spac spac	ing n 0000 0000	number, type, orientati roughness, apertu description (refer to description explanati particular	ion, shape, re, infill o defect on sheet) general
	TTC	;	SPT 2,2,3 N*=5	_11.0	- - 17 <u>.0</u>	****	ML (cont)	SILT, non to low plasticity, grey-brown, black specks, orange-brown mottles; with very fine sand. (continued)	n some	М	S										
					_	× × × × × ×	SM	Silty SAND, fine grained, p	ale grey,	w							2				-
				_10.5	17 <u>.5</u>	× × × × × × × × × × × × × × × × × × ×	ML	SILT, non to low plasticity, brown, with some black sp	pale ecks.	M-W	S	-					ω				-
					_	* * * * * *		- orange streaks													-
DSITS				_10.0	18 <u>.0</u>		SP	SAND, fine to medium grain mottled grey & white & black	ined, ck.	W	MD										-
VIAL DEP(SPT 7,10,15 N*=25		-																-
ALLUV				_9.5	18 <u>.5</u> 			- some silt from 18.6 to 19.	95m												
				<u>9</u> .0	19 <u>.0</u>												50				-
				_8.5																	-
			SPT 7,12,14 N*=26	80	20.0																-
					-			EOBH @ 19.95m, target d TS = TOPSOIL MH302 terminated at 19.99	epth 5 metres.												
				_7.5	20 <u>.5</u> 																-
				_7.0	21 <u>.0</u>																-
				<u>6.5</u>																	-
				~ ~																	-
m Al O T W S I N C V a ● ×	athoo a a b a c b a c c ppor r c ne st re pe x pe	auger o open b riple tu vashbo t nil casing near (k mould cak cask gre	drilling arrel libe ore (Pa) ed	00kPa		Lassific coil des pased o lew Zea notes, s J ₅₀ J ₅₀ J ₆₃ D N* Nc Bs	cation s cription n Field aland G amples undistu disturb SPT - s SPT wi bulk sa enviror	ymbols and Description of Soil and Rock, eotechnical Society Inc 2005 , tests urbed sample 50mm diameter urbed sample 63mm diameter ed sample sample recovered th solid cone imple mmental sample	water V M moister D M W S	10/ on wa pai cor ure di m w sa	/1/98 w date s ter inflo rtial dri mplete ry noist et aturate	'ater le hown ow Il fluid I drill flu	vel oss id loss		consistency /S = 	// den very soft firm stiff very hard very loose medi dens very	sity inc soft stiff loose um den e dense	se	weat UW SW MW HW CW RS rock EW VW MS S S VS	thering unweathered slightly weathere moderately weath highly weathered completely weath residual soil mass strength extremely weak weak weak moderately stror strong very strong	d hered hered hered



	,				y									Ν	/lachine	Bor	ehc	ole No. 🖊	MH303	
E	n	gi	neel	rin	<u>g</u>	Lo	g ·	Machine I	Bore	eho	ole	<u> </u>		5 F	Sheet Project I	No:		1 (of 4 GENZTAUC	<u>13086AF</u>
Cli	ent			7	ΉE	LAK	ES	LTD (2012)						[Date sta	rted:		1	3.1.2014	
Pri	ncij	bal:												[Date co	nple	ted	: 1	3.1.2014	
Pro	ojec	t:		S	TAC	GE 3	- Z	ONE 2						L	ogged	by:		ŀ	KMJ	
Ma Lo	achi cati	ne B on:	orehole	E	Base	of (Gull	V						(Checked	d by:		F	RBT	
Dril	l mo	del &	mounting	: T2 1	Fracto	r Mour	nt	E	asting: 36	9014.	764 n	า :	Slope: -9	90°	R.L	Surf	ace:	28 m	Vane No	:
Ho	e di	amete	er: mm		D	rilling f	iuid:	N	orthing: 7	99618	3.011	m I	Bearing:		Dat	um: >	<td>BOPC20</td> <td>00, z = Moturiki</td> <td></td>	BOPC20	00, z = Moturiki	
						mau S		Material Descriptio	on	1	~ ~		o otimo ato	<u>ما</u> 1	a G a			defe et	defect des	cription
stratigrapriy	method	water	notes samples tests, etc	, RL	depth metres	graphic log core recove	classificatio symbol	secondary components. Moisture strength. Structure, bedding, ce defects. Origin, additional obse Rock name; grain size & type, cc inclusions & minor components. moisture, strength, defer	g, colour, e, sensitivity, mentation, ervations. lour, fabric, Weathering, cts.	moisture condition	consistency density inde	weathering alteration EW	strength	ES 10	100 (remould 125 /peak) kF	recovery %	RQD %	spacing mm	number, type, orie roughness, ap description (re description expla particular	entation, shape, perture, infill fer to defect anation sheet) general
	TT (_	\bigcirc	OL	Organic SILT, no plasticity, grey-black, organic odor, a	, dark bundant	М	S									_
<u>i</u>						××	ML	rootlets. - increasing sand content												_
				_27.5	0 <u>.5</u>		×	Sandy SILT, no plasticity, p orange staining, black spe- is fine to medium grained, rootlets.	oale grey, cks, sand trace							~				
					10		×	- sand becoming fine grain	ed							6				-
				_27.0	1.0	k × × × × × × × × × × × × × × × × × × ×	ML	Sandy SILT, no plasticity,b organic odor; sand is fine g	lue-grey, grained.	W										
						× × × × > × × ×	×	CII T modium to high al	ioity nels											-
				<u>2</u> 6.5	1 <u>.5</u>	× × × × × ×	MH ML	grey, orange staining, root	ets,		S-F									
			SPT 3.2.3		-		×	Sandy SILT/Silty SAND, no) c odor:											
			N*=5	26.0	20	× × × × ×	×	sand is fine grained, rootle	ts.											-
				_20.0	-	× × ×	, X													
						$\langle \times \rangle$	× ×									100				-
				_25.5	2 <u>.5</u>		×	- wood fragments, sample sensitive	is											_
						$\langle \times \times \\ \times \times \\ \times \times \\ \langle \times \times \rangle$	×	- becoming dark grey, blac inclusion	k											_
				25.0	3.0	× × × ×	×													-
			SPT		_		ML	SILT, no plasticity, blue-gre organic staining, organic o	ey, some dor,											-
			0,1,0 N*=1		_			some fine sand.												-
				_24.5	3 <u>.5</u>															
					-	× × × × × × × × ×		- becoming moist		M-W						8				-
				24.0	4.0	× × × × × × × × ×														-
					-	× × × × × × × × ×														-
					_	× × × × × × × × ×														-
				<u>2</u> 3.5	4.5	× × × × × ×	ML	Sandy SILT, no plasticitv. t	olue-grey.		S					┝┼	\neg			_
		014	SPT 2,2,2			<pre></pre>	×	sand is fine to medium gra	ined.											
		V01/20	N*=4	_23.0	5.0	<	×									g				-
		100				× × × × ×	ML	SILT, non to low plasticity, white-grey, black specks, s	some							Ę				_
					-	× × × × × × × × ×		green staining.												_
1	othoo			22.5	5.5 c	assific	ation	symbols and	wator					consi	tonev/ de	neitvi	indo	weat	thering	
)E) a 3 (auger open b	drilling arrel		s b	oil des ased or	criptio n Field	n Description of Soil and Rock,		10. on	/1/98 v date s	vater leve hown	el	VS S	ver soft	/ soft	nue	UW SW	unweathered slightly weath moderately w	l nered veathered
i I N SU	ן יסמק	vashb t	ore		n	iew Zea	anana G	s, tests		wa pa	iter infl rtial dri	ow II fluid los	s	F St	firm stiff			HW	highly weath completely w	ered eathered
1	 	nil casing			L	J ₅₀ J ₆₃	undist undist	urbed sample 50mm diameter urbed sample 63mm diameter		CO	mplete	drill fluid	loss	VSt H	ver	/ stiff d		RS rock	residual soil	Pak
va •	ne si re	near (l moulo	k Pa) led) * c	disturt SPT -	ed sample sample recovered	D M	ure d	ry			VL L	loos	/ loose ie	e ene-		very weak weak	αλ
× ≫	p × p	eak eak gr	eater than 2	200kPa	B	s S	bulk si	ample nmental sample	W S	rr W Si	ioisi iet aturate	d		D VD	den ver	uum d se / dene	ense e	MS S VS	moderately s strong verv strong	trong
UT	Pu	nable	to penetrate			-	STIVILO		Ľ	3				10	ver		~	ËS	extremely str	ong



						J										Machine	e Bore	hole I	No.	MH303	
E	Er	າູ	yir	neer	'n	g	Lo	<u>g</u> .	Machine I	Bore	eho	ole)			Sheet Project	No:		2	2 of 4 GENZTAU	C13086AF
С	lier	nt:			7	ΉE	LAK	ES	LTD (2012)							Date sta	arted:		1	13.1.2014	
Ρ	rino	cipa	al:													Date co	mplet	ed:	1	13.1.2014	
Ρ	roje	ect:			S	TA	GE 3	3 - Z	ONE 2							Logged	by:		1	KMJ	
N L	laci oca	hine Itioi	e Bo n:	orehole	B	ase	e of (Gull	/							Checke	d by:		1	RBT	
D	rill n	node	el & i	mounting:	T2 1	Fracto	r Mour	nt	E	asting: 36	9014.	764 m	ı	Slope: ·	-90°	R.L	Surfa	ce: 28	m	Vane N	o:
н	ole	dian	nete	r: mm		D	rilling f	fluid:	N	orthing: 7	99618	3.011 ı	n	Bearing		Da	tum: x	y = BO	PC20	000, z = Moturiki	i
Ľ	drill	ling) inf	ormatio	n		mat	erial	substance Material Description	on		~				- U -	roc	k mas	ss de	defects	scription
stratioraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recover	classificatior symbol	Soil name; plasticity or gradin secondary components. Moisture strength. Structure, bedding, co- defects. Origin, additional obs Rock name; grain size & type, co inclusions & minor components. moisture, strength, defe	g, colour, e, sensitivity, ementation, ervations. blour, fabric, Weathering, cts.	moisture condition	consistency/ density inde;	weathering alteration	estimat streng	ed th	25 50 vane shea 76 (remoulde 100 (remoulde 175 /peak) kPa 175	recovery %	de spa n 001 001 001	efect acing nm	number, type, or roughness, a description (r description exp particular	ientation, shape, aperture, infill efer to defect lanation sheet) general
	TT	С				-	****	ML (cont)	SILT, non to low plasticity, white-grey, black specks, s green staining. <i>(continued)</i>	some)	M-W	S					100				-
					22.0	6.0		SW	SAND, fine to coarse grain blue-grey, black inclusions	ned, , some		MD									_
				SPT		-			coarse gravel. - 100mm silt layer												_
				3,4,6 N*=10		-															-
					_21.5	6 <u>.5</u>															
						-											9				_
					21.0	7 <u>.0</u>															-
						-	×	SW	- increasing silt content Silty SAND, fine to coarse	grained,	W-S	L-MD									-
						-	$\stackrel{\times}{\times}$		angular to sub-angular, mo & orange & pink & black; s	ottled grey silt is											-
					20.5	1.5	× ×		pink-orange, low plasticity.								\vdash	-			
				SPT 4,4,6		-	x x	2													-
LIS SIT				IN -10	20.0	8 <u>.0</u>	$\overset{\times}{\overset{\times}{}}$														-
DEPO						-	$\langle \times \times$														_
						-	$\langle \ \times \ \times \ \times$										100				-
					_19.5	8 <u>.5</u>	< × ×														
ſ						-															-
					_19.0	9.0	× × ×														-
				SPT		-	× × ×														-
				3,3,3 N*=6		-	$\stackrel{\times}{\underset{\times}{}} \times$														-
					_18.5	9 <u>.5</u>	$\stackrel{<}{\times}$														
						-											93				-
					_18.0	10 <u>.0</u>	$\left(\times \right) \\ \times \\ \times \\ \times$														-
						-	< × ×		 becoming fine to medium with some fine to medium 	n grained, gravel											-
						-	× × ×														-
				0.07	_17.5	10.5	<́× ×										\vdash	-			
				2,2,3 N=5		-	< × ×	1									20				-
				11-5	17.0	11.0	(×														_
	neth VD	od au	ger d	Irilling		S	classific	criptio	symbols and 1 Description of Soil and Deck	water	10	/1/98 w	ater lev	el	co V	o nsistency/ d S ver	e nsity ir y soft	ndex	Wear UW	thering unweathere	ed thorad
	лв T V	op trip wa	en ba ble tul shho	be be		N	lased o New Zea	aland G	Description of Soil and Rock, eotechnical Society Inc 2005		on wa	date s ter inflo	hown ow		S F	sof firn	t n		MW HW	/ moderately / highly weat	weathered hered
s 1	upp 1	ort nil				r L	notes, s J ₅₀	undist	s, tests urbed sample 50mm diameter	\neg	pa coi	rtial dri mplete	ll fluid la drill flui	ss d loss	SI V	t stif St ver	f y stiff		CW RS	completely residual soi	weathered I
) vane	ca she	sing ar (kl	Pa)			J ₆₃)	disturb	urbed sample 63mm diameter ed sample	moist	ure	n/			H VI	hai ver	d y loose		EW VW	extremely w very weak	veak
	• ×	rem pea	ioulde ik	ed		N N	NC NC	SPT w	sample recovered ith solid cone	M	di m	iy noist net			M	D me	se dium de Ise	nse	W MS	weak moderately	strong
	≫× τρ	pea una	ik gre ible to	ater than 2 penetrate	00kPa	Ē	Ē	enviro	nmental sample	s	Sa	aturate	d		V	D ver	y dense		VS FS	very strong	trong



	-					y										Mach	nine	Bor	eho	le No.	MH303	
		ną	gir	neer	'n	g	Lo	g ·	Machine E	Bore	eho	ole	;			Shee Proje	et ect l	No:		3	3 of 4 GENZTAU	C13086AP
C	lie	nt:			T	ΉE	LAP	KES	LTD (2012)							Date	sta	rted:		1	13.1.2014	
F	rin	cip	al:													Date	coi	nple	ted:	: 1	13.1.2014	
F	roj	ect	:		S	TA	GE :	3 - Z	ONE 2							Logg	jed	by:		1	KMJ	
N L	lac oca	hin atio	e Bo n:	orehole	В	ase	e of	Gull	V							Cheo	cked	d by:		I	RBT	
Γ	rill ı	noc	el & i	mounting:	T2 T	racto	or Mou	nt	Ea	asting: 36	9014.	764 m	1	Slope	: -90°		R.L	. Surf	ace:	28 m	Vane N	lo:
Ŀ	ole	dia	mete	r: mm		D	Drilling	fluid:	No	orthing: 79	99618	3.011 ı	n	Beari	ng:		Dat	um: >	/y =	BOPC20	000, z = Moturik	i
F	dril	lling	g inf	ormatio	n		ma	terial	substance Material Description	n	i		i			1.73		ro	ck n	nass de	defect d	escription
strationanhv	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification	Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, cer defects. Origin, additional obse Rock name; grain size & type, co inclusions & minor components. U moisture, strength, defec	, colour, , sensitivity, nentation, rvations. lour, fabric, Veathering, ts.	moisture condition	consistency/ density index	weathering alteration	estin stre	nated ngth ≦∽≶≝	25 50 vane shear 100 (remoulded	150 /peak) KFa	recovery %	RQD %	defect spacing mm	number, type, o roughness, description (description ex particular	rientation, shape, aperture, infill refer to defect olanation sheet) general
Γ	T	C				-	X	SW (cont)			W-S	L-MD										_
					_16.5	- 11 <u>.5</u> -		× ML	Sandy SILT/Silty SAND, nc plasticity, pink-grey; sand is medium grained. - orange staining	s fine to	-	S-F						70				
					16.0	12 <u>.0</u>		× ML	Sandy SILT, no plasticity, p black specks, sensitive, sa grained.	ale grey, nd is fine	W-S	VS							_			-
				SPT 1,1,4 N=5	15.5	- - 12 5		× ×														-
					_10.0			××××	- increasing sand content, i black & pink from 12.5 to 1	mottled 2.6m								70				
					_15.0	13 <u>.0</u> -		×														
POSIT				0.07.	_14.5	- 13 <u>.5</u>		××××														-
				3,5,6 N*=11	14.0	- 14 <u>.0</u>		· ×	- decreasing sand content													
Ā						- - - 4 4 E		××××										100				
					_13.5			X ML	- becoming moist to wet SILT, no plasticity, grey-pin fine sand.	k, minor	M-W											
				SPT	_13.0	15 <u>.0</u> -		~~~~~											_			
				N*=15	12.5	- 15 <u>.5</u>		GP	GRAVEL, fine grained, mix	ed	-		-									_
						-		ML	colours of grey, black, brow white. SILT, no plasticity, pale gre some fine sand; sensitive.	/n, pink & / y, with	S	VS						80				
					_12.0	16 <u>.0</u> - -		GW	- some yellow-green fine sa GRAVEL, fine to coarse gr yellow-brown, some silt, bla staining.	and ained, ack	M-W											
L					11.5	16.5		•														_
	meti AD OB IT W	hod aı oj tri w	uger d ben ba ple tul ashbo	Irilling arrel be ore		s t l	classifi soil des based o New Ze	cation s scriptio on Field aland C	symbols and n Description of Soil and Rock, teotechnical Society Inc 2005	water	10, on wa	/1/98 w date s ter inflo	ater le hown ow	vel		consistenc /S S	y/ de very soft firm	n sity i y soft	ndex	K Wear UW SW MW HW	thering unweather slightly we moderately highly wea	ed athered / weathered thered
	supj N C Vanv	port ni ca e sh	l asing ear (k	Pa)			Diotes, : U ₅₀ U ₆₃ D	undist undist disturt	s, tests urbed sample 50mm diameter urbed sample 63mm diameter led sample	moistu	pai coi ure	mplete	drill flu	id loss		/St /L	stiff very hard very	/ stiff d / loose	•	RS rock EW VW	completely residual so c mass strength extremely verv weak	weathered il weak
	● × ≫×	rer pe	noulde ak ak gre able tr	ed eater than 20 penetrate	00kPa	r F E	NC Bs E	SPT - SPT w bulk sa enviro	ith solid cone ample nmental sample	M W S	di m w sa	i y noist ret aturate	d			- MD) /D	den very	dium d se diens	ense e	W MS S VS	weak moderately strong very strong	v strong



		$\boldsymbol{\lambda}$				y											Mac	hine	Bo	reh	ole No.	MH303	
E	Er	าด	aiı	neer	rin	a	Lo	a -	Machine	Bore	eho	ole)				Shee	et Not N	lo.			4 of 4 GENZTA	1101308641
С	lier	nt:	<u> </u>		7	HE	LAK	ES	LTD (2012)				-				Date	star	tec	:		13.1.2014	L
P	rind	cip	al [.]														Date	con	nole	etec	ŀ.	13.1.2014	1
P	roie	ect			S	τΔά	GE 3	- 70	ONE 2									ied h	ν. 	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		KM.I	
M	lac	hin	e Bo	orehole	E	Base	e of (` Gully	v.								Che	cked	bv			RBT	
D	rill n	nod	lel &	mounting:	T2 1	Tracto	r Mour	nt	E	asting: 36	9014.	764 m	ı	Slope	e: -90	0		R.L.	Sur	face	: 28 m	Vane	No:
Н	ole	dia	mete	r: mm		D	rilling f	luid:	Ν	lorthing: 7	99618	.011 เ	m	Bear	ing:			Datu	ım:	x/y :	= BOPC2	:000, z = Motur	iki
C	drill	ling	g inf	ormatio	n	i	mat	erial	substance Material Descripti	on	1		i			1	. 73	_	rc	ck	mass d	efects	description
stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recover	classification symbol	Soil name; plasticity or gradin secondary components. Moisturn strength. Structure, bedding, cc defects. Origin, additional obs Rock name; grain size & type, c inclusions & minor components.	g, colour, e, sensitivity, ementation, ervations. olour, fabric, Weathering,	moisture condition	consistency/ density index	weathering alteration	estir stre	nated ength ഋൃഗ്രി	N IO C	vane shear	50 /peak) Kra	recovery %	RQD %	defect spacing mm	number, type, roughness description escription e	orientation, shape, s, aperture, infill n (refer to defect explanation sheet) general
	π	С		SPT		-	× × × × × × × × ×	ML	SILT, no plasticity, pale gr	ey, minor	M-W	VS				- 04							_
				8,16,24 N*=40	11.0	 17 <u>.0</u>	× × × × × × × × × × × × × × × × × × ×		black staining.														
						-	× × × × × × × × × × × × × ×												60				-
					_10.5	17 <u>.5</u> 	× × × × × × × × × × × × × × ×																
POSII					10.0			ML	Sandy SILT, non to low pla	asticity,	-												- -
				SPT 4,3,6 N*=9	0.5			r X	brown, black specks; sand grained. - 200mm silty sand layer, s fine to coarse grained, mis	t is fine sand is													-
ALL					_9.0	-		X	colours of black, orange, g white - becoming orange-brown/green_brown	jrey &									80				
					_9.0	19 <u>.0</u>																	-
					8.5																		
				SPT 4,6,7 N*=13		-		× • •											100				-
					_8.0	<u>20.0</u>	<u>(· X. · </u>		EOBH @ 19.95m, target c	lepth													
					75	20.5			MH303 terminated at 19.9	5 metres.													-
					_1.0	-																	-
					_7.0	21 <u>.0</u> 																	
					<u>6.5</u>																		-
						-																	-
					6.0	22.0																	
	neth ND DB T V supp ↓ ↓ ∕ane	nod au op tri wa nort ni ca sho	uger d pen ba ple tu ashbc I asing ear (k nould	Irilling arrel be ore Pa) ed		c s b N U U U	lassific coil des pased of New Zea notes, s J ₅₀ J ₆₃) V*	ation s cription n Field aland G amples undistu disturb SPT - s	symbols and n Description of Soil and Rock, seotechnical Society Inc 2005 s, tests urbed sample 50mm diameter urbed sample 63mm diameter ued sample sample recovered	water V M moistr D w	10/ on wat par cor ure dr	1/98 w date s ter inflo tial dri nplete y	vater le hown ow Il fluid I drill flu	vel oss id loss		cons VS S F St VSt H VL L	istenc	y/ der very soft firm stiff very hard very loose	soft stiff loos	e	ex We SV MW HV CV RS FOC EV VV W	athering V unweath V slightly w V moderate V complete C compl	ered eathered by weathered by weathered soil h y weak k
> > U	- ~ ~X TP	pea pea una	ak ak gre able to	ater than 2 penetrate	00kPa	N E E	NC 3s E	SPT w bulk sa enviro	ith solid cone ample nmental sample	W S	m we sa	oist et aturate	d			MD D VD		medi dens very	ium se den	dens se	e Ms S VS ES	6 moderate strong 6 very strong 6 extremel	ely strong ng y strong



Machine Borehole No. MH304 **Engineering Log - Machine Borehole** Sheet 1 of 4 Project No: GENZTAUC13086AK THE LAKES LTD (2012) 15.1.2014 Client: Date started: Principal: 15.1.2014 Date completed: STAGE 3 - ZONE 2 KMJ Project: Logged by: Machine Borehole Central Area of Proposed Fill Area RBT Checked by: Location: Drill model & mounting: T2 Tractor Mount Easting: 369051.42 m Slope: -90° R.L. Surface: 41 m Vane No: Hole diameter: mm Drilling fluid: Northing: 799314.24 m Bearing: Datum: x/y = BOPC2000, z = Moturiki drilling information material substance rock mass defects Material Description defect description vane shear (remoulded /peak) kPa Material Description Soli name: plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, comentation, defects. Origin, additional observations. Rock name: grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects. classification symbol consistency/ density index recovery estimated defect number, type, orientation, shape weathering g spacing mm moisture condition roughness, aperture, infill description (refer to defect stratigrap graphic lo core recc recovery method % notes depth metres support water RQD samples description explanation sheet) 300 300 300 RL tests, etc general particular SILT, non to low plasticity, brown, М F-St С MI TT mottled pink-orange, rootlets, trace sand & black inclusions. ML SILT, low plasticity, pink-brown, St 40.5 0.5 black specks, brown mottling. 23 1.0 40.0 becoming pink orange-brown, pink mottling - white silt pocket, 20mm, with organic/manganese core in the 1.5 395 pocket 10mm fine sand lenses SPT becoming dark brown becoming mottling dark brown & 2,3,3 N*=6 brown 39.0 2.0 some brown fine sand 8 ⊒ orange-brown with pink-white silt pockets, black specks 2.5 38.5 3.0 38.0 M-W becoming moist to wet SPT 3,4,4 - creamy pink-orange, black mottles N*=8 3.5 37.5 63 4.0 37.0 - becoming brown, increasing sand content grey-white mottles 4.5 36.5 100mm buried topsoil, no М plasticity, black, organic odor MI S-F W ALLUVIAL DEPOSITS SPT Sandy SILT, non to low plasticity, orange-brown/yellow-brown, black 1,2,2 N*=4 specks, sand is fine grained. 5.0 36.0 80 35 6 weathering method classification symbols and water consistency/ density index auger drilling AD soil description UW unweathered 10/1/98 water level vs very soft based on Field Description of Soil and Rock, V slightly weathered moderately weathered highly weathered SW OB open barrel on date shown S soft MW π triple tube New Zealand Geotechnical Society Inc 2005 water inflow F firm HW w washbore partial drill fluid loss CW RS completely weathered residual soil _ notes, samples, tests SI stiff support U₅₀ undisturbed sample 50mm diameter complete drill fluid loss VSt very stiff Ν nil rock ss strength С U₆₃ undisturbed sample 63mm diameter н hard casing EW extremely weak D disturbed sample moisture VL very loose VW W MS very weak weak moderately strong vane shear (kPa) N* SPT - sample recovered dry loose D . remoulded Nc SPT with solid cone Μ moist MD medium dense X peak w bulk sample wet s vs strong very strong extremely strong Bs D dense peak greater than 200kPa saturated VD very dense Е environmental sample s unable to penetrate UTP

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Clie Prin Proj Mac Loc Drill Hole dri	n ent: ject chir atic mod	gii al:	neer	in τ	g	Lo	g -	Machine E	7	_									
Clie Prin Proj Mac Loc Drill Hole	nt: icip ject chir atic mod	al:		Τ			-		30 re	eho	ole)			Sheet Proiect	No:		2 of 4 GENZTAUC1	3086AM
Prin Proj Mac Loc Drill Hole dri	icip ject chir atic mod	al: t:			ΠC	LAK	ES	LTD (2012)							Date sta	arted:		15.1.2014	
Proj Mac Loc Drill Hole dri	ject chir atic moo	t:													Date co	mplete	ed:	15.1.2014	
Mac Loc Drill Hole dri	chir atic moo dia			s	ΤΑ	GE 3	- Z(ONE 2							Logaed	bv:		KMJ	
Drill Hole dri	moo	ie Bo	orehole	С	ent	ral A	rea	of Proposed Fill A	Area						Checke	d bv		RBT	
Hole dri	dia	del &	mounting:	T2 T	racto	r Mour	it	Ea	asting: 36	9051.4	42 m		Slope	: -90°	R.L	Surfa	ce: 41 m	Vane No:	
dri		mete	r: mm		D	rilling f	luid:	No	orthing: 79	99314	.24 m		Bearir	ng:	Dat	um: x/	y = BOPC	2000, z = Moturiki	
	llin	g inf	ormatior	1		mat	erial	substance Material Descriptic	<u></u>							roc	k mass o	defects	ntion
stratigraphy	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, cer defects. Origin, additional obse Rock name; grain size & type, co inclusions & minor components. V moisture, strength, defec	g, colour, , sensitivity, mentation, ervations. lour, fabric, Weathering, cts.	moisture condition	consistency/ density index	weathering alteration	estim strer	ated ngth	25 50 vane shear 100 (remoulded 125 /peak) kPa 175	recovery % ROD %	defec spacin mm	t number, type, orient g roughness, apert description (refer description explanat	tion, shape, ire, infill o defect ion sheet) general
Т	ГС				-		ML (cont)	Sandy SILT, non to low pla orange-brown/yellow-brown specks, sand is fine grainer (continued)	sticity, ı, black d.	W	S-F					80			
			SPT 3,4,4	_35.0	6 <u>.0</u> _	$\begin{pmatrix} \times & \times \\ \times & \times \\ \times & \times \\ \times & \times \\ \star & \times \end{pmatrix}$	SM	Silty SAND, fine to medium pale brown, black specks.	ı grained,	W-S	L-MD								
			N*=8	_34.5	6 <u>.5</u>	× × × × ×													
				_34.0	- 7 <u>.0</u>	× × × × ×										80			-
					-	<``X <`X <`X		- minor fine gravel @ 7.2m											-
			SPT 5,6,6	_33.5	7 <u>.5</u> _												-		
POSITS			N*=12	_33.0	8 <u>.0</u>														-
				_32.5	8 <u>.5</u>	× × × × ×										87			-
ALI					-	<													-
		_	SPT 5,5,6 N*=11	_32.0	<u>J.U</u> - -	、													
		5/01/2014		_31.5	9 <u>.5</u>	$\begin{pmatrix} \times \\ \times \\ \times \\ \leftarrow \\ \times \\ \times \\ \times \\ \times \end{pmatrix}$													
				_31.0	10 <u>.0</u>	* × × × * ×										õ			
				_30.5	 10 <u>.5</u>	<pre></pre>		- increasing silt content											-
			SPT 3,2,3 N*=5		_ _ _	<		- becoming pink-grey								93			-
AD OB TT W sup N C van ▲	SPT 3,2,3 N*=5 3 method AD auger drilling OB open barrel IT triple tube N washbore support N nil C casing vane shear (kPa) ● remoulded × peak × case oreater than 2000				IIU C S b N U U U U U U U U U U U U	Classific coil des based of New Zea notes, s J ₅₀ J ₆₃ D N* Nc Bs	ation s cription n Field land G amples undistu disturb SPT - S SPT w bulk se	ymbols and n Description of Soil and Rock, eetechnical Society Inc 2005 s, tests urbed sample 50mm diameter urbed sample 63mm diameter ed sample sample recovered ith solid cone imple	water V M moistu D M W	10/ on wat par cor ire dr m	1/98 w date si ter inflo tial dril mplete y oist et	ater lev nown ww I fluid le drill flu	vel oss d loss	L C V S S S V H V L L M	onsistency/ de S ver firm t stiff St ver I har L ver IO0 MD me	ensity in y soft t y stiff d y loose se dium den	dex U S M H C C R C R V V V N N S N C C R N C C N N N N C C N N N N N N N	eathering eathering W unweathered W slightly weathered W moderately weat W highly weathere W completely weathere Completely weat	ed hered d hered



Machine Borehole No. MH304 **Engineering Log - Machine Borehole** Sheet 3 of 4 Project No: GENZTAUC13086AK THE LAKES LTD (2012) 15.1.2014 Client: Date started: Principal: 15.1.2014 Date completed: STAGE 3 - ZONE 2 KMJ Project: Logged by: Machine Borehole Central Area of Proposed Fill Area RBT Checked by: Location: Drill model & mounting: T2 Tractor Mount Easting: 369051.42 m Slope: -90° R.L. Surface: 41 m Vane No: Hole diameter: mm Drilling fluid: Northing: 799314.24 m Bearing: Datum: x/y = BOPC2000, z = Moturiki rock mass defects drilling information material substance Material Description defect description vane shear (remoulded /peak) kPa graphic log core recovery Material Description Soli name: plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, comentation, defects. Origin, additional observations. Rock name: grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects. classification svmbol consistency/ density index estimated defect number, type, orientation, shape % weathering Everation Second alteration Se spacing mm stratigrap moisture condition roughness, aperture, infill description (refer to defect recovery method % notes depth metres support water RQD samples description explanation sheet) RL tests, etc general particular SM Silty SAND, fine to medium grained, W-S L-MD С TT × (cont pale brown, black specks X (continued) - yellow-green sand inclusion ××××××××××××××××× ML S-F ***** SILT, non to low plasticity, pink-grey, slight light-green staining, 29.5 11.5 83 black specks. some sand inclusion - 50mm fine silty sand lenses, 29.0 12.0 light-green MD SM SAND/Silty SAND, fine to medium Х SPT grained, dark green-grey, mottling white & yellow & black, some silt. × 8,11,10 N*=21 × × X 28.5 12.5 X × × 63 X 28.0 13.0 × × × X becoming fine to coarse grained, pale grey from 13.2 to 13.3m yellow-green mottling × × ഗ 27.5 13.5 × ALLUVIAL DEPOSI Х - increasing silt content, pale X SPT 8,10,10 N*=20 pink-arev X X × 27.0 14.0 X - becoming fine to coarse grained X × × 67 Х × 26.5 14.5 × X Х × X - increasing silt content × 26.0 15.0 - dark orange-brown staining × × SPT × 6,8,9 N*=17 × × X 25.5 15.5 ×××××: ××××× ML SILT, low plasticity, pale pink-grey, M-W F-St minor fine sand 63 **** ***** 25.0 16.0 ÷ becoming orange-brown , black specks 24 5 16 5 weathering classification symbols and method water consistency/ density index auger drilling soil description AD UW unweathered 10/1/98 water level vs very soft V slightly weathered moderately weathered highly weathered based on Field Description of Soil and Rock, SW OB open barrel on date shown S soft MW π triple tube New Zealand Geotechnical Society Inc 2005 water inflow ► F firm HW w washbore partial drill fluid loss CW RS completely weathered residual soil 1 notes, samples, tests SI stiff support U₅₀ undisturbed sample 50mm diameter complete drill fluid loss VSt very stiff Ν nil rock ss strength С U₆₃ undisturbed sample 63mm diameter н hard casing EW extremely weak D disturbed sample moisture VL very loose VW W MS very weak weak moderately strong vane shear (kPa) N* SPT - sample recovered dry loose D . remoulded Nc SPT with solid cone Μ moist MD medium dense × peak w bulk sample wet s vs strong very strong extremely strong Bs D dense , peak greater than 200kPa saturated VD very dense Е environmental sample s unable to penetrate UTP

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E	'n	gi	inee	rin	g	Lo	g -	Machine B	Bore	eho	ole	;			Sh Pro	eet oject I	No:			4 of 4 GENZTA	UC13086AF
Cli	ent	:		7	THE	LAK	ES	LTD (2012)							Da	te sta	rtec	d:		15.1.201	4
Pri	nci	pal:													Da	te cor	mple	etec	1:	15.1.201	4
Pr	ojeo	ct:		5	STA	GE 3	- Z(ONE 2							Lo	gged	by:			KMJ	
Ma Lo	achi cati	ne l on:	Borehole	Ċ	Cent	ral A	lrea	of Proposed Fill A	Area						Ch	ecked	d by	<i>'</i> :		RBT	
Dri	ll mo	del	& mountin	g: T2	Tracto	r Mour	nt	Ea	asting: 36	9051.4	42 m		Slope	: -90°		R.L	. Sui	face	: 41 m	Van	e No:
Ho d	le di rilli	ame na i	ter: mm	on	D	rilling f	luid: erial	N	orthing: 7	99314	.24 m		Bearir	ng:		Dat	um:	x/y	= BOPC2 mass d	2000, z = Motu	ıriki
tigraphy	pou		notes	3	th res	ohic log e recovery	sification	Material Descriptic Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, ce defects. Origin, additional obse	on g, colour, , sensitivity, mentation, ervations.	sture dition	sistency/ sity index	athering ration	estim strer	ated ngth	ane shear	eek) kPa	overy %	D %	defect spacing mm	defect number, type roughne descriptio	t description e, orientation, shape, ss, aperture, infill on (refer to defect
stra	met	dns	tests, €	tc RL	dep	gral core	clas sym	inclusions & minor components. N moisture, strength, defe	Weathering, ts.	moi con	con	wea		S S S S	25 50 75 V	125	rec	RQ	300 300 1000	particular	explanation sheet) general
	TT	C	SPT		_	* * * *	ML (cont)	SILT, low plasticity, pale pir minor fine sand <i>(continued</i>)	nk-grey,)	M-W	F-St										_
			5,0,0 N*=12		-	× × × × × × × × ×															-
				24.0	17 <u>.0</u> _	* * * *		- fine to medium sand pock	ket @												
					-			- becoming pink orange-wh orange streaks	nite with								87				-
				_23.5	17 <u>.5</u>																
					-	Î× Û	SM	Silty SAND, fine to coarse	grained,	1	MD										-
SITS				23.0	18.0	$\begin{pmatrix} \times \\ \times \\ \times \end{pmatrix}$		brown & pink & orange, tra	ce												-
Ë			SPT	20.0	-	< × × ×		- increasing silt content													
A A			5,6,7 N*=13		-	× × ×	- - -														-
				_22.5	18 <u>.5</u>	$\stackrel{<}{\times}$															
₹					-	× ×	-										60				-
				_22.0	19 <u>.0</u>	x x															_
					-	<															-
					-	<^×															-
			CDT	21.5	19 <u>.5</u>	× ×	-	- orange staining													
			9,11,1 N*=26	5	-	$\left(\begin{array}{c} \times \\ \times \\ \times \end{array} \right)$	2										50				-
-	-	-		21.0	20.0	×	2	EOBH @ 19.95m, target d	epth												
					-			MH304 terminated at 19.98	5 metres.												-
				20.5	20.5																-
					-																-
					-																_
				_20.0	21 <u>.0</u>																
					-																-
				_19.5	21 <u>.5</u>																-
					-																-
				40.0	-																-
m Aſ	etho	d auce	r drillina	19.0	<u>⊭∠.</u> U	lassific	ation s	symbols and n	water	1	1				onsiste	ncy/ de	nsity	/ inde	ex in	athering	pered
OFTW SUNC Va ● ×	ne s	open triple wash rt nil casin hear emou eak	barrel tube bore g (kPa) Ided			oased or New Zea Notes, s J ₅₀ J ₆₃) N*	amples amples undistu disturb SPT - SPT w	Description of Soil and Rock, eotechnical Society Inc 2005 a, tests urbed sample 50mm diameter urbed sample ed sample sample recovered tith solid cone	moist D W	10/ on wa par cor ure dr m	/1/98 w date s ter inflo rtial dri mplete ry poist	vater le hown ow Il fluid I drill flu	vel oss id loss	S F S V H V L	/S 5 6t /St 1 /L /D	very soft firm stiff very hare very loos mee	y soft y stiff d y loos se dium	se dens	e M	V slightly v N modera V highly w V complet S residual ck mass streme V extreme V very we weak S modera	weathered tely weathered eathered soil soil th ly weak ak tely strong
≫ UT	хр Р ^и	eak g nable	preater than to penetra	200kPa te		s E	oulk sa envirol	ample nmental sample	s	W Sa	ei aturate	d			, /D	den very	ise y den	ise	S VS ES	Strong very stro extreme	ong ely strong
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					y										Machine	e Bo	oreh	ole No.	MH305	
Er	າູ	giı	neer	'n	<u>g</u>	Lo	<u>g</u> -	Machine E	Bore	eho	ble	;			Sheet Project	No:		1 (of 4 GENZTAU	C13086A
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Prino	cipa	al:													Date co	mpl	eteo	d: 1	14.1.2014	
Proje	ect	: _		S	TAC	GE 3	- Z	ONE 2							Logged	by:		ŀ	KMJ	
Mac Loca	hin itio	e Bo n:	orehole	E	dge	of A	4000	ess Track							Checke	d by	/:	ŀ	RBT	
Drill n	nod	lel &	mounting:	T2 1	racto	r Moun	nt	Ea	asting: 36	8925.8	313 m	ו	Slope:	-90°	R.L	. Su	rface	e: 46 m	Vane No):
Hole drill	diar I in c	mete n inf	r: mm	n	D	rilling f	luid: erial	N	orthing: 7	99541	.213	m	Bearing	:	Dat	ium:	x/y	= BOPC20	000, z = Moturiki	
atigraphy	pport	ater	notes samples,		pth etres	aphic log re recovery	Issification	Material Description Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, ce defects. Origin, additional obse Rock name; grain size & type, co	DN g, colour, s, sensitivity, mentation, ervations. lour, fabric,	bisture ndition	nsistency/ nsity index	eration	estimat streng	ted th	vane shear (remoulded /peak) kPa	covery %	D % D	defect spacing mm	defect des number, type, orie roughness, a description (re description expl	scription entation, shape, perture, infill after to defect anation sheet)
at st	ns	Ň	tests, etc	RL	de me	ш б Х	s cla	inclusions & minor components. M moisture, strength, defect	Weathering, cts.	Ĕ8	8 8	alt	n ∑ ≤ < E	e S S	25 50 75 100 175	ē	RC	3000 3000 3000 3000 3000 3000 3000 300	particular	general
	С			_45.5	0.5		ML ML	Gravel, coarse grained, gra light green vanes. Gravelly SILT, no plasticity mottled orange-brown, gra to medium grained SILT, non to low plasticity, interbedded with black silt - becoming black-brown fro	y with , grey vel is fine brown, vanes.	M-W	F	-				80				- - - - - - -
				_45.0 _44.5	1 <u>.0</u> - 1 <u>.5</u>		MI	SII T non to low plasticity		_	S-F	-								
			SPT 1,1,1 N*=2	44.0	20	(×××××××× (×××××××××		orange-brown, trace sand.												-
				_44.0	-	××××××× ××××××××		 Increasing sand content becoming grey-brown 								87				
				_43.5	2 <u>.5</u>	× × × × × × × × ×	ML	SILT, low plasticity, brown.		-										_
IIC ASHES				_43.0	3 <u>.0</u>	**************************************	ML	SILT, non to low plasticity, black & orange-grey, orang streaks, abundant black m - orange-brown staining fro 2.7m	mottled ge ottles. om 2.6 to											
VOLCAN			SPT 1,2,2 N*=4	_42.5	3 <u>.5</u>	· × × × × × × × × × × × × × × × × × × ×														- - - -
					-	× × × × × × × × × × × × × × × × × × ×		 orange staining abundant dark orange-bro 	own							100				-
				_42.0	4 <u>.0</u> 	(×××××××××× (×××××××××××		staining & inclusions - becoming orange-brown vanes & specks; some fine	with black e sand											
4005			SPT 1,0,0 N*=0	_41.5	4 <u>.5</u>	× × × × × × × × × × × × × × × × × × ×	ML	SILT, low to medium plasti creamy pale orange-white, specks, some orange stair	city, black ning	_	F	-								-
				41.0	5 <u>.0</u> 	**********		- abundant dark orange-bla inclusions from 5.0 to 5.1m - becoming yellow-white to	ack vellow							100				
Ē				40.5	5.5	× × × × × × × × ×		grey, black mottles, some t	rine sand											_
meth AD OB TT W supp N C vane ● ×	od au op trij wa ort nil ca she ren pea	uger d pen ba ple tu ashbo I asing ear (k nould ak ak ore	rilling arrel be re Pa) ed	00kP2	C S b N U U U U U U U U U U U U U U U U U U	lassific oil dese ased or lew Zea otes, s los los las	cription n Field aland C amples undistri disturb SPT - SPT w bulk sa	symbols and n Description of Soil and Rock, ieotechnical Society Inc 2005 s, tests urbed sample 50mm diameter urbed sample 63mm diameter ed sample sample recovered tit solid cone ample	water	10/ on par cor u re dr we	1/98 w date s eer infle tial dri nplete y oist et	vater lev hown ow Il fluid lo drill fluid	el ss 1 loss	C V S F S V H V L M D	onsistency/ de S ver soft firm t stiff St ver bar L ver loo ID me der	y soft y stiff d y loo se dium	y inde t se dens	ex UW SW MW HW CW RS rock EW VW W Se MS S	thering unweathered slightly weat moderately v highly weath completely v residual soil a mass strength extremely w very weak weak moderately s strong	d hered weathered ered weathered eak



	9					У										Mach	nine	Bore	ehole N	o. 🖊	MH305	
E	Er	าดู	yir	neer	'n	g	Lo	g ·	- Machine I	Bore	eho	ole	;			Shee Proje	et ect N	No:		2 0	of 4 GENZTAUC130	86AF
С	lier	nt:			7	ΉE	LAP	KES	LTD (2012)							Date	sta	rted:		1	4.1.2014	
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Р	roie	ect			S	TA	GE :	3 - Z	ONE 2							Loaa	ed	bv:		ŀ	(MJ	
N	lac	hin	e Bo	orehole	F	da	e of	Acc	ess Track							Cher	ker	t hv:		F	PRT	
Б	rill n	nod	n. el & i	mountina:	T2 1	Tracto	or Mou	nt		astina: 36	8925.	813 m	1	Slope	: -90°	Onec	R.L.	. Surfa	ace: 46 i	n	Vane No:	
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stratigraphy	method	support	water	notes samples,	RI	depth metres	graphic log	classification	Material Descriptic Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, ce defects. Origin, additional obse Rock name; grain size & type, co inclusions & minor components. V	on g, colour, e, sensitivity, mentation, ervations. blour, fabric, Weathering,	moisture condition	consistency/ density index	weathering alteration	estim strer	ated ngth 2	vane shear (remoulded	₀ /pcan/nra	recovery %	def space	ect sing m	defect description number, type, orientation, roughness, aperture, description (refer to de description explanation particular	on , shape, infill efect sheet)
-	TT	С				-	× × × ×	ML (cont)	SILT, low to medium plastic creamy pale orange-white,	cts. city, black	M-W	F		₩> 52	<u>е о > ш</u>	25 75 10 12	11	0	v − v	0-0	particular g	
									(continued)	ling								9				_
					_40.0	6.0													-			
				SPT 1,0,1		-	× × > × × >															_
				N°=1	39.5	6.5																_
					_	-			- becoming medium to high plasticity from 6.5 to 6.7m	h												_
									- abundant orange fine gra	vel								100				_
					<u>3</u> 9.0	7 <u>.0</u>																_
									- 100mm silty sand layer, d	lark		0.5										_
					00 F	75			- becoming orange-brown	to		5-г										-
				ерт	_38.5	1.5			- 100mm silty sand layer, d	lark	W	-										
				0,1,2		-			- becoming wet													_
ß				N -5	<u>38.0</u>	8.0	× ×) × × ×	ML	SILT/Sandy SILT, low plas	ticity,	1	VS	-									_
B G R								×	pink-brown, sensitive; sand medium grained, dark brow	d is fine to vn,												_
							(* * * *	×	angular to sub-angular. - interbedded silt and sand	y silt from								100				_
ATU					<u>3</u> 7.5	8 <u>.5</u>		× MI	7.9 to 8.5m		-	S	-									
Ē						-			pink-brown/orange-brown, black specks, some fine sa	minor and.												_
					27.0	0 1			- heavy orange staining & a black inclusions	abundant												_
				SPT	_37.0	<u> </u>	× × × × ×	× ML	- 100mm dark brown, fine t medium grained sand laye	to r	w											
				0,0,0 N*=0		-		×	Sandy SILT, non to low pla pink-brown/orange-brown;	sticity, sand is												-
					_36.5	9 <u>.5</u>		×	fine to medium grained, mi colours of black, orange &	ixed white.												_
						-	$\begin{pmatrix} \cdot & \times \\ \times & \times \\ \cdot & \times \end{pmatrix}$	×														_
						-		×										6				_
					<u>3</u> 6.0	10 <u>.0</u>		с Х	- increasing sand content, r gravel from 9.9 to 10.0m	trace fine												
						-	$\left\{ {}^{\times}_{\times} \right\}$	×	- fine to medium black/grey	/ sand &												_
					35.5	10 5		×	coarse black gravel from 1 10.3m	0.2 to		V9-9	-									_
				SPT	_00.0	-		ML	- sand content missing fror 10.4m	m 10.3 to	W-S	10-0										_
				0,0,0 N*=0		-			- abundant black mottles		/							100				-
L					35.0	11.0															havina.	_
	netr VD	au	iger d	Irilling			soil des	cation scriptio	symbols and n	water	10	/1/98 w	ater le	vel		onsistenc /S	y/ de very	nsity i / soft	ndex	UW	unweathered	
וו	ло Т V	op trij	ole tu	be			New Ze	aland (Beotechnical Society Inc 2005	➡	on wa	date s ter inflo	hown ow		F	3	soft firm			MW	moderately weathered highly weathered	ed
s N	upp 1	wa oort nil	JUU				notes, s U ₅₀	sample undist	s, tests urbed sample 50mm diameter		pa coi	rtial dri mplete	ll fluid l drill flu	oss id loss	8	St /St	stiff very	/ stiff		CW RS	completely weather residual soil	ed
) /anc	Ca	sing	Pa)			U ₆₃ D	undist disturi	urbed sample 63mm diameter bed sample	moistu	ure				F N	Η /∟	hard very	d / loose		EW	mass strength extremely weak	
	-ai 18 • •	ren	noulde Noulde	ed			N* Nc	SPT - SPT v	sample recovered <i>i</i> th solid cone	D M	di m	ry ioist			L	/ID	loos med	ie dium de	ense	W MS	weak moderately strong	
	`` ≫X	pea	ak gre	ater than 2	00kPa		Bs E	bulk s envirc	ample nmental sample	w s	w Sa	et aturate	d) /D	den very	se / dense		S VS	strong very strong	



		~				y										Machine	e Boreł	nole No.	MH305	
	Er	าดู	gir	neer	'n	g	Lo	g ·	- Machine E	Bore	eho	ole)			Sheet Project	No:	3	3 of 4 GENZTAUC	C13086AK
C	Clie	nt:			7	ΉE	LAK	(ES	LTD (2012)							Date sta	arted:		14.1.2014	
F	Prin	cipa	al:													Date co	mplete	d: '	14.1.2014	
F	Proj	ect:			S	TA	GE 3	3 - Z	ONE 2							Logged	by:		KMJ	
N	lac oca	hine	e Bo	orehole	E	dae	e of J	Acc	ess Track							Checke	d bv:		RBT	
	orill r	node	el & i	mounting:	T2 1	racto	r Moui	nt	Ea	asting: 36	8925.	813 n	ı	Slope	: -90°	R.L	Surfac	e: 46 m	Vane No):
Ŀ	lole	dian	netei	r: mm		D	rilling	fluid:	N	orthing: 7	99541	.213	m	Bearir	ng:	Da	tum: x/y	= BOPC20	000, z = Moturiki	
ŀ	dril	ling) inf	ormatio	n İ		mat	erial	substance Material Description	n	1		i				rock	mass de	defect des	scription
strationanhv	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recover	classification	Soil name; plasticity or grading secondary components. Moisture strength. Structure, bedding, cei defects. Origin, additional obse Rock name; grain size & type, co inclusions & minor components. I moisture, strength. defect	g, colour, , sensitivity, mentation, ervations. lour, fabric, Weathering, cts.	moisture condition	consistency/ density index	weathering alteration	estim strer	lated ngth	 vane shea vane shea vane shea vane shea vermoulde /ul>	recovery % RQD %	defect spacing mm	number, type, orie roughness, ar description (re description expla	entation, shape, perture, infill efer to defect anation sheet) general
F	ТТ	С				_	× × × × × × × × ×	ML	SILT, low plasticity, pink-br	own to	W-S	VS-S				111120				
						-	× × × × × × × × ×	(0011)	sensitive; with some fine to	medium										-
			⊻		_34.5	11 <u>.5</u>	× × × × × × × × ×										8			
			014			_	× × × × × × × × ×													_
			4/01/2			-	××× ×	SM	Silty SAND, fine to medium	grained,	-	VL	-							_
			÷		_34.0	12 <u>.0</u>	$\stackrel{<}{\times}$		angular to sub-angular, yellow-brown, orange stain	ing, black								-		
						-	× ×		specks. - decreasing sand content	till 12.5m										_
					33.5	12.5	×													_
				SPT		-	$\begin{pmatrix} \times \\ & \times \end{pmatrix}$	2												-
Da lo				1,1,2 N*=3		-	< × × ×	j	- black inclusions								87			_
UB					_33.0	13 <u>.0</u>	× × × × × × × × ×	ML	SILT, low to medium plastic	city, pale	1	S	1							
ALC:						=	× × × × × × × × ×		- 20mm fine sand lenses	te.										-
MA						12 5	× × × × × × × ×	ML	Sandy SILT, low plasticity.	pale	W	-								-
				CDT	<u>3</u> 2.5	13 <u>.5</u>	(, X) X X X X	×	pink-grey, with green staini is fine to coarse grained.	ng; sand										
				0,0,1		_		××	- interbedded silt and sand	lenses										-
					32.0	14 <u>.0</u>	(* * * * * *	×	- trace fine gravel											-
						-	× × × ×	X X												-
						-	X	GM	Silty Gravel, fine to coarse grey to blue-grey, with fine	grained, to							80			_
					_31.5	14 <u>.5</u>	(×) × ; () × ;	ML	medium grained sand, orai staining	nge	Λ									
						-	$\begin{pmatrix} \times \\ \times \\ \times \end{pmatrix}$	× ×	Sandy SILT/Silty SAND, no plasticity, sand is fine grain	o ed, pale										-
					31.0	15.0	* * * * * *	×	grey, black specks.											_
				SPT	_01.0	-	X) SM	Silty SAND, fine grained, gr	rey, black		VL-L								-
ļ				2,2,3 N*=5		-	×^ × ×													-
TIAR					_30.5	15 <u>.5</u>	× × ×													
NIN						-	$\stackrel{\times}{}_{\times}$) 												-
d A C						-	$\overset{\times}{\overset{\vee}{}}$	2 - 3									6			-
RAN					<u>_</u> 30.0	10 <u>.0</u>	<^×		- becoming sensitive											
F						-	<													-
L					29.5	16.5	< × ×													_
	meth AD	au	ger d	Irilling		s	lassific	cation	symbols and n	water	10	/1/98 v	vater le	evel	c	consistency/ de	ensity ind rv soft	iex wea	thering unweathered	d Harrison d
	UB TT	op trip	en ba ble tul	arrel be		L N	ased o lew Zea	n Field aland (Description of Soil and Rock, Geotechnical Society Inc 2005	≚	on wa	date s ter infle	hown ow		F	S sof	ft n	SW MW HW	siigntiy weatl moderately v highly weath	veathered ered
2	supp N	wa oort nil	ioi 100	ii C		r L	iotes, s J ₅₀	ample undist	s, tests urbed sample 50mm diameter	\square	pa co	rtial dri mplete	ll fluid drill flu	loss uid loss	s v	St stif /St ver	f ry stiff	CW RS	completely w residual soil	veathered
	C	ca	sing	Pa)			J ₆₃)	undist disturt	urbed sample 63mm diameter bed sample	moist	ure				F V	H hai /L ver	rd ry loose	roci EW	k mass strength extremely we	eak
	vane • ~	rem	ar (Kl noulde	ra) ed		1 1	1¢ 1*	SPT - SPT w	sample recovered ith solid cone	D M	d rr	ry noist			L	. loo /ID me	se dium den	se MS	very weak weak moderatelv s	strong
Í.	^ ≫X	pea	ik gre ible tr	ater than 2	00kPa	E	ls E	bulk s enviro	ample nmental sample	w s	W Si	et aturate	d) dei /D ver	nse ry dense	S VS	strong very strong	rong



					y										Μ	achine	e Bo	oreh	ole No). N	<i>1</i> H305	
E	'n	gi	inee	rin	g	Lo	g -	Machine I	Bore	eho	ble)			S P	neet roject	No:			4 G	of 4 SENZTAU	C13086A
Cli	ent			7	ΉE	LAK	ES	LTD (2012)							D	ate sta	arteo	d:		1	4.1.2014	
Pri	nci	pal:													D	ate co	mpl	eteo	d:	1	4.1.2014	
Pro	ojec	:t:		5	STA	GE 3	- Z(ONE 2							Lo	ogged	by:			K	(MJ	
Ma Lo	achi cati	ne on:	Borehole	E	Edge	e of A	4 <i>cc</i> e	ess Track							С	hecke	d by	/:		R	RBT	
Dri	ll mo	del	& mountin	g: T2	Tracto	r Mour	nt	E	asting: 36	8925.8	313 m	ı	Slope	e: -90°	•	R.L	Su	rface	e: 46 m		Vane No) :
Ho di	le di rilli	ame nai	ter: mm nformati	on	D	rilling f	luid: erial :	N Substance	orthing: 7	99541	.213	m	Bear	ing:		Dat	tum:	x/y	= BOPC	C200	00, z = Moturiki ects	
stratigraphy	method		notes sample tests, e	s, tc RL	depth metres	graphic log core recovery	classification symbol	Material Descripti Soil name; plasticity or gradin secondary components. Moisture strength. Structure, bedding, ce defects. Origin, additional obs Rock name; grain size & type, cc inclusions & minor components. moisture strength defe	g, colour, e, sensitivity, mentation, ervations. olour, fabric, Weathering, cts.	moisture condition	consistency/ density index	weathering alteration	estir stre	mated ength ≊ິ໑໑ຏ	s vane shear	00 (remoulded 25 /peak) kPa 75	recovery %	RQD %	defer spacia mm		defect de number, type, ori roughness, a description (ra description expl particular	scription entation, shape, perture, infill efer to defect lanation sheet) general
	TT		SPT		- 1	X	SM (cont)	Silty SAND, fine grained, g specks. (continued)	rey, black	W	VL-L				(da)		T					-
			2,2,3 N*=5	29.0	 17 <u>.0</u>	× × × × × ×																- -
					-	$\langle \times \rangle$											10					-
				_28.5	17 <u>.5</u>	x x x																
					-	<																-
BRITE					18 <u>.0</u>	< × ×																-
GNIM			SPT		_	$\begin{pmatrix} & \times \\ & \times \\ & & \times \end{pmatrix}$																-
NGA I			N*=4		10 5	× ×																-
ERA				27.5	10.5	× × ×																
F					-	$\stackrel{<}{\times}$											100					-
				_27.0	19 <u>.0</u>	$\begin{pmatrix} \times & \times \\ \times & \times \\ & \times & \times \end{pmatrix}$		- decreasing sand content														
					-	к× х																-
				26.5	19.5	$\overset{\times}{\underset{\times}{}}$																-
			SPT		-	× × × × × × × × ×	ML	SILT, low plasticity, pink-white/orange-white, ye	ellow		S-F											-
			1,0,0 N*=0		-	× × × × × × × × ×		staining & black specks, tra sand.	ace fine													-
				26.0	20.0	×××		EOBH @ 19.95m, target d MH305 terminated at 19.9	epth 5 metres.													
					-																	-
				25.5	20 <u>.5</u>																	-
					-																	-
				25.0	21.0																	-
				_20.0	-																	
					-																	-
				_24.5	21 <u>.5</u>																	
					-																	-
				24.0	22.0																	-
AL OE TT W SU N C va ● × ≫	nes x ppoi	auge open triple wash t casir hear eak eak eak	r drilling barrel tube bore g (kPa) Ided greater than	200kPa	c s b N U U U U N E E E	ciassific coil des pased on New Zea notes, s J ₅₀ J ₆₃ D N N N C S S	ation s cription n Field aland G amples undistu disturb SPT - s SPT wi bulk sa enviror	ympols and Description of Soil and Rock, ectechnical Society Inc 2005 5, tests irbed sample 50mm diameter irbed sample 63mm diameter ed sample sample recovered th solid cone imple imple impetal sample	water	10/ on par cor u re dr m we sa	1/98 w date s er inflo tial dri nplete y oist et	vater le hown ow Il fluid I drill flu	oss id loss		consist VS S F VSt VSt L VL D VD	ency/ de ver sof firm stifi ver har ver loo me der ver	ensity y soft t n y stiff y stiff y loo se dium nse y der	y ind t f dens nse	ex v	veath UW SW MW HW CW CW CW CW CW CW CW S S S S S S S S S	nering unweathere slightly weat moderately highly weat completely residual soil mass strength extremely w very weak weak moderately strong very strong	d thered weathered hered weathered weathered strong















		_f			, •											
C			E	₹y						Tria	I Pit I	۱o.		TP30	01	
F	n	ninee	ri	na		_ Т	rial Pit			She	et			1	of 1	
<u> </u>		JIIICC	/ 1		LOG	- I				Proj	ect N	o:		GENZ	ZTAUC13	<u>086AK</u>
Clie	ent:			IHE		SLIL) (2012)			Date	e star	ted:		12.12	.2013	
Prir	ncipa	al:		074	05.0	701	- 0			Date	e con	nplete	d:	12.12	.2013	
Pro	ject	:		SIA	GE 3 -	ZUNI				Log	ged t			GJN		
Equ	inme	i location:	CAT	5E (of Pipe	Stoc	Pit Orientation: N-S	Easting: 36905	3 82 m	Che	CKED	by: Surface	a: 377 m	RBI		
Exc	avati	on dimensio	ons: 4	.5m lon	ig 2.2m v	wide	Vane No: DR4523	Northing: 79935	53.69 m		Datu	m: x/y	= BOP(C2000, z =	Moturiki	
ex	cava	ation infor	mati	on		mate	erial substance									
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Description Soil name; plasticity or grading, col components. Moisture, sensitivity, str bedding, cementation, defects. Origin, ad Rock name, grain size & type, colour, f minor components. Weathering, moistur	on, secondary ength. Structure, ditional observations. abric, inclusions & e, strength, defects.	moisture condition	consistency/ density index	25 50 vane shear	125 /peak) kPa 150 /peak) kPa		struc additiona	cture and l observations	5
				-		ML	Sandy SILT, no plasticity, orange mot	tled white,	M- W	VSt- H		× >>>	<			-
				-		ML	Sandy SILT, no plasticity, black; orga Sandy SILT, no plasticity, orange,	nic odor & fibre.	-			>>>	K			-
	-		<u>3</u> 6	<u> 1</u>		ML	Sandy SILT, no plasticity, mottled pin	k-brown				>>>	k			4
	ntered			-		SM	Silty SAND fine to medium argined a	1701/	_	E-St	• >					_
Н	encou		35	2				,, ,,			•×					-
Ē	er not			-												
	Idwate			-						•	×					_
	grour		<u>3</u> 4	3							• ×					_
				-												_
-			22	4			SAND fine to medium argined light of	urev, trace silt	_			×				-
AD							EOBH $@$ 4 2m hole collapsed									
				-			AD = ALLUVIAL DEPOSITS Test pit TP301 terminated at 4.2 metr	es.								-
			<u>3</u> 2	5												
				-												_
			21	6												-
			21	<u> </u>												-
	leate	h		-												-
5	Keto	n														
c s b	lassi oil de ased	fication symb escription on New Zeala	ols an	d otechnic	al Society In	ic 2005	vane shear (kPa) ● remoulded × peak	moisture		consi	istency	/ densit	y index			
n	otes,	samples, tes	ts				>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	D dry M moist		VS S	1	very soft	,	VL L	very loose loose	
U	50 63	undisturbe undisturbe	ed sam ed sam	iple 50m iple 63m	m diameter m diameter		water ▼ 10/1/98 water level	W wet S saturated		F St	1	irm stiff		MD D	medium dens dense	e
D B F	s	bulk samp	sample le ental se	ample			 on date shown water inflow 			VSt H	ľ	very stiff nard		VD	very dense	
R		refusal					water outflow									

C		ЭΠ	ſ	₹	/ -					Tria	Il Pit No.	TP302
C	n	ninor	ri			-т	rial Dit			She	et	1 of 1
	пć	Jinee	71	ng	LUY	- 1	nai Fil			Pro	ject No:	GENZTAUC13086AP
Clie	ent:			THE	LAKES	S LTI	D (2012)			Dat	e started:	12.12.2013
Prir	ncipa	al:								Dat	e completed:	12.12.2013
Pro	ject			STA	GE 3	ZON	E 2			Log	ged by:	GJN
Tria	al pit	location:		NW	Corner	of P	roposed Fill Area			Che	ecked by:	RBT
Equ	ipme	nt type: 20	t CAT				Pit Orientation: N-S	Easting: 368949	9.29 m		R.L. Surface:	35 m
Exc: ex	avati cava	on dimension Information	ms: 4 mati	.5m lor on	ig 2.2m v	vide mate	Vane No: DR4523	Northing: 79936	62.67 m		Datum: x/y =	BOPC2000, ž = Motufiki
Y						ц	Material Descrip	otion		ex /	ear Jed Pa	
stratigraph	water	notes samples, tests, etc	RL	depth metres	graphic log	classificatio symbol	Soil name; plasticity or grading, components. Moisture, sensitivity, bedding, cementation, defects. Origin, Rock name, grain size & type, colou minor components. Weathering, mois	colour, secondary strength. Structure, additional observations. Ir, fabric, inclusions & sture, strength, defects.	moisture condition	consistenc density ind	25 50 75 100 (remould 150 /peak) kl 175	structure and additional observations
				-		ML	Sandy SILT, no plasticity, mottled of	orange-white, brown.	D-M	F	×	-
FILL			_34							Н	*	- - - -
				-		SP	50mm black layer (possibly buried SAND, fine to medium grained, por	topsoil) orly graded, light	-1		*	-
LS							brown, trace gravel.	, g,g				-
-ISOc			<u>3</u> 3	<u>_</u>								
LDEF				-								-
IVIAI			32	3			becoming moist to wet becoming dark orange-white		M- W			-
ALLI				-								-
	_			-			becoming grey, fine grained					-
	2013		<u>3</u> 1	4			EOBH @ 3.8m, hole collapsed, inc	reasing water inflow	-			
	12/12			-	-		Test pit 1P302 terminated at 3.8 m	etres.				-
				-								-
			<u>3</u> 0	5								_
				-	-							-
			29	6								-
			_20	-								
_				-	-							
S	sketo	h										
с	lassi	ication symb	ools an	d			vane shear (kPa)					
s	oil de	scription on New Zeal	and Ge	otechnic	al Society In	c 2005	● remoulded × peak	moisture		cons	sistency/ density	index
n	otes,	samples, tes	ts	mla 50	na diat		>>>> peak greater than 200kPa UTP unable to penetrate	D dry M moist		VS S	very soft soft	VL very loose L loose
U U	50 63	undisturbe undisturbe	ed sam ed sam	iple 50m iple 63m	m diameter m diameter		water 10/1/98 water level	W wet S saturated		F St	firm stiff	MD medium dense D dense
_		diaturhad										
D	s	bulk samp	sampie ole	e			 In this water level on date shown water inflow 			VSt H	very stiff hard	VD very dense

C			C	7y						Trial Pit No.		TP303
E	n	ginee	əri	ng	Log	- T	rial Pit			Sheet Project No:		1 of 1 GENZTAUC13086AF
Clie	ent:	_		THE		S LTI	D (2012)			Date started	1:	12.12.2013
Pri	ncip	al:								Date comple	eted:	12.12.2013
Pro	iect	•		STA	GE 3	ZON	E 2			Logged by:		GJN
Tri	al nii	Llocation:		SW/	Corner	of P	 ronosod Fill Area			Checked by		PRT
Εαι		ent type: 20	t CAT		oomer	0111	Pit Orientation: N-S	Easting: 368942	.31 m	R.L. Sur	- face: 40	.5 m
Exc	avati	on dimensio	ons: 4	.5m lon	g 2.2m v	vide	Vane No: DR4523	Northing: 79932	0.25 m	Datum:	x/y = ₿Q	PC2000, z = Moturiki
ex	cav	ation info	rmati	on		mate	erial substance					
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descript Soil name; plasticity or grading, o components. Moisture, sensitivity, , bedding, cementation, defects. Origin, a Rock name, grain size & type, colour minor components. Weathering, moist	tion solour, secondary strength. Structure, additional observations. , fabric, inclusions & uure, strength, defects.	moisture condition	consistency/ density index 25 25 vane shear 75 vane shear 100 (remoulded	175	structure and additional observations
			<u>4</u> 0	- - 1_		ML	Sandy SILT, no plasticity, mottled pi	nk-brown, white.	M	VSt- H • ×	>>× >>×	- - -
			<u>3</u> 9	-		•	- black staining					-
FILL	/12/2013		<u>3</u> 8	2			- minor water inflow				>>× >>× ×	- - -
	12		<u>3</u> 7	3						• ;	>>× <	
			<u>_3</u> 6	4						•	× >>×	
			35	5			EOBH @ 4.8m, target depth. Test pit TP303 terminated at 4.8 me	tres.			>>*	
				<u>6</u>								- - -
			34	-								
	otes,	fication symt sscription on New Zeal samples, tes undisturbu disturbed bulk samg environm refusal	ools an and Ge ats ed sam ed sam sample ble ental sa	nd eotechnic pple 50mi pple 63mi e ample	al Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ↓ 10/1/98 water level on date shown ▶ water inflow water outflow	moisture D dry M moist W wet S saturated		consistency/ de VS very S soft F firm St stiff VSt very H hard	n sity inde soft stiff	X VL very loose L loose MD medium dense D dense VD very dense

C		h	6)	, 🤊							
				- y						Trial	l Pit No.	TP304
Ε	n	ginee	eri	ng	Log	- T	rial Pit			She Proi	et ect No:	1 of 1 GENZTAUC13086AK
Cli	ent:			THE		S LTL) (2012)			Date	e started:	12.12.2013
Pri	ncip	al:								Date	e completed:	12.12.2013
Pro	oject	:		STA	GE 3 -	ZONI	E 2			Log	ged by:	GJN
Tria	al pit	location:		SE (Corner	of Pr	oposed Fill Area			Che	cked by:	RBT
Equ	iipme	ent type: 20	t CAT				Pit Orientation: N-S	Easting: 369054.	.59 m		R.L. Surface:	44 m
Exc	avati	on dimensio	ons: 4 mati	.5m lor	ng 2.2m v	wide mate	Vane No: DR4523	Northing: 799276	6.71 m		Datum: x/y =	BOPC2000, z = Moturiki
ev.	Lav		mau				Material Descript	ion		×e ×e	ar Da	
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classificatic symbol	Soil name; plasticity or grading, c components. Moisture, sensitivity, s bedding, cementation, defects. Origin, a Rock name, grain size & type, colour minor components. Weathering, moist	olour, secondary strength. Structure, additional observations. , fabric, inclusions & ure, strength, defects.	moisture condition	consistency density inde	25 50 vane she 100 (remould 125 /peak) kF 175	structure and additional observations
LED FILL	V		40	- - 1 ⁻		ML	Sandy SILT, no plasticity, orange-pi	nk.	M- W	F	• × ×	
JNCONTROL	12/12/2013		_43				- water inflow, 50mm sand lense				* *	
			42	2		ML	Sandy SILT, no plasticity, orange-pi silt pocket (embankment fill). - silt pocket, orange-black, no plasti	nk, with orange-black city	-	Н	• × >>×	
NEERED FILI			_41	<u>3</u>							>>× >>×	
ENGI			40	4							>>*	
			39	5	<u>////</u> ,		EOBH @ 4.8m, target depth. Test pit TP304 terminated at 4.8 me	tres.			>> *-	
			<u>3</u> 8	<u>6</u>	-							
S	Sketo	h	1	1	•					<u> </u>		
n U	oil de based otes,	fication symbols scription on New Zeala samples, tes undisturbe	ools an and Ge ts ed sam	nd eotechnic	cal Society In m diameter	c 2005	vane shear (kPa) ● remoulded × peak ≫× peak greater than 200kPa UTP unable to penetrate water	moisture D dry M moist W wet		consi VS S F	istency/ density i r very soft soft firm	ndex VL very loose L loose MD medium dense
	63) (S	undisturbe disturbed bulk samp environme refusal	ed sam sample ental sa	nple 63m e ample	m diameter		Image: 10/1/98 water level on date shown Image: 10/1/98 water level on date shown Image: 10/1/98 water inflow Imag	S saturated		St VSt H	stiff very stiff hard	D dense VD very dense

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C	5		E	ŻY	-					Tria	l Pit N	No.		TP305	,
F	n	ninod	ri	na		_ т	rial Dit			She	eet			1 of 1	
_		Jined	711		LUY					Pro	ject N	o :		GENZTAU	C13086AK
Cli	ent:			THE		S LTL) (2012)			Dat	e star	ted:		12.12.2013	
Pri	ncip	al:								Dat	e com	npleted	:	12.12.2013	
Pro	ject	:		STA	GE 3 -	ZONI	E 2			Log	ged b	y:		GJN	
Tria	al pi	location:	0.17	Eas	tern En	d of I	Proposed Fill Area	E (1 000000)		Che	ecked	by:	. 49	RBT	
Equ	iipme avati	on dimensio	CAI	5m lon	ua 2.2m.v	vide	Vane No: DR4523	Easting: 369069.3	39 m 38 m		R.L. Datu	Sunace m:x/v ≡	: 42 m = BOPC2	000. z = Maturiki	
ех	cav	ation infor	mati	on	9 2.2	mate	rial substance	Noranny. 100000	.00 111		Dutu		201 02		
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descript Soil name; plasticity or grading, cr components. Moisture, sensitivity, s bedding, cementation, defects. Origin, a Rock name, grain size & type, colour, minor components. Weathering, moistu	ion blour, secondary trength. Structure, dditional observations. fabric, inclusions & ure, strength, defects.	moisture condition	consistency/ density index	25 50 75 vane shear 100 (remounded	125 /peak) kPa 175	ac	structure and Iditional observa	d ations
UNCONTROLLED FILL	ntered		_ <u>4</u> 1 _ <u>4</u> 0	1 		ML	Sandy SILT, non plastic, liquid limit, j brown. - some black organic pockets	oink orange, mottled	M	VSt- H	•	× × × × × × × × × × × × × × × × × × ×			
EPOSITS BT	groundwater not encou		<u>3</u> 9	<u>3</u>		OL	Organic SILT, non plastic liquid limit, - old telephone wire Sandy SILT non plastic liquid limit, bi	black.		St- Vst	•	>>×			
			37	- - 5		SM	Silty SAND, fine to medium grained, gravels of completely weathered pur EOBH @ 5.2m, target depth.	white, with cobbles & nice.			•	×			
			<u>3</u> 6	<u>6</u>			Test pit 1P305 terminated at 5.2 me	ires.							- - - -
	otes,	fication symb sscription on New Zeala samples, tes undisturbed disturbed bulk samp environme refusal	and Ge and Ge ts ed sam sample le ental sa	nd eotechnic nple 50m nple 63m e ample	al Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>> peak greater than 200kPa UTP unable to penetrate water	moisture D dry M moist W wet S saturated		Cons VS S F St VSt H	sistency v s f s v ł	r/ density very soft soft irm stiff very stiff nard	r index	VL very loo L loose MD mediun D dense VD very de	ose n dense inse

			C	7 y						Tria	l Pit	No.	-	TI	P308	
=n	יר	ninec	ri	na		Т	rial Pit			She	et			1	of 1	
		JIIICC	/ 1		LUG					Proj	ect	No:		GI	ENZTAUC130	86A
lien	nt:			THE		S LTI	D (2012)			Date	e sta	arteo	d:	10	.1.2014	
rinc	cipa	al:								Date	e co	mpl	ete	d: 10	.1.2014	
roje	ect:			STA	GE 3 -	ZON	E 2			Log	ged	by:		AF	-	
rial	pit	location:	0.47	Bas	e of Se	ction	C-C	Easting 000044	000	Che	cke	d by	/: rtaa	RE a. 07 m	B <i>T</i>	
quipi xcav	me /atio	on timensio	ns 4	5m lon	ua 2.2m.)	wide	Vane No: DR4523	Northing: 79995	.002 m 3 274 n	n	R.L	L. Su tum:	maic x/v	e: ∡/ ··· = BOPC2000), z = Maturiki	
exca	ava	ation infor	mati	on	9 2.2	mate	rial substance	Horaning. Fooooc			Du	turri.	<i>N</i> .9			
su augrapriy wotor	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descriptio Soil name; plasticity or grading, colo components. Moisture, sensitivity, str- bedding, cementation, defects. Origin, add Rock name, grain size & type, colour, fa minor components. Weathering, moisture	n ur, secondary ngth. Structure, itional observations. bric, inclusions & e, strength, defects.	moisture condition	consistency/ density index	25 50 vane shear	100 (remoulded 125 /neak) kPa	150 / pcan/ n a 175	addit	structure and ional observations	
				-		OL	Sandy SILT, no plasticity, black, organ	ic odour; sand is	D-M							-
	-		_26	 1	X X X X X X X X X X X X X X X X X X X	SW PT	Silty SAND, fine to coarse, orange bro subrounded. Dry to moist. PEAT, moderately decomposed brand approximately 75% of soil volume. Da strong organic odour.	wn, subangular to hes and logs, k brown black,	/ M- W							- - - -
			<u>2</u> 5	2 ⁻	× × × × × × × × × × × × × × × × × × ×				_					Groundwate	r inflow at 1.5m	
			_24	3	× × × × × × × × × × × × × × × × × × ×	ML	SiL I some sano, non plastic, pale gre green staining.	y white with dive								_
			_23	4 										Hard digging	j at 3.8m	_
				<u> </u>	× × × × ×	SW	SAND, some gravel, medium to coars	e, blue grey.						Easy digging	j al 4.011	_
	_						Test pit TP308 terminated at 5.5 metre	es.								
			<u>_2</u> 1	<u>6</u>												_
Ske	etc	h														
clas soil bas note U ₅₀ U ₆₃ D Bs E	ssif I de sed es, s	ication symb scription on New Zeala samples, test undisturbed disturbed disturbed disturbed bulk samp environme refusal	ols an and Ge ts ed sam ed sam sample le ental sa	d otechnic ple 50m ple 63m e ample	al Society In m diameter m diameter	nc 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ✓ ✓ 10/1/98 water level on date shown ✓ water inflow ✓ water outflow	moisture D dry M moist W wet S saturated		cons VS S F St VSt H	isten	cy/ d every soft firm stiff very harc	ensi / sofi / stiff	ty index L MD D VD	very loose loose medium dense dense very dense	

		_ f														
(OII	E	÷у						Trial	l Pit I	No.		TP30	9	
Ε	n	ainee	əri	nq	Loq	- T	rial Pit			She	et			1	of 1	
Cli	ent:			THE		S LTE) (2012)			Date	ect N	io: ited:		<u>GENZ</u> 10.1.2	014	DOAN
Pri	ncin	al.					(2012)			Date		nnlete	۰d.	10 1 2	014	
Pr	nicip			STA	GE 3 -	70NF	= 2			Log	hoor	npicie	.u.	ΔΡ	• • •	
Tri	al ni	location.		Ras	o of So	ction	 F-F			Cho	okod	bv:		DRT		
Equ	uipme	ent type: 20	t CAT	Dus			Pit Orientation: E-W	Easting: 369038.8	385 m	Che	R.L.	Surfac	35 m	КВТ		
Exc	avat	on dimensio	ons: 4	.5m lon	g 2.2m v	wide	Vane No: DR4523	Northing: 799836	.544 r	n	Datu	um: x/y	/=BOPC	2000, z = I	Moturiki	
ex	cav	ation infor	mati	on		mate	rial substance		1				1			
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descript Soil name: plasticity or grading, c components. Moisture, sensitivity, bedding, cementation, defects. Origin, a Rock name, grain size & type, colour minor components. Weathering, moist	tion olour, secondary strength. Structure, additional observations. , fabric, inclusions & ure, strength, defects.	moisture condition	consistency/ density index	25 50 75 vane shear	100 (remoulded 125 /peak) kPa 175	a	struct additional	ture and observations	
				-		OL	Sandy SILT, no plasticity, black, org	anic odour; sand is	D-M							_
			3/			300	SAND, some silt, fine to coarse, ora	nge. Dry.			×					-
				-		SW	SAND, trace silt, fine to coarse, pale moist.	e yellow brown. Dry to								
S			<u>3</u> 3	2			- Layered deposits dip parallel to sk ashes)	ope (i.e. draped								
ANIC ASHE			<u>3</u> 2	3												-
VOLC			31	4		SW	Sand, trace silt, fine to coarse, pale pumiceous.	grey. Moist,	м							-
				-												-
			_30	<u>5</u> 			- layering with yellow medium to coa limonite staining.	arse sand with	M- W				Hard dig	gging belov	w 5.0m depth	
-	•		29	6	× ×	SW	Silty SAND, fine to coarse, grey sub rounded. Wet to saturated, pumiced	angular to sub ous.								
				-			Test pit TP309 terminated at 5.8 me	tres.								_
S	6keta	ch														
r L L E F	otes,	fication symb escription on New Zeala samples, tes undisturbe disturbed bulk samp environme refusal	and Ge ts ed sam ed sam sample ble ental s	nd eotechnic nple 50m nple 63m e ample	al Society In m diameter m diameter	c 2005	vane shear (kPa) • remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ✓ 10/1/98 water level on date shown >> water inflow ✓ water outflow	moisture D dry M moist W wet S saturated		consi VS S F St VSt H	istenc	y/ densi very soft soft firm stiff very stif hard	ity index ft	VL L MD D VD	very loose loose medium dense dense very dense	

TRIAL PIT 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

Log - T LAKES LTD AGE 3 - ZONE e of Section ng 2.2m wide 00 yitte sessification NGE 3 - ZONE se of Section NGE 3 - ZONE Section	frial Pit (2012) 2 H-H Pit Orientation: E-W Vane No: rial substance Soli name; plasticity or grading, or components. Moisture, sensitivity, s bedding, cementation, defects. Origin, a bedding, cementation, defects. Origin, a size & type, colour, minor components. Weathering, moist SAND with trace gravel and cobbles angular to sub-angular, white. Dry to cobbles 60 to 80mm, pumiceous. (Refusal) (Refusal) Test pit TP310 terminated at 3 metre	Easting: 369080 Northing: 79934 ion olour, secondary tirength. Structure, dditional observations. , fabric, inclusions & ure, strength, defects.	0.399 m 0.217 n unision D-M	She Proj Date Date Logg Che xepuit/index	et ect No: e started: e complete ged by: cked by: R.L. Surfac Datum: */	1 of 1 <u>GENZTAUC13086A</u> 10.1.2014 d: 10.1.2014 GJN RBT xe: 40 m y = BOPC2000, z = Meturiki structure and additional observations
AGE 3 - ZONE a of Section a 2.2m wide mater b 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(Refusal) (Refusal) (2012) (2012) (Refusal) (Refusal) (Refusal) (Refusal) (Refusal)	Easting: 369080 Northing: 79934 ion olour, secondary itrength. Structure, didtional observations. fabric, inclusions & ure, strength, defects. , fine to medium, moist, pumiceous.	0.399 m 10.217 n condition D-M	Proj Date Date Logg Che xaput August	ect No: e started: e complete ged by: cked by: R.L. Surfac Datum: */	GENZTAUC13086A/ 10.1.2014 id: 10.1.2014 GJN RBT ve: 40 m v = BOPC2000, z = Maturiki
AGE 3 - ZONE e of Section ng 2.2m wide bo piude bo piude bo piude set set set set set set set set set se	(2012) (Easting: 369080 Northing: 79934 ion Jour, secondary tirength. Structure, dditional observations. fabric, inclusions & ure, strength, defects.	0.399 m 10.217 m uoistine condition D-M	Consistency/ consistency/ chee	started: e complete ged by: cked by: R.L. Surfac Datum: */ beatum: */ beatum: */	10.1.2014 ed: 10.1.2014 GJN RBT pe: 40 m y = BOPC2000, z = Moturiki structure and additional observations
AGE 3 - ZONE se of Section ng 2.2m wide mater bio crassing crassing sw sw sw sw sw	E 2 H-H Pit Orientation: E-W Vane No: rial substance Material Descript Solin name: plasticity or grading, or more components. Wolsture, sensitivity, s bedding, cementation, defects. Origin, a Rock name; grain size & type, colour, minor components. Weathering, moist SAND with trace gravel and cobbless angular to sub-angular, white. Dry to Cobbles 60 to 80mm, pumiceous.	Easting: 369080 Northing: 79934 ion olour, secondary trength. Structure, dditional observations. fabric, inclusions & ure, strength, defects. , fine to medium, moist, pumiceous.	0.399 m to.217 n uoistrue D-M	consistency/ biodexistency/ density index	2000 complete ged by: ccked by: R.L. Surfac Datum: */ beaty kba 100 (beaty) kba	Id: 10.1.2014 GJN RBT Se: 40 m # = BOPC2000, z = Meturiki structure and additional observations
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a of Section a 2.2m wide mater a 2.2m wide mater a 2.2m wide a 2.2m wide a 2.2m wide a 3.2m wide a 3.2m wide a 4.2m wide a 4	H-H Pit Orientation: E-W Vane No: rial substance Material Descript Soil name: plasticity or grading, or opponents. Moisture, sensitivity, s bedding, cementation, defects. Origin, a Rock name, grain size & type, colour, minor components. Weathering, moist SAND with trace gravel and cobbles angular to sub-angular, white. Dry to Cobbles 60 to 80mm, pumiceous. (Refusal) Test pit TP310 terminated at 3 metre	Easting: 369080 Northing: 79934	0.399 m IO.217 n IO.217 n IO.017 n IO.017 n IO.017 n IO.017 n IO.017 n IO.017 n IO.017 n IO.017 n	consistency/ density index	200 200 R.L. Surface 200 200 (remonided 200 (RBT we: 40 m y = BOPC2000, z = Meturiki structure and additional observations
ng 2.2m wide mater bo index crassification SW SW	Pit Onentation: E-W Vane No: rial substance Soil name: plasticity or grading, c components. Moisture, sensitivity, s bedding, cementation, defects. Origin, a Rock name, grain size & type, colour, minor components. Weathering, moist SAND with trace gravel and cobbles angular to sub-angular, white. Dry to Cobbles 60 to 80mm, pumiceous. (Refusal) Test pit TP310 terminated at 3 metre	Easting: 369080 Northing: 79934 ion Jour, secondary itrength. Structure, didtional observations. fabric, inclusions & ure, strength, defects.	0.399 m 0.217 n existance b b D-M	consistency/ density index	20 20 20 20 20 20 20 20 20 20	# = BOPC2000, z = Moturiki structure and additional observations
mate mate diag shupol symbol symbol	rial substance Material Descript Soil name; plasticity or grading, components. Molsture, sensitivity, s bedding, cementation, defects. Origin, a Rock name, grain size & type, colour, minor components. Weathering, moist SAND with trace gravel and cobbles angular to sub-angular, white. Dry to Cobbles 60 to 80mm, pumiceous. (Refusal) Test pit TP310 terminated at 3 metre	ion Jour, secondary trength. Structure, dditional observations. fabric, inclusions & ure, strength, defects. , fine to medium, moist, pumiceous.	M-D Moisture Condition	consistency/ density index	25 25 25 25 26 26 27 27 27 27 27 27 27 27 27 27 27 27 27	structure and additional observations
graphic log classification symbol	Material Descript Soil name; plasticity or grading, c components. Moisture, sensitivity, s bedding, cementation, defects. Origin, a Rock name, grain size & type, colour, minor components. Weathering, moist SAND with trace gravel and cobbles angular to sub-angular, white. Dry to Cobbles 60 to 80mm, pumiceous.	ion olour, secondary trength. Structure, dditional observations. ,fabric, inclusions & ure, strength, defects. , fine to medium, moist, pumiceous.	R moisture R condition	consistency/ density index	25 20 75 vane shear 160 (remoulded 125 /peak) kPa 175	structure and additional observations
SW	SAND with trace gravel and cobbles angular to sub-angular, white. Dry to Cobbles 60 to 80mm, pumiceous. (Refusal) Test pit TP310 terminated at 3 metre	, fine to medium, moist, pumiceous.	D-M			
		25.				Too hard to excavate with clearing bucket
cal Society Inc 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate	moisture D dry M moist		consi VS S	istency/ dens very sof	ty index t VL very loose
Ca	al Society Inc 2005 n diameter n diameter	al Society Inc 2005 n diameter n diameter n diameter N diameter Al Society Inc 2005 ■ remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water 10/1/98 water level on date shown	al Society Inc 2005 Al Society Inc 2005 n diameter n diameter	al Society Inc 2005 n diameter n diameter n diameter n diameter n diameter n diameter	al Society Inc 2005 n diameter n diameter n diameter n diameter n diameter n diameter n diameter n diameter n diameter n diameter	vane shear (kPa) moisture consistency/ density al Society Inc 2005 remoulded peak moisture D dry VS very soft M moist S soft S saturated S /ul>

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L			C	- y						Tria	al Pit	No.		TP3	11	
Ε	ng	ginee	əri	ng	Log	- T	rial Pit			Sh	eet Niect I	No.		1 GEN	of 1 7 74//C13	086 A K
Clie	ent:	-		THE		S LTL) (2012)			Da	te sta	rted:		10.1.2	2014	000/11
Prir	ncipa	al:								Da	te coi	nplete	ed:	10.1.	2014	
Pro	ject	:		STA	GE 3	ZONI	2			Lo	gged	by:		AP		
Tria	al pit	location:		Belo	w Acce	ess R	load - Section D-D			Ch	ecked	d by:		RBT		
Equ	ipme	ent type: 201	CAT				Pit Orientation: E-W	Easting: 368956.	902 m	l	R.L	Surfa	ce: 40 n	n		
Exc	avati	on dimensio	ns: 4 mati	.5m lon	g 2.2m v	vide mate	Vane No: DR4523	Northing: 799540	.004 r	n	Dat	um: »/	y = BOP	°C2000, z =	Moturiki	
	cave		mau				Material Descript	ion		Xe	ar	a d				
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classificatic symbol	Soil name; plasticity or grading, c components. Moisture, sensitivity, 4 bedding, cementation, defects. Origin, a Rock name, grain size & type, colour minor components. Weathering, moist	olour, secondary strength. Structure, additional observations. , fabric, inclusions & ure, strength, defects.	moisture condition	consistency density inde	25 50 75 vane she	100 (remould 125 /peak) kF 150 /peak) kF		strue additiona	cture and I observation	s
SITS				-		OL	Sandy SILT, no plasticity, black, org	anic odour; sand is	D-M	F						-
EPO				-		ML	Sandy SILT, no plasticity, orange. E	Dry to moist, sensitive.	1		• ×					-
TERRACE D			_39	<u>1</u> -		ML	Sandy SILT, no plasticity, pale orang Sand is fine to medium.	ge. Moist, sensitive.	M	VSt	•	×				
ALLUVIAL			<u>3</u> 8	<u>2</u>	× × × ×	SW	SAND minor silt, fine to coarse, pale	e orange. Moist to wet.	M- W	-	•×					
ASHES			<u>3</u> 7	3_		014/	CAND modium to operate rate base	muhita Majatéa wat	_							
VOLCANIC			<u>3</u> 6	4 <u></u>		511		vir winte. Woist to wet.								-
			<u>3</u> 5	5			- sand layering with pale brown fine	to coarse sand.								
			<u>3</u> 4	<u>6</u>			(Target depth) Test pit TP311 terminated at 5.4 me	tres.								
S	keto	:h	1	1												
	lace"	lication current		d			vano shear //Ba\		-							
n U B R	oil de ased otes,	samples, tes undisturbed bulk samp environme refusal	and Ge and Ge ts ed sam ed sam sample le ental sa	eotechnic nple 50mi nple 63mi e ample	al Society Ind m diameter m diameter	2005	varie Sited (Kra) ● remoulded × peak ≫× peak greater than 200kPa UTP unable to penetrate water ↓ 10/1/98 water level on date shown ▶ water inflow water outflow	moisture D dry M moist W wet S saturated		con VS S F St VS H	sistenc t	y/ dens very so soft firm stiff very sti hard	ity index ft	VL L D VD	very loose loose medium dens dense very dense	se

(of	F)	/					Tri	al Dit No		7040	_
				- 7						I FI	ai pit no.		TP312	
E	n	ginee	eri	ng	Log		Sh Pro	eet oject No:		1 of 1 GENZTAUC13086	<u>i</u> Ak			
Cli	ent:			THE		S LTL) (2012)			Da	te started:		10.1.2014	—
Pri	ncip	al:								Da	te complete	ed:	10.1.2014	
Pro	oject	t:		STA	GE 3 -	ZONI	E 2			Lo	ged by:		AP	
Tria	al pi	t location:		Bas	e of Gu	lly				Ch	ecked by:		RBT	
Equ	uipme	ent type: 20	t CAT			.,	Pit Orientation: E-W	Easting: 369019.	722 m	l	R.L. Surfa	ce: 27 m	2000 Moturiki	
ex	cav	ation aimension	mati	on	ig 2.2m v	mate	rial substance	Northing: 799614	.268 r	n	Datum: XI	у = ворс	2000, Z = MOtunki	
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descript Soil name; plasticity or grading, c components. Moisture, sensitivity, S bedding, cementation, defects. Origin, a Rock name, grain size & type, colour minor components. Weathering, moist	tion solour, secondary strength. Structure, additional observations. ; fabric, inclusions & ure, strength, defects.	moisture condition	consistency/ density index	25 50 75 100 (remoulded 125 /peak) kPa	a	structure and additional observations	
DSITS			_26 _25	1	* * * * * * * * * * * * * * * * * * * *	OL ML PT SW	Sandy SILT, no plasticity, black, org. (fine grained. (TOPSOIL) Sandy SILT, low plasticity, grey. Mo fine to medium. - increasing sand content below 0.8 staining. PEAT, dark brown black, moderately and branches. Strong organic odour SAND, trace silt, fine, grey, subroun Wet to saturated, organic inclusions	anic odour; sand is jist, sensitive. Sand is m depth, limonite y decomposed logs r. der to subangular. (approximately 20%).	W-S	VSt	• × • ×	Ground	water seepage/inflow a 1.0m	
ALLUVIAL DEPO			_24 _23	<u>3</u> 	× × × × × × × × × × × × × × × × × × ×	ML	SILT, trace sand, non plastic, grey w staining. Moist to wet.	vith blue green	M- W	-		Ground	water seepage/inflow a 3.1m	
			<u>2</u> 2	5_ 	X X X X X X X X X X X X X X X X X X X		Test pit TP312 terminated at 5.5 me	tres.				Digging	becoming hard	
S	ßket	ch												1
n L L E E F	classi soil d based lotes, J ₅₀ J ₆₃) ss	ification symb escription d on New Zeala samples, tes undisturbe disturbed bulk samp environm refusal	ools ar and Ge ts ed sam ed sam sample ble ental s	nd eotechnic nple 50m nple 63m e ample	al Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ✓ 10/1/98 water level on date shown water inflow water outflow	moisture D dry M moist W wet S saturated		Con VS S F St S H	sistency/ dens very so soft firm stiff very sti hard	i ty index ft	VL very loose L loose MD medium dense D dense VD very dense	

(2	off	F	21	, 🎙										
				_ y								No.		TP313	
Engineering Log - Trial Pit												lo:		1 GEN	of 1 ZTAUC13086AI
Cli	ent:			THE		S LTI) (2012)			Dat	e sta	rted:		10.1.	2014
Pri	ncip	al:								Dat	e cor	nplete	ed:	10.1.	2014
Pro	oject	:		STA	GE 3 -	ZONI	Ξ2			Log	ged I	oy:		GJN	
Tria	al pi	t location:		Bas	e of Gu	lly				Che	ecked	by:		RBT	
Εqι	lipme	ent type: 20	t CAT				Pit Orientation: E-W	Easting: 368998.	034 m	۱	R.L.	Surfac	xe: 28 m	1	
Exc ex	avat cav	ion dimension ation info	ons: 4 r mat i	1.5m lor i on	ig 2.2m v	wide mate	Vane No: DR4523	Northing: 799758	3.139 ı	m	Dati	lm: x/)	/= BOP(C2000, z =	= Moturiki
ž				_		Б	Material Descript	tion		ex	ear	Pa Pa			
stratigraph	water	notes samples, tests, etc	RL	depth metres	graphic loç	classificati symbol	Soil name; plasticity or grading, c components. Moisture, sensitivity, bedding, cementation, defects. Origin, a Rock name, grain size & type, colour minor components. Weathering, moist	colour, secondary strength. Structure, additional observations. r, fabric, inclusions & ture, strength, defects.	moisture condition	consistenc density ind	s vane sh	00 (remould 25 /peak) k 75		stru additiona	cture and al observations
				-	$\rightarrow \rightarrow \rightarrow \rightarrow$	OL	Sandy SILT, no plasticity, black, org	anic odour; sand is	М	F-St					
				-		ML	Silty SAND, fine, grey brown. Moist,	minor limonite			•×				-
			27	1			Sandy SILT trace gravel, non plastic	c, grey brown. Wet,							_
				-	(x x x x x x x x x x x x x x x x x x x		innorme stammig, rootiets (inne), grav								-
SITS			00		$\begin{pmatrix} & \times & \times & \times \\ & \times & \times & \times \\ & \times & \times & \times$										-
			_20	-							• ×				
VIAL	-			-	$\begin{array}{c} \times \times \times \\ \times \times \times \\ \times \times \times \end{array}$	0.14	- becoming wet to saturated at 2.5r	n depth.			•		Groun	dwater se	- epage/inflow a 2.5m
ALLU			<u>2</u> 5	3	$\begin{pmatrix} \times & \times \\ & \times & \times \\ & & \times & \times \end{pmatrix}$	500	Silty SAND, trace gravel, fine to coa and orange staining. Saturated, gravely and orange staining.	rse, white with brown vels are fine to							-
-				-	$(\hat{x} \times \hat{x} \times \hat{x})$		medium, pumiuceous. - becomes pale yellow white at 3.0r	n							-
					$\begin{pmatrix} & \times & \times \\ & \times & \times \\ & & & \times \end{pmatrix}$										-
			24	4	$(\times \ \times \$										-
				-	× × ×	sw /	Silty SAND, some gravel, fine to me	dium, blue grey.							
			<u>2</u> 3	5	-		Staurated. (Target depth)	, , ,	/						-
				-	-		Test pit TP313 terminated at 4.6 me	etres.							-
					-										-
			22		-										
				-	-										
S	Sket	ch													
	lassi	fication syml	ools ar	nd			vane shear (kPa)								
ł	boll d	on New Zeal	and Ge	eotechnic	al Society In	c 2005	remoulded x peak x peak greater than 200kPa	moisture		cons	sistenc	y/ densi	ity index	VI	very loose
n L	otes, I ₅₀	samples, tes undisturb	ed san	ple 50m	m diameter		UTP unable to penetrate	M moist W wet		S F		soft firm	-	L MD	loose medium dense
	1 ₆₃	undisturb disturbed	ed san sampl	nple 63m e	m diameter		10/1/98 water level	S saturated		St VSt		stiff very stif	f	D VD	dense very dense
E	s	environm	ole ental s	ample			 water inflow water outflow 			Н		hard			
F		reiusai													

L				7 y						Tria	al Pit No.	TP3	14	
Engineering Log - Trial Pit											eet	1 of 1		
Cli	ent [.]	<i>.</i>) (2012)			Pro	oject No:	<u> </u>	21AUC13080AF 2014	
Dri	oni.	al·				0 2 7 2	(2012)			Da	te scanteu.	d. 10.1	2014	
Dre	ncipi			STA	GE 3 -		= 2				and by:	Δ Δ	2074	
Tri	Ject al nit	-		Bac	o of Gu	2011				Ch	ggeu by.			
Εαι	ai pit jipme	ent type: 20	t CAT	Das	e or Gu	iiiy	Pit Orientation: E-W	Easting: 36903	5.352 m	Ch	R.L. Surfac	KDI		
Exc	avati	on dimensio	ons: 4	.5m lon	g 2.2m v	wide	Vane No: DR4523	Northing: 79967	′5.712 r	n	Datum: x/y) = BOPC2000, z =	Moturiki	
ex	cava	ation info	rmati	on		mate	rial substance				_	1		
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descrip Soil name; plasticity or grading, o components. Moisture, sensitivity, bedding, cementation, defects. Orgin, Rock name, grain size & type, colou minor components. Weathering, mois	tion colour, secondary strength. Structure, additional observations. r, fabric, inclusions & ture, strength, defects.	moisture condition	consistency/ density index	vane shear (c) (c) (c) (c) (c) (c) (c) (c) (c) (c)	stru additiona	cture and I observations	
			07	- - -		OL ML	Sandy SILT, no plasticity, black, org (fine grained. (TOPSOIL) Sandy SILT, nonplastic, brown. Moi	anic odour; sand is st, some rootlets.	M	F-St	• * • * • *		-	
			27	-		ML	SIL I, minor sand, low plasticity, bro Sandy SILT, non plastic, pale grey w Moist to wet, sensitive.	wn. Moist to wet. with orange staining.	— W-	VSt	* ×			
DEPOSITS		2	<u>_2</u> 6	2		-					• ×	× Groundwater see	- 	
			<u>_2</u> 5	3		-							- - -	
			_24	<u>4</u>		ML	Sandy SILT, non plastic blue grey.	Wet, sands fine.	S					
			<u>_2</u> 3	5		SM	Silty SAND, fine to coarse, grey blue	e, subangular. Wet.						
			<u>_2</u> 2	6		GW	Gravelly SAND, tine to coarse, dark brown staining, Angular gravel. (Target depth) Test pit TP314 terminated at 5.5 me	grey green with						
S	Sketc	ch												
	classif soil de pased lotes, J ₅₀ J ₆₃) 3s	fication symb sscription on New Zeak samples, tes undisturbu disturbed bulk samp environmu refusal	ools an and Ge ts ed sam ed sam sample ble ental sa	nd eotechnic nple 50mi nple 63mi e ample	al Society In m diameter m diameter	ic 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water 10/1/98 water level on date shown ▶ water inflow water outflow water outflow	moisture D dry M moist W wet S saturated		Con VS S F St VS H	sistency/ densi very sof soft firm stiff t very stif hard	ty index t VL MD D f VD	very loose loose medium dense dense very dense	

(off	Fe)	, 🥊					Trie	ol Dit I	No			
Ē	n	nine	eri	na	Loa	- Trial Pit					eet	INU.	1	1P315	1
		<u> </u>		···ອ 		• • •				Pro	oject N	NO:		GENZTAUC13086AK	
Cli	ent:			INC	LANE	SLIL) (2012)			Da	te sta	rtea:		24.1.2014	
Pri	ncip	al:		_	_	_				Dat	te con	nplete	d: 2	24.1.2014	l.
Pro	oject	:		STA	GE 3	ZON	E 2			Log	gged I	by:		KMJ	
Tri	al pi	location:		Bas	e of Gu	lly				Ch	ecked	l by:		RBT	
Equ	iipme	ent type: 20	t CAT				Pit Orientation: E-W	Easting: 369052	.664 m		R.L.	Surfac	e: 29 m	M -tu	
Exc	avati cav	on dimension ation infor	ons: 3 rmati	m long on	1.5m wid	de mate	vane No: SL588	Northing: 79961	5.101 r	n	Datt	um: x/y	= BOPC20	000, z = Motur	iki
tratigraphy	vater	notes samples,	DI	lepth netres	rraphic log	lassification ymbol	Material Descrip Soil name; plasticity or grading, c components. Moisture, sensitivity, bedding, cementation, defects. Origin, a Rock name, grain size & type, color minor components. Weathering, moist	tion colour, secondary strength. Structure, additional observations. r, fabric, inclusions & ture, strength, defects.	noisture ondition	onsistency/ ensity index	vane shear	vane shear (remoulded /peak) kPa		structure a ditional obse	and rvations
TS s	>	tests, etc	RL	-	23	OL	Organic SILT, no plasticity, black, ro (TOPSOIL).	ootlets, organic odor	M	F-St	25 50 75	1220			
			<u>2</u> 8.5	0.5		ML	Sandy SILT, non to low plasticity, whe mottles, sand is fine grained.	hite-grey, orange			• × • ×				
⊢			<u>2</u> 8.0	1.0							• ×				-
AL DEPOSI			<u>2</u> 7.5	1. <u>5</u>	1.5 × × × × × × × × × × × × × × × × × × ×										
ALLUVI	2014 📍		<u>_2</u> 7.0	2. <u>0</u> -			- becoming orange-brown with oran	ge mottling	M- W	-					-
	23/01/		<u>2</u> 6.5	2.5							•×				-
			26.0	3.0-		SP	SAND, fine grained, grey.								
			<u>2</u> 5.5	3. <u>5</u> -			EOBH @ 3.0m, target depth. TS= TOPSOIL Test pit TP315 terminated at 3 metr	es.							
															-
			25.0	4.0											
r L L E E F	otes,	fication symbols escription on New Zeals samples, tes undisturbe disturbed bulk samp environmor refusal	ools an and Ge ts ed sam ed sam sample ble ental sa	d otechnic ple 50m ple 63m e ample	al Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water	moisture D dry M moist W wet S saturated		Con VS S F St VSi H	sistenc t	y/ densit very soft soft firm stiff very stiff hard	y index L I I	/L very - loos MD med D dens /D very	loose e ium dense se dense

TRIAL PIT 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

C		off	6)	/ 🌒												
				- y						Tria	l Pit	t No).	TP316			
Ε	n	ainee	eri	na	Loa	- T	rial Pit			She	et			1 of 1			
		<u></u>		··э тис		י פודו				Proj	ect	No:		GENZTAUC13086AM			
	ent:			186		5 L 11	<i>(2012)</i>			Date	e sta	аπе	a:	10.1.2014			
Pri	ncip	al:								Date	e co	omp	lete	d: 10.1.2014			
Pro	oject	:		STA	GE 3 -	ZON	E 2			Log	ged	by:		AP			
Tria	al pi	t location:		Bas	e of Gu	illy, N	lorth of Sediment Pond			Che	cke	d b	y:	RBT			
Equ	lipme	ent type: 20		5m lon	a 2.2m	vido	Pit Orientation: E-W	Easting: 369036.	.594 m	•	R.I Da	L. SL	intac · v/v	18:32 m ⊭ = BOBC3000			
ex	cav	ation info	mati	on	ig 2.2111 v	mate	rial substance	Norunny. 799466	0.440 H	1	Ba	lenn	. ∧∉y	- B9F92000; 2 - MORINKI			
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descriptio Soil name; plasticity or grading, colo components. Moisture, sensitivity, stre bedding, cementation, defects. Origin, add Rock name, grain size & type, colour, fe minor components. Weathering, moisture	n ur, secondary ength. Structure, itional observations. bric, inclusions & e, strength, defects.	moisture condition	consistency/ density index	25 50 vane shear	(in the second s	50 /peak) KPa	structure and additional observations			
				-		OL	Sandy SILT, no plasticity, black, organ fine grained. (TOPSOIL)	ic odour; sand is	М	St				-			
			<u>3</u> 1	- <u>1</u> _ - -		SW	SAND some silt, fine to coarse, pale b SAND some silt, fine to coarse, pale b saturated. Limonite staining	rown. Moist to wet.	M- W W-S		• × •×						
VIAL DEPOSITS			<u>3</u> 0	2 ⁻		ML	Silty SAND with some minor clay, fine subrounded to subangular. Pale grey.	to coarse,	_					Hole collapsing below 2.0m depth			
ALLU			<u>_29</u> _ <u>28</u>	<u> </u>			- becoming pale brown, increasing fin staining.	es content, limonite									
			27	5			- becoming sandy fine to coarse, trac grey.	e fine gravels, pale						Groundwater seepage/inflow a 4.0m			
				-	-		(Target depth) Test pit TP316 terminated at 5 metres										
			<u>_2</u> 6	<u>6</u> -	-												
S	6keto	ch															
n U U B B F	otes,	fication symbols escription on New Zeala samples, tes undisturbe disturbed bulk samp environm refusal	ools an and Ge ts ed sam ed sam sample ole ental sa	nd eotechnic aple 50m aple 63m e ample	cal Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water 10/1/98 water level on date shown water inflow water outflow	moisture D dry M moist W wet S saturated		cons VS S F St VSt H	isten	ver sof firm stift ver har	lensi y sof t f y stiff	ty index t VL very loose L loose MD medium dense D dense f VD very dense			
		_															
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C	7		E	₹y	-					Tria	l Pi	t No	0.		TP3	17	
F	n	ninoc	ri	na		т	rial Dit			She	et				1	of 1	
	I Q	Jined	711		LUY	- 1				Pro	ject	No):		GEN	ZTAUC13	086AK
Cli	ent:			THE		S LTI	D (2012)			Dat	e st	tarte	ed:		24.1.2	2014	
Pri	ncip	al:		0-1						Dat	ec	omp	plete	ed:	24.1.2	2014	
Pro	ject			SIA	GE 3 -	ZON	E Z			Log	geo	1 by 	/:		KMJ		
E ria		nt type: 20	CAT	Bas	e of Gu	iiiy	Pit Orientation: E-W	Fasting: 368954	447 m	Che	R.	ed b	oy: Surfac	ae: 28 m	RBI		
Exc	avati	on dimensio	ons: 1	0m long	g 1.5m w	vide	Vane No: SL588	Northing: 799697	′.977 r	n	Da	atum	n: x/y	/ = BOP(22000, z =	Moturiki	
ех	cava	ation infor	mati	on		mate	erial substance					- 70					
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descriptic Soil name; plasticity or grading.col components. Moisture, sensitivity, str bedding, cementation, defects. Origin, ad Rock name, grain size & type, colour, f minor components. Weathering, moistur	on bur, secondary ength. Structure, ditional observations. abric, inclusions & e, strength, defects.	moisture condition	consistency/ density index	25 50	75 vane snea 100 (remoulder	¹²⁵ /peak) kPa ¹⁷⁵		strue additiona	cture and I observation	s
TS				-		ML	Sandy SILT, no plasticity, black, organ sand is fine grained (TOPSOIL).	nic odor, rootlets;	D-M	F-St							-
đ			<u>2</u> 7.5	0.5	(\times,\times)	SM	Silty SAND, fine to coarse grained, or sub-angular.	agne-brown,	1		•×						-
È				=		OL	Organic SILT, no plasticity, black, orga	anic odor, with tree	-								_
			<u>2</u> 7.0	1.0			branches & organic inclusions (PEAT)).			•	×					-
F				-													-
PE			<u>2</u> 6.5	1.5								×					-
	•			-													1
	/2014		<u>2</u> 6.0	2.0-													-
Ą	23/01			-	$\begin{pmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{pmatrix}$	ML	Sandy SILT/Silty SAND, no plasticity, staining; sand is fine grained, abunda	white-grey, orange nt tree branches.	W-S								-
			<u>2</u> 5.5	2.5			EOBH @ 2.3m, target depth. TS= TOPSOIL										_
				-	-		AD= ALLUVIAL DEPOSITS Test pit TP317 terminated at 2.3 metri	es.									-
			<u>2</u> 5.0	3.0_													
				-	-												-
			<u>2</u> 4.5	3. <u>5</u>													-
				-	-												-
			24.0	4.0-													_
5	sketo	h															
n U U E F	otes,	fication symbody sscription on New Zeala samples, tes undisturbe disturbed disturbed bulk samp environme refusal	ools an and Ge ts ed sam ed sam sample ble ental sa	d otechnic ple 50m ple 63m e ample	cal Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ✓ 10/1/98 water level on date shown ▶ water inflow ✓ water outflow	moisture D dry M moist W wet S saturated		cons VS S F St VSt H	ister	ncy/ ve so fin sti ve ha	densi ery sof oft m iff ery stif ard	t y index t	VL L D VD	very loose loose medium den dense very dense	6e

TRIAL PIT 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

		- fi										
C	5		IE	ŻY						Tria	l Pit No.	TP318
F	n	ninod	ri	na		_ т	rial Dit			She	et	1 of 1
		Jine	711		LOG	- 1				Proj	ect No:	GENZTAUC13086AK
Cli	ent:			IHE		SLIL) (2012)			Date	e started:	24.1.2014
Pri	ncip	ai:		стл	CE 2	701	= 0			Date	e completed:	24.1.2014 Km I
Pro	oject			SIA	GE 3 - o of Gu		= Z Stroam Edgo			Log	gea by:	
Equ	lipme	ent type: 20	t CAT	Das	e 0/ 00	<i>y</i> - 、	Pit Orientation: E-W	Easting: 368974.0	098 m	Cile	R.L. Surface:	28 m
Exc	avati	on dimensio	ons: 1	9m lon	g 1.5m w	vide	Vane No: SL588	Northing: 799679	.552 m	ı	Datum: x/y = l	90PC2000, z = Moturiki
ex	cav	ation info	rmati	on		mate	rial substance Material Description			_ ×	a ad	
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classificatior symbol	Soil name; plasticity or grading, colou components. Moisture, sensitivity, stre bedding, cementation, defects. Origin, addi Rock name, grain size & type, colour, fal minor components. Weathering, moisture	ur, secondary ngth. Structure, tional observations. pric, inclusions & , strength, defects.	moisture condition	consistency/ density inde	25 50 vane shea 100 (remoulde 125 /peak) kP 175	structure and additional observations
TS				-		ML	Sandy SILT, no plasticity, organic odor fine to medium grained (TOPSOIL).	, rootlets, sand is	M- W	St		-
			27.5	0.5	× × × ×	ML	Sandy SILT, non to low plasticity, pale-	grown, with peat				-
				-		OL	Organic SILT, no plasticity, black, with staining some fine sand	brown & grey	1	F		
EAT			27.0	1.0						1	• ×	1
ſ				-						ľ	•×	
			26.5	1.5								-
				-	× × × × × × × × × × × × × × × × × ×	ML	SILT, low plasticity, grey-white, abunda minor fine sand.	nt tree branches,	w	St		
₹	2014		26.0	2.0	× × × × × × × × × × × × × × ×							-
	23/01/			-			EOBH @ 2.0m, target depth. TS= TOPSOIL					-
			25.5	2.5			AD= ALLUVIAL DEPOSITS Test pit TP318 terminated at 2 metres.					-
				-								
			25.0	3.0-								
				-								-
			24.5	3.5								-
				-								
			24.0	4.0								-
s	sketo	h										
n L L E F	otes, solased	fication symt scription on New Zeala samples, tes undisturbe disturbed bulk samp environme refusal	ools an and Ge its ed sam ed sam sample ble ental sa	eotechnic aple 50m aple 63m e ample	al Society In m diameter m diameter	ic 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ✓ 10/1/98 water level on date shown ▶ water inflow ✓ water outflow	moisture D dry M moist W wet S saturated		cons VS S F St VSt H	istency/ density ir very soft soft firm stiff very stiff hard	ndex VL very loose L loose MD medium dense D dense VD very dense

	_		C	7 y						Tria	I Pit No.	TP319
F	n	ninee	riı	na	l ou	- T	rial Pit			She	et	1 of 1
<u> </u>		<u>, , , , , , , , , , , , , , , , , , , </u>	/				- (2042)			Proj	ject No:	GENZTAUC13086A
	ent:	-1.		INE	LANE	SLII	<i>J</i> (201 <i>2</i>)			Date	e started:	24.1.2014
-rir	ncip	ai:		ота	CE 2	701	E 2			Date	e completed:	24.1.2014 KM I
-ro Tric	Ject			SIA	GE 3 o of Gu		= Z Stroam Edgo			Log	ged by:	
Equ	lipme	ent type: 20	CAT	Das	e or Gu		Pit Orientation: E-W	Easting: 368998.	748 m	Che	R.L. Surface: 2	26 m
Exc	avati	on dimensio	ons: 8	m long	1.5m wid	de	Vane No: SL588	Northing: 799633	8.397 n	n	Datum: x/y = E	00PC2000, z = Moturiki
ex	cava	ation infor	mati	on		mate	erial substance	tion		. ×	a ga	
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classificatior symbol	Soil name; plasticity or grading, components. Moisture, sensitivity, bedding, cementation, defects. Origin, Rock name, grain size & type, colou minor components. Weathering, mois	solour, secondary strength. Structure, additional observations. r, fabric, inclusions & ture, strength, defects.	moisture condition	consistency/ density inde	25 50 75 70 100 (remoulde 125 /peak) kP	structure and additional observations
TS				-		OL	Sandy SILT, no plasticity, rootlets, d organic odor, some fine sand (TOP	lar-brown to black, SOIL).	М	St		_
Р			<u>2</u> 5.5	0.5	** * **	OL	Organic SILT, no plasticity, black, or	rganic odor.				-
				-		ML	Sandy SILT, non to low plasticity, pa sand is fine grained.	ale orange-brown,	M- W		•	-
F			<u>2</u> 5.0	1.0_		ML	Sandy SILT, low plasticity, pale grey tree branches.	/-white; minor clay,	W			-
EPOS	►-			-			- orange staining					-
IAL DI	1/2014		<u>2</u> 4.5	1.5							• ×	-
LLUV	23/0			-								-
A			<u>2</u> 4.0	2.0	$\begin{pmatrix} \times & \times \\ \times & \times \end{pmatrix}$	SM	Silty SAND, fine to medium grained tree branches.	l, blue-grey, abundant				
				_	$\begin{pmatrix} \times & \times \\ & \times & \times \\ & & & & & \\ & & & & &$							-
			<u>2</u> 3.5	2. <u>5</u> _			EOBH @ 2.3m, target depth. TS= TOPSOIL					-
				-			Test pit TP319 terminated at 2.3 me	etres.				-
			<u>2</u> 3.0	3.0_								-
				-								-
			<u>2</u> 2.5	3.5_								-
				-								-
			22.0	4.0-								-
c s b n U U D	oil de based otes,	fication symbols scription on New Zeala samples, tes undisturbe disturbed bulk comm	and Ge ts ed sam ed sam	d otechnic ple 50mr ple 63mr	al Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak ≫× peak greater than 200kPa UTP unable to penetrate water ↓ 10/1/98 water level on date shown	moisture D dry M moist W wet S saturated		cons VS S F St VSt	istency/ density in very soft soft firm stiff very stiff	dex VL very loose L loose MD medium dense D dense VD very dense

TRIAL PIT 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

		ОП	E	Ż						Tria	al Pi	t Nc).	TP3	320	
E	ng	ginee	eri:	ng	Log	- T	rial Pit			She	eet	No			of 1	196 A K
Cli	ent [.]	<u> </u>		THE		S L TI) (2012)			Dat	iject le st	arte	: ed:	GEN 24.1	2014	JOUAN
Pri	ncin:	al.					()			Dai	le m	h	leted.	24 1	2014	
Pr	niect			STA	GF 3 -	70NI	= 2			Loc		i hv		 KM.	 I	
Tri	ol nit	location:		Rac			 Stroam Edgo			Ch)ycc	- Uy.		DB1	-	
Εαι	uipme	ent type: 20	t CAT	Dus	01 00	<i></i>	Pit Orientation: E-W	Easting: 369003.	944 m		R.	L. SI	urface:	26.5 m		
Exc	avati	on dimensio	ons: 8	m long	1.5m wid	de	Vane No: SL588	Northing: 799553	3.254 ı	m	Da	atum	: x/y = l	BOPC2000, Z	= Moturiki	
ex	cava	ation info	mati	on		mate	rial substance									
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descrip Soil name; plasticity or grading, components. Moisture, sensitivity, bedding, cementation, defects. Origin, Rock name, grain size & type, colou minor components. Weathering, mois	tion colour, secondary strength. Structure, additional observations. r, fabric, inclusions & ture, strength, defects.	moisture condition	consistency/ density index	25 50 vono choor	75 Valle silear 100 (remoulded	175 /peak) kPa	str additior	ucture and aal observations	
TS			26.0	0.5	×××××	OL	Sandy SILT, no plasticity, sand is fir odor, rootlets (TOPSOIL). - becoming pale orange-brown	ne to medium, organic	М	St	•	×				
TS			20.0			OL	SILT, low plasticity, creamy orange- specks, orange mottles; minor fine Organic SILT, no plasticity, black.	brown, minor black sand.	_		•	×				
VL DEPOSI			_25.5	1. <u>0</u> - - -		ML	Sandy SILT, no plasticity, grey. - brown, black staining, sand is fine	grained.	M- W		•	×				
	01/2014		25.0	1. <u>0</u> - - 2.0-		ML	Sandy SILT/Silty SAND, non to low to blue-grey, sand is fine grained. - increasing sand content	plasticity, white-grey	W		•	×				
	23/		_24.5	2.0	X X X X X X X X		EOBH @ 2.2m, target depth.									
			<u>2</u> 4.0	2.5			Test pit TP320 terminated at 2.2 me	etres.								
			<u>_2</u> 3.5	3. <u>0</u> - -	-											-
			<u>2</u> 3.0	3.5	-											
			22.5	4.0												
r U U E E F	classif soil de based notes, J ₅₀ J ₅₃ S S S	fication symbols escription on New Zeala samples, tes undisturbed disturbed disturbed bulk samp environmer refusal	and Ge and Ge ts ed sam ed sam sample ble ental sa	d otechnic ple 50m ple 63m ample	al Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ↓ 10/1/98 water level on date shown ↓ water inflow water outflow	moisture D dry M moist W wet S saturated		Cons VS S F St VSt H	sister	n cy/ c ver sof firm stif ver har	density ir ry soft ft n f f ry stiff rd	ndex VL MD D VD	very loose loose medium dense dense very dense	e

TRIAL PIT 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

		A ff	E														
C	7		IE	ŻY						Tria	l Pit	Nc).		TP3	21	
F	n	ninod	ri	na		_ т	rial Dit			She	et				1	of 1	
		Jine	<i>,</i>		LUG	- 1				Pro	ject	No			GEN	ZTAUC1	<u>3086AK</u>
Clie	ent:			THE		S LTL	D (2012)			Dat	e sta	arte	d:		24.1.2	2014	
Pri	ncipa	al:								Dat	e co	mp	lete	ed:	24.1.	2014	
Pro	ject	:		SIA	GE 3 -	ZONI	= 2			Log	ged	by:			KMJ		
l ria Equ	al pit	t location:	t CAT	Bas	e of Gu	liiy - 3	Pit Orientation: E-W	Easting: 368996	81 m	Che	ecke R I	d b Si	y: urfac	yea∙ 20am	RBI		
Exc	avati	on dimensio	ons: 5	im long	1.5m wie	de	Vane No: SL588	Northing: 799497	7.73 m		Da	tum	: x/y	/ = BOPC	2000, z =	Moturiki	
ex	cava	ation info	rmati	on		mate	rial substance					77					
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descript Soil name: plasticity or grading, or components. Moisture, sensitivity, s bedding, cementation, defects. Origin, a Rock name, grain size & type, colour, minor components. Weathering, moist	ion blour, secondary trength. Structure, dditional observations. fabric, inclusions & ure, strength, defects.	moisture condition	consistency/ density index	25 50 75 vane shear	100 (remoulded	150 /peak) KPa 175		strue additiona	cture and I observatio	าร
τs				-	()))	OL	Organic SILT, no plasticity, black (TO	OPSOIL).	М	St							-
			28.5	0.5	× × × ×	OL	Sandy SILT, no plasticity, grey, orga	nic odor, rootlets.			•	×					-
				-	$\begin{pmatrix} & & & & \\ & \times & \times \\ & & \times & \times \end{pmatrix}$	SM	Silty SAND, fine to medium grained, medium grained, black staining, tree	grey-white, fine to branches, organic						hole co	llapsed fro	om 0.5m, no	stable _
ş			28.0	1.0	$(\times		odor.										-
OSIT				-		ML	Sandy SILT, no plasticity, grey-white	, orange staining.									-
LDE			27.5	1.5													-
AINU-				-													-
ALL			27.0	2.0	(x)												-
			26.5	2.5	$\begin{array}{ccccc} \times & \times & \times \\ & \times & \times & \times \\ \times & \times & \times & \times$												-
	014		20.0				EOBH @ 2.5m, target depth. TS= TOPSOIL										
	8/01/20		26.0	30-			Test pit TP321 terminated at 2.5 me	tres.									-
	23		20.0	-													
			25.5	3.5													-
			<u>_</u> 20.0	-													
			25.0	4 0-													
s	keto	h	20.0	1.0		I	L										
n U B B R	lassif oil de ased otes, 50 63 S	fication symbols sscription on New Zeala samples, tes undisturbe disturbed bulk samp environme refusal	ools an and Ge its ed sam ed sam sample ble ental sa	eotechnic aple 50m aple 63m e ample	al Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ✓ 10/1/98 water level on date shown ▶ water inflow ✓ water outflow	moisture D dry M moist W wet S saturated		Cons VS S F St VSt H	isten	ver sof firn stif ver har	lensi Ty sof t f Ty stiff	t y index t	VL L D VD	very loose loose medium de dense very dense	ise

_		h			, 🥑						
L			C	-y						Trial Pit No.	TP322
E	ng	ginee	eri	ng	Log	- T	rial Pit			Sheet Project No:	1 of 1 GENZTAUC13086AK
Cli	ent:			THE	LAKE	S LTL) (2012)			Date started:	24.1.2014
Pri	ncip	al:								Date completed:	24.1.2014
Pro	oject	:		STA	GE 3 -	ZONI	E 2			Logged by:	КМЈ
Tri	al pit	location:		Bas	e of Gu	lly - S	Stream Edge			Checked by:	RBT
Equ	uipme	ent type: 20	t CAT			_	Pit Orientation: E-W	Easting: 368957.	893 m	R.L. Surface:	28 m
Exc	avati	on dimensio	ons: 8	m long	1.5m wid	de	Vane No: SL588	Northing: 799432	2.837 n	n Datum: x/y =	BOPC2000, z = Moturiki
ex	cav	ation info	mati	on		mate	rial substance	41a -		x HD a	
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classificatior symbol	Soil name; Jasticity or grading, components. Moisture, sensitivity, bedding, cementation, defects. Origin, Rock name, grain size & type, colou minor components. Weathering, mois	tion solour, secondary strength. Structure, additional observations. r, fabric, inclusions & ture, strength, defects.	moisture condition	consistency/ density inde: 25 05 vane shez 76 100 (remoulde 125 175 175 175	structure and additional observations
TS				-		OL	Sandy SILT, no plasticity, pale grey rootlets (TOPSOIL). becoming black, with grey staining	-brown, organic odor,	М	F-St ●×	-
	untered		<u>2</u> 7.5	0. <u>5</u>		ML	Sandy SILT, no plasticity, pale brow pockets; sand is fine.	n, occasional organic	M- W	• ×	
SITS	encol		<u>2</u> 7.0	1. <u>0</u> -		MI	SILT no plasticity grey-white some	fine sand trace clay	W	VSt • ×	-
ЕРО	er not			-			OLET, NO plasticity, grey white, some	, inte sand, indee oldy.			-
IAL D	idwate		<u>2</u> 6.5	1. <u>5</u> ⁻	× × × × × × × × × × × × × × × × × × × ×					• ×	-
LLUV	groun			-	× × × × × × × × × × × × × × × ×						-
A			26.0	2.0	* * * * * * *						-
				-							
			0F F	25-	× × × × × × × × × ×		EOBH @ 2.3m, target depth.				
			<u>_</u> 25.5	2. <u>5</u>	-		TS= TOPSOIL Test pit TP322 terminated at 2.3 m	etres.			
				-							
			<u>2</u> 5.0	3.0							_
				-	-						-
			<u>2</u> 4.5	3. <u>5</u> _	-						-
				-							-
			24.0	4.0-	-						-
r L L E F	classi soil de pased otes, J ₅₀ J ₆₃) ss	fication symbols escription on New Zeala samples, tes undisturbe disturbed bulk samg environme refusal	ools an and Ge ts ed sam ed sam sample ble ental sa	d otechnic ple 50m ple 63m ample	cal Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>> peak greater than 200kPa UTP unable to penetrate water 10/1/98 water level on date shown > water inflow water outflow	moisture D dry M moist W wet S saturated		Consistency/ density i VS very soft S soft F firm St stiff VSt very stiff H hard	ndex VL very loose L loose MD medium dense D dense VD very dense

L	7		E	ŻY						Tria	al F	Pit N	۱o.			TP 323	3	
Ε	ng	ginee	əri	ng	Log	- T	rial Pit			She	eet						of 1	006 1
Clie	ent:			THE		S LTI	D (2012)			Pro Dat	jec te s	star	tec	1:		<u>GENZ</u> 24.1.20	AUCT3	000AI
Prir	ncip	al:					- ()			Dat	te d	com	npl	eted:		24.1.20)14	
Pro	ject	:		STA	GE 3 -	ZON	E 2			Log	jge	ed b	y:			KMJ		
Tria	al pit	location:		Bas	e of Gu	lly -	Stream Edge			Che	eck	ked	by	:		RBT		
Equ	ipme	ent type: 20	t CAT				Pit Orientation: E-W	Easting: 369015.	603 m		F	₹.L.	Su	face:	28 m			
	avati	on dimension	ons: 3 mati	m long	1.5m wid	de mate	Vane No: SL588	Northing: 799707	7.456 r	n	Ę	Datu	m:	x/y =	BOPC2	000, z = M	oturiki	
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	Material Descriptio Soil name; plasticity or grading, colo components. Moisture, sensitivily, stre bedding, cementation, defects. Origin, add Rock name, grain size & type, colour, fa minor components. Weathering, moisture	n ur, secondary ngth. Structure, titonal observations. bric, inclusions & , strength, defects.	moisture condition	consistency/ density index	5 2	vane shear	25 (neak) kPa	75	ac	structu Iditional o	ire and bservations	5
TS				-		OL	Organic SILT, no plasticity, black, rootl (TOPSOIL)	ets, organic odor	м	F-St								_
			07 E	0.5-		ML	Sandy SILT, low plasticity, creamy oral brown, sand is fine grained.	nge mottling, pale	1		•	×						
			<u>_</u> 21.5	0.0	× × × × • × × × • × × ×	SM	Silty SAND, fine grained, white-grey.		M-									
			27.0	- 1 0	$(\hat{x} \times \hat{x} \times \hat{x})$, , , , , , , , , , , , , , , , , , ,		W									-
s			21.0	-	$\begin{pmatrix} & \times & \times \\ & \times & \times \\ & & \times & \times \\ & & & &$													
Posi			26.5	15	$\begin{pmatrix} \times & \times \\ & \times & \times \end{pmatrix}$													-
LDE			20.5	-	$\begin{pmatrix} \times & \times \\ & \times & \times \\ & \times & \times \end{pmatrix}$													
			26.0	20-	<``X`X X`X													-
AL	14		<u>_2</u> 0.0	- 2.0	$\begin{pmatrix} & \times & \times \\ & \times & \times \\ & & \times & \times \end{pmatrix}$													-
	/01/20		05.5	25-	$\left\langle \times \right\rangle \times \left\langle \times \right\rangle \times \left\langle \times \right\rangle$													-
	23		<u>_</u> 25.5	2. <u>9</u>	$\begin{pmatrix} \times & \times \\ & \times & \times \\ & & \times & \times \end{pmatrix}$													-
			05.0	3 0-	<^													
			25.0	- 3.0	(XX.		EOBH @ 3.0m, target depth.				•	×						
			04.5	35-			Test pit TP323 terminated at 3 metres.											
			24.5	J. <u>J</u>														
			04.0															
s	keta	:h	24.0	4.0														
c s b n U	lassi oil de ased otes,	fication symb escription on New Zeala samples, tes undisturbe disturbed	ools an and Ge ts ed sam ed sam	otechnic ple 50mi ple 63mi	al Society In m diameter m diameter	c 2005	vane shear (kPa) ● remoulded × peak >>× peak greater than 200kPa UTP unable to penetrate water ♥ 10/1/98 water level	moisture D dry M moist W wet S saturated		cons VS S F St	sist	ency v s f	// de /ery soft irm stiff	ensity i soft	index	VL L D D	very loose loose medium dens dense very dosso	e

TRIAL PIT 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

C			C	₹y						Hand	Auge	er No).	HA	1304	1		
E	ng	ginee	əri	ng	Log	- -	land A	Auger		Shee Proie	t ct No			1 o GE	f 1 NZT	AUC	130	86A)
Clie	ent:	_		THE		S LTI	D (2012)	_		Date	starte	ed:		24.	1.20	<u>14</u>	100	00/1
Pri	ncip	al:					. ,			Date	comp	leted	d:	24.	1.20	14		
Pro	oject	:		STA	GE 3 -	ZON	E 2			Logg	ed by			GJ	N			
На	nd A	uger loca	tion:	Mid	Point o	of Se	ction H-H			Chec	ked b	v.		RB	T			
Dyr	namic	penetrome	ter typ	be:			Eastin	g: 369058.61 m	Slope: -90°	01100	R.L. Si	urface	e: 45 m		Va	ane No	: SL58	38
Hole	e dia	meter: 50 n	۱m		•		Northi	ng: 799853.72 m	Bearing:		Datum	: x/y	= BOPC	2000,	z = Mo	oturiki		
dr	illin	g informat	tion		materia	al subs	stance							i				
atigraphy	ter	notes		oth tres	Iphic log	ssification nbol	Soil n compor	Material Des name; plasticity or grac nents. Moisture, sensit	cription ling, colour, secondary ivity, strength. Structure, ects. Origin, additional	isture	nsistency/ nsity index		remoulded peak) kPa	pen	blows	on resi s per 1	stanc 00 mn	e test n
str	wa	tests, etc	RL	dep me	gra	syr		observati	ons.	D IO	de co	25 50	75 100 150 (175	2	46	8 10	12 14	16 18
UVIUM				-		ML	Sandy SILT, n	on plastic, orange bro on plastic, bark brown	wn. Moist, fine rootlets. black. Moist, organic.	M	F							
öĽ			44	1		ML	[TOPSOIL] Sandv SILT. n	on plastic, grev brown	. Moist. sand is fine.	/		●×						
0				-			,											_
				-			- becoming or	range brown below 1.2	m depth.									_
				-	$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & & \times & \times & \times$		011 T		- human Maint		VSt							_
					× × × × × × × × × × × × × × ×	ML	SILI, some sa	and, non plastic, orang	e brown. Moist.			•	×					_
ĒS	ered		43	2_								•	×					
ANIC ASF	ot encounte			-			- becoming br	rown at 2.1m depth.										
20L0	ter no			-	* * * * * *	SW	- sand conten	t increasing below 2.5	m depth.				×					_
-	ndwa			-		0.11	- becoming lig	slit, fine to medium, pa tht grey white below 2.	ie yellow orange. Moist. 7m depth.									_
RITE	Brou		42	<u>3</u> - -		SW	SAND, minor s pumiceous.	silt, fine to coarse, ligh	brown white. Dry to moist	, D-N	1							
TE RANGA IGNIMB			<u>4</u> 1	<u>4</u> - -														
			40	5														
				_			EOBH = Targe Borehole HA3	et Depth 04 terminated at 5 me	tres.									
				_	-													
				_	_													
			39	6	I			i										
s t a ()	classi soil de based and R Geote	fication symbols sscription on Field Deso ock, New Zea chnical Societ	criptior land ty Inc 2	nd n of Soil 2005	vane si ● re × pr ≫× pr UTP ut	hear (kP emoulded eak eak grea nable to	a) 5 ter than 200kPa penetrate	water ↓ 10/1/98 water le on date shown ↓ water inflow ↓ water outflow	vel D dry M moist W wet S saturated	consis VS S F St VSt H	t ency/ d vei sof firm stif vei hai	densit ry soft ft n f ry stiff rd	y index	VL L MD D VD	k r c v	very loos bose nedium lense very der	se dense se	

										-					·		
E	ng	ginee	ri	ng	Log	- ŀ	land Auger		Sheet Projec	t No:			1 o GE	f 1 NZT	AUC	:130	86A
Clie	ent:			THE		S LTI	D (2012)		Date s	starte	d:		19.	12.2	013		
> rir	ncipa	al:							Date of	comp	leted	d:	19.	12.2	013		
>ro	iect			STA	GE 3 -	ZON	E 2		l ogge	d bv			SL	С			
	nd A	uger locat	ion.	Slor	o Bolo	w Ac	 coss Road		Chock	od b			PR	т			
)vn	amic	nenetromet	er tvr	<u>510p</u>	e Delo	WAU	Easting: 368913.05 m	Slope -90°	F		y. Irface	e 41 m		Va	ne No	DR2	244
Hole	arriic Aiai	neter: 50 m	m	ю.			Northing: 799642.32 m	Bearing:	, L)atum	· x/v	= BOPC	2000	7 = Mo	turiki	. DIV2.	277
dri	lling	j informat	ion		materia	al subs	stance	Doamig.	-	atum		20.0					
Ž					6	no	Material De	scription		ex /	, L	ba Da	pen	etratio	n resi	stanc	e test
Irapn					ic loc	ficati	Soil name; plasticity or gra	ding, colour, secondary	ion Ion	y ind	40	allo noulc ak) ki					
tratic	/ater	samples,		epth ietres	raph	lassi ymbo	bedding, cementation, de	fects. Origin, additional	ondit	onsis ensit		(ren /pea		blows	per 1	00 mn	n
ν N	5	tests, etc	RL	σĽ	6	ပဖ		tions.	20	00	22 22	125 125 125 150 175	2	4 6	8 10 [.]	12 14	16 18
2				_	())))		Organic SIL I, dry and friable, brown	1.		VSt							
				_	$(\times \times $		Sandy SILT, non plastic, friable, pal	e brown. Sand is fine grained	l.			×					
				_	$(\hat{x},\hat{x},\hat{x},\hat{x},\hat{x},\hat{x},\hat{x},\hat{x},$												
					× × × ×												
			40	1													
					$\times \times $		- becoming pale brown. Moist.		М	1							
				-	$(\begin{array}{c} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{array})$							*					
				-	$\times \times $												
2				-	$\begin{pmatrix} & \times & \times & \times \\ & \times & \times & \times \\ & & \times & \times &$						•	×					
				-	$(\times												
2	ered		<u>3</u> 9	2_	$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$		- becoming moist to wet		M	-	•	×					
5	ounte			_	$\begin{array}{c} x \\ x \\ x \\ x \\ x \end{array}$		- becoming moist to wet.		W								
	ence			_	$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$						•	×					
	ir not			_	$(\times		- beocming dark brown (non organi	c). Minor clay, low to medium									
	lwate			_	× × × × × × × × × ×		plasticity. - becoming pale brown .					×					
	ounc		38	3	$\begin{pmatrix} \times & \times & \times \\ \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$												
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A SL				-	$\times \times \times$		brown specks. Minor, fine, and idura	ated gravels.									
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			36	5			brown specks. Minor, fine, and med	lium gravels.	_/	51							
				_			pumice gravels. Becoming quick.	brown. Minor weathered inte									
				_			EOBH = Target Depth Borehole HA305 terminated at 5 me	etres.									
			35	6													
~	lace	ication cumb	ole an	h	Vano o	hear /LP	a) wator	moisture	consist	ency/ c	lencit	v index					
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b a	ased nd Ro	on Field Desc ock, New Zeal	and	01 501		eak eak grea	ter than 200kPa	W wet	S F	sof firm	เ 1		L MD	lc n	iose nedium	dense	
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ц.		Waar loog	tion	5/01				~		Chaol	a by	•			-		
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Ę					ŋ	tion		Material Des	cription		cv/	100	ided APa	penet	tration r	esistan	ce test
igrap	<u>ب</u>	notes		_ s	hic lo	sificat	Soil r compo	name; plasticity or grac nents. Moisture, sensi	ling, colour, secondary tivity, strength. Structure,	ture	isten itv in		ent sak) k sak) k			- 400	
strati	wate	samples,	RL	depth metre	grap	class	bedo	ding, cementation, def observat	ects. Origin, additional ons.	mois	cons dens	100	~ 98.88 • 7 (1		nows pe	r 100 m	m 16 19
		10010, 010				ML	Sandy SILT, n	o plasticity, black, org	anic odor; sand is fine grained	d. D-M	I F-	2 15	<u>K 5 6 5 6</u>	24		10 12 14	10 18
NUN				-			(COLLUVIUM)			ST						
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õ				-	$\begin{array}{c} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{array}$		- becoming cre	eamy orange-brown									
				-		ML	Sandy SILT, n	o plasticity, creamy or	ange-brown.	_		• ×					
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ло N	enco			-	$(\times	SM	Silty SAND, fir	to medium grained,	pale brown with black specks	5.							
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	-			_	(X (×XX)	ML	Sandy SILT/S	ilty SAND, no plasticity	, pale grey-brown; sand is fin	e	St-	-	×				
Ъ					×^×^×^		to medium gra	lined.			Vst						
BGR			32	4								•	×				
A SU																	
ATU						-	- becoming pa	le arev-white with blac	k specks			•	×				
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dr	illing	g informat	ion		materia	al subs	stance	0	5									
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grapl	L	notes		s	hic lo	sificat	Soil n compor	ame; plasticity or grac nents. Moisture, sensit	ing, colour, secondary ivity, strength. Structure,	ture	itv inc		me sn moul sak) k					
strati	wate	samples,	RL	depth metre	grapl	class symb	bedo	ling, cementation, defeored	ects. Origin, additional ons.	moist	consi		be be be	a.	blo	ws per 1	00 mm	
		18515, 810		-		ML	Sandy SILT, n (TOPSOIL)	o plasticity, black, orga	anic odor; sand is fine graine	d. D	St	26	2001	17	240	5 8 10	12 14 10	6 18
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				-		ML	Sandy SILT, n	o plasticity, brown.		D-N								
				-									×					
			40	1			- becoming ora	ange-brown										
				-	$\begin{pmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{pmatrix}$						_	•	×					
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	red			-	$\begin{pmatrix} x & x & x \\ x & x & x \\ x & x & x \end{pmatrix}$	ML	Sandy SILT, n possibly colluv	on to low plasticity, pa ium deposits.	le brown with black specks,		St-	1						
õ	ounte		<u>3</u> 9	2_			- increasing sa	and content			Vst		×					
	enco			-														
	er not			-	$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$								×					
	dwate			-			- black & dark	orange-brown inclusio	n									
	lroun			-)			•	×					
s	0,		<u>3</u> 8	3	× × × × ×	ML	- some mediur Sandy SILT, lo	w plasticity, orange-bi	orange-black staining own, with dark-orange stain	ing								
SHE				-			& orange strea	aks; some fine black g	ravel; white inclusion.				×					
				-			- increasing m	edium plasticity clay c	ontent									
CA				-	× × × ×	ML	Sandy SILT, n	on to low plasticity, pa	le orange-brown, black spec	ks;				×				
٥ ۷				-			sand is fine gra	ained. le-brown grey, mediur	n plasticity									
			<u>3</u> 7	4		ML	Sandy SILT, Ic	w plasticity, pale-grey	with black specks (complete	ely			:	>>X				
=				-	(* x * x * X X X X		weathered ign	interie).										
				-										►				-
					(× × × × × × ×		EOBH = Refus	sal		_	-	+						+++
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b a	ased and R	on Field Deso ock, New Zeal	cription and	of Soil		eak eak grea	ter than 200kPa	on date shown water inflow	W wet	S F	so firr	ft n		L	١D	loose medium	dense	
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Pro	ject	:		STA	GE 3 -	ZON	E 2			Logg	ed by	:			SLC			
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Dyr	amic	penetrome	ter typ	be:			Eastin	ng: 368939.31 m	Slope: -90°		R.L. S	urfac	e: 46	m		Vane	No: DF	₹2244
Hol dr	e dia illin	meter: 50 n a information	nm tion		materia	al sub	Northi stance	ng: 799788.53 m	Bearing:		Datum	: x/y	= BO	PC	2000, z =	= Motu	riki	
~		<u>,</u>				5		Material Des	scription		×ex		ed a	3	penet	ration	resista	nce test
Jraph		notoo			ic log	ficatio	Soil r	name; plasticity or grad	ding, colour, secondary	er.	v inde		e she nould sk) kF					
stratiç	vater	samples,		lepth netres	graph	symbo	bedo	ding, cementation, def	ects. Origin, additional	noistu	consis		ren (ren		b	lows p	er 100 i	nm
TS ®	-	tests, etc		02	, 	ML	Organic SILT.	drv and friable, brown			VSt	25	1560	175	24	68	10 12 1	4 16 18
				-		ML	Sandy SILT, n	ion plastic, fribale, pal	e grey with pale brown mottle	s.								
				-			- becoming pa	le grey with grey and	orange brown mottles. Minor	- N	I	•		×				
				-	$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$		quarz grains	Somm.										
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				-	$\begin{array}{ccc} \times & \times & \times \\ & \times & \times & \times \\ \times & \times & \times & \times$													
				-	$\begin{pmatrix} \times & \times & \times \\ \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$						St		1					
				-		ML	SILT, low plas	ticity, pale orange bro	wn. Minor clay.			•	×					
				_		ML	Sandy SILT, k	w plasticity, pale brow	vn with brown and orange									
	tered		44	2		ML	- becoming ve	ry dark orange brown	grading to dark red brown w	ith		•	×					
ĘS	coun			-	$\begin{pmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{pmatrix}$	-	Sandy SILT, k	ow plasticity, pale brow	vn with brown and orange									
ASF	ot en			-			- becoming pa	le brown with some fi	e. ne to medium gravels, some			•	×					
ANIC	ater n			-			- no gravels. C	Occasional very dark b	orown silty SAND lenses <40	mm M	,							
/orc	ewpur			-	$\begin{array}{c} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{array}$		- occasional of - moist to wet.	range specks and ora	nge brown mottles <40mm. i inclusions within dark browr			•	×					
ĺ	grou		43	<u> </u>			stained soil (ne - pale brown g	on organic). Irey SAND lense <50r	nm, sand is fine to medium.	v	'							
				-			Wet.	-				•	×					
					$\begin{array}{ccc} \times & \times & \times \\ & \times & \times & \times \\ \times & \times & \times \end{array}$		- sand becomi	ing fine grained.										
				-	$\begin{pmatrix} & \times & \times & \times \\ & \times & \times & \times \\ & & \times & \times &$	-	- becoming sli	ghtly sensitive.				•	×					
				-			- pumiceous s	ilty SAND inclusions <	:30mm.									
			42	4_			- sand inclusio	ons absent below 4.0n	n. Wet to saturated.	W-	s	•	×					
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				-	1		Borehole HA3	08 terminated at 5 me	etres.									
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			40	6	1													
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	lassi	fication sym	ools ar	nd	vane s	hear (kF	a)	water	moisture	consis	tency/	densi	ty inde	x				
9 	oil de	on Field Des	criptior	n of Soil	● re × p	emoulde eak	d	10/1/98 water le	evel D ary M moist	VS S	ve	ry sof ft	t		VL L	very loos	loose e	
á (and R Geote	ock, New Zea chnical Socie	iand ty Inc 2	005	≫× p UTP u	eak grea nable to	iter than 200kPa penetrate	 water inflow water outflow 	S saturated	F St	firr stif	n Ť			MD D	mec den	lium den se	se
										VSt H	ve ha	ry stiff rd	F		VD	very	dense	

gine al: t: Auger loca c penetrome meter: 50 r g informa notes samples, tests, etc	tion: ter type m RL	າg THE STA Cres	Log LAKES GE 3 st of Se materia	- H S LTI ZON	Hand Auger D (2012) E 2 D F-F Easting: 369095.9 m		Sheet Projec Date s Date c Logge	t No: tarte omp d by:	d: letec	 I:	1 of GEI 10.1	1 <u>VZTA</u> 1.201 1.201	<u>UC1</u> 4 4	3086AI
al: t: c penetrome meter: 50 r g informa notes samples, tests, etc	tion: ter type tion RL		GE 3 st of Se materia	S LTI ZON ctior	D (2012) E 2 D F-F Easting: 369095.9 m		Date s Date c Logge	tarte omp d by:	d: letec	1:	<u>9E</u> 10.1 10.1	<u>1.201</u> 1.201 1.201	4 4 4	<u>3000AI</u>
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t: Auger loca c penetrome meter: 50 r g informa notes samples, tests, etc	tion: ter type tion RL	STA Cres	GE 3 st of Se materia	ZON	E 2) F-F Easting: 369095.9 m		Logge	d by:			_			
Auger loca c penetrome meter: 50 r g informa notes samples, tests, etc	tion: ter type im tion RL	Cres	at of Se materia	ctior	Easting: 369095.9 m		- 55 -	,			GJN	V		
notes samples, tests, etc	ter type	th res	materia		Easting: 369095.9 m		Check	ed b	v.		RB	Г		
notes samples, tests, etc	nm tion RL	th res	materia	J er l'		Slope: -90°	R	.L. St	,. Irface	: 43 m		Van	e No: D	R2244
g informa notes samples, tests, etc	RL	th res	materia	1.001	Northing: 799562.27 m	Bearing:	D	atum	x/y	= BOPC	2000, z	z = Moti	uriki	
notes samples, tests, etc	RL	th res	_	II SUDS	stance						—			
notes samples, tests, etc	RL	th res	<u> </u>	ation	Material Desc	ription		ncy/ ndex	hear	kPa	pene	tration	resista	ance test
tests, etc	RL		phic	ssific	components. Moisture, sensitiv	vity, strength. Structure,	isture	isiste Isity i		remoi beak)		blows	per 100	mm
		dep met	gra	clas	observatio	ins.	COL	con der	25 50 V	125 / (1) 175 / (1) 175 / (1)	2	468	10 12	14 16 18
	1 1		× × × ×	ML	Sandy SILT, non plastic, dark drown b	black. Moist, rootlets.	D-M	F-S						
			$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$	IVIL	Sandy SILT, non plastic, orange brow	n. Dry to moist.			• >	<				
			$(\times		- becoming brown at 0.5m depth.									
		_		ML	SILT, non plastic, dark brown black w	ith brown mottles. Dry to			• ×					
	42	1		ML	Sandy SILT, non plastic, orange brow	n. Moist. Sand is fine.	м							
			$\begin{array}{c} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{array}$	ML	Sandy SILT, non plastic, orange brow	n. Moist.								
		_	(x, x, x)											
		_			- sand content increasing, becoming	fine to medium.				×				
	41	2	$\begin{pmatrix} \times & \times \\ \times & \times \end{pmatrix}$	SM	Silty SAND, fine to coarse, orange ye	llow, subrounded to	D-M			Ì				
		_	$\begin{pmatrix} \times & \times \\ & \times & \times \end{pmatrix}$											
		_	$\begin{pmatrix} \times & \times \\ & \times & \times \end{pmatrix}$		- becoming grey below 2.3m depth.									
		_	$(\times		- becoming moist to wet below 2.5m	depth.								
		_	$\begin{pmatrix} \times & \times \\ & \times & \times \end{pmatrix}$											
	40	3	(\hat{x})											
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		_	$(\times \times $											
	38	5	$\begin{pmatrix} \times & \times \\ & \times & \times \end{pmatrix}$											
		_			EOBH = Target Depth VA = Volcanic Ashes									
		_			Borehole HA311 terminated at 5 metr	es.								
		_												
	37	6			· · · · ·									
	ools and	ł	vane sl	near (kP	a) water	moisture	consiste	ncy/ d	lensity	/ index				
ification sym			1	ma	- 10/1/00 woter lev			-						
ification sym escription d on Field Des	cription	of Soil	● re × pe	enouideo	on date shown	M moist	VS S	ver sof	y soft		VL L	ve loo	ry loose ose	
ification sym escription d on Field Des cock, New Zea echnical Socie	cription land ty Inc 20	of Soil 105	● ree × pee ≫× pee	anouided eak eak grea nable to	ter than 200kPa penetrate	M moist W wet S saturated	VS S F St	ver sof firm stiff	y soft t 1		VL L MD D	ve loc me dei	ry loose ose edium de nse	nse
ification sym lescription d on Field Des lock, New Zea echnical Socie	cription land ty Inc 20	of Soil 105	● re × pe ≫× pe UTP ur	anouided eak eak grea nable to	ter than 200kPa penetrate	M moist W wet S saturated	VS S F St VSt H	ver sof firm stiff ver har	y soft t y stiff d		VL L MD D VD	ve loc me dei vei	ry loose ose edium de nse ry dense	nse
	fication symbols	41 40 39 38 fication symbols and	41 2 41 2 	41 2 × × 40 3 × × 40 3 × × 39 4 × × 39 4 × × 38 5 × × 38 5 × × 37 6 - × fication symbols and vane si	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	41 2 X SM Sity SAND, fine to coarse, orange yell subangular. Dry to moist, puriceous. 40 3 X - - - 40 3 X - - - 40 3 X - - - 39 4 X - - - 39 4 X - - - 38 5 X - - - 38 5 X - - - 37 6 - - - -	41 2 SM Silly SAND. fine to coarse, orange velow, subrounded to subangular. Dry to moist, pumiceous. 41 2 X Silly SAND. fine to coarse, orange velow, subrounded to subangular. Dry to moist, pumiceous. 40 3 - - 40 3 - - 39 4 - - 39 4 - - 38 5 - - 38 5 - - 38 5 - - 38 5 - - 37 6 - - 37 6 - -	41 2 SM Sitty SAXDI. Fire to corse; corange yellow, subrounded to subangular. Dry to moist, pumiceous. 41 2 X Sitty SAXDI. Fire to corse; corange yellow, subrounded to subangular. Dry to moist, pumiceous. 40 3 X - becoming grey below 2.3m depth. 40 3 X - becoming moist to wet below 2.5m depth. 40 3 X - becoming moist to wet below 2.5m depth. 40 3 X - becoming moist to wet below 2.5m depth. 39 4 X - becoming moist to wet below 2.5m depth. 38 5 X - becoming moist complexity and the subangular. 38 5 X - becoming moist complexity and the subangular. 38 5 X - becoming moist complexity and the subangular. 38 5 X - becoming moist complexity and the subangular. 37 6 - becoming moist complexity and the subangular. - becoming moist complexity and the subangular. 37 6 - becoming moist complexity and the subangular. - becoming moist complexity and the subangular. 37 6 - becoming moist complexity and the subangular. - becoming moist complexity and the subangular.	41 2 SM SM Silty SAND, fine to corase, corace yellow, subrounded to subangular. Dry to moist, pumiceous. 40 3 - - - 40 3 - - - 39 4 - - - 39 4 - - - 39 4 - - - 38 5 - - - 38 5 - - - 37 6 - - -	41 2 X SM Sitty SAND, fine to corse, orange vellow, subrounded to subangular. Dry to moist, pumiceous. 41 2 X A - - - - - - -	41 2 SM Sity SAND, fine to corse; orange yellow, subrounded to subangular. Dry to moist, pumiceous. 41 2 Sity SAND, fine to corse; orange yellow, subrounded to subangular. Dry to moist, pumiceous. 40 3 40 3 39 4 38 5 38 5 38 5 38 5 38 5 38 5 38 5 37 6	41 2 SM Silly SAND, fine to coarse, orange yellow, subrounded to subangular. Dry to moist, pumiceous. 41 2 SM Silly SAND, fine to coarse, orange yellow, subrounded to subangular. Dry to moist, pumiceous. 40 3 - becoming grey below 2.3m depth. 40 3 33 4 33 5 33 5 33 5 33 5 33 5 33 5 33 5 34 5 35 EOBH = Target Depth VA = Volcanic Astres Borehole HA311 terminated at 5 metres.	41 2 X SM Sity SAND, fine to coarse, orange yellow, subrounded to subangular. Dry to moist, pumiceous. 41 2 X SM Sity SAND, fine to coarse, orange yellow, subrounded to subangular. Dry to moist, pumiceous. 40 3 - becoming grey below 2.3m depth. 40 3 - becoming moist to wet below 2.5m depth. 40 3 - becoming moist to wet below 2.5m depth. 40 3 - X 40 3 - X 41 - Vane - Becoming moist to wet below 2.5m depth. 40 3 - Vane 41 - Vane - Becoming moist to wet below 2.5m depth. 40 3 - Vane 41 - Vane - Becoming moist to wet below 2.5m depth. 42 - Vane - Becoming moist to wet below 2.5m depth. 43 - Vane - Becoming moist to wet below 2.5m depth. 44 - Vane - Becoming moist to wet below 2.5m depth. 45 - Vane - Becoming moist to wet below 2.5m depth. 38 - S - Vane 37 - G - Becoming moist coarse, orange coarse, or	41 2 SM Sill GUILER Indexand, becoming the domedulit. 41 2 SM Sill SAND, fine to correse, orange version subrounded to subangular. Dry to moist, purniceous. 41 - - - 42 - - - 43 - - - 44 - - - 40 3 - - 40 3 - - 40 3 - - 40 3 - - 40 3 - - 40 3 - - 5 - - - 7 6 - -

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Pro	oject	:		STA	GE 3 -	ZON	E 2			Logge	ed by:			RBT		
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Dyr	namio	penetrome	ter typ	be:			Eastir	ig: 368901.91 m	Slope: -90°		R.L. Si	urface	: 52 m		Vane No: D	R2244
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aphy					boj	cation	Soil r	Material Des	cription ling_colour_secondary	a 9	ency/ index	shear) kPa	penetra	ation resista	nce test
stratigra	vater	notes samples,	ы	lepth netres	Jraphic	symbol	compo	nents. Moisture, sensi ding, cementation, def	ivity, strength. Structure, ects. Origin, additional	noistur	consiste lensity	vane	(remo	blo	ows per 100	mm
0) 20	>	tests, etc	RL		 X	ML	Highly organic	SILT, with minor sand	I, non plastic, dark brown.	M	St	25 50 75	12220	24	6 8 10 12	14 16 18
-				-	× × × × × × × × × × × × × × ×	ML	Moist, rootlets	e clay and trace fine s	and orange brown Moist	_						
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Ä			_51		× × × × × × × × × × × × × × × × × ×		- becomes SI	I T with minor clay ore	ev brown slightly plastic. Moi	st		•	×			
15 N				-	× × × × × × × × × × × × × × ×		trace fine blac	k inclusions (non orga	nic).							
ž					× × × × × × × × × × × × × × × × × ×							•	×			
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	5		50	2												
-	Itered		<u>_</u> <u>0</u>	<u> </u>		ML	Sandy SILT, n	ion plastic, pale grey o	range. Moist, becomes grea	sy		•	×			
A & A	ncour			-	$\begin{pmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{pmatrix}$		when reworke	a.								
Ē	not ei				$(\times	0.01	- 100mm thic	k layer of dark orange	sandy SILT, slightly plastic.	w			×			
	/ater			-	$(\times	500	Silty SAND, or	ange grey, pumiceous	3.	/ M- W						
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	gro			-	- <u>x</u> _x_ <u>x - x</u>		Moist to wet.	ayey one r, slightly to	noderately plastic, dark brow			•		×		
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					- × -×- (_×_ ×		- Becoming S	ILT with minor clay, sli	ghtly plastic, dark orange				UTF			
				-	- <u>x-x</u> (- <u>x</u> - x		brown.									
			47	5			FORL T				-					
				-	-		EOBH = Targe TS = TOPSOI	et Depth L 40 to min start at 5 mm	h				UTF			
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t	based and R	on Field Deso ock, New Zea	criptior land	n of Soil	× p ≫× n	eak eak grea	ter than 200kPa	 on date shown water inflow 	M moist W wet	SF	sof	t 1		L MD	loose medium der	ise
(Geote	chnical Societ	y Inc 2	2005	UTP	nable to	penetrate	- water outflow	S saturated	St VSt	stif ver	f v stiff		D	dense verv dense	
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				′ J					Hand	Auge	er No	-		HA	314			
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Clie	ent:			THE		S LT	D (2012)		Date	starte	d:			10.	1.20	14		
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На	nd A	uger loca	tion [.]	Cre	st of Se	oction	H-H		Check	red h	v.			RR	т			
Dvn	amic	penetrome	ter tvp	e:			Easting: 369113.22 m	Slope: -90°	F	R.L. Si	y. urface	: 55	m		v a	ne No:	DR22	244
, Hole	e diar	neter: 50 m	nm				Northing: 799343.94 m	Bearing:	0	Datum	: x/y :	= BO	PC	2000,	z = Mo	turiki		
dri	illing	g informat	ion		materia	al sub	tance	-			-							
Ś					D	ion	Material De	scription		/× xep		bed	U L	pen	etratio	n resis	stance	e test
grap	_	notes		s	Jic lo	ificat	Soil name; plasticity or gra components. Moisture, sens	ding, colour, secondary itivity, strength, Structure.	ture	stend ity ind	40							
strati	wate	samples,	RL	depth metre	grapl	class symb	bedding, cementation, de observa	ects. Origin, additional tions.	moist	consi		0 (re	0 2 2		blows	per 10	JU mm	1
		iesis, eic				OL	Sandy SILT, dark brown, friable. Di	y to moist, rootlets. (TOPSOIL	.) / D-M	F-St	22	£65	115	2	4 6	8 10 1	2 14 '	16 18
				-	$\begin{pmatrix} x & x & x \\ x & x & x \\ x & x & x \end{pmatrix}$	ML	Sandy SILT, non plastic, orange mo	ttled brown. Dry to moist.										
				-	$\begin{pmatrix} & \times & \times & \times \\ & \times & \times & \times \\ & & \times & \times &$													
·				-	$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$						•	*						
·				-	$\begin{pmatrix} & \times & \times & \times \\ & \times & \times & \times \\ & & \times & \times &$		- becoming dry below 0.6m depth.											
			54	1	$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & \times & \times & \times \end{pmatrix}$													
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30LL				-	$(\hat{x},\hat{x},\hat{x},\hat{x})$						•×							
0				-	$(x^{2}x^{2}x^{2}x^{2})$													
				-	$(\hat{x},\hat{x},\hat{x},\hat{x},\hat{x},\hat{x},\hat{x},\hat{x},$		- thin laver of buried topsoil approx	imately 50mm thick										
	ered		<u>5</u> 3	2_	$\begin{array}{c} & \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{array}$													
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·	wate				$\begin{pmatrix} \times & \times & \times \\ & \times & \times & \times \\ & & \times & \times & \times$	ML	Sandy SILT, non plastic, yellow ora	nge. Dry	D	VSt-	•		>>	x				
6	punc		52	3	$\begin{pmatrix} & \times & \times & \times \\ & \times & \times & \times \\ & & \times & \times &$													
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C A:				-			- becoming pale brown.											
ANI				-	$(\times													
OLG				-	$\langle \times							•	×					
·				-	× × × × ×													
			<u>5</u> 1	4_	$(\hat{x},\hat{x},\hat{x},\hat{x})$													
				-		SP	SAND, some silt, fine, grey brown.	Dry, pumiceous.		D	1 [>>	1				
				-														
5				-			- becoming pink white											
				_														
			50	5														
							UI = UNWELDED IGNIMBRITE (Target depth)											
				-]		Borehole HA314 terminated at 5 me	etres.										
				-	1													
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			49	6	4		<u>i</u>	-										
c	lassi	ication symb	ols an	d	vane s	hear (kP	a) water 10/1/08 water	moisture D drv	consist	ency/ c	lensity	/ inde	ЭX	10				
s t	ased	on Field Des	cription	of Soil	● re × p	enioulde eak		M moist	vs s	ver sof	y soft t			VL L	ve la	ery loos Iose	e	
a (and Ro Geote	ock, New Zea chnical Societ	land 1y Inc 20	005	≫X po UTP u	eak grea nable to	ter than 200kPa water inflow	S saturated	F St	firn stif	n F			MD D	m d	edium ense	dense	
									VSt	ver	y stiff			VD	V	ery den	se	
									н	hai	ď							

Ξn	ıg	jir	ne	erin	g l	-0	g	-	Ha	nd Auger		:	Boreh sheet proiec	ole : ct no	ID.		HA01-AQ 1 of 1 GENZTAUC13086
lient	:		TH	E LAKE	S 2	012	(L7	D)					date s	start	ed:		28 Jan 2015
rinci	ра	I:											date d	com	plet	ed:	28 Jan 2015
roje	ct:		TH	E LAKE	s s	TAG	<i>E</i> :	3 Z	ONE	3		I	logge	d by	:		DBC
ocati	on	: '	Τομ	o of slo	pe k	oelov	N C	Col	lecto	or Road			check	ed I	oy:		RBT
ositio	n:	E: 36	68,90	08; N: 799,	598 (E	OPC2	000)		surface elevation: 50 m (MOTUHT1953)	a	ingle f	rom ho	rizor	ital:	90°	DCP id.:
rill mo	ode	l: Ha	nd A	luger			—	nato	rial cub	ostanco	ł	ole dia	ameter	: 50	mm		vane id.: 4523
	.		nau						u	material description		// isity	va	ne	D	CP	structure and
support	1 2 nonatrat		water	samples & field tests	or (m)	depth (m)	aranhic lo	giapiiic io	classificat symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency relative den	she ⊕remi ⊛p (kF 02	eak Pa)	(bl) 100 ≈ ₹	ows/ mm)	additional observations
Î								$\left \right $		ORGANIC SILT: non plastic, orange brown.	D						TOPSOIL / COLLUVIUM
					-	0.5-				SILT: non plastic, orange mottled brown, with abundant topsoil inclusions.	D	St					COLLUVIUM VS 67/ 12 kPa
																	VS 84/ 16 kPa
					-49	1.0-	\prod	Я		ORGANIC SILT: non plastic, black.	D to M	F				ii	BURIED TOPSOIL / COLLUVIUM
										SILT: non plastic, orange brown.	DIOM	5	€				VS 50/ 14 kPa
										SILT: non plastic, brown orange.	м	VSt					VS 12/ 10 kPa
					-	1.5-							€				YOUNGER ASHES
										SILT: non plastic, pale brown orange, with	м	s	-11				ROTOEHU ASH
					-48	2.0-				some sand. with a < 100 mm lense of loose grev SAND at		Ū	 ⊕				VS 12/ 10 kPa
			red							2.0m. Silty CLAY: high plasticity, cream brown.	м	St					MATUA SUBGROUP
			incounte		-	2.5-							€¦⊙	i i I I		ii	VS 77/ 20 kPa
			Not E							Clayey SILT: medium to high liquid limit, cream grey.	М	St					
					47	20-				- becoming cream from 2.8m.							VS 84/ 14 kPa
					-47	3.0-	12	X		- becoming moderately plastic, cream streaked \dark orange (oxidisation) from 3.0m.	M to W	н		 		ii	
						.				SILT: low liquid limit, cream streaked dark orange, (oxidisation), with some clay.	М						VS 206/ 28 kPa
					-	3.5-	1			grey, with minor clay from 3.2m. - becoming non plastic with trace clay from			(⊕)	 @			VS >215/ 35 kPa
										 3.3m. becoming non to slightly plastic, cream pale grev streaked orange, with minor clav from 	M to W						V0 / 210/ 00 Ki u
					-46	4.0-				3.7m. - becoming creamy pale grey from 4.0m.			- Li i	@		ii	VS >215 kPa
												St	- ; ;				
					-	4.5-				 becoming creamy pale grey streaked orange from 4.4m. 	w		⊕ @ 				VS 89/ 35 kPa
						· .				Clayey SILT: medium liquid limit, cream pale	M to W	St	_ ₩				VS 54/ 16 kPa
					-45	5.0				Sandy SILT: low liquid limit, cream pale grey, with some clay.	W	VSt					
-								I. I		Hand Auger HA01-AQ terminated at 5.2 m Target depth							VS 106/ 38 kPa
etho D S A / A	bit s	ger dr ger so nd aug shbor nd aug shown /T	Illing* rewin ger e ger	ig* suffix	sup M I C Q pen wat	port mud casing etration er er ∎ ∎ 10. lev	n n n n ra re -Oct-1 rel on	N o resis anging efusal 12 war date	nil stance to ter 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, neak/remouded (kPa)	class s b Cla moistur D dr M mo W we S sa Wp pla	sificatic soil des ased o ssificati re / bist et turated astic lim	it	n d iem			Image: consistency / relative density /S very soft S soft F firm St stiff /St very stiff H hard -b friable /L very loose - loose - medium dense

Ξn	າຍ	gir	۱e	ering	g I	Log] -	На	nd Auger			Boreh sheet	iole :	ID.		HA02-AQ 1 of 1 GENZTAUC13086
lient	t:		ТН	ELAKE	S 2	012	LTI)				date s	starte	ed:		28 Jan 2015
rinci	ipa	al:										date d	com	olete	d:	28 Jan 2015
roie	ect:		ТНІ	E LAKE	s s	TAG	E 3	ZONE	E 3			loaae	d bv	:		DBC
rati	ion		Mic	Idle of	slor	ne he	low	Colle	ector Road			check	ed h			RRT
ositic	on:	E: 3	68.9 ⁻	2: N: 799.0	502 (E	BOPC2	000		surface elevation: 47 m (MOTUHT1953)		angle f	rom ho	rizon	tal: 9	0°	DCP id.:
rill m	ode	el: Ha	ind A	uger							nole dia	ameter	: 50	mm	-	vane id.: 4523
drillin	ngi	infor	mati	on	1		ma	terial sul	ostance							
support	-	2 penetration	water	samples & field tests	iRL (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	va she ⊕rem ⊚p (kF ເ	ne ear ^{oulded} eak 2a) 00 200 200	DC (blov 100 n	P vs/ nm) ∞∞	structure and additional observations
Î					47	-			ORGANIC SILT: non plastic, brown.	D						TOPSOIL / COLLUVIUM
					L	0.5-	\mathbb{H}		SILT: non plastic, orange brown.	D	VSt	-11				COLLUVIUM VS 103/ 10 kPa
					Ē	0.5 -	\mathbb{H}^{2}		ORGANIC SILT: non plastic, dark brown.		F	- e				BURIED TOPSOIL /
					-46				cream.		VSt	- ● 				VS 46/ 10 kPa VS 158/ 10 kPa
					_	- - 1.5-						⊕ 	● 			VS 154/ 20 kPa
						-			SILT : low liquid limit, brown orange streaked pale grey, with some clay.	D to M	VSt	-⊕ ⊕ 				MATUA SUBGROUP VS 101/ 20 kPa
			ered		-45	2.0-			Sandy SILT: non plastic, dark orange red, (oxidisation).	D to M	Н					VS UTP
			ncount			-		•	SILT: pop plastic to low liquid limit, croppo	N						
z			Not E		-	2.5-			brown, with abundant dark reddish black oxidised inclusions with some sand and some clay.							VSUF
					-44	3.0-			Clayey SILT: low to medium liquid limit, orange brown, with abundant dark reddish black oxidised inclusions with some sand.	M to W	VSt					VS 189/ 16 kPa
						35-		· . · .	Sandy SILT: non plastic to low liquid limit, orange brown, with abundant dark reddish black oxidised inclusions with some clay.	w	VSt	_⊕ 	• 			VS 156/ 18 kPa
						-			Clayey SILT: medium liquid limit, brown orange, with minor dark reddish black oxidised inclusions with some sand.	i W	VSt	⊕ ⊕ 				VS 103/ 19 kPa
					-43	4.0-			SILT: non plastic, brown orange, with minor	М	н	111				VS UTP
					-	4.5-			Clayey SILT: medium liquid limit, brown orange, with minor dark reddish black oxidised inclusions with some sand. - becoming brown orange with some sand. Hole squeezing.	M to W	' St					VS 99/ 28 kPa
												_ <mark>⊕</mark> ¦⊛				VS 82/ 20 kPa
*					-42	5.0			SILT: non plastic, brown orange, with minor dark reddish black oxidised inclusions. Hand Auger HA02-AQ terminated at 5.0 m Target depth	W to S	H					VS UTP
netho D S A / A	od au hai wa hai bat	iger di iger so ind au ashboi ind au show D/T	rilling* crewin ger re ger n by s	g* suffix	sup M C pen wat	port mud casing etration er er	no r rang refu Oct-12	N nil esistance ging to sal water ate 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	Clas Clas moistu D du M m W w S sa Wo o	sification soil des pased o assificat re y oist et atturated astic lim	on symt cription n Unifie ion Syst	n d		C S F S V F S V F S V F S V F S V F S V	consistency / relative density /S very soft 5 soft 6 firm 7 stiff /St very stiff 7 hard 7 hard 7 friable 7 very loose 8 loose

Ξn	gi	ne	erin	g l	_o() -	Ha	nd Auger		E s	Borehole ID. Sheet: project no.	HA03-AQ 1 of 1 GENZTAUC13086
ient:		TH	E LAKE	S 2	012 (LTC))			d	late started:	29 Jan 2015
incip	oal:									d	late completed	29 Jan 2015
ojec	:t:	ΤН	E LAKE	s s	TAG	E 3	ZONE	3		lo	ogged by:	DBC
catic	on:	Тор	o of slo	pe k	oelov	v Co	llecto	r Road		С	hecked by:	RBT
sitior	n: E: 3	368,9	24; N: 799,5	577 (B	BOPC2	000)		surface elevation: 49 m (MOTUHT1953)	а	angle fro	om horizontal: 90	DCP id.:
ill mo	del: H	and A	uger			mat	erial sub	stance	h	nole dia	meter : 50 mm	vane id.: 4523
						D		material description		// Isity	vane DCF	structure and
support	¹ 2 penetrat	water	field tests	ŠRL (m)	depth (m)	graphic lo	classificat symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistenc relative der	Bitear ⊕ remoulded ⊕ peak (kPa) Bitear (kPa) Bitear (kPa) Bitear (kPa) Bitear (kPa)	m)
				-				ORGANIC SILT: non plastic, dark brown mottled orange brown.	D	VSt	<pre></pre>	TOPSOIL / COLLUVIUM
								SILT: non plastic, orange brown flecked cream.	D	St VSt		COLLUVIUM VS 69/ 15 kPa
				-48	1.0			- with trace clay from 0.9m.	M			VS 180/ 11 kPa
				-	- - 1.5			Decoming non to slightly plastic with minor clay from 1.2m. becoming non plastic, brown orange with		н	- - 	VS 119/ 18 кРа
								trace clay from 1.5m. SILT: non plastic to low liquid limit, pale brown orange, with minor clay.	M	VSt	- 	VS >215 kPa MATUA SUBGROUP
		ered		-47	2.0			 becoming pale brown orange streaked orange brown with minor sand, minor clay and some black manganese nodules from 1.9m. Sandy SIL T: non plastic low liquid limit pale 	_/ _M		⊕ ⊕ 	VS 140/ 28 kPa
 z		Not Encount		-	2.5-			brown orange streaked orange brown, with minor clay and some black manganese nodules.	M	VSt	 ⊕ ♀_ 	 VS 139/ 31 kPa
				-46	3.0-			brown orange streaked orange brown, with minor sand and minor black manganese nodules. SILT: low liquid limit, pale brown orange streaked orange brown flecked dark grow with		VOL		 VS 144/ 24 kPa
								minor sand and some clay.				 VS 160/ 31 kPa
					-			- with some sand, some clay and minor black manganese nodules from 3.6m.				VS 154/ 27 kPa
				-45	4.0		· · · · · · · · · · · · · · · · · · ·	Sandy SILT: non plastic to low liquid limit, pale brown orange streaked orange brown flecked dark grey, with minor clay.	M to W	Н	- ⊕ • 	VS 202/ 49 kPa
				_	4.5			SILT: low liquid limit, pale brown orange streaked orange brown flecked dark grey, with minor sand, some clay and minor black manganese nodules.	M to W	St VSt	⊕ 	VS 82/24 kPa
¥				-44	5.0			Hand Auger HA03-AQ terminated at 5.0 m Target depth		Н		VS 140/23 kPa VS >215 kPa
ethoo C a S a A h ' N A h	d auger s auger s nand a washb	drilling' screwir uger ore uger	ig*	sup M I C C	port mud casing etration	- no re rangi ≺ refus	N nil	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 s b Cla moistur D dry M mo	sification soil desc ased on ssification re	n symbol & rription Unified on System	Consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Eb ficible

En	IQ	jir	ne	ering	g I	_o <u>(</u>) -	-	Hai	nd Auger		1	Boreho sheet: project		ID.	HA04-AQ 1 of 1 GENZTAUC1308
ient	:		ΤН	E LAKE	S 2	012 (ĹΤ	D)				(date st	tarte	ed:	29 Jan 2015
inci	ра	I:										(date co	om	oleted:	29 Jan 2015
oje	ct:		TH	E LAKE	s s	TAG	E 3	3 Z	ONE	3		I	ogged	l by	:	DBC
cati	on	: /	Mic	dle of a	slop	e be	lov	v (Colle	ctor Road		(checke	ed k	by:	RBT
sitio	n:	E: 3	68,93	30; N: 799,	578 (E	BOPC2	000)		surface elevation: 46 m (MOTUHT1953)	é	angle fr	om hor	izon	tal: 90°	DCP id.:
ill ma rillir	ode ngi	l: Ha nfor	nd A mati	on			ma	ater	ial sub	stance	1	nole dia	ameter	: 50	mm	vane id.: 4523
	, j			samples &			ŋ		tion	material description		y / nsity	van	e	DCP	structure and
support	1 2 popotro	2 perietia	water	field tests	ÅRL (m)	depth (m)	graphic lc		classifica symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistenc relative de	€ remou ● remou ● pea (kPa 05 00 00	al ak a) 000	(blows) 100 mm	
					40	-				ORGANIC SILT: non plastic, dark brown.	D	VSt	⊕ 			TOPSOIL / COLLUVIUM
	 				-	0.5-				SILT: non plastic, orange brown flecked cream.	D to M	Н				YOUNGER ASHES
	 				-45	- - 1.0-				- becoming pale brown orange flecked cream from 0.9m.						 VS UTP
					_	- - - 1.5-				SILT: non plastic to low liquid limit, orange brown flecked cream, with minor sand, minor clay and minor black manganese nodules.	М	Н		• 		 MATUA SUBGROUP VS >215 kPa
	 					-				SANDY SILT / SILTY SAND: fine to medium grained, non plastic, pale brown orange.	M	MD	-⊕ 	• • •		VS 187/ 22 kPa
			ber		-44	2.0							⊕ 	- @		VS 204/ 15 kPa
 			Not Encounte		-	2.5-				Silty SAND: fine to medium grained, pale grey	M	MD	⊕¦ ∲ 			VS 103/ 20 kPa
	 				-43	- - 3.0-				 black manganese nodules absent from 2.9m. 						 VS 110/ 28 kPa
	 	 			_	- - 3.5-										 VS 67/ 35 kPa
	 	 				-										
					-42	4.0										
					-	- 4.5— -										
					-41	5.0-										
						-				Hand Auger HA04-AQ terminated at 5.2 m Target depth						
ethc C S A	aug aug har was har	ger dr ger so nd au shbor nd au	illing* rewir ger e ger	ng*	sup M C (pen	port mud casing etration	- no rar ≺ refi	N	nil stance 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 t Cla moistu D dr	sificatio soil des based or assificati re	n symbo cription n Unified on Syste	ol &		consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard F first

Eng	gi	ne	erin	g l	Log) -	H	an	d Auger		E	Borehole sheet: project no	ID.		HA05-AQ 1 of 1 GENZTAUC13086
ent:		TH	E LAKE	ES 2	012 (LT)				(late start	ed:		29 Jan 2015
incip	al:										c	late com	pleteo	d:	29 Jan 2015
oject	t:	ΤΗ	E LAKE	es s	TAG	E 3	zol	IE 3	}		ŀ	ogged by	<i>r</i> :		SLC
catio	n:	То	o of slo	pe k	belov	v Co	olled	tor	Road		c	hecked	by:		RBT
sition	: E:	368,8	26; N: 799,	698 (E	BOPC2) 000		s	surface elevation: 57 m (MOTUHT1953)	a	angle fr	om horizor	ntal: 9	0°	DCP id.:
ll moo	del: H	land A	on			ma	terial	ubsta	ance	ł	nole dia	meter : 50	mm		vane id.: SL588
	, in i						io		material description		// Isity	vane	DCI	Ρ.	structure and
support	² penetrat	water	field tests	1RL (m)	depth (m)	graphic lo	classificat	ayıındı	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency relative der	shear ⊕ remoulded ● peak (kPa) 00 00 00 00 00 00 00 00 00 0	(blow 100 m	vs/ nm)	additional observations
				57	-	$ \rangle$		C n	DRGANIC SILT: non plastic, dark brown, ninor fine grained sand.	D					TOPSOIL
				-	0.5-			s	SILT: non plastic, pale brown mottled brown, some black specks.		St	 ⊕9_ 			COLLUVIUM VS 55/ 14 kPa
					-			s g	SILT: non plastic, orange brown, trace fine grained sand.	D to M	St to VSt				VS 50/ 11 kPa VOLCANIC ASHES
				-56	1.0							- ⊕ ⊕ -			VS 78/ 22 kPa VS 154/ 29 kPa
				_	- 1.5—							 ⊕ ⊚ 			VS 159/ 37 kPa
				-55	2.0-			S	SILT: non plastic, brown.	М	VSt	- ⊕ ⊕ 			MATUA SUBGROUP VS 147/ 29 kPa
		untered			-			2 (; S	2.0 m: minor pale brown and black inclusions accretionary lapilli). Silty CLAY: medium to high plasticity, brown.	-					VS 147/ 27 kPa
 z 		Not Enco		-	2.5-			2	2.5 m: becoming pale brown.						VS 103/ 21 kPa
				-54	3.0-			2	2.8 m: becoming orange brown. Clayey SILT: low to medium liquid limit, pale	-		+ + + + + + + + + + + + + + + + + + +			VS 138/ 31 kPa VS 144/ 22 kPa
					-			5 3 1	orown mottled pale grey. 3.2 m: becoming pale brown with pale pink nottles.						VS 126/ 22 kPa
					-	XU		3 9 	8.5 m: 100mm silty sand lense (fine grained, bale brown with pale grey specks). NTERBEDDED SILTY SAND & CLAYEY SILT: Silty sand is fine grained and pale	D to M M	VSt				VS 124/ 42 kPa
				-53	4.0-				brown with black banding. Clayey SILT is low to nedium plasticity and pale brown/pink brown. Bedding is 50mm to 150mm. Clayey SILT: low to medium liquid limit, pale	M to W	St to VSt	⊕ @ ⊕ @			VS 160/ 17 kPa VS 146/ 37 kPa
				-	4.5-			p	link brown.			● ● ● ● 			VS 101/ 14 kPa
				-52											VS 90/ 22 kPa
					-			F T	Tailo Auger HAUS-AQ terminated at 5.0 m Farget depth						
ethod Da Sa Ah W Ah	uger uger and a vashb	drilling ³ screwir auger ore auger	, ng*	sup M C o pen	port mud casing etration	- no r rano ◄ refu	N nil resistance ging to Isal		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)	class s b Cla moistu D dr M mu	sificatio soil dese based or issificatio re y y sist	n symbol & cription Unified on System		C V S F S V F	l consistency / relative density /S very soft S soft f firm St stiff /St very stiff H hard -b friable



	O		Зy							Doroh		
										Boreno	Die ID.	HAU/-AQ
Er	ngi	ne	erin	g l	_00) - (Ha	nd Auger		sneet:		
	<u>.</u>	тн	FIAKE	5 2	012 (, η τη	ור			project	no.	05 Ech 2015
rino	inal:			.0 2	012 ("			data a	ancu.	05 Feb 2015
innc	ipai.	T 11			T 40	- ^	70115			date co	ompieted:	05 Feb 2015
roje	ct:	<u>ін</u>		:5 5	IAG	E 3				logged	by:	DBC
ocat	ion:	То	o of slo	pe k	pelov	/ Ру	ves Pa	Road		checke	ed by:	RBT
ositio rill m	on: E:3	369,1 and (27; N: 799,	329 (E	SOPC20)00)		surface elevation: 56 m (MOTUHT1953)	a F	angle from hor	izontal: 90°	DCP id.:
drilli	ng info	rmati	on			mat	terial sub	ostance			50 mm	Varie Id., 4325
	tion		samples &			6	tion	material description		, van	e DCP	structure and
support	1 2 penetra 3	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 de monale frondy)		
1				50	1 1			SILT: non plastic, brown orange mottled dark brown, with common topsoil inclusions.	М	S to F		COLLUVIUM
					-					•		VS 37/ 5 kPa
				-	0.5-			- becoming brown orange from 0.4m.	D to M			
					-							VS 20/ 5 kPa
					-					®	įliii	VS 15/0 kPa
				-55	1.0-							V3 15/ 0 KFa
					-					(B)		VS 37/ 24 kPa
				Ļ	1.5-			SILT: non plastic, brown orange.	D to M	St to		YOUNGER ASHES
					-					vst⊕⊚∣		VS 70/ 25 kPa
					-						įliii	
				-54	2.0-					⊕∣∣©	·	VS 135/ 16 kPa
		σ			-							
		untere			-					⊕⊚		VS 90/ 23 kPa
 z		ot Enco		_	2.5-							
		z			-					⊕⊙		VS 67/ 20 kPa
				-53	3.0-			SII T: non plastic, brown orange flecked black	M	St to	įliii	
					-			flecked cream, with trace clay.		VSt ⊕⊚	įliii	VS 84/ 23 kPa
					-							V3 04/ 23 Ki a
				-	3.5-					⊕ ●		NO 400/00 HD-
					-							VS 108/ 33 KPa
				-52	4.0-							
					-			 with some black manganese nodules and some white nodules from 4.0m. 			įliii	VS 131/ 32 kPa
					-							
				-	4.5-							VS 110/ 46 kPa
					-						 	
					-			- becoming non to slightly plastic, creamy pink	M to W		^{יי}	VS 158/ 33 kPa
				-51	5.0-			with minor clay from 4.9m.				
					-			Hand Auger HA07-AQ terminated at 5.2 m			●	VS 156/ 42 kPa
					-				elec			
eth D	auger of	drilling	* •	sup M	port mud	I	N nil	samples & field tests B bulk disturbed sample	ciass s	soil description	л о с	consistency / relative densityVSvery soft
A /	hand a	uger	ิษ	pen	casing etration			D disturbed sample E environmental sample	Cla	ssification Syste	m	S soft F firm
A	hand a	uger			0 0 - C	- no re	esistance	SS split spoon sample U## undisturbed sample ##mm diameter	moistu	re		St stiff VSt very stiff
				wat	er	refus	sal	HP hand penetrometer (kPa) N standard penetration test (SPT)	M mo W we	y Dist et		H hard Fb friable
.g.	Dit show	wn by	suffix		Leve	Oct-12 v el on da	water te shown	NC SPT i - sample recovered NC SPT with solid cone VS vane shear: neak/remounded (kPo)	S sa Wp pla	turated astic limit		v∟ very loose L loose MD medium dense
	TC bit	nt			wate	er intiov	w SW	R refusal	WI liq	uid limit		D dense VD verv dense

CDF_0_9_06_LIBRARY.GLB rev.AI Log COF BOREHOLE: NON CORED + DCP #13086AQ HA01.AQ TO HA15.AQ 02-02-2015 DBC.GPJ <<DrawingFile>> 20/02/2015 10:39

coffey

Ξn	g	ine	erin	g l	Log	g -	На	nd Auger		B si p	orehole heet: roiect no	ID.		HA08-AQ ^{1 of 1} GENZTAUC13086.
lient		ТН	E LAKE	S 2	012	ĹŦĽ)	_		d	ate start	ed:		05 Feb 2015
rinci	pal:									d	ate com	pletec	1:	05 Feb 2015
rojeo	ct:	ΤН	E LAKE	s s	TAG	E 3	ZONE	E 3		lc	ogged by	/:		RBT
catio	on:	Во	ttom of	slo	pe b	elov	v Pyes	s Pa Road		C	hecked	by:		RBT
ositio	n: E	: 369,1	09; N: 799,	329 (E	BOPC2	000)		surface elevation: 48 m (MOTUHT1953)	á	angle fro	m horizoi	ntal: 90)°	DCP id.:
rill mo	del:	Hand /	Auger			mat	orial cut	netanco	ł	nole diar	neter : 50	mm		vane id.: 2244
								material description		// Isity	vane	DCF	,	structure and
support	¹ 2 penetrat	water	field tests	BRL (m)	depth (m)	graphic lo	classificat symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency relative der	Shear ⊕ remoulded ⊚ peak (kPa) B 00 00 00 C 00 00	(blow 100 m	s/ m) ∞	additional observations
				40	-			SILT: non plastic, mottled greyish brown, friable with some organic inclusions.	D	F to St				OLLUVIUM
				-	0.5-									/S 43/ 18 kPa
				-47	- - 1.0 - - -			- with occasional pale yellow white very weak gravel inclusions (weathered pumice) from 1.0m.		н	 ⊕			/S 70/ 18 kPa
				-	1.5-			- with a possible rock inclusion at 1.6m.	D to M					/S UTP
		Encountere		46	-			SILT: non plastic, greyish brown, friable (organic inclusions absent).	D	VSt			N	IATUA SUBGROUP
		Not E		-40	2.0-					н	 			′S 107/ 56 kPa
				-	2.5-			 becoming greyish orange from 2.35m. with occasional white pumice gravels at 2.6m. 	D to M				i I V I H	/S UTP land auger refused on grav
				-45	3.0-									Jsed scala to break through
					-			- becoming pale greyish orange from 3.0m. Difficult to auger.		VSt				SUP
				-	3.5-						⊕ ⊙ 		V	/S >182/ 50 kPa
				-44-	- - 4.0			- becoming mottled orange grey with brown pockets from 3.8m.	_		 1000			(C 112/72 kDa
								Hand Auger HA08-AQ terminated at 4.0 m Collapse						5 112/72 KFd
				-	4.5									
				-43	5.0-									
hetho	d			sur	port			samples & field tests	class	sification	symbol &			sistency / rolative density
D S A A	auge auge hanc wash hanc	er drilling er screwi d auger nbore d auger	* ng*	M C pen	mud casing etration	no re	N nil esistance ing to	B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP band penetrometer (RPa)	t Cla moistu D dr	soil desc based on ssificatio re	ription Unified n System		VS S F St VSt H	very soft soft firm stiff very stiff hard

En	ng	jir	1e	erin	g l	Log	g -	Ha	and	/	Aug	ger				1	Borehol sheet: project r	e ID.	-	HA 1 of 7	09-AQ	086A
client	t:		TH	E LAKE	S 2	012 (LTL)									date sta	rted:	:	30 J	an 2015	
princi	ipa	1:														(date cor	nple	ted:	30 J	an 2015	
proje	ct:		ТΗ	E LAKE	s s	TAG	E 3	ZON	E 3							I	ogged b	oy:		DBC	;	
locati	ion	: '	Τομ	o of slo	pe d	of Py	es I	Pa Re	bad							(checked	l by:		RBT	-	
positic	on:	E: 30	69,09	99; N: 799,	413 (E	BOPC2	000)		sur	face	elevatio	on: 50 m	(MOTUHI	[1953)		angle fr	om horiz	ontal:	90°		DCP id.:	
drill m drilli	ode na i	il: Ha infor	nd A mati	on			ma	terial s	ubstand	ce						hole dia	ameter : 5	50 mn	n		vane id.: 452	3
				samples &			 	tion			r	material de	scription			y / nsity	vane		DCP		structure and	
method 8 support	1 2 popotro	2 penetra	water	field tests	BRL (m)	depth (m)	graphic lc	classifica svmbol		SOIL CO ^I	- TYPE : p lour, sec	plasticity or condary and	particle cha I minor corr	aracteristic, ponents	moisture condition	consistenc relative de	€ Premoulde © peak (kPa) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	^{2d} 10	0 mm)	aut		UIIS
					50	-			OR	GAN	NIC SILT	r: non plas	stic, dark l	orown.	D	S				TOPSO	IL / COLLUVIU	М
					_	0.5-										VS	● ● ● ●	 		Very loo falling ir drilling, 3.2m. VS 20/	ose topsoil cont nto borehole thr resulting in coll 10 kPa	inually oughout apse at
					-49	- - 1.0-											<pre></pre>			VS 0/ 0	kPa	
			Encountered		_											F to S				VS 0/ 0	kPa	_
			Not E			-			- wi	th mi	ninor roo	ots from 1.	6m.							VS 41/	32 kPa	
					-48	2.0-			- be fron	ecom n 1.9	ning dar 9m.	'k brown m	nottled bro	own orange		VSt				VS 54/	27 kPa	 - -
					-	2.5-			- wi	th mi	ninor roc	otlets from	2.4m.							VS 130	/ 46 kPa	-
	·				-47	3.0-			SIL pink	T: no	on plast white st	tic, brown treaked bla	orange st ack.	reaked	D	VSt				COLLU VS 106	VIUM / 49 kPa	-
					_	- 3.5 - 			Har Col	าd Aเ lapse	uger HA e	A09-AQ te	rminated	at 3.2 m								-
					-46	4.0												 				-
					_	4.5												 				-
					-45	5.0																-
metho AD AS HA W HA	od aug har was har	ger dr ger so nd au shbor nd au	illing* rewir ger e ger	, ng*	sup M C pen	port mud casing etration	no r	N nil esistance		san B D E SS U# HP	mples & f bu dis en sp # un	field tests Ilk disturbed sturbed sam avironmenta Ilit spoon sa idisturbed s	d sample nple al sample ample ample ##m meter (kPa	ım diameter	Clas	sificatio soil des based or assificati ure	n symbol cription n Unified on System	& &		L Consisten VS S F St VSt H	cy / relative dens very soft soft firm stiff very stiff hard	ity

Ξn	g	in	eerin	ıg l	Lo	g -	Ha	nd Auger		E s	Borehole I heet: project no.	D.	HA10-AQ 1 of 1 GENZTAUC13086
ient	:	7	HE LAK	ES 2	012	(LTI	D)			С	late starte	ed:	30 Jan 2015
inci	pal	:								с	late comp	leted:	30 Jan 2015
ojeo	ct:	7	HE LAK	ES S	TAG	<i>E</i> 3	ZONE	3		le	ogged by:		DBC
cati	on:	E	ottom o	fslo	pe b	elov	w Pyes	s Pa Road		с	hecked b	y:	RBT
sitio	n: E	E: 369	9,089; N: 799),414 (E	BOPC2	000)	surface elevation: 45 m (MOTUHT1953)	a	ingle fro	om horizont	tal: 90°	DCP id.:
il mo	ig in	: Han nform	d Auger			ma	terial sub	ostance	ŕ	ole dia	meter : 50 i	mm	vane id.: 4523
support	penetration		samples &	SL (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 ⊕remoulded ⊚peak (kPa)	DCP (blows/ 100 mm)	structure and additional observations
A	0 7 7	m 	-	45		ĬĨ		ORGANIC SILT: non plastic, dark brown.	D	VSt		0 4 0 0	TOPSOIL / COLLUVIUM
				_	0.5-			- becoming dark brown mottled brown orange from 0.3m.			$ \begin{array}{c c} $		VS 119/ 15 kPa VS 119/ 12 kPa
				-44	1.0-								VS 162/ 23 kPa VS 120/ 23 kPa
				_	1.5-			SILT: non plastic, brown orange streaked dark brown.	D to M	St to VSt			COLLUVIUM VS 82/ 35 kPa
			p	-43	2.0-						● ● ● 		VS 126/ 20 kPa
 z				-	2.5-			Steaked pale pinkish white from 2.3m. SILT: non plastic, black. SILT: non plastic, brown orange streaked black streaked pale pinkish white	M M	VSt VSt			BURIED TOPSOIL / COLLUVIUM VS 193/ 27 kPa
				-42	3.0-								VS 108/28 kPa
				_	3.5-						+ + + + + + + + + + + + + + + + + + +		VS 120/ 41 kPa
				-41	4.0-			- with minor gravel inclusions (fine gravel sized) from 3.8m. Sandy SILT: non plastic, pale brown orange.	D to M	VSt	- 0- 0- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-		MATUA SUBGROUP VS 120/ 36 kPa
				_	4.5-			Silty SAND: fine to medium grained, pale brown orange.	D to M				VS >215 kPa
				-40	5.0-			Hand Auger HA10 AO terminated at 5.2 m			♥ ♥ ● ●		VS 137/ 51 kPa
						1		Target depth					
etho	d auge auge hand wash hand bit s	er drill er scro d augo hbore d augo shown	ing* ewing* er er by suffix	sur M C per	port mud casing etration etration ter ter	n no ran arefu -Oct-12	N nil resistance ging to usal	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 (RPa) N standard penetration test (SPT) N* SPT - sample recovered	class s b Cla moistur D dry M mo	ification oil desc ased on ssification re / bist	n symbol & cription Unified on System		onsistency / relative density /S very soft soft firm st stiff /St very stiff h hard b friable /L very loose

ent: THI incipal: oject: THI cation: Mic sition: E: 369,06 Il model: Hand A rilling information tooddns - c & c toddns - c & c & c & c & c & c & c & c & c & c	E LAKE E LAKE Idle of s a7; N: 799,5 uger on samples & field tests	S 2012 S STA(slope b 571 (BOPC (LL) 98 (LL) 99 - 0.5	GE 3 elow 2000)	ZONE Pyes erial sub erial sub	3 Pa Road surface elevation: 36 m (MOTUHT1953) stance material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	a h	date started date comple logged by: checked by: ngle from horizontal ole diameter : 50 mr	90° n	30 Jan 2015 30 Jan 2015 SWH RBT DCP id.: vane id.: 2244
incipal: oject: THI cation: Mic sition: E: 369,06 Il model: Hand A rilling information trodding to the second trodding to the second	E LAKE Idle of s auger on samples & field tests	25 STA(slope b 571 (BOPC (L) Hag 90 (L) Hag	GE 3 elow 2000) mat	ZONE classification sympol erial sub	3 Pa Road surface elevation: 36 m (MOTUHT1953) stance material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	a h	date comple logged by: checked by: ngle from horizontal ole diameter : 50 mr	ted: 90° n	30 Jan 2015 SWH RBT DCP id.: vane id.: 2244
oject: THI cation: Mic sition: E: 369,08 Il model: Hand A rilling information to day the second	E LAKE Idle of s 37; N: 799,5 uger on samples & field tests	S STA(slope b 571 (BOPC (LL) (LL) (LL) (LL) (LL) (LL) (LL) (LL	GE 3 elow 2000) mat	ZONE Pyes erial sub shupol	3 Pa Road surface elevation: 36 m (MOTUHT1953) stance material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	a h	logged by: checked by: ngle from horizontal ole diameter : 50 mr	n DCP	SWH RBT DCP id.: vane id.: 2244
Image: second	Idle of s 37; N: 799,5 uger on samples & field tests	(E) 1271 (BOPC	elow 2000) mat	Pyess crial sub sympol	Pa Road surface elevation: 36 m (MOTUHT1953) stance material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	a h	checked by: ngle from horizontal ole diameter : 50 mr	90° n	RBT DCP id.: vane id.: 2244
sition: E: 369,08 II model: Hand A rilling informati U of the second	samples & field tests	771 (BOPC للله الله الله الله الله الله الله الل	2000)	classification symbol	surface elevation: 36 m (MOTUHT1953) stance material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	a h	ngle from horizontal ole diameter : 50 mr	90° n	DCP id.: vane id.: 2244
II model: Hand A rilling informati a selectation a selectation	uger on samples & field tests	(Lu) (H) (H) (H) (H) (H) (H) (H) (H) (H) (H	Graphic log	classification symbol	stance material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	h o c	ole diameter : 50 mr	n DCP	vane id.: 2244
Interview Support support 1 support 1 <td< td=""><td>on samples & field tests</td><td>- 0.5.</td><td>Braphic log</td><td>classification symbol</td><td>stance material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components</td><td>υĘ</td><td>Atis vane</td><td>DCP</td><td>structure and</td></td<>	on samples & field tests	- 0.5.	Braphic log	classification symbol	stance material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	υĘ	Atis vane	DCP	structure and
Support	samples & field tests	(m) 9 Gepth (m) - 0.5	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	ω⊆	vane	DCP	structure and
		- 0.5				moistur conditio	I) Iibuic e 01 Ibbuic e 02 (aque) e 03 (aque) e	4 ∞ ∞	additional observations
		- 0.5			SILT: non plastic, dark brown-black, some	, D			
		- 0.5			Sandy SILT: fine grained, non plastic, brown.				VS 45/ 23 kPa
							 ⊕● 		VS 62/ 23 kPa
		-35 1.0	-	ML	SILT: non plastic to low liquid limit, pale brown-orange, some fine grained sand.	_	⊕ I St to VSt		VS 81/ 29 kPa
		- 1.5					St ⊕ ⊕ 		VS 110/ 37 kPa
			1				⊕ © 		VS 97/ 37 kPa
		-34 2.0		. ML	Sandy SILT: fine grained, low liquid limit, pale brown.		 ⊕© 		MATUA SUBGROUP VS 83/ 34 kPa
N Image: Second seco		- 2.5							VS 76/ 37 kPa
2 2				•••••					VS 60/ 37 kPa
		-33 3.0							VS 68/ 40 kPa
		- 3.5			3.5 m: becoming pale brown-pale grey		⊕⊙ ⊕⊙		VS 86/ 43 kPa
			-	· · ·	3.8 m becoming nale vellow-nale grey with				VS 91/ 45 kPa
	·	-32 4.0			some specks of black and orange				VS 83/ 48 kPa
	·	- 4.5							VS 89/ 55 kPa
									VS 86/ 55 kPa
	Hand Auger HA11-AQ terminated at 5.0 m Target depth								V3 9// 5/ KPa
ethod D auger drilling* S auger screwin A hand auger / washbore A hand auger	ig*	support M mud C casing penetratio	on rangi	N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand cenetrometer (kPa)	class s bi Clas moistur D drv	ification symbol & oil description ased on Unified ssification System		consistency / relative density /S very soft S soft firm St stiff /St very stiff hard



CDF_0_0_06_LBRARY.GLB rev.xl Log_COF BOREHOLE: NON CORED + DCP #13086AQ HA01.AQ_TO HA15.AQ 02.02.2015 DBC.GPJ_<CPrevingFile>> 20/02

coffey

Ξn	gi	ine	erin	g I	-0	g .	-	Ha	nd Auger		E s	Borehol heet: project r	e ID. no.		HA14-AQ 1 of 1 GENZTAUC13086
ient:		TH	E LAKE	S 2	012	(LT	D)				c	late sta	rted:		30 Jan 2015
incip	oal:										с	late cor	nplete	ed:	30 Jan 2015
ojec	t:	TH	E LAKE	s s	TAG	E 3	3 Z	ONE	3		le	ogged I	by:		DBC
catic	on:	То	p of slo	pe k	pelov	v P	ye	s Pa	Road		c	hecked	l by:		RBT
sitior	n: E	: 369,0	30; N: 799,	869 (E	BOPC2	000)		surface elevation: 48 m (MOTUHT1953)	é	angle fro	om horiz	ontal: 9	90°	DCP id.:
ill mo rillin	del: a in	Hand .	Auger ion			m	ater	rial sub	stance	ł	nole dia	meter : 5	0 mm		vane id.: 4523
	tion		samples &			0	,	tion	material description		y / nsity	vane	DC	P	structure and
support	¹ 2 penetra	3 water	field tests	BRL (m)	depth (m)	graphic lc		classifica symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistenc relative de	€ remoulde ● remoulde ● peak (kPa)		ws/ mm)	
Ĩ					-				ORGANIC SILT: non plastic, dark brown mottled orange brown.	D					TOPSOIL / COLLUVIUM
				_	0.5				SIL I: non plastic, orange brown flecked cream.	D to M	H F to St				VS UTP VS 31/ 10 kPa
				-47	1.0-										VS 57/ 11 kPa
				-	- - 1.5-				ORGANIC SILT: non plastic, black.	D to M	F	-			COLLUVIUM VS 45/ 19 kPa
				46	-										VS 31/ 16 kPa
		ed		-40	2.0		-		SILT: non plastic, brown orange, with trace	M	VSt	52 7 			VS 38/ 18 kPa YOUNGER ASHES
 z		Not Encounte		-	2.5				uay.			⊕ ¦⊝ 			VS 130/ 44 kPa
				-45	3.0-				SILT: non plastic, brown orange, with trace clay, and minor dark grey and cream inclusions (course sand sized).	M	VSt				VOLCANIC ASHES VS 126/ 38 kPa
					-				- with some black manganese nodules and dark grey inclusions (fine to medium gravel sized) from 2.9m.						VS 67/ 41 kPa
				-	3.5				orange brown.						
				-44	4.0-				Sandy SILT: non plastic to low liquid limit, pale orange brown, with minor clay.	M to W	VSt	- 00 00 00 00 00 00 00 00			VS 160/ 48 kPa
				-	4.5	•			SILT : non plastic to low liquid limit, pale orange brown, with some sand and minor clay.	M to W	St to VSt	- + • 			VS 139/ 49 kPa
				-43	- 5.0										VS 79/ 19 kPa
T					-				Hand Auger HA14-AQ terminated at 5.2 m Target depth						VS 97/ 44 kPa
ethod D auger drilling* S auger screwing* A hand auger Washbore A hand auger bit shown by suffix bit shown by suffix			no rar	N nil samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample Frauging to U## HP hand penetrometer (kPa) N standard penetration test (SPT) V SPT - cample reconverted				classification symbol & soil description consistency / relative density based on Unified VS very soft Classification System F firm moisture VSt very stiff D dry H hard M moist Fb friable							

Ξn	g	in	e	erin	g l	-0	g.	-	Hai	nd Auger		E s	Borehole heet: project n	ID. o.		HA15-AQ 1 of 1 GENZTAUC13086
lient	:	7	ΉE	LAKE	S 2	012	(LT	D)				C	late star	ted:		30 Jan 2015
rinci	pal	:									date completed:					30 Jan 2015
roje	ct:	7	ΉE	ELAKE	s s	TAG	E 3	3 Z	ONE	3		logged by:				SWH
ocati	on:	N	ſid	dle of s	slop	e be	elov	v F	yes	Pa Road		checked by: RBT				RBT
ositio	n: E	E: 369	9,03	4; N: 799,8	356 (E	BOPC2	000)		surface elevation: 39 m (MOTUHT1953)	á	angle from horizontal: 90				DCP id.:
rill mo	odel:	: Han	d A	uger				ator	ial cub	stanco	ł	nole dia	meter : 50) mm		vane id.: 2244
	ig ii 5								5 F	material description		sity	vane	D	CP	structure and
support	¹ ² penetrati	е.	water	samples & field tests	ŠRL (m)	depth (m)	graphic loc	0	classificati symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency relative den	shear ⊕ remoulded ⊚ peak (kPa) 00 00 00 00 00 00	(blc 100	ws/ mm) ∞∞	additional observations
Â					- 35	-	Π	X	OL	SILT: non plastic, black, some roots, trace of sand.	D					TOPSOIL
					_	0.5-			ML	SILT: non plastic, brown.		F				COLLUVIUM VS 164/ 55 kPa
						-				0.8 m becoming brown-orange nonplastic to		St to				VS 46/ 20 kPa
					-38	- 1.0				low plasticity		VSt				VS 89/ 37 kPa
					-	- - 1.5							⊕ ⊕ 			VS 99/ 40 kPa
						-				1.8 m: becoming dark brown-black		F	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ⊕ ● ↓ ↓ ↓			VS 107/ 43 kPa
					-37	2.0-	1			CII Tuleuulisuid limit nole brown	_	Chito				
		Ì	untered			-						VSt	• •		ii II	VS 07/45 kPa
 			Not Enco		_	2.5							 ⊕ ∳			VS 107/ 40 kPa
					-36	3.0-										VS 115/ 48 kPa
						-							 ⊕ ⊚ 			VS 112/ 40 kPa
						3.5										VS 123/ 43 kPa
					-35	4.0-				4.0 m: with a trace of fine grained pale orange-grey subangular gravel			⊕ ⊕ 			VS 99/ 45 kPa
					-	- - 4.5-				4.5 m with some fine grained sand		VSt				VS 120/ 48 kPa
						-				4.6 m: becoming pale orange-pale brown, with some black specks			♥ ♥ ● ! ●!			VS 136/ 53 kPa
*					-34	5.0				Hand Auger HA15-AQ terminated at 5.0 m Target depth						VS 167/ 57 kPa
etho D S A / A	bit s	er drill er scro d augo hbore d augo shown	ing* ewing er er by s	g* uffix	sup M I C C pen wat	port mud casing etration er er ∎ ∎ 10- lev	no rau Oct-12 el on c	N o resis nging fusal 2 wate	nil tance to er	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	class s Cla moistu D dr M m W we S sa Wo ob	sification soil desc based on ussification re y bist st turated	n symbol & cription Unified on System	 	 0 1 1 1 1 1 1 1 1 1 1	consistency / relative density /S very soft 5 soft 5 firm 5 stiff /St very stiff 4 hard 7b friable /L very loose 6 loose

Appendix D - Post Development Investigation Data



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 504 Innetion

Borehole ID.	HAL504
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	SBG
ala alƙa al layu	DBC

						• ·			checked by.			
positi	on: Not	Speo	cified					surface elevation: Not Specified	angle from horizontal: 90°	DCP id.:		
drill m	nodel: Ha	and A	Auger					drilling fluid:	hole diameter : 50 mm	vane id.:		
drilli	ing info	mati	on			mate	erial sub	stance				
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	moliciture molic	structure and additional observations		
		Not Encountered						0.0 m: Refused at 3 different locations due to gravel hardfill Hand Auger HAL504 terminated at 0.0 m Refusal				
meth AS HA W HA * e.g. B T V	method AD support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger Y washbore * bit shown by suffix e.g. AD/T B blank bit T T C bit V V bit		N no res rangir refusa Oct-12 we el on date er inflow er outflow	I nil sistance g 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	classification symbol & soil description based on Unified g Classification System g moisture g D dry M moist W wet S saturated 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					



THE LAKES (2012) LIMITED client:

principal:

CDF_0_9_06_LIBRARY GLB revait Log_COF BOREHOLE: NON CORED + DCP_13086AP_STAGE 31 GCR_MASTER.GPJ_<CDrawingFile>> 08/12/2017 15:08

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL504-505
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	SBG

location:	BO	BOUNDARY OF LOT 504 AND 505							checked by: DBC				
position: N	Not Spec	cified					surface elevation: Not Specified	a	angle fro	om horizontal: 9	0° DCP id.:		
drill model:	Hand A	Auger					drilling fluid:	ł	nole diar	meter : 50 mm	vane id.:		
drilling in	nformati	on			mate	rial sub	stance						
method & support	s - 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	moisture condition	consistency / relative density	vane DC shear ⊕remoulded ⊚peak 100 m (kPa)	P structure and ws/ additional observations		
							0.0 m: Refused at 3 different locations due to gravel hardfill Hand Auger HAL504-505 terminated at 0.0 m Refusal						
method AD auge AS auge HA hanc W wash HA hanc * bit sl e.g. AD/1 B blani T TC b V V bit	vethod support D auger drilling* S auger screwing* IA hand auger V washbore IA hand auger V washbore IA hand auger V washbore IA hand auger bit shown by suffix more g AD/T B blank bit TC bit water inflow V water outflow			N no res rangin refusa Oct-12 wa d on date er inflow er outflov	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 vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	class s b Cla moistur D dr M mo W we S sa Wp pla WI liq	sification soil desc ased on ssificatio re y bist st turated astic limit uid limit	symbol & ription Unified n System	LII 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			



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 505 la antinua.

Borehole ID.	HAL505
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	SBG

_	ocation: CENTRE OF LOT 505 position: Not Specified surface elevation: Not Specified														
ĥ	ositio	on: Not	Spec	cified					surface elevation: Not Specified	angle from horizontal: 90°				DCP id.:	
(rill mo	odel: Ha	and A	luger					drilling fluid:	ł	nole dia	meter : 50 n	nm	vane id.:	
┢	drillir	ng infor	mati	on			mate	erial sub	stance					1	
-	support 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) 03 00 00000000000000000000000000000000	DCP (blows/ 100 mm)	structure and additional observat	ions
CDF_0_9_06_LIBRARY.GLB rev.AT Log COF BOREHOLE: NON CORED + DCP_13086AP_STAGE 31 GCR_MASTER.GPJ_< <drawingfile>> 08/12/2017 15:08</drawingfile>	Z		Not Encountered						0.0 m: Refused at 3 different locations due to gravel hardfill Hand Auger HAL505 terminated at 0.0 m Refusal					DCP REFUSAL	
	method AD auger drilling* AA support M mud C casing HA hand auger penetration W washbore penetration HA hand auger water * bit shown by suffix e.g. AD/T B blank bit T T T C bit water		oort nud assing etration er leve wate wate	I no reservation reservatio reservation reservation reservation reservation reservatio	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 HB hammer bouncing	Class class Cla moistu D dr M m W we S sa Wp pla WI liq	sification soil desc pased on assification re y oist oist oist oist oist oist oist oist	a symbol & ription Unified on System		L consistency / relative dens Very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium der D dense VD very dense	sity			



THE LAKES (2012) LIMITED client:

principal:

TC bit V bit

project: THE LAKES, STAGE 3I GCR

Borehole ID. HAL505-506 1 of 1 sheet: 773-GENZTAUC13086A project no. date started: 26 Oct 2017 26 Oct 2017 date completed: logged by: SBG

location:	BO	UNDAR	Y O	FLC	OT 50	04 50	6 AND 511	checked by: DBC				
position: N	Not Spec	cified					surface elevation: Not Specified	а	ingle fro	m horizontal: 90	° DCP id.:	
drill model	: Hand A	Auger					drilling fluid:	h	ole diar	meter : 50 mm	vane id.:	
drilling in	nformati	on			mate	rial sub	stance					
method & support ¹ 2 penetration	3 r 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	moisture condition	consistency / relative density	vane DCF shear ⊕remoulded ⊚peak 100 m (kPa) B D G G Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	s/ m) S	
▲ ▲ ∀H ∠	countered						ORGANIC SILT: non plastic, dark brown black.	D to M				
				0.5	****		0.3 m: Refused at 3 different locations due to gravel hardfill Hand Auger HAL505-506 terminated at 0.3 m Refusal					
AS I EK. GPJ << Urawing				1.5 — - - 2.0 —								
סאר_סו אטר טו ניכיד_וזי 				- - - 2.5 -								
				- - 3.0 — -								
				3.5								
				4.0								
				4.5								
method AD aug AS aug HA han W was HA han * bits e.g. AD/ B blan T T Ctt	method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand buger W washbore HA hand buger W water * bit shown by suffix e.g. AD/T B blank bit T TC bit		N no res rangin refusa Oct-12 wa el 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 vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	class s Clas moistur D dry M mc W we S sat Wp pla Wi liqu	ification oil desc ased on ssificatio re / / oist t turated ustic limit uid limit	i symbol & ription Unified n System	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			



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 506

Borehole ID.HAL506sheet:1 of 1project no.773-GENZTAUC13086Adate started:26 Oct 2017date completed:26 Oct 2017logged by:PRMchecked by:DBC

position: Not Specified			surface elevation: Not Specified	angle from ho	rizontal: 90°	DCP id.:
drill model: Hand Auger		-	drilling fluid:	hole diameter	: 50 mm	vane id.: 1447
drilling information	<u> </u>	material subst	ance			
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 om mon	ne DCP ear (blows/ 100 mm	structure and additional observations
method I <td>0.5- 1.0- 1.5- 2.0- 2.5- 3.0- 3.5- 4.0- 4.5-</td> <td></td> <td>orgANIC SILT: non plastic, dark brown black. SILT: non plastic, pale grey-brown, with minor fine grained sand. refusal at three different locations due to hardfill gravels Hand Auger HAL506 terminated at 1.0 m Refusal samples & field tests</td> <td>M H YS</td> <td></td> <td>TOPSOIL FILL FIL</td>	0.5- 1.0- 1.5- 2.0- 2.5- 3.0- 3.5- 4.0- 4.5-		orgANIC SILT: non plastic, dark brown black. SILT: non plastic, pale grey-brown, with minor fine grained sand. refusal at three different locations due to hardfill gravels Hand Auger HAL506 terminated at 1.0 m Refusal samples & field tests	M H YS		TOPSOIL FILL FIL
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 C bit		N nil no resistance ranging to GCt-12 water el on date shown ter inflow ter outflow	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	soil description based on Unifie Classification Syst moisture D dry M moist W wet S saturated Wp plastic limit WI liquid limit	n d em	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



THE LAKES (2012) LIMITED client:

principal:

CDF_0_9_06_LIBRARY.GLB rev.AT Log COF BOREHOLE: NON CORED + DCP 13086AP_STAGE 31 GCR_MASTER.GPJ <<DrawingFile>> 08/12/2017 15:08

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL506-507
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	SBG

location: BOUNDARY OF LOT 506 AND 507								checked by:				DBC	
position: Not Specified						surface elevation: Not Specified				angle fro	om horizon	tal: 90°	DCP id.:
drill model: Hand Auger							drilling fluid:			nole diar	meter : 50	mm	vane id.: DR2244
drilli	ng info	ormati	on			material substance							
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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) 00 05 05	DCP (blows/ 100 mm)	structure and additional observations
					_			ORGANIC SILT: non plastic, dark brown black.	М				
– HA – – N –		Not Encountered	VS 157/ 43 kPa VS 157/ 43 kPa VS >182 kPa					SILT: non plastic, brown orange mottled pale brown white, trace fine to medium grained sand, minor subangular gravel clasts.		VSt			FILL -
			VS 182/ 32 kPa		- - 1.5 - - - -								
* *			- 32 kPa		2.0	****		Hand Auger HAL506-507 terminated at 2.0 m			¶ ¶ ¶		
					2.5			Target depth	class	sification	I I I I I I I I I I I I I I I I I I I		
metho AD AS HA W HA * e.g. B T V	bd auger auger hand a washb hand a bit sho AD/T blank I TC bit V bit	drilling screwin auger auger wn by bit	⊾ ng* suffix	support M mud N nil C casing penetration ranging to ranging to ranging to ranging to ranging to ranging to ranging to ranging to water level on date shown water inflow water outflow			nil stance g to ter 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	moistur D dŋ M mc W we S sa Wp pla WI liq	re y bist turated astic limit uid limit	ription Unified n System		consistency / relative density VS very soft VS 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


THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

•	Borehole ID.	HAL507
	sheet:	1 of 1
	project no.	773-GENZTAUC13086A
	date started:	26 Oct 2017
	date completed:	26 Oct 2017
	logged by:	PRM

location: CENTRE OF LOT 507 checked by: DBC							
position: Not Specified			surface elevation: Not Specified	angle from horizontal: 90° DCP id.:			
drill model: Hand Auger			drilling fluid:	hole diameter : 50 mm	vane id.:		
drilling information		material subst	ance				
samples & 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	→ transition of the second se	s/ s/ m)		
H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H <th></th> <th></th> <th>SILT: non plastic, brown orange mottled black, trace fine to medium grained sand, trace subangular gravel. [Hand Auger HAL507 terminated at 0.2 m Refusal</th> <th></th> <th>I FILL - I - -</th>			SILT: non plastic, brown orange mottled black, trace fine to medium grained sand, trace subangular gravel. [Hand Auger HAL507 terminated at 0.2 m Refusal		I FILL - I - -		
method AD auger drilling* AS auger crewing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T TC bit	support M mud C casing penetration water	N nil no resistance ranging to refusal Oct-12 water el on date shown ter 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	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated 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		



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL507-508
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	PRM

lo	location: BOUNDARY OF LOT 507 AND 508										С	hecked	by:		DBC
ро	position: Not Specified								surface elevation: Not Specified		angle fro	om horizo	ntal:	90°	DCP id.:
dri	drill model: Hand Auger								drilling fluid:		hole diar	meter : 50) mn	n	vane id.: 1447
d	rillin	ig info	mati	on			mate	rial sub	stance						1
method &	support	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)	(b 10	DCP blows/ 0 mm)	structure and additional observations
SCR_MASTER.GPJ < <drawingfile>> 08/12/2017 15:08</drawingfile>			Not Encountered wa	VS UTP VS 204/ 25 kPa VS 183/ 58 kPa VS 162/ 45 kPa VS 158/ 42 kPa	R	ق 		syr	Sandy SILT: non plastic, pale brown, sand is fine grained, with minor gravel, and trace clay.	<u>е</u> в D М	VSt to H VSt				FILL
CDF_0_9_06_LIBRARY.GLB.rev.A1_Log_COF_BOREHOLE: NON CORED + DC/F_1300864Y_S1AGE 31 GG															
m A A H W H * e B T V	netho D S A / A	d auger d auger s hand au washbo hand au bit show AD/T blank bi TC bit V bit_	rilling* crewir iger iger n by s	ig* suffix	supp M r C c pend wate	etration	N - no res 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	clas E Cla moistu D dr M m W w S sa Wp pl WI lic	sification soil desc based on assificatio assificatio re y oist et aturated astic limit uuid limit	n symbol 8 ription Unified n System	<u>.</u>		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



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 508

Borehole ID.HAL508sheet:1 of 1project no.773-GENZTAUC13086APdate started:07 Dec 2017date completed:07 Dec 2017logged by:PRMchecked by:DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	angle from horizontal: 90° DCP id.:	
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm vane id.: 4523		
drilling information	material subs	tance			
samples & set up of the station field tests	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	→ List vane → Li	structure and s/ additional observations	
Y F × € > I I VS UTP I I VS 150/ I I VS 90/ I I VS 90/ I I VS 87/		ORGANIC SILT: non plastic, dark brown mottled brown, with some fine to medium grained sand, trace clay. SILT: non plastic, brown mottled pale brown, with trace to minor fine to medium grained sand. 0.8 m: with trace clay Clayey SILT: low plasticity, orange-brown mottled brown, with trace fine grained sand. SILT: non plastic, orange-brown mottled brown, with trace fine grained sand. SILT: non plastic, orange-brown. Clayey SILT: low plasticity, orange-brown mottled brown/dark brown. 1.5 m: becoming medium plasticity, mottled pale pink-brown	D H H H D to M YS UTP H M YS UTP H VSt YS UTP H H H H VSt H H H H H H H H VSt H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H	» ≠ I II II II II II II II II II II II II I	
• •		Hand Auger HAL508 terminated at 2.0 m Target depth			
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 TC bit V V bit	support M mud N nil C casing penetration penetration registration water 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 S saturated Wp plastic limit WI liquid limit	VSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CORNER OF LOT 508

Borehole ID.	HAL508c
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	07 Dec 2017
date completed:	07 Dec 2017
logged by:	PRM
ala alva al lavu	DBC

position	position: Not Specified surface elevation: Not Specified							surface elevation: Not Specified		angle from horizontal: 90° DCP id.:			
drill mo	del: Ha	and A	luger					drilling fluid:		hole dia	meter : 50 mm		vane id.: 4523
drillin	g info	mati	on			mate	rial sub	stance		1			
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 DC shear ⊕remoulded ⊚ peak 100 r (kPa) ⊛ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P ws/ nm) ∞ ₽	structure and additional observations
HA HA STATE		Not Encountered W	VS UTP VS 194/ 60 kPa VS 172/ 25 kPa VS 184/ 37 kPa VS 87/ 35 kPa					ORGANIC SILT: non plastic, dark brown mottled brown, with some fine to medium grained sand, trace clay. Clayey SILT: low plasticity, brown mottled pale brown, sand is fine grained. Sandy SILT: non plastic, brown, sand is fine grained. Clayey SILT: low plasticity, orange-brown mottled brown, with trace fine grained sand. 1.3 m: becoming pale brown mottled brown Clayey SILT: non plastic, pale brown, with minor fine grained sand, fint organic odour, trace fine rootlets. Hand Auger HAL508c terminated at 2.0 m Target depth		VSt to H	0 0 <td></td> <td>TOPSOIL FILL Stiff to auger from 0.3m to 0.9m.</td>		TOPSOIL FILL Stiff to auger from 0.3m to 0.9m.
method AD a AS a HA f W W HA f e.g. A B t T	I I I	rilling* crewir iger iger m by s	ig⁺ suffix	supj M r C c pene wate	port mud assing etration er 10-0 leve wat	N no res rangin refusa Oct-12 wa el on date er 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 Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal	clas Cla Cla Cla Cla Cla Cla Cla Cla Cla Cla	sification soil desc based on assification re y ooist et aturated astic limit uid limit	n symbol & ription Unified un System	II II VSF SV HFV LMD	onsistency / relative density S very soft soft firm t stiff St very stiff hard b friable L very loose loose ID medium dense dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 509 location.

Borehole ID.	HAL509
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	07 Dec 2017
date completed:	07 Dec 2017
logged by:	PRM
checked by	DBC

Doc'H		C	aifiad					ourfood alouation: Not One-Stad		ngle f	m hori-ort-l. C	
positio	drill model: Hand Auger drilling fluid:							surface elevation: Not Specified	angle from horizontal: 90° DCP id.:			
arili m	drilling information								ŕ	iole dial	neter : 50 mm	vane Id.: 4523
ariii	ng intoi	mat	lon			mate	riai sub	stance		>		
method & support	1 2 penetratior 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classificatior symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative densit	vane DC shear (blow ⊕remoulded ⊚peak (kPa) B ♀ ♀ ♀ ♀ ♀ ♀ ♀ ♀	P structure and ws/ additional observations nm)
					-			ORGANIC SILT: non plastic, dark brown mottled brown, with some fine to medium	D	Н		TOPSOIL
			VS UTP		- - 0.5-			In the second se	D to M			FILL
V 7		Encountered	VS UTP VS 179/ 35 kPa					0.8 m: becoming orange-brown, trace clay	М	VSt		II I Stiff to auger from 0.7m to I 1.0m.
T Z		Not E	VS 190/ 35 kPa		-			1.1 m: becoming brown mottled pale pink				
			VS >224 kPa VS 140/ 22 kPa		1.5					H		
			22 KF d		- 20-			Silty CLAY : low plasticity, pale orange-brown mottled pale pink, with minor fine grained sand.		VSt		
meth				SUD	2.5 			Hand Auger HAL509 terminated at 2.0 m Target depth	class	sification	I I	I I <td< td=""></td<>
AD AS HA W HA	method AD support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger Washbore penetration Washbore water * bit shown by suffix e.g. AD/T		N no res rangin refusa Oct-12 wa el on date	nil istance g to l ater 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)	b Cla moistuu D dr M mo W we S sa Wp pla	soil desc ased on ssificatio re y bist et turated astic limit	ription Unified n System	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense			
т V	B blank bit T TC bit V V bit		wat	er inflow er outflow	,	R refusal HB hammer bouncing	WI liq	uid limit		D dense VD very dense		



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 509 AND 510

Borehole ID.	HAL509-510							
sheet:	1 of 1							
project no.	773-GENZTAUC13086AP							
date started:	26 Oct 2017							
date completed:	26 Oct 2017							
logged by:	PRM							

DBC

checked by:

ро	position: Not Specified								surface elevation: Not Specified		angle fro	om horizontal:	90°	DCP id.:
dri	drill model: Hand Auger								drilling fluid:		hole dia	meter : 50 mm		vane id.: 1447
d	rilling i	infor	nati	on			mate	rial 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	moisture	consistency / relative density	vane D shear (bl ⊕remoulded ⊚peak 100 (kPa) ○ 8 8 8	ICP ows/) mm)	structure and additional observations
15:08 - HA			ot Encountered	VS UTP VS 247 kPa		0.5-			SILT: non plastic, pale brown mottled dark brown/orange. Sandy SILT: non plastic, brown mottled dark grey.	M	H	10 = 2 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 =		FILL - - - - - - - - - - - - - - - - - - -
GPJ < <drawingfile>> 08/12/2017</drawingfile>			Ž	VS 129/ 21 kPa VS 129/ 25 kPa VS UTP		1.5 - - 1.5 - - -			Silty CLAY: low plasticity, pale brown mottled pale pink/brown, with minor fine grained sand. Silty CLAY: medium plasticity, pale pink mottled white-pink/ pale orange. Clayey SILT: low plasticity, pale brown mottled brown, with minor fine to medium grained sand.		VSt	⊕ •		- - - - - - - - - - - - - - - - - - -
CDF_0_9_06_LIBRARY/GLB revait_log_COF BOREHOLE: NON CORED + DCP_13088AP_S1AGE 31 GCK_MASTER.						2.0			SILT: non plastic, brown, with minor fine to medium grained subangular gravel. shear vane UTP due to gravel hardfill Hand Auger HAL509-510 terminated at 1.9 m Refusal					
AI A: H, W H, e. B T V	D aug S aug A hai / wa A hai bit g. AD bla TC	ger dri ger sc nd aug ishbori nd aug showr D/T ank bit bit	Illing* rewin ger ger	ig* suffix	wate	etration	N - no resis ranging refusal Oct-12 war d on date er inflow er outflow	nil stance 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	CI D d M m W w S si Wp p WI lie	soil desc based on assificatio ry noist ret aturated lastic limit quid limit	ription Unified in System	F F L L	//S very soft S soft = firm St stiff /St very stiff I hard Fb friable /L very loose loose MD medium dense O dense /D very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL510
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	07 Dec 2017
date completed:	07 Dec 2017
logged by:	PRM
chockod by:	DBC

position: No	t Specified			surface elevation: Not Specified	-			
drill model: H	and Auger			drilling fluid:	angle from horizontal: 90° DCP id.:			
drilling infc	ormation		material subst	ance				Vanc 10 4020
upport penetration	samples & field tests	RL (m) lepth (m)	Iraphic log lassification iymbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture	onsistency / elative density	vane Do shear ⊕remoulded ⊚peak (kPa)	CP structure and ows/ additional observation
	VS UTP	0.5-		ORGANIC SILT: non plastic, dark brown olack. SILTY SAND: fine grained, brown mottled pale brown.	D to M	MD	B D	••••• ••••• TOPSOIL ••••• ••••• ••••• ••••• ••••• ••••• ••••• •••• ••••• •••• ••••• •••• ••••• •••• ••••
		1.0- 1.5- 2.0- 2.5- 3.0- 3.5- 4.0- 4.5-		Hano Auger HALS10 terminated at 0.9 m Target depth				
method AD auger of AS auger of HA hand a W washbu HA hand a * bit sho e.g. AD/T B blank t T TC bit V V bit	drilling* uger ore uger wn by suffix wit	support M mud C casing penetration water	N nil no resistance reging to -Oct-12 water el on date shown ter inflow ter 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	class b Cla moistuu D dr M mo W we S sa Wp pla WI liq	sification soil desc pased on passificatio re y poist et turated astic limit uid limit	n symbol & ription Unified ın System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

HEINKES STACE 21 CCB proj

Borehole ID.	HAL510-511
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	PRM

project:	THE LAKES, STAC	<i>GE 31 GCR</i>			lo	bgged by:		PRM
location:	BOUNDARY OF L	OT 510 ANE	D 511		с	hecked by	/:	DBC
position: No	ot Specified		surface elevation: Not Specified	а	ngle fro	om horizonta	al: 90°	DCP id.:
drill model: I	Hand Auger		drilling fluid:	h	ole dia	meter : 50 n	nm	vane id.: 1447
drilling inf	ormation	material subst	tance					
method & support 1 2 2 penetration	kater kater tield tests 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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DCP (blows/ 100 mm)	structure and additional observations
			ORGANIC SILT: non plastic, dark brown	D				TOPSOIL
	VS UTP		black. SILT : non plastic, pale brown, with minor fine to medium grained sand.	D to M	Н	 γς μτρ		FILL
H Z H H	US >247 kPa		Clayey SILT: low plasticity, pale brown mottled brown, with trace fine grained sand.	М				
	1.0-		Refusal on hardfill gravel at 1.0m at 2 locations			Li i i L		
	1.5- 2.0- 2.5- 3.0- 3.5- 4.0- 4.5-		Refusal					

meth AD AS HA W	hod auger drilling* auger screwing* hand auger 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	hand auger	no resistance ranging to water	U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered	moisture D dry M moist W wet	VSt very stiff H hard Fb friable VI very loose
* B T V	bit shown by suffix AD/T blank bit TC bit V bit	I0-Oct-12 water level on date shown water inflow water outflow	Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Wp plastic limit Wl liquid limit	L loose MD medium dense D dense VD very dense

CDF_0_9_06_LIBRARY.GLB.rev/AT_L0g_COF_BOREHOLE: NON CORED + DCP_13086AP_STAGE 31 GCR_MASTER.GPJ_<<DrawingFile>> 08/12/2017 15:08



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL511
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	PRM
checked by:	DBC

posi	osition: Not Specified surface elevation: Not Specified angle from horizon					ontal: 90° DCP id.:							
drill ı	model: Hand	Auger			-		drilling fluid:		nole diar	meter : 50	mm		vane id.: 1447
dril	ling informa	tion			mate	rial sub	stance		<u> </u>				
method & support	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) 03 00 05 00	DCP (blows 100 mi	s/ m) ₽	structure and additional observations
	ncountered	VS UTP		- - - 0.5 -			ORGANIC SILT: non plastic, dark brown black. // SILT: non plastic, pale brown, with minor fine grained sand.	M	VSt to H	 γς ψτρ 			TOPSOIL FILL - - - - - -
Ξ Z	Note the second	VS 183/ 39 kPa		- 1.0- -			Clayey SILT: low plasticity, pale brown mottled pale grey, with trace fine grained sand.	_		- ⊕ ⊙ - -			-
	 	VS 227/ 55 kPa		- 1.5—			Sandy SILT: non plastic, pale brown, sand is fine to medium grained.						-
Y Y				2.0			Hand Auger HAL511 terminated at 1.6 m Refusal						
met AD AS HA W HA * e.g. B T	hand auger bit shown b AD/T blank bit	g* ving* v suffix	sup M r C c pen wat	4.5	N no resis refusal Oct-12 wa el on date ter inflow	nil stance g to iter 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	clas E Cla moistu D dr M m W w S sa Wp pl iic	sification soil desc assed on assification re y oist et uturated astic limit	I I I I		Cost Section 1 Cost S	nsistency / relative density s very soft soft firm stiff t very stiff hard friable very loose loose D medium dense dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL512
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	07 Dec 2017
date completed:	07 Dec 2017
logged by:	PRM
abaalaad bur	DBC

			find						
positio drill m	on: Not S lodel [,] Hai	nd A	nea					surrace elevation: Not Specified drilling fluid:	angle from nonzontal: 90° DCP ld.: hole diameter : 50 mm vane id : 4523
drilli	ng inforr	natio	n			mate	ial subs	stance	
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	
		Not Encountered w	VS UTP VS UTP VS UTP VS UTP	Ľ		D C C C C C C C C C C C C C C C C C C C		ORGANIC SILT: non plastic, dark brown black. SILT: non plastic, pale brown, with trace fine grained sand. 0.5 m: with minor fine grained sand 0.8 m: with trace fine grained sand	D I I I D I I I D I I I D I I I D I I I D I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I M VS UTP I I I I VS UTP I I I
					-2.0 			Hand Auger HAL512 terminated at 2.0 m Target depth	i <iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii< td=""></iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii<>
meth AD AS HA W HA * e.g. B T V	od auger dri auger sci hand aug washbore hand aug bit showr AD/T blank bit TC bit V bit	lling* rewing ger ger n by su	9* uffix	supp M r C c pene wate	etration	N no resis ranging refusal Oct-12 wa el on date er inflow er outflow	nil stance 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) 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	solid description consistency / relative density based on Unified S soft Classification System F firm moisture St stiff D dry H hard M moist Fb friable W wet VL very loose S saturated L loose Wp plastic limit MD medium dense Wi liquid limit D dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 512 AND 513

Borehole ID.	HAL512-513
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	PRM

checked by

locati	on:	BO	UNDAR	RY O	F LC	DT 5 1	12 AN	ID 513	checked by:					DBC
position: Not Specified								surface elevation: Not Specified	á	angle fro	om horizor	ntal: 9	0°	DCP id.:
drill model: Hand Auger								drilling fluid:	ł	nole dia	meter : 50	mm		vane id.: 1447
drilli	ng info	rmati	on			mate	rial sub	stance						
method & support	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)	DCI (blow 100 m	P vs/ nm)	structure and additional observations
					-			ORGANIC SILT: non plastic, dark brown black.	М					TOPSOIL
		Itered	VS 179/ 21 kPa		- - 0.5-			SILT: non plastic, brown mottled pale orange/dark brown, with trace subangular fine grained gravel.	-	VSt	 ⊕ ⊙			FILL
		Not Encour	VS 217/ 29 kPa		-			mottled pale orange, with minor fine to medium grained sand.			-@ @			
					- - 1.0 - -									
<u>'</u>					1.5-	~~~		Refusal on gravel hardfill Hand Auger HAL512-513 terminated at 1.4 m Refusal						
					- 2.0									
					-									
					- 2.5 -									
					-								 	
					- 3.5—									
					-								 	
					4.0									
					- 4.5									
					-									
method support AD auger drilling* M AS auger screwing* M HA hand auger penetration W washbore penetration HA hand auger water * bit shown by suffix water e.g. AD/T blank bit T T C bit water				er drilling* er drilling* fr screwing* d auger bore d auger bauger t auger d auger bore d auger t auger d auger t auge			samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split soon sample	classification symbol & soil description based on Unified Classification System				c V S F	onsistency / relative density 'S very soft s soft firm t stiff	
							SS split spoon sample moresistance ranging to refusal N Standard penetration test (SPT) N			re y oist et			V H F V	St very stiff I hard b friable L very loose
				Vational Action of the second	Oct-12 wa I on date er inflow er outflow	ater shown	Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	S sa Wp pla Wl liq	iturated astic limi uid limit	t		L N D V	loose ID medium dense dense /D very dense	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL513
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	SBG
ale a closed las a	DBC

iocai	.011.					115				C	neckeu by.		DBC	
positio	on: Not	Spe	cified					surface elevation: Not Specified		angle fro	om horizontal: 9	0°	DCP id.:	
drill m	odel: Ha	and A	Auger					drilling fluid:		nole dia	meter : 50 mm		vane id.: DR2244	
drilli	ng info	mati	on			mate	rial sub	stance						
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	moisture condition	consistency / relative density	vane DC shear ⊕remoulded ⊚peak 100 r (kPa)	:P ws/ mm)	structure and additional observations	
		-			-			ORGANIC SILT: non plastic, dark brown black.	M				TOPSOIL	
					-			SILTY SAND: fine to medium grained, pale brown grey.	_		 		FILL	
- HA		lot Encountered	VS >182 kPa		0.5			SILT: non plastic, brown orange, trace fine to medium grained sand.		VSt to H			-	
		2	VS >182 kPa		-			Clayey SILT: low plasticity, brown orange mottled black.	_					
			VS >182 kPa		1.5			SILT: non plastic, brown orange mottled black white.					-	
					2.5 - 2.5 - - - - - - - - - - - - - - - - - - -			Hand Auger HAL513 terminated at 2.0 m Target depth					-	
meth AD AS HA W HA * e.g. B T V	od auger d hand au washbo hand au bit show AD/T blank bi TC bit	rilling crewii iger iger iger n by t	∙ ng* suffix	supp M r C c pene wate	port mud casing etration er er ∎ leve wat ev wat	N no res rangin refusa Oct-12 wa el on date er inflow er outflow	nil istance 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	clas s Cla moistu D dr M m W w S sa Wp pl WI liq	sification soil desc based on assificatio re y oist et aturated astic limit uid limit	a symbol & ription Unified n System	C S F S V H F I V L M D V	onsistency / relative density S very soft soft firm t stiff St very stiff hard b friable L very loose loose ID medium dense D very dense	



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 513 AND 514

Borehole ID.	HAL513-514
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	PRM

checked by

ositio		location: BOUNDARY OF LOT 513 AND 514							checked by:				
position: Not Specified surface elevation: Not Specified							é	angle from horizontal: 90° DCP id.:			DCP id.:		
rill m	ill model: Hand Auger							drilling fluid:	ł	nole dia	meter : 50 mm		vane id.: 1447
drilli	illing information material subs						rial sub	stance					
support &	2 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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak 100 m (kPa)	P ws/ nm)	structure and additional observations
	9 / 7 	untered	VS 213/		-			ORGANIC SILT: non plastic, dark brown black.	M				TOPSOIL
 		Not Enco	39 kPa VS 166/ 35 kPa		- 0.5 -			SILT: non plastic, pale brown, with minor fine grained sand.		Н			FILL
			55 K 4		- 			Clayey SILT: low plasticity, pale brown mottled pale grey/pale orange, with minor fine grained sand. Refusal on gravel hardfill		VSt			
					- - 1.5-	-		Hand Auger HAL513-514 terminated at 1.0 m Refusal					
					2.0								
					- 2.5— -	-							
					- - 3.0								
						-							
					-								
					4.0	-							
					- 4.5	-							
					-	-			<u> </u>				
method support AD auger drilling* M AS auger screwing* C HA hand auger penetration W washbore penetration HA hand auger mud				rilling* rilling* support M mud N nil B bulk disturbed sample C casing D disturbed sample E e environmental sample ger re ger minut ger Ut## undicturbed sample ##### diameter				samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter	cias: t Cla moistu	classification symbol & soil description based on Unified Classification System D dry M moist W wet S saturated Wp plastic limit W liquid limit			nsistency / relative density very soft soft firm stiff St very stiff
* bit shown by suffix e.g. AD/T B blank bit T TC bit			er IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	reresistance ranging to HP hand penetrometer (kPa) refusal N standard penetration test (SPT) N* SPT - sample recovered on date shown VS vane shear; peak/remouded (kPa) R refusal			D dr M m W we S sa Wp pla WI liq	hard friable very loose loose D medium dense dense					



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL514
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	07 Dec 2017
date completed:	07 Dec 2017
logged by:	PRM
checked by:	DBC

position: Not Specified surface elevation: Not Specified								angle from horizontal: 90° DCP id.:							
drill model: Hand Auger drilling fluid:							ł	hole diameter : 50 mm vane i				vane id.: VH4523			
drill	rilling information material substance														
		tion		samples 8		-	Ð	tion	material description		ty / nsity	vane	DCF) c/	structure and
method & support	-	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 de	€ Peak (kPa) Sheet Constraints (kPa) Sheet	(blow: 100 m	s/ m) ₀₽	
				VS UTP		- - - 0.5 -			ORGANIC SILT: non plastic, dark brown black. SILT: non plastic, pale brown, with minor fine grained sand.	D	H	- γς μτΡ 			Topsoil Fill
N - N			Not Encountere	VS UTP VS 87/ 22 kPa		- - 1.0 - -			SILT: non plastic, grey-white, with trace clay. SILT: non plastic, brown, sand is fine grained. Clayey SILT: low plasticity, pale grey mottled orange. Sandy SILT: non plastic, brown, sand is fine	M	St VSt to	V\$UTP ⊕ ⊙ 			
				VS UTP		- 1.5 - - -			grained. 1.4 m: becoming grey-white		H	 VS UTP 			
									Refusal						
meth AD AS HA W HA * e.g. B T	nod au ha wa ha bi Al bl T(uger d uger s and au ashbo and au t show D/T ank bi C bit	rilling* crewir ıger ıger ıger	ig* suffix	supr M n C c pene wate	etration	N no res rangin refusa Oct-12 wa el on date er inflow er outflow	nil istance g to iter shown	samples & tield tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal	moistu D dr M ma W we S sa Wp pla WI liq	re y bist et turated assic limit uid limit	ription Unified n System			onsistency / relative density 'S very soft firm it stiff 'St very stiff hard b friable 'L very loose loose 1D medium dense o dense 'D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL515
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	PRM
checked by:	DBC

nosition: Not Specified Surface elevation: Not Specified									angle from horizontal: 90° DCP id ·						
position: Not Specified drill model: Hand Auger									drilling fluid:			angle fro	m norizontai: 9	90°	DCP Id.:
drill	drilling information material subst								rial sub	stance		noie uidi			vane iu 1447
												ţ,	vane DC	Þ	structure and
method & support		2 penetratio		Malci	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 dens	shear ⊕remoulded ⊚peak (kPa) ⊗ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ws/ nm)	additional observations
11	•						-			ORGANIC SILT: non plastic, dark brown ∖black.	М				TOPSOIL FILL
					VS 158/		-			SILT : non plastic, brown, with minor fine grained sand.					
					JJKFa		0.5-			Clayey SILT: low plasticity, brown mottled pale orange/grey.		VSt			
	-				VS 140/ 45 kPa		-			SILT: non plastic, brown mottled grey, with minor fine grained sand.					
							- 1.0-			SILTY SAND: fine grained, pale grey-white.					TE RANGA IGNIMBRITE
* *	1		-	_						Too stiff to auger further	-				
										Hand Auger HAL515 terminated at 1.2 m Refusal					
metl	ho	 				sup	- 4.5 - - - - -			samples & field tests	cla	assification		 	consistency / relative density
AD AS HA W HA * e.g. B T		auger auger hand washi hand bit sho AD/T blank TC bit	r drilli r scre auge bore auge own bit	ng* win er er	g* uffix	m r C c pene wate	nud asing etration er er lev wat	N no res rangin refusa Oct-12 wa el on date ter inflow	nil istance ig to i ater e 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	mois D M W S Wp WI	soil desc based on Classificatio ture dry moist wet saturated plastic limit liquid limit	ription Unified n System	> S F S > F F > L A C	/S very soft S soft Firm stiff /St very stiff I hard /b friable /L very loose Ioose MD Modelum dense 0 dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 515 AND 516

HAL515-516
1 of 1
773-GENZTAUC13086A
02 Nov 2017
02 Nov 2017
PRM

logged by: **PRM** checked by: **DBC**

position: Not Specified			surface elevation: Not Specified	angle from horizontal:	90° DCP id.:
drill model: Hand Auger			drilling fluid:	hole diameter : 50 mm	vane id.: 1447
drilling information		material substa	ance		
unter and the samples & samples & field tests field te	RL (m) depth (m)	graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	m moisture consistency model consistency model model consistency model consistency model consistency (plu consistency (plu	CP structure and additional observations
			DRGANIC SILT: non plastic, dark brown	D to M	
Yes Yes VS UTP Yes VS UTP VS UTP Yes VS UTP VS 196/ VS UTP VS 199/ VS 199/	- - 0.5 - -		Clayey SILT: low plasticity, grey mottled orange. 0.45 m: with minor fine grained sand	M VSt VSt VSUTP II ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ⊕ ↓ ⊕ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	FILL
58 kPa 	1.0-	s g	SILT : non plastic, brown, with trace fine rained sand.		
	1.5	S S	SAND: fine grained, grey mottled pale brown. Hand Auger HAL515-516 terminated at 1.3 m Refusal	D	Image: Television of the second se
	- - 2.0- -				
	- 2.5 - -				
	3.0				
	3.5				
	4.0				
	-		1		
method auger drilling* auger screwing* AS auger screwing* auger HA hand auger hand auger W washbore H HA hand auger H	support M mud C casing penetration	N nil - no resistance ranging to ◄ refusal	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_s cample recovered	ciassification symbol & soil description based on Unified Classification System moisture D dry M moist W wet	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VI very kope
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	Vate	Dct-12 water el on date shown er inflow er outflow	NC SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	S saturated Wp plastic limit WI liquid limit	L loose MD medium dense D dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL516
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	0° DCP id.:
drilling information	material sub	stance		
authod & samples & samples & field tests	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	v using the second sec	P structure and ws/ nm)
I I		ORGANIC SILT: non plastic, dark brown black. SILT: non plastic, brown orange, trace fine to medium grained sand. Clayey SILT: low plasticity, pale brown grey brown, minor to some fine to medium grained sand. SILT: non plastic, brown orange, trace clay, trace fine to medium grained sand. SAND: fine to medium grained, grey brown black, trace silt. Sandy SILT: non plastic, brown grey mottled black, sand is fine to medium grained. Hand Auger HAL516 terminated at 2.0 m Target depth	D to M M VSt G C C C C C C C C C C C C C	0 11 TOPSOIL 11
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 Vb#	support M mud N nil C casing penetration penetration ranging to refusal water 10-Oct-12 water level on date shown water utflow 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	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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 516 AND 517 location.

Borehole ID.	HAL516-517
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	PRM
abaalaad bur	DRC

												by.	220	
	position: Not Specified drill model: Hand Auger drilling information material substa									surface elevation: Not Specified angle from horizoni			ntal: 90°	DCP id.:
┟										stanco	11		, , , , , , , , , , , , , , , , , , , ,	Valie IU., 1447
ł	un									stance		>		
	method & support		penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classificatior symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / sysea bear (vo (eda) (vo (eda) (vo (eda) (vo (eda) (vo (eda) (vo (eda)) (vo (eda))) (vo (eda)) (vo (eda)))	DCP (blows/ 100 mm	structure and additional observations
ľ							_			ORGANIC SILT: non plastic, dark brown black.	М			TOPSOIL
					VS UTP VS >247 kPa		- - 0.5 <i>-</i> -			Sandy SILT: non plastic, pale brown mottled pale orange, sand is fine to medium grained, with trace clay.	_	Η γς ψτΡ 		FILL
15:09	AH N			Encountered	VS 125/ 32 kPa					Silty CLAY: low plasticity, pale grey-white	_	VSt		-
> 08/12/2017	Ī			Not	34 kPa		-			Sandy SILT: non plastic, brown mottled arey	_	⊕		DCP REFUSAL
R.GPJ < <drawingfile></drawingfile>							- 1.5 - - -			Sand is fine grained. // SAND: fine grained, brown mottled orange brown, with trace silt.				
R STAGE 31 GCR_MASTE	<u>* 1</u>	 					- <u>2.0</u> - - 2.5 -	~~~~		Hand Auger HAL516-517 terminated at 2.0 m Refusal				
ON CORED + DCP 13086/							- - 3.0 — -							
COF BOREHOLE: NO							3.5							
RY.GLB rev:AT Log							4.0							
CDF_0_9_06_LIBRA							4.5							
	met AD AS HA W HA * e.g. B T	thod a a h w h h b A b T	uger d uger s and au ashbo and au it show D/T lank bi C bit	rilling crewi iger iger iger n by t	∗ ng* suffix	sup M r C c pen	port nud casing etration er er leve wate	N no resi rangin refusal Oct-12 was on date or inflow or 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	class b: Clas moistur D dry M mc W we S sat Wp pla WI liqu	ification symbol 8 oil description ased on Unified ssification System re / bist t t turated ustic limit aid 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



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL517
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	PRM
checked by:	DBC

position: Not Specified							surface elevation: Not Specified			a	angle fro	om horizontal:	90°	DCP id.:
	drill model: Hand Auger							drilling fluid:			nole dia	meter : 50 mm		vane id.: VH1447
	drilling information						mate	rial sub	stance					
	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	moisture condition	consistency / relative density	vane DC shear (blo ⊕remoulded ⊚peak 100	CP ws/ mm)	structure and additional observations
.00			ncountered	VS >247 kPa VS 140/ 25 kPa		- - - 0.5 - - - -			ORGANIC SILT: non plastic, dark brown black. SILT: non plastic, grey mottled pale orange, with trace to minor clay. SILTY SAND: fine to medium grained, pale grey mottled pale orange.	W	H			TOPSOIL
TER.GPJ < <drawingfile>> 08/12/2017 15:</drawingfile>	₩ - N		Not Er	VS 147/ 42 kPa VS UTP VS 231/ 45 kPa		1.0 — - - 1.5 — - - - - - - - - - - - -			SILT: non plastic, brown.	M	VSt to H			
CDF_0_9_06_LIBRARY.GLB rev.AT_Log_COF BOREHOLE: NON CORED + DCP_13086AP_STAGE 31 GCR_MASI						2.5			Hand Auger HAL517 terminated at 2.0 m Target depth					
	meth AD AS HA W HA * e.g. B T V	od auger di auger so hand au washboi hand au bit show AD/T blank bit TC bit V bit	illing' crewir ger ger n by s	ıg* suffix	supp M r C c pene wate	etration	N no res rangin ⊲ refusa Oct-12 wa el on date er inflow er outflow	nil istance g to 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) R refusal HB hammer bouncing	class s Cla moistu D dr M moi W we S sa Wp pla WI liq	sification soil desc pased on assificatio re y oist et turated astic limit uid limit	n symbol & rription Unified ın System	G F F V F V L L N C	consistency / relative density /S very soft S soft = firm St stiff /St very stiff I hard Fb friable /L very loose loose MD medium dense 0 dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 517-518 location:

Borehole ID.	HAL517-518
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	SBG

location:	UNDAF	RY O	PF LC		c	hecked b	DBC	DBC					
position: I	Not Spe	cified					surface elevation: Not Specified	angle from horizontal: 9			tal: 90	0	DCP id.:
drill mode	el: Hand /	Auger					drilling fluid:	h	ole dia	meter : 50	mm	vane id.: SL588	vane id.: SL588
drilling information						rial sub	ostance						
method & support bonetration	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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) 00 00 000	DCP (blows 100 mr	√ addit n) ₽	structure and ional observations
A A A A A A A A A A A A A A	Image: Second	VS 179/ 56 kPa VS 132/ 31 kPa VS 152/ 40 kPa VS 92/ 46 kPa VS UTP					ORGANIC SILT: non plastic, dark brown black. SILT: non plastic, orange-brown, with trace fine grained sand. Silty CLAY: medium to high plasticity, grey-brown. SILT: non plastic, orange-brown mottled black, with trace fine grained sand. 1.0 m: with minor clay, and some fine to medium grained sand Clayey SILT: low plasticity, orange-brown mottled dark brown/white. Hand Auger HAL517-518 terminated at 2.0 m Target depth	<u>Ε</u> 8 Μ	St St			φ I TOPSOIL FILL I <td< td=""><td></td></td<>	
method AD aug AS aug HA han W was HA han * bit s e.g. AD/ B blar T TC V V hi	ger drilling ger screwi nd auger shbore nd auger shown by /T nk bit bit bit	* ng* suffix	supp M r C c penu wate	port nud casing etration er er leve wat	N 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 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	class s b Cla moistur D dry M mc W we S sai Wp pla WI liqu	ification coil desc ased on ssification re / / bist et turated astic limit uid limit	n symbol & rription Unified on System		Consistency VS S F St VSt H Fb VL L MD D VD	/ relative density very soft soft firm stiff very stiff hard friable very loose loose medium dense dense very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL518
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	SBG
chockod by:	DBC

iocal	юп.					/10				, c	necked by.	
position: Not Specified surface elevation: Not Specified angle from									om horizontal: 9	DCP id.:		
drill model: Hand Auger drilling information mat								drilling fluid:		hole dia	meter : 50 mm	vane id.: SL588
drilli	ng info	ormat	ion	-		mate	rial sub	stance				
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 DC shear (blo ⊕ remoulded ⊚ peak 100 r (kPa) ⊗ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CP structure and additional observations
					-	\bigotimes		ORGANIC SILT: non plastic, dark brown	D to N	VSt		TOPSOIL
			VS 161/		-			Sandy SILT: non plastic, orange-brown mottled white/dark brown.	м			FILL
			40 KPa		0.5			Silty CLAY: low to medium plasticity, grey-brown mottled black/dark brown, with minor fine grained sand.				
		ountered	VS 136/ 31 kPa		-						⊕ ⊙ □	
- ын — — — — — — — — — — — — — — — — — —		Not Enc			1.0			SAND: fine to medium grained, grey-brown, with trace silt.		D		
					-							DCP REFUSAL
					1.5							
					-							1 1 1 1 1 1
					2.0 -			Hand Auger HAL518 terminated at 2.0 m Target depth				
					-							
					2.5							
					- 30-							
					-							
					- 3.5							
					-							
					- 4.0-							
					-							
					4.5							
meth AD	od auger o	drilling	*	sup M	port nud	N	nil	samples & field tests B bulk disturbed sample	clas	sification soil desc	n symbol &	consistency / relative density VS verv soft
AS HA W	auger s hand a washbo	screwi luger ore	ng*	C of pen	asing etration			D disturbed sample E environmental sample SS split spoon sample	Cli	based on assificatio	Unified on System	S soft F firm St stiff
HA	hand a	luger				 no resist ranging refusal 	stance I to	U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moistu D di	ire Ty		VSt very stiff H hard
*	bit sho	wn by	suffix	wat	er	Oct-12 wa	ter	N* SPT - sample recovered Nc SPT with solid cone	W W S sa	et aturated		VL very loose
e.g. B T	blank b TC bit	oit			wat	er inflow	anowii	VS vane shear; peak/remouded (kPa) R refusal	Wp pl WI lic	astic limi quid limit		MD medium dense D dense
v	V bit			1	wat	ei outtiow		HB hammer bouncing				VD very dense



THE LAKES (2012) LIMITED client:

principal:

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Borehole ID.	HAL518-519
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	PRM

project:	TH	E LAKE	S, S	TAG	GE 31	GCR			lo	ogged by	/:		PRM
location:	BO	UNDAF	RY O	FLC	OT 51	8-51	9		с	hecked I	by:		DBC
position: No	ot Spec	cified					surface elevation: Not Specified		angle fro	om horizor	ntal: 9	90°	DCP id.:
drill model: H	Hand A	Auger					drilling fluid:		hole dia	meter : 50	mm		vane id.: 1447
drilling info	ormati	on			mate	rial sub	stance						
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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊛peak (kPa)	DC (blo 100	CP ws/ mm)	structure and additional observations
				_			ORGANIC SILT: non plastic, dark brown black mottled orange, trace fine to medium	М					TOPSOIL
	1			-			SILT: non plastic. brown.						FILL
	ountered			- 0.5 —			Sandy SILT: non plastic, pale grey mottled	7	VCt				
 H z	lot Enco	VS 153/ 29 kPa		-			Silty CLAY: low to medium plasticity, pale grey mottled pale orange.		VSI	 ⊕ ⊕			
				-			SILT: non plastic, brown.						
		VSUIP		1.0					Н	- VsUTP			
				-	~~~		SAND: fine grained, pale grey-white.	-	D				TE RANGA IGNIMBRITE
							too stiff to auger further at 1.3 m						
				1.5 - - 2.0			Hand Auger HAL518-519 terminated at 1.3 m Refusal						
				- - - 2.5 - - -									
				3.0									
				3.5									
				4.0									
method	drilling	 	supp	4.5			samples & field tests	clas	sification	n symbol &			consistency / relative density
AD auger	arilling	-	Мm	nud	N	nil	B bulk disturbed sample		SOII GeSC	npuon			/S very soft

auger screwing* D E SS U## disturbed sample environmental sample based on Unified S F St VSt soft firm AS C casing HA W HA hand auger Classification System environmental sample split spoon sample undisturbed sample ##mm diameter hand penetrometer (kPa) standard penetration test (SPT) SPT - sample recovered SPT with solid cone vane shear; peak/remouded (kPa) refueal penetration washbore stiff very stiff hard no resistance ranging to moisture D dry M moist W wet S saturated Wp plastic limit WI liquid limit hand auger ო 5 HP N N* H Fb ÷. friable water VL very loose 10-Oct-12 water level on date shown * bit shown by suffix ⊻ Nc VS L MD loose e.g. B T AD/T medium dense blank bit water inflow R HB D VD refusal dense TC bit V bit water outflow hammer bouncing very dense

08/12/2017 <<DrawingFile>> _0_9_06_LIBRARY.GLB rev:AT Log_COF BOREHOLE: NON CORED + DCP_13086AP_STAGE 31 GCR_MASTER.GPJ

E E

15:09



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 510 Innetion

Borehole ID.	HAL519
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	SBG
checked by:	DBC

iuca	uon.											
positi	on: Not	Spe	cified					surface elevation: Not Specified	i	angle fro	om horizontal: 9	0° DCP id.:
drill n	nodel: Ha	and A	Auger				• •	drilling fluid:		hole dia	meter : 50 mm	vane id.: 1447
drill	ing info	rmati	ion			mate	rial sub	stance			· · ·	
method & support	¹ 2 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	moisture condition	consistency / relative density	vane DC shear ⊕ remoulded © peak (kPa) B 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P structure and vs/ additional observations
			VS >247 kPa					ORGANIC SILT: non plastic, dark brown black mottled orange, trace fine to medium grained sand. SILT: non plastic, orange-brown, with minor clay.	D to M	H		TOPSOIL
- N		Not Encountered	VS 231/ 51 kPa VS 183/ 29 kPa		- - 1.0 - - - - - - - - - - - - - - - - - - -			Sandy SILT: non plastic, pale orange-brown.	_	VSt to H		
					-	××××		SAND: fine to medium grained, grey.				ECP REFUSAL CONTROL CONTROL
					2.0 - - 2.5 - - -			Hand Auger HAL519 terminated at 2.0 m Target depth				
					3.0							
					4.5							
method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger V washbore HA hand auger					port mud casing etration er er ↓ 10-0 leve	N no res rangin refusa Oct-12 wa on date or influence	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 Nc SPT with solid come VS vane shear; peak/remouded (kPa)	class class Cla moistu D dr M m W w S sa Wp pl	sification soil desc based on assificatio rre y oist et aturated astic limit	n symbol & ription Unified in System	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
B blank bit T TC bit V V bit					- wate	er outflow	,	R refusal HB hammer bouncing	vvi liq	jula limit		D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL519-520
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	PRM

IC	location: BOUNDARY OF LOT 519-520 checked by										y:	DBC		
р	ositio	on: Not	Spec	cified				surface elevation: Not Specified			angle fro	om horizont	al: 90°	DCP id.:
d	rill m	odel: Ha	and A	luger					drilling fluid:	ł	nole dia	meter : 50 r	nm	vane id.: 764
Ŀ	drilling information							rial sub	stance					
method 8.	support	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) 00 05 00	DCP (blows/ 100 mm)	structure and additional observations
CDF_0_9_06_LIBRARY GLB revait Log COF BOREHOLE: NON CORED + DCP 13086AP_STAGE 31 GCR_MASTER GPJ <		0 0 <t< td=""><td>Not Encountered v</td><td>VS UTP VS UTP VS UTP VS 128/ 31 kPa VS UTP VS UTP VS UTP</td><td>supp</td><td>0.5 - - - - - - - - - - - - -</td><td></td><td></td><td>ORGANIC SILT: non plastic, dark brown black mottled orange, trace fine to medium grained sand. SILT: non plastic, brown mottled pale brown/pale grey/pale orange, with minor fine grained sand. Clayey SILT: low plasticity, brown. SILT: non plastic, brown, with trace fine grained subrounded gravel, with trace fine grained sand. Hand Auger HAL519-520 terminated at 2.0 m Target depth</td><td>Class</td><td>VSt H</td><td>B E E M I I I I I I I I I I I I I I I I I I I I I I I I VS UTP I I I I I I VS UTP I I I I I I VS UTP I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I <td< td=""><td></td><td>TOPSOIL</td></td<></td></t<>	Not Encountered v	VS UTP VS UTP VS UTP VS 128/ 31 kPa VS UTP VS UTP VS UTP	supp	0.5 - - - - - - - - - - - - -			ORGANIC SILT: non plastic, dark brown black mottled orange, trace fine to medium grained sand. SILT: non plastic, brown mottled pale brown/pale grey/pale orange, with minor fine grained sand. Clayey SILT: low plasticity, brown. SILT: non plastic, brown, with trace fine grained subrounded gravel, with trace fine grained sand. Hand Auger HAL519-520 terminated at 2.0 m Target depth	Class	VSt H	B E E M I I I I I I I I I I I I I I I I I I I I I I I I VS UTP I I I I I I VS UTP I I I I I I VS UTP I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I <td< td=""><td></td><td>TOPSOIL</td></td<>		TOPSOIL
metron super AD auger drilling* AS auger drilling* M C HA hand auger W washbore B blank bit T T V V bit				uger drilling* uger screwing* and auger and auger and auger it shown by suffix D/T lank bit C bit					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	t Cla moistu D dr M me S sa Wp pla WI liq	re y bist et turated astic limit uid limit	rr ption Unified in System		/S very soft S soft F firm St stiff /St very stiff I hard Fb friable /L very loose L loose MD medium dense O dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL520
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	SBG
checked by:	DBC

ocalio	on:		NIKEC			20				C	пескеа ру:		DBC
position: Not Specified								surface elevation: Not Specified	ä	angle fro	om horizontal: 9	0°	DCP id.:
drill moo	del: Ha	and A	luger					drilling fluid:	I	nole dia	meter : 50 mm		vane id.: 764
drilling	g infor	mati	on			mate	rial sub	stance				_	
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	moisture condition	consistency / relative density	vane DC shear ⊕remoulded ⊚peak 100 r	:P ws/ nm)	structure and additional observations
	3 5 7	>	VS >213 kPa		-		0 8	ORGANIC SILT: non plastic, dark brown black mottled orange, trace fine to medium grained sand.	M	H			TOPSOIL
		ncountered	VS 179/ 31 kPa VS 197/		0.5— - - -			SILT: non plastic, pale brown mottled pale orange.		VSt			FILL _
Z		Not Er	49 kPa		1.0			Sandy SILT: non plastic, pale brown mottled pale orange-brown, sand is fine grained.					
			VS 179/ 34 kPa		-			Clayey SILT: low plasticity, brown, with minor fine grained sand.			€		
					-	\bigotimes		SAND : fine to medium grained, grey, with trace silt.					
					2.5- 			Target depth					
AD a AS a HA h W v HA h * t e.g. A B t T T	auger d auger so hand au washbo hand au bit show AD/T blank bi TC bit / bit	rilling crewin ger re ger	, ng* suffix	wate	etration	N no res rangin refusa Oct-12 wa el on date ter inflow ter outflow	nil istance g to l ater s 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	t Cla moistu D dr M m S sa Wp pl Wl liq	soil desc based on assification re y bist et uturated astic limit uid limit	r iption Unified on System	6 V S F S V F F V L A C V	Very soft S soft ifm firm it stiff VSt very stiff ib friable VL very loose loose loose ID medium dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 520-521

Borehole ID.	HAL520-521
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	SBG
checked by:	DBC

position: Not Specified drill model: Hand Auger								surface elevation: Not Specified		angle fr	om horizontal: 9	0°	DCP id.:
drill n	drilling information material sub							ariling fluid:		hole dia	meter : 50 mm		vane Id.: SL819
drill	ing info	rmat	ion		1	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	consistency / relative density	vane DC shear (blow ⊕ remoulded © peak 100 r (kPa) ⊕ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P vs/ nm) ∞♀	structure and additional observations
					-			ORGANIC SILT: non plastic, dark brown	D to	М		Т	PSOIL
		q	VS >247 kPa		- - 0.5			Jack motion of ange, trace line to mediatin grained sand. SILT: non plastic, orange-brown mottled black, with minor fine grained sand. 0.4 m: with minor clay	M	VSt		FII 	LL .
		Joountere	VS >247 kPa		-					St	- @ 		
чн 		Not E	VS 204 kPa		1.0— - -			Clayey SILT : low plasticity, orange-brown, with minor fine to medium grained sand.		VSt	-		-
			VS >247 kPa		- 1.5 - -			Sandy SILT: non plastic, brown-grey mottled black/white, sand is fine to medium grained.	M to	W H			
• •			VS >247 kPa		2.0	¥XX		Hand Auger HAL520 521 terminated at 2.0 m	_		 		
					2.5 								
meth AD AS HA W HA * e.g. B T	bit show AD/T blank b TC bit V bit	drilling screwi uger ore uger wn by it	* ng* suffix	supj M r C c pene wate	erration	N no reserangin rangin refusa Oct-12 we el on date er inflow er outflow	nil istance ig to il 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 cla D M W S Wp WI	assificatio soil desc based or Classificatio ture dry moist wet saturated plastic limit liquid limit	n symbol & cription Unified on System	Cons VS S F St VSt H Fb VL L MD D VD	istency / relative density very soft soft firm stiff very stiff hard friable very loose loose medium dense dense very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL521
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	PRM
checked by:	DBC

positio	on: Not	Spec	ified					surface elevation: Not Specified	i	angle fro	om horizontal:	90°	DCP id.:
drill m	odel: Ha	and A	uger					drilling fluid:		nole dia	meter : 50 mm		vane id.: 1447
drilli	drilling information material subst						rial sub	stance		1			
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 Do shear ⊕ remoulded ⊚ peak 100 (kPa) ⊛ © © ∞ ∞ ∞ ∞ ∞ ∞ ∞	CP ws/ mm)	structure and additional observations
		ountered	VS 147/ 50 kPa VS 166/ 50 kPa		- - - 0.5 - - -			ORGANIC SILT: non plastic, dark brown black mottled orange, trace fine to medium grained sand. Clayey SILT: low plasticity, brown mottled pale pink/ dark brown, with minor fine grained sand, and trace fine grained subrounded gravel. SILTY SAND: fine grained, pale brown.	M	VSt			TOPSOIL FILL - - - - - -
HA		Not Enco	VS UTP VS 179/ 61 kPa VS 176/		1.0 - - 1.5 - - - -			1.4 m: becoming pale brown mottled pale grey/pale orange			VSUTP		- - - - - - - - - - - - - - - - - - -
			<u>48 kPa</u>		2.5 			Hand Auger HAL521 terminated at 2.0 m Refusal					
Meth AD AS HA W HA * e.g. B T V	od auger d auger s hand au washbc hand au bit show AD/T blank b TC bit V bit	rilling* crewir uger uger vn by s	ig* suffix	sup M r C c pen wate	port nud casing etration er er val	N no resi rangin refusal Oct-12 wa el on date er inflow er outflow	nil istance g to tter 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	moistu Cla moistu D dr M m W w S sa Wp pl WI lig	re y oist et tturated astic limit uid limit	ription Unified n System		consistency / relative density VS very soft S soft = firm St stiff VSt very stiff H hard Pb friable VL very loose loose MD medium dense D dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CORNER LOT 521

Borehole ID.	HAL521c
sheet:	1 of 1
project no.	773-GENZTAUC13086AF
date started:	02 Nov 2017
date completed:	02 Nov 2017
logged by:	SBG
ala alva al la v	DRC

oou				-01	021							000
oositi	on: Not	Spe	cified					surface elevation: Not Specified		angle fr	om horizontal: 9	90° DCP id.:
rill m drilli	ing info	and A	Auger			mato	rial cub			nole dia	meter : 50 mm	vane Id.: 1447
urnn						mate				≥		CD structure and
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	vane DC shear (blov ⊕peak (kPa) ⊛ ²⁹ ²⁰ ²⁰ ²⁰ ²⁰ ²⁰ ²⁰	additional observation
Î					-			ORGANIC SILT: non plastic, dark brown black mottled orange, trace fine to medium	D to N	1		TOPSOIL
			VS 166/ 42 kPa		- - 0.5			<u>grained sand.</u> SILT: non plastic, orange-brown mottled dark brown.	/ м	VSt	 ⊕ ℗ 	FILL
 		Not Encountered	VS 162/ 39 kPa		- - 1.0-			Clayey SILT : non plastic to low plasticity, orange-brown mottled dark black, with minor fine to medium grained sand.			 ⊕ ⊕ 	
			VS 162/ 58 kPa					Silty CLAY: low plasticity, brown grey mottled dark brown, with minor fine to medium grained sand.				
			VS 196/ 45 kPa					Sandy SILT: non plastic, pale brown-grey, sand is fine to medium grained.			+ € € 	
Y			VS 179/ 45 kPa		2.0	\boxtimes		Hand Auger HAL521c terminated at 2.0 m			++++++++++++++++++++++++++++++++++++++	
					- 2.5 - - - 3.0 - - -							
					- 3.5 - -							
					- 4.0 - -							
					- 4.5 - - -							
l eth D S A / A	auger of auger s hand a washbo	l drilling screwin uger ore uger	* ng*	sup M I C C pen	port mud casing etration	N no resi rangin	nil stance I 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)	Clas C moist D c	sificatio soil desc based or assificatio	n symbol & ription Unified on System	Consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard
g. } /	bit shov AD/T blank b TC bit V bit	vn by it	suffix	wat	er 10-1 leve wat wat	Cct-12 wa oct-12 wa el on date er inflow er outflow	ter shown	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	M n W v S s Wp p WI li	noist vet aturated lastic limi quid limit	t	Fb friable VL very loose L loose MD medium dense D dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 522

Borehole ID.HAL522sheet:1 of 1project no.773-GENZTAUC13086APdate started:05 Oct 2017date completed:05 Oct 2017logged by:SBGchecked by:DBC

position:	: Not S	Specified						surface elevation: Not Specified	angle from	n horizontal: 90	° DCP id.:
drill mod	del: Ha	nd Auger						drilling fluid:	hole diam	eter : 50 mm	vane id.: 817
drilling information material substa						mate	rial sub	stance			
method & support	penetration	samp field	oles & 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 eremoulded epremoulded (blows 100 mr (kPa) 8 8 8	:/ structure and additional observations
		VS 251 VS >24	104/ kPa 47 kPa		0.5-			SILT: non plastic to low plasticity, brown orange mottled grey. Clayey SILT: low to medium plasticity, brown orange mottled white black grey.	D to M M VSt H		
HA		VS >24 VS >24	47 kPa 47 kPa		1.0-			SILT: non plastic, brown orange mottled black white, trace fine to medium grained sand.			
		VS >24 VS >24	47 kPa 47 kPa		1.5-			Clayey SILT: low plasticity, brown orange mottled white grey black, trace fine to medium grained sand. SILT: non plastic, brown orange, trace fine to medium grained sand.			
					2.5-			Hand Auger HAL522 terminated at 2.0 m Target depth			T
					3.0	-					
, , , , , , ,					4.0-	-					
					4.5-	-					
method AD au AS au HA ha W w HA ha	uger dri uger sci and aug /ashbore and aug it showr	lling* rewing* ger ger n by suffix		supp M r C c pene wate	port mud casing etration er er ∎ 110	N no resi ranging refusal	nil stance g to ter	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 Ne SPT with perid period	classification s soil descrip based on U Classification moisture D dry M moist W wet S saturated	symbol & ption nified System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose
e.g. A B bl T T V V	.D/T lank bit C bit / bit	-			iev wa ■ wa	el on date ter inflow ter outflow	shown	NC SP I with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Wp plastic limit WI liquid limit		L 100se MD medium dense D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

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TC bit

V bit

THE LAKES, STAGE 3I GCR project:

BOUNDARY OF LOT 522 AND 523

Borehole ID.	HAL522-523
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	PRM

DBC location: checked by: position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: drill model: Hand Auger drilling fluid: hole diameter : 50 mm vane id.: 4523 drilling information material substance structure and DCP material description vane consistency / relative density class ification g shear ⊕ remould ⊚ peak (blows/ 100 mm) samples & additional obs vations Ē method & support penetra moisture condition SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components field tests graphic I symbol Ē depth (water (kPa) 8 8 8 R ORGANIC SILT: non plastic, dark М TOPSOIL 11111 brown-black. | | | | |Clayey SILT: low plasticity, brown mottled dark brown/pink, with trace fine to medium FILL н 11 1 11111 VS UTP γ**\$ U**TP | | | | | | ||||grained sand. 0.5 | | | |11111 11 | | | |11 1 | | | |11111 Not Encountered VS UTP VSUTP ||||| ||||11111 ||||| | | |8/12/2017 15:09 1 | | | |₽ ż 1.0 VS UTP VsUTP ||||| VS 140/ 35 kPa 111 9 9 1 1.3 m: brown orange VSt 111 11 ĭι 111 1.5 VS 140/ 32 kPa 111 11111 ₽ ||||11111 | | || | | | |11111 | | |11111 ||||||VS 140/ MASTER. ||||11111 2.0 Hand Auger HAL522-523 terminated at 2.0 m | | |11111 Target depth GCR 1111 ||||| | | |11111 STAGE 31 111 |||||||. 2.5 111 |||||||11111 13086AP ||||||||||111 |||||||11111 LIBRARY.GLB rev:AT Log COF BOREHOLE: NON CORED + DCP ||||| | | |11111 | | || | | |11111 3.0 11111 ||||||||||||||||11111 11111 | | | |11111 11111 ||||||3.5 11111 111 ||||||111 ||||||11111 ||||||||4.0 |||||||||||11111 ||||++++11111 11111 ||||||11111 11 1 + 111111 4.5 11111 |||||||||90 11111 liiii 111 |||||||11111 ||||||11111 111 method AD auger drilling* classification symbol & consistency / relative density support samples & field tests soil description N nil bulk disturbed sample VS Μ mud В very soft AS auger screwing' disturbed sample environmental sample based on Unified soft firm C casing D S F HA W hand auger Classification System Е penetration split spoon sample undisturbed sample ##mm diameter washbore SS St stiff hand auger HA very stiff VSt no resistance ranging to refusal U## moisture HP hand penetrometer (kPa) hard н dry moist wet D M W standard penetration test (SPT) Fb Ν friable wate N* SPT - sample recovered VĹ very loose bit shown by suffix 10-Oct-12 water saturated **T** SPT with solid cone Nc loose L e.g. B evel on date shown AD/T plastic limit liquid limit VS vane shear; peak/remouded (kPa) Wp MD medium dense blank bit vater inflow

R

HB

water outflow

refusal

hammer bouncing

wi

D

VD

dense

very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

SOUTHERN CORNER OF LOT 522 location:

Borehole ID.	HAL522C
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	ODS
checked by:	DBC

positi	ion: 1	Not S	Spec	ified					surface elevation: Not Specified	á	angle fro	om horizontal:	90°	DCP id.:
drill n	drill model: Hand Auger								drilling fluid:	hole diameter : 50 mm				vane id.: SL588
drill	drilling information material subst						mate	rial sub	stance					
method & 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	moisture condition	consistency / relative density	vane D shear (blo @peak 100 (kPa) 06 09 00 00 00 00 00 00 00 00 00 00 00 00	CP ows/ mm)	structure and additional observations
HA			Not Encountered	VS >213 kPa VS >213 kPa VS 182/ 52 kPa VS 184/					SILT: low plasticity, orange brown mottled brown and grey, with minor clay and trace to minor fine to medium grained sand. 1.2 m: becomes orange brown mottled brown with some clay and trace fine grained sand	M	H to VSt	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		FILL
V				50 kPa VS 150/ 40 kPa		- - - - - - - - - - - - - - - - - - -			Hand Auger HAL522C terminated at 2.0 m Target depth					
						3.0								
meth	 				supp	- - 4.5 - - - - - - - - - - - - - - - -			samples & field tests	class	sification		 	onsistency / relative density
AD AS HA W HA * e.g. B T	aug aug han was han bit s AD/ blan TC I	ler dri ler sci ld aug shbore ld aug showr T nk bit bit	Iling* rewin ger ger	ig* suffix	M n C c pene wate	nud asing etration er V leve wat	N rangin refusa Oct-12 wa el on date er inflow er outflow	nil stance g to iter shown	B bulk disturbed sample D disturbed sample E environmental sample SS split spon 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	t Cla moistu D dr M m W we S sa Wp pla WI liq	soil desc pased on assificatio re y oist et uturated astic limit uid limit	rription Unified on System	VSFSVHFVLMD;	YS very soft soft firm tt stiff YSt very stiff hard bb friable L very loose loose MD medium dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL523
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	0° DCP id.:
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: SL817
drilling information	material subst	ance		
& authod & semicinal water a support & support	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	a definition a	P structure and vs/ additional observations m) ∞ ₽
<pre></pre>		DRGANIC SILT: non plastic, dark brown black mottled orange, trace fine to medium grained sand. Clayey SILT: low plasticity, brown orange mottled grey black white. SILT: non plastic, brown orange, trace fine to medium grained sand.	D to M H H H H H H H H H H H H H	II TOPSOIL - II FILL - II - - III - - III - - III - - III - - III
		Hand Auger HAL523 terminated at 2.0 m		
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 TC bit V V bit	support M mud N nil C casing penetration ranging to ranging to refusion water 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 S saturated Wp plastic limit WI liquid limit	VSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense



ATETR	A TECH	I COMF	PANY							E	Borehole I	D.	HAL523-524	
С,	adi	no	orin	~		~	La	nd Augor		s	heet:		1 of 1	
	iyi	ne	enn	<u>y</u> ı	<u> </u>	<u>J -</u>	Па	nu Auger		p	project no.		773-GENZTAUC1308	B6AP
clien	ıt:	ΤН	IE LAKE	S (2	2012)) LIM	IITED			С	late starte	ed:	05 Oct 2017	
princ	cipal:									С	late comp	leted:	05 Oct 2017	
proje	ect:	ΤН	E LAKE	S, S	STAC	GE 31	GCF	2		le	ogged by:		ODS	
loca	tion:	EA	STERN	во	UND	ARY	OF	OT 523 AND 524		c	hecked b	y:	DBC	
positi	on: No	ot Spe	cified					surface elevation: Not Specified	а	angle fro	om horizont	al: 90°	DCP id.:	
drill m	nodel: I	Hand	Auger			_		drilling fluid:	h	nole dia	meter : 50 r	nm	vane id.: SL588	
drill	ing inf	ormat	ion		-	mate	erial sul	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) ର 0 0 0 0 00	DCP (blows/ 100 mm)	structure and additional observations	
HA I I I I I I I I I I I I I I I I I I I		Not Encountered	VS >213 kPa VS >213 kPa VS >213 kPa VS >213 kPa VS >213 kPa					SILT: low plasticity, orange brown mottled brown and grey, with minor clay and trace fine grained sand. 0.5 m: with some clay Hand Auger HAL523-524 terminated at 2.0 m	D to M	H	· · · · · · · · · · · · · · · · · · ·		FILL -	
					-			Target depth					-	

08/12/2017	
< <drawingfile>></drawingfile>	
MASTER.GP.	_
STAGE 31 GCR	
^{13086AP}	
+ DCF	
: NON CORED	
OF BOREHOLE	
Log C	
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	┝

metho		ben	water		RL (n	depth		graph	classi symb		colou	r, seco	ondary an	d minor o	compone	ents	moist		consis relativ	8	(kPa)	0.**	2						
A mett			Not Encountered wate	VS >213 kPa VS >213 kPa VS >213 kPa VS >213 kPa VS >213 kPa		0.5 1.0 1.5 2.5 3.0 3.5 4.0		dab	class	SIL broy grai 0.5	F: low p with ned sa m: with	er HA	LS23-52	24 termi	vn mott	tt 2.0 m			H consi		(k00)					-				-
met AD AS HA W HA * e.g. B T V	thoo	I I I I I I I I I I I I I I I I I I I	drilling screw uger uger wn by it	ı* ing* suffix	sup M C C pen wat	4.5	on 10-Oc water	N no ress rangin e refusa ct-12 wo no date inflow o utflow	nil istance g to ater shown		sample B D ⊟ S U H P N N N S R HB	es & f bul dis env spl unc har sta SP SP vai refi hav	ield tests k disturbe vironment it spoon s disturbed idsturbed ind penetr 'T - sample 'T - sample 'T - sample 'T - sample 'T with soil ne shear; usal mmer bou	ad sample al sample anple sample sample # oneter (I netration e recove id cone peak/rer	e e ¥#mm di kPa) test (SF red nouded	ameter ^I T) (kPa)	cl mois D M W S Wp WI	assi ba Clas sture dry moi wet satu plas liqui	ficatic bil des issed on sisticati ist urated stic limit	it	 	 			consis VS F St VSt H Fb VL L MD D VD	tency	/ relat ver soft firm stiff firat ver loos mee der ver	v stiff y stiff d ole se dium de se se se y loose se se y dense	nse	-



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 524 location:

Borehole ID.	HAL524
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	SBG
checked by:	DBC

nos	sitio	n No	t Sne	cified					surface elevation: Not Specified	9	inale fro	om horizontal· 0	٦°	DCP id ·
drill	Im	odel: F	and A	Auger					drilling fluid:	c h	iole diar	meter : 50 mm		vane id.: SL817
dr	illir	ng info	rmati	on			mate	rial subs	stance					
nethod &	support	penetration	vater	samples & field tests	dL (m)	depth (m)	Jraphic log	symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture	onsistency / elative density	vane DC shear (blow ⊕ peak (kPa) (kPa)	s/ im)	structure and additional observations
	Â	0 0 7				-		0 00	ORGANIC SILT: non plastic, dark brown black.	D to M	01		° 	
			q	VS 217 kPa VS 140 kPa					Clayey SILT: low to medium plasticity, brown orange mottled black white grey.	M	H VSt	- @ 		ILL
HA	z		Not Encountere	VS 247 kPa VS 247 kPa		- - 1.0			SILT: low plasticity, brown orange mottled	_	Н	-		- - -
0				VS 247 kPa		- - 1.5			Sandy SILT: non plastic, brown orange mottled grey white. 1.5 m: becoming slightly plastic					- - - -
				VS UTP								VS UTP		-
	etho				supp	2.5			Hand Auger HAL524 terminated at 2.0 m Target depth	class	ification	I I	Corr	
AE AS HA W HA e.ç B T) 5 4 9	auger auger hand a washb hand a bit sho AD/T blank I TC bit	drilling screwi uger ore uger wn by bit	ng* suffix	M n C c pene wate	nud asing etration er leve wate	N no resi ranging refusal Oct-12 wa I on date er inflow er outflow	nil stance g 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	moistur D dry M mo W we S sa Wp pla WI liqu	ased on ssificatio	rıption Unified n System	VS S F St VSt H Fb VL L MD D	very soft soft firm stiff hard friable very loose loose medium dense dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 524 AND 525

Borehole ID.	HAL524-525
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	PRM

DBC

checked by:

position:	Not	Spec	ified					surface elevation: Not Specified	а	ingle fro	om horizontal: 9	0°	DCP id.:
drill model: Hand Auger								drilling fluid:	h	ole dia	meter : 50 mm		vane id.: 4523
drilling	infor	mati	on			mate	rial subs	stance					
method & support	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)	P vs/ nm)	structure and additional observations
	33	-			-			ORGANIC SILT: non plastic, dark brown-black.	D to M	02		<u>∞</u> = 	TOPSOIL
		sred	VS 215/ 37 kPa VS UTP		- - 0.5 - -			Clayey SILT : low plasticity, brown mottled dark brown/pink, with trace fine to medium grained sand.	M	VSt			FILL
z 		Not Encounte	VS 140/ 40 kPa		- - 1.0 -			1.2 to 1.3 m: becoming moderately plastic					-
			VS UTP		- 1.5— -						 vs uтр 		-
			VS 194/		-			Sandy SILT: non plastic, pale grey, sand is fine grained.					
								Hand Auger HAL524-525 terminated at 2.0 m Target depth	class	ification			-
method AD ar AS ar HA ha W w HA ha te.g. A B bl T Tr V V	uger di uger si and au ashbo and au it show D/T lank bi C bit	rilling* crewir iger iger <i>i</i> n by s	g* suffix	supj M r C c pene wate	etration	N no resi rangin refusal Oct-12 wa el on date er inflow er outflow	nil istance g to iter 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	moistur D dry M mc W we S sai Wp pla WI liqu	oil desc ased on ssificatio pist turated turated ustic limit	Unified n System	CO VS F St VS H Fb VL L D VD	nsistency / relative density s very soft soft firm stiff thard friable very loose loose loose very loose dense dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 525

Borehole ID.HAL525sheet:1 of 1project no.773-GENZTAUC13086APdate started:05 Oct 2017date completed:05 Oct 2017logged by:ODSchecked by:DBC

ositic	on: Not	Spe	cified					surface elevation: Not Specified	a	ingle fro	m horizon	tal: 90	•	DCP id.:
Irill m	odel: H	and A	Auger					drilling fluid:	h	ole diar	neter : 50	mm		vane id.: SL588
drilli	ng info	rmati	ion			mate	rial sub	ostance						
upport	penetration	vater	samples & field tests	sL (m)	lepth (m)	raphic log	lassification ymbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture	onsistency / elative density	vane shear ⊕remoulded ⊚peak (kPa)	DCF (blow 100 m	s/ add m)	structure and itional observations
- 0 -	3 10 -	>		ш	ъ		0 0	ORGANIC SILT: non plastic. black.	D to M	02	8668	0400		L
					-	\bigotimes		SILT: non plastic to low plasticity, orange	-				FILL	
					-			brown mottled grey and dark brown, with trace to minor clay and trace fine to medium grained sand					BURIED	TOPSOIL
			VS >213 kPa		0.5			ORGANIC SILT: non plastic, black mottled orange brown.		VSt to H	 @ 		FILL	
		Encountered	VS 173/ 31 kPa		-			SILT: low plasticity, orange brown mottled brown and grey, with minor clay and trace fine to coarse grained sand.						-
Ī		Not	or ki u		-									-
			VS >213 kPa		- 1.5			1.3 m: with some clay and trace fine grained sand						-
			VS 208/ 61 kPa		-						 ⊕ 0 			-
					-2.0			Hand Auger HAL525 terminated at 2.0 m Target depth						
					-									-
					2.5									
					- 3.0 —									-
					-									-
					- 3.5 — -									-
					-									-
					4.0-									-
					- 45-									-
														-
					_			 	<u> </u>	101				
netho AD AS HA	auger o auger s auger s	Irilling crewi	* ng*	sup Mr Cc	p ort nud asing	N	nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental cample	ciass s b Cla	ased on ssification	symbol & ription Unified System		consistenc VS S F	y / relative density very soft soft firm
N HA	washbo hand a	ore uger		pen		no res rangin	istance g to	SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moistur D dry	re /			St VSt H	stiff very stiff hard
.g.	bit shov AD/T	vn by	suffix	wate	er ⊈_ 10- Ievo	Oct-12 wa el on date	ater shown	N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone	M mo W we S sa Wp pla	oist et turated astic limit			Fb VL L	friable very loose loose medium dense
	blank b TC bit	it			wat	er inflow er outflow	,	R refusal HB hammer bouncing	Wİİlq	uid limit			D VD	dense very dense


A TETRA TECH	TETRA TECH COMPANY									Borehole	ID.	HAL525-526		
Enai	ina	orin	~	~	2	La	nd Augor		S	heet:		1 of 1		
Eng	ine	enné	<u>y i</u>	<u>_0(</u>	<u>y -</u>	Па	nu Auger		р	roject no	D.	773-GENZTAUC1308	6AP	
client:	ΤН	E LAKE	S (2	2012)) LIM	IITED			d	ate start	ed:	05 Oct 2017		
principal:									d	ate com	pleted:	05 Oct 2017		
project:	ΤН	E LAKE	S, S	STAC	GE 31	GCF	?		lo	ogged by	/:	ODS		
location:	EA	STERN	во	UND	ARY	OF L	OT 525 AND 526		с	hecked	by:	DBC		
position: N	lot Spe	cified					surface elevation: Not Specified	ä	angle fro	om horizoi	ntal: 90°	DCP id.:		
drill model:	Hand	Auger					drilling fluid:	I	nole dia	meter : 50	mm	vane id.: SL588		
drilling in	format	ion			mate	erial sub	ostance							
method & support 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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) B 0 0 00	DCP (blows/ 100 mm)	structure and additional observations		
		VS >213 kPa VS >213 kPa		- - - - 0.5 - - - -			ORGANIC SILT: non plastic, black. SILT: low plasticity, orange brown mottled brown and grey, with minor clay and trace fine to coarse grained sand. 0.5 m: perched water table encountered	M S	VSt to H			TOPSOIL		

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+ DCP	
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BOREHOLE	
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r Log	
'.GLB rev:A ⁻	
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od & ort	letration		samples & field tests	(L	(m) r	nic log	ification	SOIL TYP	material description E: plasticity or particle characteristic,	,	ture ition	stency / e density	va sh ⊕rem ⊚p	ne ear oulded beak	ا (1 10	DCF blow 10 m	P ∕s/ ∖m)	st additio	ructure and nal observations	
supp	3 per	wate		RL (r	depth	grapt	class symt	colour, s	secondary and minor components		cond	consi: relativ	(ki 26 00	Pa)	~ ~	4 0 1	∞ 2			
					-			ORGANIC S	ILT: non plastic, black.		М	VCtto						TOPSOIL		-
			VS >213 kPa	1	-			brown and g to coarse gra	isticity, orange brown mottled rey, with minor clay and trace fil ained sand.	ne		H		 @			ii ii	FILL		-
					0.5-			0.5 m: perch	ed water table encountered		S									-
			VS >213 kPa	1	-															-
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, ,			VS >213 kPa		- 2.0-															-
					-			Target depth	HAL525-526 terminated at 2.0	m							ii ii			
					2.5-															
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meth AD	od auger d	rilling	*	sup M i	port mud	N	nil	samples B	& field tests bulk disturbed sample		class	ification	sym riptio	bol & n	•		(consistency / /S	relative density very soft	
AS HA W	auger s hand a washbo	crewi uger ire	ng	С о pen	casing etratior	ı		D E SS	disturbed sample environmental sample split spoon sample		b Cla	ased on ssification	n Sys	tem			i i	S = St	soft firm stiff	
HA	hand a	uger				− no res rangin refusa	istance ig to I	U## HP N	undisturbed sample ##mm diamete hand penetrometer (kPa) standard penetration test (SPT)	er m D	noistui) dry	re V					ł	/St ⊣ =b	very stiff hard friable	
* e.g.	bit shov AD/T	vn by	suffix	wat	er Logical de la compositione	Oct-12 wa	ater shown	N* Nc	SPT with solid cone	N S N	V we S sa	et turated						/Ľ	very loose loose	
В	blank b	it			wa	ter inflow		VS R	varie snear; peak/remouded (kPa)	v	VI liq	uid limit						עוע ר	meaium dense	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 526

Borehole ID.HAL526sheet:1 of 1project no.773-GENZTAUC13086APdate started:05 Oct 2017date completed:05 Oct 2017logged by:SBGchecked by:DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	DCP id.:		
drill model: Hand Auger	<u>.</u>	drilling fluid:	hole diameter : 50 mm	vane id.: SL817		
drilling information	material s	ubstance				
* and the same same same same same same same sam	RL (m) depth (m) graphic log class ification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	a vance	P structure and (xs/ additional observations 		
▲ ▲		ORGANIC SILT: non plastic, dark brown black, trace fine grained sand. Clayey SILT: low to medium plasticity, brown orange mottled white black red.	D to M 1111 111 1111 111 M H 1111 111 1111 111 1111 111 1111 111 1111 111 1111 111 1111 111	TOPSOIL 		
VS >247 kPa		Sandy SILT: low plasticity, pale grey mottled brown orange black, minor clay.				
2 VS >247 kPa VS >247 kPa		Clayey SILT: low plasticity, brown orange mottled black white.		 		
 VS >247 kPa 		SILT: non plastic, brown mottled black white grey.		 		
	2.5	Hand Auger HAL526 terminated at 2.0 m Target depth				
	3.0					
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud N nil C casing penetration penetration ranging to water	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)	classification symbol & soil description based on Unified Classification System moisture D dry M moist	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable		
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	10-Oct-12 water level on date shown water inflow water outflow	N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	VV wet S saturated Wp plastic limit WI liquid limit	VL very loose L loose MD medium dense D dense VD very dense		



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 526 AND 527

Borehole ID.	HAL526-527
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	PRM

DBC

checked by:

positi	oosition: Not Specified								surface elevation: Not Specified	ar	ngle from	n horizontal:	90°	DCP id.:	
drill n	nodel	: Ha	nd A	uger					drilling fluid:	hc	hole diameter : 50 mm			vane id.: 4523	
drill	ing ir	nforr	natio	on			mater	rial sub	stance					Γ	
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 D shear (bla ⊕ remoulded ⊕ peak 100 (kPa) ⊕ 9 9 8 8 8 100	CP ows/ mm)	structure and additional observations	
						-			ORGANIC SILT: non plastic, dark brown-black.	D to M				TOPSOIL	
				VS 215/ 40 kPa		- - 0.5			Clayey SILT: low plasticity, dark brown mottled pale orange/pale pink, with trace fine grained sand.	М	H			FILL	
 Z			Encountered	√S >224 kPa											
Ī		 	Not	VS UTP		-			1.1 to 1.3 m: becoming moderately plastic			 Vs UTP 			
				VS UTP		1.5						 V\$ UTP 			
				VS UTP											
									Target depth						
method support AD auger drilling* M AS auger screwing* C HA hand auger penetration W washbore penetration HA hand auger Image: C			support samples & field tests drilling* M mud N nil B bulk disturbed sample screwing* C casing D disturbed sample uger penetration E environmental sample uger N mud N nil SS split spoon sample uger U## undisturbed sample Uger N mod N nil U## undisturbed sample			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)	ciassi ba Class moisture D dry M moi	sification	ption Inified System		consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fh friable				
* bit shown by suffix e.g. AD/T B blank bit T TC bit			Dct-12 wat I on date : er inflow er outflow	ter shown	N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	W wet S satu Wp plas WI liqui	urated stic limit id limit			VL very loose L loose MD medium dense D dense VD very dense					



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 527 location:

Borehole ID. HAL527 sheet: 1 of 1 773-GENZTAUC13086AP project no. 05 Oct 2017 date started: 05 Oct 2017 date completed: logged by: SBG DBC checked by:

posit	position: Not Specified								surface elevation: Not Specified	an	gle from horizontal: 9)° DCP id.:	
drill r	nodel:	Han	d Au	ger					drilling fluid:	hol	le diameter : 50 mm	vane id.: SL817	
dril	ling in	form	ormation material substance						tance				
method & support	¹ 2 penetration	3 untor	watci	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	/ Xirsup 2000 (kPa) 000 (P structure and vs/ additional observations	
		 	V	S >247 kPa		-			ORGANIC SILT : non plastic, dark brown black mottled red white grey, trace fine to medium grained sand.	D to M	H		
		 -	V	S >247 kPa		- 0.5 -			SILT: low plasticity, brown orange mottled white black, trace fine to medium grained sand, minor clay.	М	 © 	 	
H H	:	Not Factoria		S >247 kPa		- - 1.0					 	 .	
			V	S >247 kPa S >247 kPa		- - 1.5			Clayey SILT: low to medium plasticity, brown orange mottled black white grey.				
				VS UTP		-			SILT: Jow placticity, brown orange, trace free		, , , , , , , , , , , , , , , , , , ,		
	<u> i i i</u>	i –	-			2.0	~~~~		to medium grained sand.				
met AD AS HA W HA * e.g. B T	hod auge auge hand wash hand bit sh AD/T blank TC bi	r drilli r scre auge bore auge nown l	ng* wing r r by su	* ffix	supp M r C c pene wate	etration	N no res rangin refusa Oct-12 wa el on date er inflow er outflow	nil stance y to ter 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 penetrometer (kPa) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	classifi soi bas Class Class D dry M mois W wet S satur Wp plast WI liquic	I description I description eed on Unified ification System t t rated ic limit j 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	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 527 AND 528

Borehole ID.	HAL527-528
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	PRM

DBC

checked by:

positi	osition: Not Specified surface elevation: Not Specified							surface elevation: Not Specified	а	DCP id.:			
drill n	nodel: H	and /	Auger					drilling fluid:	hole diameter : 50 mm				vane id.: 4523
drill	ing info	rmat	ion			mate	rial 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	moisture condition	consistency / relative density	vane D0 shear ⊕remoulded ⊚peak 100 (kPa)	CP ws/ mm)	structure and additional observations
					-			ORGANIC SILT: non plastic, dark brown-black.	D to M				TOPSOIL
			VS >224 kPa		-			Sandy SILT: non plastic, brown mottled orange-brown and dark brown, sand is fine to medium grained.	M /	Н			FILL
		tered	VS UTP					Clayey SILT: low plasticity, brown mottled dark brown/white/pale brown, with trace fine to medium grained sand.					
H H N 		Not Encoun			- 1.0-			SILTY SAND: fine to medium grained, pale grey-white.					
			VS UTP		-			Clayey SILT: low plasticity, brown mottled brown/dark brown/ orange-brown, with minor fine grained sand.		Н	VsUTP 		
			VS UTP		1.5-						үз итр 		
			VS UTP		- 2.0						 		
					-			Hand Auger HAL527-528 terminated at 2.0 m Target depth					
					- 2.5—								
					-								
					3.0-								
					- - 3.5-								
					-								
					4.0-								
					45-								
					-								
									class	ification	symbol &		
method support AD auger drilling* M mud AS auger screwing* C casing HA hand auger C casing			port mud casing	N	nil	samples & neld tests B bulk disturbed sample D disturbed sample E environmental sample	s ba Clas	oil desc ased on ssificatio	ription Unified n System	(\ 5 F	Consistency / relative density /S very soft S soft firm		
W HA	W washbore penetratio HA hand auger				no res	istance g to	SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moistur D dry	e /			St stiff /St very stiff H hard	
* bit shown by suffix e.g. AD/T B block bit			Oct-12 wa	ater shown	N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa)	M mo W we S sat Wp pla	ist t urated stic limit		F L N	-b friable /L very loose - loose MD medium dense			
T V	TC bit V bit			-	wat	er outflow	ı	R refusal HB hammer bouncing	vvi liqu	ua limit			D dense /D very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 528

Borehole ID.HAL528sheet:1 of 1project no.773-GENZTAUC13086APdate started:05 Oct 2017date completed:05 Oct 2017logged by:ODSchecked by:DBC

position: Not Specified	surface elevation: Not Specified	angle from horizontal: 90°	DCP id.:	
drill model: Hand Auger	drilling fluid:	hole diameter : 50 mm	vane id.: SL588	
drilling information	material substance			
method & support	Do in the set b End the set b material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	model and a set of the set of th	structure and additional observations	
Outdot Text End End End End I I I I I I I </th <th>Image: Solit IFFE plasticity of particle characteristic, colour, secondary and minor components ORGANIC SILT: non plastic, black. SILT: low plasticity, orange brown mottled brown, with minor clay. 1.2 m: becomes grey mottled brown. With minor to some clay and trace fine grained sand and with trace to minor clay Sandy SILT: non plastic to low plasticity, brown mottled grey and orange brown, with trace clay. Sand is fine grained. Hand Auger HAL528 terminated at 2.0 m Target depth</th> <th>Instruction Image: Construction Image: Construction Image: Construction D Image: Construction Image: Construction Image: Construction Image: Construction M VSt to H Image: Construction Image: Construction Image: Construction M VSt to H Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction W VSt Image: Construction Image: Construction Image: Construction Image: Construction W VSt Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction <t< th=""><th>TOPSOIL FILL .</th></t<></th>	Image: Solit IFFE plasticity of particle characteristic, colour, secondary and minor components ORGANIC SILT: non plastic, black. SILT: low plasticity, orange brown mottled brown, with minor clay. 1.2 m: becomes grey mottled brown. With minor to some clay and trace fine grained sand and with trace to minor clay Sandy SILT: non plastic to low plasticity, brown mottled grey and orange brown, with trace clay. Sand is fine grained. Hand Auger HAL528 terminated at 2.0 m Target depth	Instruction Image: Construction Image: Construction Image: Construction D Image: Construction Image: Construction Image: Construction Image: Construction M VSt to H Image: Construction Image: Construction Image: Construction M VSt to H Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction W VSt Image: Construction Image: Construction Image: Construction Image: Construction W VSt Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction <t< th=""><th>TOPSOIL FILL .</th></t<>	TOPSOIL FILL .	
method 4.5 Market 4.5 Market 4.5 Market Support Market Market Ma	N nil 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	classification symbol & soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose	



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 528 AND 529

Borehole ID.	HAL528-529
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	PRM

DBC

checked by:

pos	position: Not Specified							surface elevation: Not Specified	i	angle from horizontal:	90° DCP id.:
drill	drill model: Hand Auger							drilling fluid:		nole diameter : 50 mm	vane id.: 4523
dri	lling info	rmati	on	I		mate	rial sub	stance			
method &	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	vane beak shear (%) (kPa)	XP structure and additional observations mm)
		-	VS 143/ 32 kPa	_				ORGANIC SILT: non plastic, dark brown-black.	D to M	VSt to I I I I H I I I I I I H I </td <td> </td>	
ס		countered	VS >224 kPa		0.5			SILT: non plastic, brown mottled pale orange and dark brown, with trace fine grained sand. Clayey SILT: low plasticity, brown mottled	M		FILL - - -
- AH	 z 	Not Eno	VS >224 kPa		1.0			orange-brown, with trace fine to medium grained sand.			
seurawingrille			VS 98/ 25 kPa		1.5 — - -			1.5 m: becoming moderately plastic, white mottled orange-brown and brown		St to VSt ⊕ ∲ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	
DP_0_9_0_LIBRARY.GLARRYALLOG COF BUREHOLE.NON CUREU + DCF_1308AF_51AGE 31 GCR_MAATEK			VS 105/ 28 kPa		2.0 - - - 2.5 - - - - - - - - - - - - - - - - - - -	***		Hand Auger HAL528-529 terminated at 2.0 m Target depth			
me AD AS HA W HA * e.g B T V	thod auger d auger s hand au washbo hand au bit shov . AD/T blank b TC bit V bit	rilling crewin uger uger uger vn by t	* ng* suffix	supp M n C ca pene wate	oort hud asing tration r r leve wate wate	N no resi ranging refusal Oct-12 wa l on date er inflow er outflow	nil stance g to ter 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	clas t Cla moistu D dr M m W m W w W s S S S Wp pl WI liq	sification symbol & soil description based on Unified assification System re y oist et turated astic limit uid 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



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 529 AND 530

Borehole ID.	HAL529-530
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	SBG

checked by: **DBC**

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 90° DCP id.:				
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: SL817			
drilling information	material subs	stance					
samples & sample	RL (m) depth (m) graphic log class fifcation symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	m model	CP structure and additional observations			
4100 100 100 - ∞ € 0 -	Li TIA Iden	Colour, secondary and minor components ORGANIC SILT: low plasticity, dark brown black mottled grey white. Sandy SILT: low plasticity, brown orange mottled dark brown black white. 0.4 m: becoming slightly plastic SILTY SAND: fine to medium grained, brown orange mottled white black. 0.9 m: becoming pale grey mottled brown (orange black Sandy SILT: low plasticity, brown orange mottled white black. 19 m: becoming pale grey mottled brown (orange black) Sandy SILT: low plasticity, brown orange mottled grey white black. Hand Auger HAL529-530 terminated at 2.0 m Target depth	Image: Second state				
			classification symbol &				
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 penetration ranging to refusal water 10-Oct-12 water 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 S saturated 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			



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 530

Borehole ID.	HAL530
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	ODS
checked by:	DBC

										·	, y.				
bosition: Not Specified surface							surface elevation: Not Specified	angle from horizontal: 9)° DCP id.:		
drilling information						rial sub-	anining ilula.	1	iole dia	meter : 50	m		varie IG.: SL588		
uriili									, te vana				structure and		
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 densi	shear ⊕remoulded ●peak (kPa) 00 00 0000000000000000000000000000000	(blow 100 m	/s/ im) ₀♀	additional observations		
				-			ORGANIC SILT: low plasticity, dark brown black mottled grey white.	М					TOPSOIL		
		VS 199/ 48 kPa		0.5-			SILT : low plasticity, orange-brown mottled brown, with minor clay and trace fine to coarse grained sand.		VSt	- ⊕ ⊕ 			FILL		
		VS 134/ 22 kPa		1.0-			0.9 m: with minor fine to medium grained sand	w	-						
		VS 115/ 38 kPa VS 103/		. .											
		38 kPa		1.5-						⊕ 					
		31 kPa		- 20-					St	6 0					
				2.5- 											
meth AD AS HA W HA * e.g. B T V	od auger drilli auger scre hand auge washbore hand auge bit shown I AD/T blank bit TC bit V bit	ng* awing* ar ar by suffix	sup M C pen wat	port mud casing etration er er ↓ 10- lev wai	N no res rangin refusa Oct-12 wa el 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	class s Cla moistu D dr M m W we S sa Wp pla WI liq	sification soil desc passed on assification re y oist et aturated astic limit uid limit	n symbol & rription I Unified on System		6	onsistency / relative density 'S very soft 'S soft firm firm St stiff 'St very stiff I hard 'b friable /L very loose IOOse loose /D medium dense /D very dense		



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL531
sheet:	1 of 1
project no.	773-GENZTAUC13086AF
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	ODS
checked by:	DBC

locali	ation: CENTRE OF LOT 537 checked by: DBC									DBC		
positio	tion: Not Specified surface elevation: Not Specified								a	ngle fro	om horizontal: 90	° DCP id.:
drill me	odel: Ha	and A	Auger					drilling fluid:	h	ole diar	meter : 50 mm	vane id.: SL588
drillin	ng infor	rmati	on			mate	rial sub	stance				
method & support	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) 8 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	s/ n)
					-			ORGANIC SILT: non plastic, dark brown-black.	D to M			TOPSOIL
		Intered	VS >213 kPa		0.5			SILT: low plasticity, orange-brown mottled brown/grey, with minor clay, and trace fine to coarse grained sand.	М	Н		
— ЧЦ — Ц		Not Encor	VS >213 kPa		- 1.0 - -			1.1 m: with minor fine to medium grained sand	W			
			VS >213 kPa		- 1.5— - -			1.6 m: with trace fine to medium grained sand				
• •			VS 213 KPa		- 20-	\bigotimes						-
					2.5 			Target depth	class	ification		
metho AD AS HA W HA * e.g. B T	bd auger d auger s hand au washbo hand au bit show AD/T blank bi TC bit	rilling crewin uger re uger vn by t	suffix	supj M r C c pena wate	port nud casing etration etratio	N no resi rangin refusal Oct-12 wa el on date er inflow er outflow	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 Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	moistur D dry M mo W wel S sati Wp pla: WI liqu	ist iurated stic limit id limit	ription Volfied n System	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



THE LAKES (2012) LIMITED client:

principal:

08/12/2017 15:09 ₹

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CDF_0_9_06_LIBRARY.GLB rev.AT Log COF BOREHOLE: NON CORED + DCP 13086AP_STAGE 31 GCR_MASTER.GPJ

TC bit V bit

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL531-532
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	SBG

D VD

very dense

1				-, -	-	-									
loca	bcation: BOUNDARY OF LOT 531 AND 532									С	hecked	by:		DBC	
posit	ion: No	t Spe	cified					surface elevation: Not Specified			om horizo	[DCP id.:		
drill model: Hand Auger								drillina fluid: hole di			meter : 50) mm		١	/ane id.: SL817
drill	ing info	rmati	on			mate	material substance								
	Б					_	n	material description		sity	vane	DC	СP	s	tructure and
& v ₽	stratic		samples & field tests	~	Ē	c log	icatio	SOIL TYPE: plasticity or particle characteristic.	ine ine	ency	shear ⊕ remoulded	(blo 100	ws/ mm)	additio	onal observations
uppo	pene	ater		L (m	epth	raphi	assif ymbo	colour, secondary and minor components	noistu	onsist	(kPa)		,		
≚ ō ▲ ▲	~ N ®	3		22	Ō		0.0	OPCANIC SILT: non plastic, dark brown	E 5	0 ⊻ 1 \/St to	8 5 5 8	0.4.0	ء م	TOPSOIL	
			V0.0471.5		-			black mottled orange, trace fine grained sand.		H				TOPBOIL	
	liii		VS 247 KPa		-	\bigotimes		Sandy SILT: non plastic, brown orange	М		liii	∮iii	ii	FILL	
					0.5-	\bigotimes		grained.							
	liii		VS 247 kPa		-	\bigotimes					iiii•	∳iii	ii		
		ered			-	\bigotimes									
	l i i i	count	VS 247 kPa		-	\bigotimes					liiii	∳iii	ii		
HH -		of En			1.0-	\bigotimes		0.9 m: becoming slightly plastic 1.0 m: becoming mottled dark brown black							
		z	VS 162/ 58 kPa		_	\bigotimes		white			6				
					-	\bigotimes									
			VS 179/		-	\boxtimes						liii			
			40 KF d		1.5	\bigotimes									
			VS 204/		-	\bigotimes									
			25 KPa		-	\bigotimes					₩ ♥				
* *					2.0			SILTY SAND : fine to medium grained, pale ∖brown orange.	/ w			tii			
					-			Hand Auger HAL531-532 terminated at 2.0 m							
					-			larget depth							
					2.5-										
					-										
					_										
					-										
					3.0-										
					-							!!!			
					-										
					3.5-								ļ		
					-										
	liii				-	1						!!!	ij		
					-										
					4.0-							111	İİ		
					-										
					-							<u> </u> [[]	İİ		
					4.5-	1									
					-							!!!	İİ		
					-	1									
					-							!!!	ij		
meth	hod			supp	port			samples & field tests	clas	sificatio	n symbol &	· · · · · ·	Г	consistency /	relative density
AD AS	auger o auger s	drilling screwii	* ng*	Min	nud asina	N	nil	B bulk disturbed sample D disturbed sample		soil desc based on	Unified			VS S	very soft
HA W	hand a washbo	uger ore		pene	etration	ı		E environmental sample	CI	assificatio	on System			F St	firm stiff
HA	hand a	uger			<u> </u>	no res	istance	U## undisturbed sample ##mm diameter	moist	ure				VSt	very stiff
				ranging to refusal N standard penetrometer (kPa) N standard penetration test (SPT)		N standard penetrometer (KPa)	D d M n	ry noist				Fb	friable		
*	bit sho AD/T	wn by	suffix		10-1 lev	Oct-12 wa	ater shown	N* SP1 - sample recovered Nc SPT with solid cone	S s	et aturated				VL L	very loose loose
B T	blank b	oit			wat	er inflow		VS vane shear; peak/remouded (kPa) R refusal	Wpp WIli	astic limit quid limit	L			MD D	medium dense dense

R HB

hammer bouncing

water outflow



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 532

Borehole ID.HAL532sheet:1 of 1project no.773-GENZTAUC13086APdate started:05 Oct 2017date completed:05 Oct 2017logged by:ODSchecked by:DBC

position: Not Specified			surface elevation: Not Specified	angle from horizontal: 90° DCP id.:					
drill model: Hand Auger			drilling fluid:	hole diameter : 50 mm	vane id.: SL588				
drilling information		material subst	ance						
method & support piej water water	ples & (iii)	graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	m m m m m m m m m m m m m m m m m m m	CP structure and additional observations				
A A IIII IIII III III VS >2	13 kPa 0.5 -		DRGANIC SILT: non plastic, black. 0.3 m: becoming mottled brown SILT: low plasticity, orange brown mottled prown and grey, with minor to some clay and	D to M	TOPSOIL 111 111 111 111 111 111 FILL				
VS >2	13 kPa 1.0−		with trace fine grained sand. 0.6 to 0.65 m: mixed topsoil						
VS >2 VS	157/ kPa 1.5-		1.5 to 1.6 m: trace organic odour						
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	132/ kPa								
	2.5-		Hand Auger HAL532 terminated at 2.0 m Target depth						
	3.0-								
	4.0-								
	4.5-								
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing penetration	N nil no resistance ranging to refusal	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 nenetration test (SPT)	classification symbol & soil description based on Unified Classification System moisture D dry M moist	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable				
 bit shown by suffix e.g. AD/T B blank bit T C bit V V bit 	water 10 wa wa wa	Oct-12 water el on date shown ter inflow ter outflow	N statutatu penetration test (SP1) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	W wet S saturated Wp plastic limit WI liquid limit	D Triable VL very loose L loose MD medium dense D dense VD very dense				



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ATE	TRA	TECH	I CON	/IPA	NY							В	orehole	ID.		HAL532-533		
Engineering Log - Hand Auger sheet: 1 of 1											1 of 1							
_	:n	<u>ig</u>		e	eriną	<u>J L</u>	<u>-0(</u>	<u>g -</u>	па	na Auger		р	roject no).		773-GENZTAUC130864		
cli	ent	:	Т	THE LAKES (2012) LIMITED date started:												05 Oct 2017		
pri	inci	pal:		date completed												05 Oct 2017		
pr	ojeo	ct:	Т	HE	LAKE	s, s	TAC	GE 3I	GCF	2		lc	ogged by	/:		ODS		
loc	cati	on:	И	Έ	STERN	во	UNL	DARY	OF	LOT 532 AND 533		c	hecked I	by:		DBC		
ро	sitio	n: No	ot Sp	eci	fied					surface elevation: Not Specified	i	angle fro	m horizor	ntal: 9	90°	DCP id.:		
dri	ll mo	odel: I	Hand	I Aı	uger					drilling fluid:	I	nole diar	neter : 50	mm		vane id.: SL588		
d	rillir	ng inf	orma	atio	on			mate	erial sub	ostance								
method &	support	2 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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) 30 00 00 00	DC (blor 100 r	;P ws/ mm)	structure and additional observations		
	1						-			ORGANIC SILT: non plastic, black.	D to M							
A			Encountered	~	VS 179/ 52 kPa /S >213 kPa		- - - - - - - - - - - - - - - - - - -			SILT: low plasticity, orange brown mottled brown, with trace fine grained sand and minor clay.	М	VSt to H				FILL		
							1.5			SAND: fine to medium grained, orange brown mottled brown, with minor silt. 1.3 m: with some silt	M to W	MD						
							2.5 - 2.5 - 3.0 - 3.5 - 3.5 -			Hand Auger HAL532-533 terminated at 2.0 m Target depth								

CDF_0_9_06_LIBRARY.GLB rev:AT Log COF ||||||||4.5 | | |ΪÌÌ ||||111 classification symbol & consistency / relative density VS very soft method AD auger drilling* AS auger screwing* support M mud samples & field tests B bulk disturbed sample soil description N nil very soft soft firm disturbed sample environmental sample based on Unified C casing D E S F HA W hand auger Classification System environmental sample split spoon sample undisturbed sample ##mm diameter hand penetrometer (kPa) standard penetration test (SPT) SPT - sample recovered SPT with solid cone when short penetration and (kPa) penetration washbore . St VSt SS stiff very stiff hard HA hand auger no resistance ranging to moisture D dry M mois W wet ო U## HP N N* H Fb D dry M moist W wet S saturated Wp plastic limit WI liquid limit ÷. friable water VL very loose 10-Oct-12 water level on date shown * bit shown by suffix ⊻ Nc VS L loose e.g. B T AD/T MD vane shear; peak/remouded (kPa) medium dense blank bit water inflow R HB D VD refusal dense TC bit water outflow hammer bouncing very dense Vbit

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THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 533 location:

Borehole ID. HAL533 1 of 1 sheet: 773-GENZTAUC13086AP project no. 04 Oct 2017 date started: 04 Oct 2017 date completed: logged by: PRM checked by: DBC

position	: Not	Spec	ified					surface elevation: Not Specified	а	ingle fro	om horizontal:	90°	DCP id.:	
drill mod	Irill model: Hand Auger							drilling fluid:	h	ole diar	meter : 50 mm	vane id.: 4523		
drilling	drilling information material subs							stance						
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	moisture condition	consistency / relative density	vane D shear (blo ⊕remoulded ⊚peak 100 (kPa) © 950	CP ows/ mm)	structure and additional observations	
HA N		Not Encountered w:	VS 143/ 35 kPa VS 196/ 35 kPa VS 140/ 37 kPa VS 140/ 37 kPa	ŽŽ		۵.	39	ORGANIC SILT: non plastic, dark brown-black. Clayey SILT: low plasticity, dark brown mottled pale brown/orange, with minor fine grained sand. Sandy SILT: non plastic, pale white-grey mottled pale orange, sand is fine grained.	E 8 D to M M	VSt	$\begin{array}{c} \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} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \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} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} $		TOPSOIL FILL	
					2.0 			Hand Auger HAL533 terminated at 2.0 m Target depth						
method AD a AS a HA h W w HA h * b e.g. A B b T T V V	d auger dr auger so hand au washbor hand au bit show AD/T blank bit FC bit / bit	illing* crewin ger ger n by s	ıg* suffix	support M mud N nil C casing penetration ranging to refusion water level on date shown water inflow water outflow			nil stance g to tter 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 b Cla moistur D dry M mo V we S sai Wp pla WI liqu	sification soil desc ased on ssificatio re / bist turated astic limit uid limit	i symbol & ription Unified n System		consistency / relative density /S very soft S soft F firm St stiff /St very stiff H hard Fb friable /L very loose loose MD medium dense O dense /D very dense	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 533 AND 534

Borehole ID.	HAL533-534
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	PRM

DBC

checked by:

oosition: Not Specified			surface elevation: Not Specified	angle from horizontal: 90			DCP id.:
drill model: Hand Auger			drilling fluid:	hole diameter : 50 mm vane ic		vane id.: 4523	
drilling information		material subs	tance				
and the sector of the sector o	SL (m) s %	graphic log class ification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture condition	vane shear ⊕ remoulded © peak (kPa) 00 00 00 00 00 00 00 00 00 00 00 00 00	DCP (blows/ 100 mm)	structure and additional observations
			ORGANIC SILT: non plastic, dark brown-black.	D to M	VSt	1	TOPSOIL
			SILT: non plastic, pale orange-brown, with some fine grained sand.	м			FILL
	0.5-		SILTY SAND: fine to medium grained, white-grey.		MD γs μπρ		
tered			0.7 m: becoming pale grey-white				
	1.0-		SILTY SAND: fine to medium grained,				
2 2			wine-grey.				
	1.5						
	1.5-						
	2.0-		Hand Auger HAL533-534 terminated at 2.0 m Target depth				
		-					
	2.5-						
		-					
	3.0-	-					
	3.5-						
		-					
		-					
	4.0-						
		-					
	4.5-						
method	support	1	samples & field tests	classif	ication symbol &		consistency / relative density
AD auger drilling* AS auger screwing* HA hand auger	M mud C casing	N nil	Bbulk disturbed sampleDdisturbed sampleEenvironmental sample	so bas Class	in description sed on Unified sification System		VS very soft S soft F firm
W washbore HA hand auger		no resistance ranging to	SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moisture			St stiff VSt very stiff H hard
bit shown by suffix	water ▼ 10-Oct-12 water		N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone	M mois W wet S satu	st rated		Fb friable VL very loose
e.g. AD/ I B blank bit T TC bit		ver on date shown ater inflow ater outflow	VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Wp plas WI liqui	tic limit d limit		MD medium dense D dense VD verv dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: **CENTRE OF LOT 534**

Borehole ID.	HAL534
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	ODS
checked by	DBC

position: Not Specified surface elevation: Not Specified drill model: Hand Auger drilling fluid:											om horizontal: 9	90°	DCP id.: vane id.:	
drilli	ng info	rmati	ion			mate	rial sub	stance						
method & support	¹ ² 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	moisture condition	consistency / relative density	vane DC shear ⊕remoulded ⊚peak (kPa) 8 0 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	:P ws/ nm)	structure and additional observations	
		Not Encountered			0.5 			ORGANIC SILT. SAND: fine to coarse grained, orange pale brown, some silt. 0.4 m: becoming pale brown with trace to minor silt SAND: fine to coarse grained, grey, some silt.	D to M	MD			TOPSOIL	
					2.0 			Hand Auger HAL534 terminated at 2.0 m Target depth						
meth AD AS HA W HA * e.g. B T V	od auger of hand a washbo hand a bit show AD/T blank b TC bit V bit	Irilling crewi uger uger wn by it	* ng* suffix	supp M r C c pene wate	etration	N no res rangin refusa Oct-12 wa el on date er inflow er outflow	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 Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	class b Cla moistur D dry M mo W we S sa Wp pla WI liqu	sification oil desc ased on ssification re / bist turated astic limit uid limit	n symbol & ription Unified ın System		consistency / relative density /S very soft /S soft Firm firm St stiff /St very stiff I hard 'b friable /L very loose loose /ID medium dense 0 dense /D very dense	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 534 and 535

Borehole ID.	HAL534-535
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	SBG
checked by:	DBC

р	ositic	on: Not	Spe	cified					surface elevation: Not Specified	angle from horizontal: 90		90°	00° DCP id.:	
d	rill m	odel: Ha	and A	Auger					drilling fluid:	ł	nole dia	meter : 50 mm		vane id.: SL817
Ŀ	drilling information						material substance							
method &	support	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 D shear (bl ⊕remoulded ⊚peak (bl 1000 (kPa) 8 9 9 8 8 8 8	CP ows/ mm)	structure and additional observations
αΥ.GLB rev.AT Log COF BOREHOLE: NON CORED + DCP 13086AP_STAGE 31 GCR_MASTER.GPJ < <drawningfile>> 08/12/2017 15:10 ▲ Ha Ha Ha Ha Ha Ha Ha Ha Ha Ha Ha Ha Ha</drawningfile>			Not Encountered wat	VS 247 kPa VS 213/ 48 kPa VS 162/ 29 kPa VS 193/ 45 kPa VS 193/ 42 kPa VS 196/ 104 kPa				clas	ORGANIC SILT: non plastic, dark brown mottled orange brown, trace fine grained sand. SAND: fine to medium grained, pale brown mottled white black, minor silt. 0.7 m: becoming brown orange mottled dark brown black white 1.2 m: becoming pale brown mottled black white dark brown Hand Auger HAL534-535 terminated at 2.0 m Target depth	D to M	MD			TOPSOIL - FILL - - -
CDF_0_9_06_LIBKAK	neth AD AS	 	rilling crewi	* ng*	supj M r C c	4.5	N	nil	samples & field tests B bulk disturbed sample D disturbed sample	class s b	sification soil desc ased on			consistency / relative density S very soft S soft
	HA N HA e.g. 3 T	hand au washbo hand au bit show AD/T blank bi TC bit V bit	uger re uger vn by t	suffix	pend wate	etration	 no res rangin refusa Oct-12 wa el on date er inflow er outflow 	istance g to I ater shown	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 moistur D dr M mo W we S sa Wp pla WI liq	ssification re y bist et turated astic limit uid limit	n System		F firm St stiff /St very stiff H hard Fb friable /L very loose L loose MD medium dense D dense /D very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 535

Borehole ID.	HAL535
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	SBG
checked by	DBC

positi	ion: Not Specified				surface elevation: Not Specified	i	angle fro	om horizontal: 9	0° DCP id.:
drill n	nodel: Hand Auge			unaterial as	drilling fluid:		nole dia	meter : 50 mm	vane id.:
					material description		Ę,	vane DC	P structure and
method & support	sam field water ater	bles & E (E)	depth (m)	graphic log class ificatio symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative dens	shear ⊕remoulded ⊚peak (kPa) S ² S ² S ² N 5 S ²	additional observations
			-		ORGANIC SILT : non plastic, dark brown black, trace fine grained sand.	D to M			FILL _
- HA			0.5		SAND: fine to medium grained, pale brown orange mottled white black. 0.8 m: with trace silt	М	L to D		
			- - 1.5 - - - - -		1.6 m: with minor silt				
			2.0 -	****	Hand Auger HAL535 terminated at 2.0 m Target depth				
			- - 2.5—						
			3.0-						
			- - 3.5 - -						
			4.0						
			4.5 - - -						
meth AD AS HA W HA * e.g. B T	bit shown by suffix AD/T biank bit TC bit	su M C pe	upport mud casing enetration ⊂ N ∞ ater leve wat	N nil no resistance ranging to ◄ refusal Oct-12 water el on date shown er inflow er 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	class t Cla moistu D dr M m W w S sa Wp pl WI liq	sification soil desc pased on assification re y oist oist oist oist oist oist oist oist	n symbol &	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 verv dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 535 AND 536

Borehole ID.	HAL535-536
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	PRM

checked by

locat	cation: BOUNDARY OF LOT 535 AND 536								checked by:				DBC
positio	position: Not Specified							surface elevation: Not Specified	angle from horizontal: 90°			0°	DCP id.:
drill m	drill model: Hand Auger							drilling fluid:	h	ole dia	meter : 50 mm		vane id.: 4523
drilli	ng infoi	mati	on			mate	rial sub	stance					
method & support	2 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	moisture condition	consistency / relative density	vane DC shear ⊕remoulded ⊚peak 100 n (kPa) © 2 2 8	P vs/ nm) ∞₽	structure and additional observations
		-	VSUTP		-			ORGANIC SILT: non plastic, dark brown-black.	D to M				TOPSOIL
— HA —		Not Encountered	VSUIF		0.5			SILTY SAND: fine to medium grained, white-grey mottled pale orange, with trace clay.	М	MD	- YS UTP - 11 		MATUA SUBGROUP
					- - 1.5- - - -			CLAYEY SAND: fine to medium grained, white mottled pale orange/dark brown, clay is slightly plastic.		L			
					2.0 			Hand Auger HAL535-536 terminated at 2.0 m Target depth					
metha AD AS HA W HA * e.g. B T V	od auger d auger s hand au washbo hand au bit show AD/T blank bi TC bit V bit	rilling* crewir iger iger iger	, ıg* suffix	sup M r C c pen wate	Port mud casing etration etration er er lev wai	N no res rangin refusa Oct-12 wa el 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	class s b Cla moistur D dry M mo S sai Wp pla WI liqu	ification oil desc ased on ssificatio re / bist t turated ustic limit uid limit	a symbol & ription Unified n System	C S F S H F V L N D V	onsistency / relative density S very soft firm t stiff St very stiff hard b friable L very loose loose ID medium dense D very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: **CENTRE OF LOT 536**

Borehole ID.	HAL536
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	ODS
abaakad bur	DRC

ocat													
oositio hrill m	on: No nodel H	t Spe	cified					surface elevation: Not Specified	angle from horizontal: 90°			90°	DCP id.:
drilli	ing info	rmati	on			mate	rial sub	stance	1				
ər illi						mate		matorial description		_ ≿	Vana Dr	סי	etructure and
method & support	1 2 penetration	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) & 2 2 2 0 0 0 4 4 6	ws/ mm)	additional observations
			VS 103/		-			ORGANIC SILT: non plastic, dark brown-black.	D to M				TOPSOIL
			40 kPa		0.5-			Clayey SILT: low plasticity, orange-brown mottled brown/dark brown, with trace fine to medium grained sand.	м	VSt MD	⊕ @ + 		FILL
		Incountered			-			SAND: fine to coarse grained, grey, with minor silt, and trace subrounded fine grained gravel.					
		Not E			1.0			0.8 m: becoming fine grained with some silt, gravel absent					
					- 1.5— - -								
					2.0			Hand Auger HAL536 terminated at 2.0 m Target depth					
					- - 2.5-								
					-								
					3.0								
					- 3.5— -								
					- - 4.0								
					-								
					4.5								
					-								
meth AD AS HA W HA	auger auger hand a washb hand a	drilling screwi uger ore uger	* ng*	sup Mr Cc pen	nud asing etration	N no res	nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter	class s Cla	sification soil desc based on assificatio	i symbol & ription Unified n System	- C	consistency / relative density /S very soft 5 soft = firm St stiff /St very stiff
* bit shown by suffix e.g. AD/T B blank bit ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓		ater shown	N standard penetration test (KPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal	D dr M m W we S sa Wp pla WI liq	y oist aturated astic limit uid limit			T Hard Tb friable /L very loose L loose MD medium dense O dense					
	V bit			-	- wat	er outflow	v	HB hammer bouncing				1	/D very dense



blank bit

TC bit

V bi

vater inflow

water outflow

R

HB

refusal

hammer bouncing

Borehole ID. HAL536-537 sheet: 1 of 1 **Engineering Log - Hand Auger** 773-GENZTAUC13086A project no. THE LAKES (2012) LIMITED client: 04 Oct 2017 date started: 04 Oct 2017 principal: date completed: THE LAKES, STAGE 3I GCR ODS project: logged by: BOUNDARY OF LOT 536 AND 537 DBC location: checked by: position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: drill model: Hand Auger drilling fluid: hole diameter : 50 mm vane id.: SL588 drilling information material substance structure and DCP material description vane consistency / relative density class ification g (blows/ 100 mm) samples & shear ⊕ remould ⊚ peak additional obs /ations Ē method & support penetra SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components field tests moisture conditior graphic I symbol Ē depth (water (kPa) 8 8 8 R ORGANIC SILT: non plastic, dark D to M TOPSOIL brown-black **SILT**: low plasticity, orange-brown mottled brown, with minor clay and trace fine to coarse FILL VS UTP М н VS UTP 11 1 ||||grained sand. | | | | |M to W MD to 0.5 SAND: fine to medium grained, brown mottled | | | | |11 D 11 grey, with minor silt. |||||SAND: fine to medium grained, pale grey, Vot Encountered ||||with minor silt | | || | | | |11 1 2/2017 15:10 11 11 ₽ ż 1.0 111 | | | | ||||||111 11 |||||||111 1.5 |||||||| | ||||||||||||T ę 111 111 Ţ 111 MASTER. 2.0 Hand Auger HAL536-537 terminated at 2.0 m ||||11111 ||||||Target depth GCR 1111 ||||11111 |||||||11111 2.5 11111 111 |||||||11111 ||||| | | |11111 111 | | | | |11111 rev:AT Log COF BOREHOLE: NON CORED + DCP | | || | | |11111 11111 ||||||3.0 11111 111 |||||111 ||||||11111 11111 111 | | | |11111 ||||||11111 3.5 11111 111 1 1 1 1 11111 1 1 1 1 11111 111 ||||||11111 11111 4.0 |||||||||||11111 ||||LIBRARY.GLB 11111 1 1 1 1 11111 11 1 + 111111 4.5 11111 ||||||||||90 11111 | | | | |11111 111 |||||||Ę 11111 ||||||11111 11 consistency / relative density VS Verv 20⁴ method AD auger drilling* classification symbol & support samples & field tests soil description N nil bulk disturbed sample Μ mud В auger screwing' disturbed sample environmental sample based on Unified soft firm AS C casing D S F HA W hand auger Classification System Е penetration split spoon sample undisturbed sample ##mm diameter washbore SS St stiff hand auger no resistance ranging to refusal HA very stiff VSt U## moisture HP hand penetrometer (kPa) hard н dry moist wet D M W standard penetration test (SPT) Fb Ν friable wate N* SPT - sample recovered VL very loose bit shown by suffix 10-Oct-12 water saturated T SPT with solid cone Nc loose L e.g. B evel on date shown AD/T plastic limit liquid limit VS vane shear; peak/remouded (kPa) Wp MD medium dense

۱۸/i

D

VD

dense

very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 537 location:

Borehole ID.	HAL537
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified			angle from horizontal: §	DCP id.:	
drill model: Hand Auger		meterial cubat	hole diameter : 50 mm	vane id.:	
drilling information		material subst	ance		
samples & samples & field tests	RL (m) depth (m)	graphic log classificatior symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	model m	P structure and ws/ additional observations nm)
HA Image: Imag	0.5- 1.0- 1.5- 2.0- 2.5- 3.0- 3.5- 4.0- 4.5-		DRGANIC SILT: non plastic to low plasticity, lark brown black mottled orange white. SAND: fine to medium grained, pale brown orange mottled white black, trace silt. 0.6 m: becoming pale brown mottled white plack SAND: fine to medium grained, pale brown nottled white black, some silt. -land Auger HAL537 terminated at 2.0 m Farget depth	D to M M L to M L to H H L to H L to H H L to H H L to H H L to H H H L to H H H H H H H H H H H H H H	11 TOPSOIL 11 FILL 11 FILL 11 I 11
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 TC bit	support M mud C casing penetration water	N nil no resistance ranging to refusal Oct-12 water el on date shown er inflow er 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 hamme bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated 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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 537 AND 538 location:

Borehole ID.	HAL537-538
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	ODS

checked by: DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 90° DCP id.:								
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: SL588							
drilling information	material subst	ance									
samples & field tests	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	m m m m m m m m m m m m m m m m m m m	s/ s/ additional observations							
E 07 - 0 0 3 VS 150/ 36 kPa 111 111 111 111 111 111 111 1		ORGANIC SILT: non plastic, black. SILT: low plasticity, orange brown, minor clay, trace fine grained sand. 0.9 m: becoming mottled brown with trace fine to medium grained sand 1.0 m: with some fine to medium grained sand SAND: fine to medium grained, brown, minor sit. 1.4 m: becoming grey brown SAND: fine to medium grained, grey, minor to some silt. Hand Auger HAL537-538 terminated at 2.0 m Target depth	E 8 8 2 8 2 3 3 N = 0.0 D to M 1 1 1 1 1 M VSt 1 1 1 1 1 Et 0 1 1 1 1 1 1 M to W 1 1 1 1 1 1 1 N to W 1 1 1 1 1 1 1 1 1 N to W 1 <t< td=""><td>0.2 II TOPSOIL II II II II II II II II II III >	0.2 II TOPSOIL II II II II II II II II II III	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 TC bit	support M mud N nil C casing penetration resistance ranging to refusal water 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 S saturated 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		



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 538 location.

Borehole ID.	HAL538
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	04 Oct 2017
date completed:	04 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified drill model: Hand Auger								surface elevation: Not Specified	а	angle from horizontal: 90° DCP id.:			DCP id.:
drilling information						mato	rial cub	drilling fluid:	h	iole dia	meter : 50 mm		vane id.:
method & support	penetration	vater	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	noisture	consistency / elative density	vane shear ⊕ peak (kPa) S S S S	:P ws/ mm)	structure and additional observations
	327	2		H	-		0 0	ORGANIC SILT: non plastic, dark brown mottled black orange.	D to M				TOPSOIL
HA		t Encountered			0.5 - - - 1.0			SAND: fine to medium grained, pale brown grey mottled white black, minor silt.	M	MD			FILL
		No			- - - 1.5 - - - -				W				
<u>v v</u>					2.0 	****		Hand Auger HAL538 terminated at 2.0 m Target depth					
meth AD AS HA W HA * e.g. B T V	od auger di auger so hand au washboi hand au bit show AD/T blank bit TC bit V bit	rilling crewin ger ger n by :	ng* suffix	supp M r C c pene wate	oort nud asing etration er leve wate wate wate	N no res rangin refusa Oct-12 wa el on date er inflow er outflow	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 Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Class b Cla moistur D dry M mo W we S sa Wp pla WI liqu	sification coil desc ased on ssification re / bist turated sstic limit uid limit	in symbol & ription	CO VS S F VS H Fb VL L ME D VD	s very soft soft firm stiff tvery stiff hard friable very loose loose boxe dense very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL538-539
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	SBG

	location: BOUNDARY OF LOT 538 AND 539									checked by:			DBC
k	position: Not Specified								surface elevation: Not Specified angle from horizontal: 90°			al: 90°	DCP id.:
c	drill model: Hand Auger								drilling fluid:	hole diameter : 50 mm vane id.:			vane id.:
L	drilling information material substa						mate	rial sub	stance				
	metnoa & 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	moisture condition	vane shear ⊕ premoulded (kPa) 00 00 00 00 00 00 00 00 00 00 00 00 00 00	DCP (blows/ 100 mm)	structure and additional observations
7		3 6 7						0 0	ORGANIC SILT: non plastic, dark brown black mottled orange.	D to M			TOPSOIL
7 15:10 HA -	- N		ot Encountered			- 0.5 - - - 1.0 -			SAND: fine to medium grained, pale brown orange, minor silt. 0.6 m: becoming pale brown mottled black white orange	М	L to MD		FILL -
TER.GPJ < <drawingfile>> 08/12/2011</drawingfile>			NG			- - - 1.5 - - - -				W			
0.06_LIBRARY.GLBrev.AT_Log_COF BOREHOLE: NON CORED + DCP_13086AP_STAGE 31 GCR_MAS1						2.0 - - 2.5 - - - - - - - - - - - - - - - - - - -			Hand Auger HAL538-539 terminated at 2.0 m Target depth				
CDF_0	metho AD AS HA W HA • e.g. B T V	od auger d auger d hand au washbo hand au bit shov AD/T blank b TC bit V bit	rilling ccrewin ger re ger n by t	ng* suffix	supp M r C c pence wate	oport nud assing etration er ∎ ∎ 10-0 leve wate wate	 no resi ranging refusal Oct-12 wael on date or inflow er outflow 	nil stance g to tter 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 with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	class s bi Clas moistur D dry M mo W we S sat Wp plals Wi liqu	ification symbol & oil description ased on Unified ssification System		onsistency / relative density 'S very soft s soft firm it stiff YSt very stiff h hard b friable /L very loose ID medium dense 0 dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 540 location:

Borehole ID.	HAL540
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified surface elevation: Not Specified						a	ingle fro	om horizonta	al: 90°	DCP id.:			
drill mod	drill model: Hand Auger						drilling fluid:			hole diameter : 50 mm			vane id.:
ethod & pport	irrilling information material s samples & (L) (L) (L) (L) (L) (L) (L) (L) (L) (L)		assification mbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	oisture	nsistency / ative density	vane shear ⊕remoulded ⊚peak 1 (kPa)	DCP (blows/ 100 mm)	structure and additional observations				
HA	- - <td>Not Encountered wa</td> <td></td> <td>LL RL</td> <td></td> <td></td> <td>syr</td> <td>ORGANIC SILT: low plasticity, dark brown black. SAND: fine to medium grained, pale grey brown, trace silt. 0.9 m: with trace clay SILTY SAND: fine to medium grained, brown grey mottled dark brown, trace clay. SAND: fine to medium grained, pale grey brown.</td> <td><u>е в</u> D to M M</td> <td>MD</td> <td></td> <td></td> <td>TOPSOIL</td>	Not Encountered wa		LL RL			syr	ORGANIC SILT: low plasticity, dark brown black. SAND: fine to medium grained, pale grey brown, trace silt. 0.9 m: with trace clay SILTY SAND: fine to medium grained, brown grey mottled dark brown, trace clay. SAND: fine to medium grained, pale grey brown.	<u>е в</u> D to M M	MD			TOPSOIL
method AD AI HA W W W W HA HA HA HA HA HA HA W HA HA	it show	rilling* crewir ger re ger m by :	ng*	sup M r C c pen	3.5	N rangin ⊲ refusa l on dater	nil istance ig to i	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample U## undisturbed sample U## undisturbed sample N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa)	class s b Cla moistu D dra M ma W we S sa W p pla	:ification ased on ssificatic re t t turated ticl limit turated	t		consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very losse L loose MD medium dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 540 AND 541

Borehole ID.	HAL540-541
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	PRM

logged by: **PRM** checked by: **DBC**

position: Not Specified			surface elevation: Not Specified	angle from horizontal: 90° DCP id.:	
drill model: Hand Auger			drilling fluid:	hole diameter : 50 mm	vane id.:
drilling information		material subst	ance		_
% samples % sending % % % % % % % % % % % % % % % % % % %	RL (m) depth (m)	graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	or condition conditi	P structure and ws/ additional observations nm)
	-		DRGANIC SILT: non plastic, dark prown-black. SILTY SAND: fine grained, pale grey-white.	D to M 1111	TOPSOIL 1 1 1 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1
L	0.5				
H H H H H H H H H H H H H H H H H H H	1.0			MD to D 11111	
	1.5				
	2.0		Hand Auger HAL540-541 terminated at 2.0 m Target depth		
	2.5-				
	3.5				
	4.0				
	4.5				
	-		1		
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	Support M mud C casing penetration	N nil no resistance ranging to ◄ refusal	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetroineter (kPa) N standard penetroineter (sPT)	classification symbol & soil description based on Unified Classification System moisture D dry M moist	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Eb friable
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	wn by suffix water N standard penetration test (SPT) M moist Fb water Image: SPT - sample recovered N* SPT - sample recovered VL VL it Image: SPT - sample recovered N S saturated L water inflow water inflow VS vane shear; peak/remouded (kPa) Wp plastic limit MD R refusal HB hammer bouncing VD		VL very loose L loose MD medium dense D dense VD very dense		



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: WESTERN CORNER OF LOT 540

Borehole ID.	HAL540C
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	ODS
checked by	DBC

posit	tion.	Not	Sner	cified					surface elevation: Not Specified	:	angle fr	om horizontal [.]	0°	DCP id ·
drill r	nod	el: Ha	ind A	Auger					drilling fluid:	, I	nole dia	meter : 50 mm	0	vane id.: SL588
dril	ling	infor	mati	on			mate	rial sub	stance					
method & support	: -	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 DC shear ⊕remoulded ⊚peak 100 r (kPa) g ♀ ♀ Q Q S ★ ♥	P vs/ nm) ∞ ₽	structure and additional observations
HA			Not Encountered	VS 114/ 34 kPa					SILTY SAND: fine to coarse grained, orange brown mottled grey. 0.5 m: becomes brown	M	L to MD			FILL
				VS 117/ 31 kPa VS 113/ 31 kPa		1.5 — - - -			Sandy SILT: non plastic, grey, with trace clay. Sand is fine to medium grained.	w	VSt			
						2.0 			Hand Auger HAL540C terminated at 2.0 m Target depth	clas	sification			
method AD support AS auger drilling* M AS auger screwing* C HA hand auger penetra W washbore penetra HA hand auger water * bit shown by suffix e.g. e.g. AD/T B blank bit T T C bit		etration	N no resi ranging refusal Oct-12 wa on date er inflow er outflow	nil stance g to tter 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	moistu D dr M m W w S sa Wp pl WI liq	re y oist et astic limi uid limit	t	CO VS S F St VS H Fb VL L MI D VL	nsistency / relative density s very soft soft firm stiff very stiff hard friable very loose loose medium dense dense very dense				



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 541 AND 542 location:

Borehole ID.	HAL541-542
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	SBG

DBC

checked by:

positio	sition: Not Specified surface elevation: Not Specified							surface elevation: Not Specified	cified angle from horizontal: 90° DCP id.:				DCP id.:
drill mo	ill model: Hand Auger drilling fluid:								ł	nole dia	meter : 50 mn	n	vane id.:
drillir	lling information material substance												
metnoa & 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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) g ⁰⁰ g ⁰ g	DCP blows/ 0 mm)	structure and additional observations
1					-			ORGANIC SILT : non plastic, dark brown black, trace fine to medium grained sand.	D to M				TOPSOIL
		ncountered			- 0.5 - - -			SILTY SAND: fine to medium grained, pale grey brown.	M	MD			FILL
		Not Er			1.0 - - - 1.5 - - - - -	× × ×		SAND: fine to medium grained, pale grey.					TE RANGA IGNIMBRITE
					2.0 			Hand Auger HAL541-542 terminated at 2.0 m Target depth					
method AD 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 * bit shown by suffix e.g. AD/T B blank bit		no res rangin ✓ refusa Oct-12 wa el on date er inflow	nil istance ig to il 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	class s Cla moistu D dr M me S sa Wp pla WI liq	sification soil desc pased on assification re y oist et uturated astic limit uid limit	n symbol & rription Unified on System	C S S V F S V F V L L M	consistency / relative density /S very soft S soft firm stiff /St very stiff H hard 'b friable /L very loose JD medium dense 0 dense				



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 542 location:

Borehole ID. HAL542 sheet: 1 of 1 773-GENZTAUC13086A project no. date started: 05 Oct 2017 05 Oct 2017 date completed: logged by: ODS DBC checked by:

pos	position: Not Specified						surface elevation: Not Specified			angle fro	om horizontal: 9	0° DCP id.:
drill	model:	Hand	Auger					drilling fluid:	ł	nole diar	meter : 50 mm	vane id.: SL588
dr	illing in	forma	tion			mate	rial subs	tance				
nethod &	upport penetration	ater	samples & field tests	(L (m)	epth (m)	raphic log	lassification ymbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture ondition	onsistency / elative density	vane DC shear ⊕remoulded ⊚peak (kPa)	P structure and ws/ additional observations nm)
130864P_STAGE 31 GCR_MASTER.GPJ < <drawingfile>> 08/12/2017 15:10 HA</drawingfile>		Image: Second second	VS >213 kPa	BT (deuß	class symmetry s	ORGANIC SILT: non plastic, black. SILT: low plasticity, orange brown mottled grey and brown, with minor to some clay and trace fine to medium grained sand. 0.7 m: with minor fine to medium grained sand SAND: fine to medium grained, brown grey, with trace to minor silt. 1.3 m: becomes pale grey with trace fine subrounded pumiceous gravel	M	H H MD to D		∞ 2 II TOPSOIL II II FILL II II II FILL II IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	thod auge		g* vino*	sup		N	nil	Hand Auger HAL542 terminated at 3.0 m Target depth	class	sification	I I	II - VS very soft
AS HA W HA e.g B T V	AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T TC bit		ger arilling ^c ger screwing ^s and auger ashbore and auger t shown by suffix D/T ank bit C bit bit M mud C casing penetration water 10-Oct-12 I level on d water outf		ores rangin refusa Oct-12 wa el on date er inflow er outflow	istance g to I ater shown	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	b Cla moistu D dr M ma W we S sa Wp pla WI liq	re y oist et uturated astic limit uid limit	Unified in System	S soft F firm St stiff VSt very stiff H hard Fb friable VL very lose L loose MD medium dense D dense VD very dense	



A TETRA TE	ECH CC	MPANY							Borehole ID.		HAL542-543	
Enc	Engineering Log - Hand Auger										1 of 1	
EUĆ	JIII	eenn	y I	LOÍ	J -	Паі	iu Augei		project no.		773-GENZTAUC13086	
client:	7	THE LAK	ES (2012,) LIM	ITED			date started:		05 Oct 2017	
principa	al:								date complete	ed:	05 Oct 2017	
project:	: 1	THE LAK	ES, S	STAC	GE 31	GCR		logged by:		SBG		
location	n: b	VESTER	N BC	OUNE	DARY	OF L	OT 542 AND 543		checked by:		DBC	
position:	Not S	pecified					surface elevation: Not Specified	ang	le from horizontal:	90°	DCP id.:	
drill mode	el: Har	nd Auger					drilling fluid:	e diameter : 50 mm		vane id.: SL817		
drilling	inforn	nation			mate	rial subs	stance		>			
method & support penetratio		samples 8 field tests	sr (m)	lepth (m)	Iraphic log	Bit Solution Solution Solution Solution Solution Solution Solution Solution			His vane DCP Shear (blows/ eremoulded epeak 100 mm)		structure and additional observations	
	3 5	>	<u> </u>	0		0 0	ORGANIC SILT: low plasticity, dark brown	D to M	25 8668 44		TOPSOIL	
		VS 158/ 42 kPa VS >247 kF	°a	0.5-			black mottled orange. Clayey SILT : low to medium plasticity, orange brown, trace fine to medium grained sand.	M			FILL - - - -	
HA. 		Not Encountered					SAND: fine to medium grained, pale grey brown.				TE RANGA IGNIMBRITE	
				3.0 			Hand Auger HAL542-543 terminated at 3.0 m Target depth					
method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T TC bit				port mud casing eetration eer eer ↓ 10- lev, wat	N no resi rangino refusal Oct-12 wa el on date ter inflow ter outflow	nil stance g to ter 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 eshear; peak/remouded (kPa) R refusal HB hammer bouncing	classific soil base Classif Moisture D dry M moist W wet S sature Wp plastic WI liquid	ation symbol & description d on Unified ication System ted ilmit		Asymptotic consistency / relative density VS very soft S soft F firm St stiff /St very stiff I hard Fb friable /L very loose JO dense /D very dense	



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 543 le setien.

Borehole ID.	HAL543
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	PRM
ale a closed las a	

naciti	ion: Not Specified surface elevation: Not Specified								angle from horizontal: 90° DCP id											
positic drill m	islinon. Not Specified surface elevation: Not Specified drilling fluid:									angle fro	om norizontal: 90	J [*] DCP Id.: vane id : 4523								
drilli	na info	rmati	ion			mate	rial sub	stance				Valle Id., 4525								
-	5						Б	material description		/ sity	vane DCF	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 dens	shear ⊕ remoulded ⊚ peak (kPa) G 00 00 00 00 00 00 00 00 00 00 00 00 00	us/ additional observations ୭.୧								
			VS >224 kPa		-			ORGANIC SILT: non plastic, dark brown-black.	D to M	н		Topsoil 								
			\/S >224 k₽a		0.5-			Clayey SILT: low plasticity, brown mottled orange-brown/pale brown, with minor fine grained sand.	м											
			V3 ~224 KF a		1.0	1.0		1.0-	1.0-	1.0-	- - 1.0-		1.0-			Clayey SILT: low to medium plasticity, white, with trace fine grained sand. Clayey SILT: low plasticity, brown mottled		L to D		
		ountered						-			orange-brown/pale brown, with minor fine grained sand. SAND: fine grained, pale grey-brown, with minor silt and trace clay.]								
		Too u to VS >224								Clayey SILT: low plasticity, brown mottled	_									
			VS >224 kPa					2.0-		2.0-	2.0-	2.0-	2.0-	2.0-	2.0-	2.0-			orange-brown/pale brown, with minor fine grained sand. SAND: fine grained, pale grey-brown, with minor silt and trace clay	/
			VS 73/ 22 kPa		2.5-			Clayey SILT: non plastic, pale grey-brown, with minor fine grained sand.		St to H	-									
			VS >224 kPa		-															
					- 3.0 -			Hand Auger HAL543 terminated at 3.0 m Target depth												
					3.5-															
					-															
					4.0-															
					4.5-															
					-															
metho AD AS	od auger d auger s	Irilling crewi	* ng*	sup M i C o	port mud casing	N	nil	samples & field tests B bulk disturbed sample D disturbed sample	clas	sification soil desc	n symbol & cription Unified	consistency / relative density VS very soft S soft								
HA W HA	hand at washbo hand at	uger ore uger		pen		no res rangin	istance g to	E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moistu D dr	re y	on System	F firm St stiff VSt very stiff H hard								
* e.g. B	bit shov AD/T blank bi	vn by it	suffix	wat	er Io- lev wat	Oct-12 water on date	ater shown	N standard penetration test (SF1) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refused	W we S sa Wp pla WI liq	uist et iturated astic limit uid limit	t	ru friable VL very loose L loose MD medium dense								
/	TC bit V bit			-	- wat	er outflov	/	HB hammer bouncing				VD very dense								



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL543-544
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	ODS
checked by:	DBC

DCP id.:

vane id.: SL588

angle from horizontal: 90°

hole diameter : 50 mm

location:	WESTERN BOUNDARY OF LC	DT 543 AND 544
position: No	t Specified	surface elevation: Not Specified
drill model: H	land Auger	drilling fluid:

dril	drilling information						aterial substance									
method & support	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) 00 00 00 00	DCP (blows/ 100 mm)	structure and additional observations			
		itered	VS >213 kPa					ORGANIC SILT: non plastic, black. SILT: non plastic to low plasticity, grey mottled orange brown and brown, with minor fine to medium grained sand and with trace clay. SAND: fine to medium grained, brown grey, with minor silt.	D to M	H D	- 		TOPSOIL			
		Not Encour	VS >213 kPa					SILT: non plastic to low plasticity, orange brown mottled grey, with trace to minor fine to medium grained sand. SILT: non plastic, orange brown, with trace fine to medium grained sand and with trace clay. SAND: fine to medium grained, brown, with trace silt.		H	- - - -		POST ROTOEHU ASH			
					2.5			Hand Auger HAL543-544 terminated at 2.0 m Target depth								
met AD AS HA W HA * e.g. B T V	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 TC bit V V bit		od auger drilling* auger screwing* hand auger support M mud C casing penetration penetration water bit shown by suffix AD/T blank bit TC bit V bit bit shown by suffix mud C casing			t auger drilling* auger screwing* hand auger bit shown by suffix AD/T blank bit TC bit V bit bit stown by suffix			N no ress rangin refusa Oct-12 wa el on date er inflow er outflow	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 Nc SPT with solid cone VS vare shear; peak/remouded (kPa) R refusal HB hammer bouncing	clas I Cla D di M m W w S sa Wp pl Wp lic	sification soil desc based on assification re ry joist et aturated astic limit quid limit	n symbol & rription Unified on System	CV SF SV FF V L L N U V	onsistency / relative density S very soft firm firm tt stiff St very stiff hard b friable L very loose loose D medium dense b dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 544

Borehole ID.HAL544sheet:1 of 1project no.773-GENZTAUC13086Adate started:05 Oct 2017date completed:05 Oct 2017logged by:SBGchecked by:DBC

position: Not Spe	ecified				surface elevation: Not Specified	cified angle from horizontal: 90° DCP id.:			00° DCP id.:			
drill model: Hand	ill model: Hand Auger drilling fluid:							hole diameter : 50 mm vane id.: SL817				
drilling information	tion		mate	naterial substance								
nethod & upport penetration /ater	samples & field tests	kL (m) lepth (m)	raphic log	lassification ymbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture ondition	onsistency / elative density	vane DC shear ⊕remoulded ⊚peak (kPa)	P structure and ws/ additional observations			
≥ ∞ - ∞ 3	VS 247 kPa			s c	ORGANIC SILT: non plastic to low plasticity, dark brown black, trace fine to medium grained sand.	D to M	VStto		∞			
	VS 196/ 66 kPa	0.5			Sandy SILT: low plasticity, brown orange mottled white black. 0.5 m: becoming slightly to moderately plastic	IVI	H					
TIA		1.0			SILTY SAND: fine to medium grained, brown grey mottled orange dark brown.		MD to D					
ter table		2.0			 2.0 m: becoming orange grey mottled brown 	w	-					
	_	2.5				8	-		11 11 11 11 11			
						3			11 11 11 11			
		35	-		Hand Auger HAL544 terminated at 3.0 m Target depth				11 11 11 11			
		4.0	-									
		4.0	-									
		4.5	-									
method support AD auger drilling* M mud AS auger screwing* C casing HA hand auger penetration HA hand auger To N the second			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 t Cla moistu	sification soil desc based on assificatio re	n symbol & ription Unified n System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard				
 bit shown by suffix e.g. AD/T B blank bit T CC bit 		0-Oct-12 w evel on date vater inflow vater outflow	ater e shown	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	M m W we S sa Wp pla WI liq	y oist et iturated astic limit uid limit		Fb friable VL very loose L loose MD medium dense D dense VD very dense				



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 544 AND 545

Borehole ID.	HAL544-545
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified surface elevation: Not Specified drilling fluid:						angle from horizontal: 90°			DCP id.:				
drilling information material substance							rial sub	stance	I		ineter . 50 i		varie id
method & support	benetration	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)	DCP (blows/ 100 mm)	structure and additional observations
HA		Not Encountered						ORGANIC SILT: low plasticity, dark brown black, trace fine grained sand. Sandy SILT: low plasticity, brown orange mottled grey, sand fine to medium grained. SILTY SAND: fine to medium grained, brown grey mottled dark brown. SAND: fine to medium grained, brown grey, minor silt. SAND: fine to medium grained, brown grey, minor silt.	D to M M	D			TOPSOIL FILL DCP REFUSAL TE RANGA IGNIMBRITE
								Hand Auger HAL544-545 terminated at 3.0 m Target depth					
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 TC bit			ng⁺ suffix	support M mud N nil C casing penetration ranging to ranging to retusal water 10-Oct-12 water level on date shown water rulflow water 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	classification symbol & soil description VS based on Unified S Classification System F T Moisture D dry H H M moist VB Saturated L Wp VB Iiquid 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			



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 545

Borehole ID.	HAL545
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	PRM
checked by	DBC

position: Not Specified surface elevation: Not Specified							angle from horizontal: 90° DCP id.:	
drill model: Hand Auger drilling fluid:							hole diameter : 50 mm vane id.: 4523	
drilling information mater						material	ubstance	
method & support	2 penetration	water	samples & field tests	RL (m)	depth (m)	graphic log classification	Material description SOIL TYPE: plasticity or particle char. colour, secondary and minor comp	racteristic, ponents v v v v v v v v v v v v v v v v v v v
		Not Encountered	VS 197/ 46 kPa VS 179/ 31 kPa VS UTP VS 197/ 46 kPa				 ORGANIC SILT: non plastic, dark brown-black. Clayey SILT: low plasticity, brown n orange-brown/pale brown, with minor grained sand. SILTY SAND: fine grained, pale ora brown. Clayey SILT: low plasticity, brown n orange-brown/pale brown, with minor grained sand. SILTY SAND: fine grained, pale ora brown. Sandy SILT: non plastic, pale orang mottled white, sand is fine grained. SILTY SAND: fine grained, pale gre pale orange. SILTY SAND: fine to medium grained mottled orange. 	E 0 0 2 0
meti				sup	3.0		Hand Auger HAL545 terminated at 3 Target depth	3.0 m
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			M mud N nil C casing penetration ranging to refused water level on date shown water inflow water outflow			B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm HP hand penetrometer (kPa) N standard penetration test (N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoude R refusal HB hammer bouncing	sour aescription VS very soft based on Unified S soft Classification System F firm m diameter moisture VSt very stiff D dry H hard (SPT) M moist Fb friable W wet VL very loose S saturated L loose Wp plastic limit MD medium dense Wl iquid limit D dense VD very dense VD very dense	


A TETRA	TECH	COMF	ANY							В	orehole	ID.	HAL545-546
En	ai	ne	erin	al		a -	На	nd Auger		S	heet:		1 of 1
aliante	3.	<u>т</u> и		<u>ש</u> יי פ	2012	3				p	roject no). 	773-GENZIAUC13080
client:		п	E LANE	3 (4	2012		IIIED			a	ate starte	ea:	05 Oct 2017
princip	oal:					_				d	ate comp	oleted:	05 Oct 2017
projec	t:	ΤН	E LAKE	'S, S	STA	GE 3	I GCF	2		lo	ogged by	:	ODS
locatio	on:	WE	STERN	BC	DUN	DARY	YOF	LOT 545 AND 546		С	hecked b	by:	DBC
positior	n: No	t Spe	cified					surface elevation: Not Specified	a	angle fro	om horizon	tal: 90°	DCP id.:
drill mo	del: H	and A	Auger			mat	orial cul	drilling fluid:	ł	nole dia	meter : 50	mm	vane id.: SL588
unni	5					mau	Enal Sul	material description		sity	vane	DCP	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 dens	shear ⊕remoulded ⊚peak (kPa) 3 0 0 0 00	(blows/ 100 mm)	additional observations
						-		ORGANIC SILT: non plastic, black.	D to M				
			VS >213 kPa				× × ×	grey and brown, with some clay and with trace fine grained sand.			 @		
		untered	VS >213 kPa		0.5-		*	0.4 m: becomes pale brown mottled grey, non plastic to slightly plastic with trace to minor clay and minor fine to medium grained sand			 @ @		
		Not Enco			1.0-			SILTY SAND: fine to medium grained, pale brown grey, with trace fine subrounded pumiceous gravel.	M to W	MD to VD			
					1.5-								REFUSAL - - - -
					2.0-	-		Hand Auger HAL545-546 terminated at 2.0 m Target depth					
					2.5-	-							
					3.0-								
					3.5-	-							
					4.0-								

CDF_0_9_06_LIBRARY.GLB		- - 4.5 - - - - - -			
	method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud N nil C casing penetration ranging to ranging to ranging 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) N standard penetration test (SPT)	classification symbol & soil description based on Unified Classification System moisture D dry M moist	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable
	* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	Water 10-Oct-12 water level on date shown water inflow water outflow	N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	W wet S saturated Wp plastic limit Wi liquid limit	VL very loose L loose MD medium dense D dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL546
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	ODS
checked by:	DBC

positi	on: Not	Spe	cified					surface	elevation: N	ot Specified		а	ngle fro	om hori	zonta	l: 90)°	_	DCP id.:	
drill m	nodel: Ha	and A	Auger					drilling flu	uid:			h	ole diar	neter :	50 m	m			vane id.: SL5	88
drilli	ing info	rmati	ion		1	mate	rial sub	stance												
method & support	1 2 penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	SOIL TY colou	material YPE: plasticity r, secondary a	description or particle chai and minor comp	racteristic, ponents	moisture condition	consistency / relative density	van shea ⊕remou ⊚pea (kPa	e ar I ^{ded} 1	DCF (blow 00 m	⊃ /s/ nm) ∞ ₽	addif	structure and ional observati	ons
			VS 161/ 31 kPa		-			ORGANIC Sandy SII mottled gro	ESILT: non p LT: non plasi ey, sand is fi	lastic, black. tic, orange br ne to mediun	rown n grained.	D to M M	VSt	- ⊕ € 	 			topsoil Fill		
		ncountered	VS 103/ 46 kPa		0.5			SILT: low p grey, with medium gr	plasticity, ora minor to son rained sand.	ange brown n ne clay and tr	nottled race fine to		VSt to H	- ⊕ ⊕ 						
z 		Not E	VS >213 kPa VS 161/	a	1.0															
			31 kPa VS >213 kPa	a	1.5			1.7 m: with grained sa	n trace to mir Ind	nor fine to me	edium									
¥					2.0			Hand Aug Target dep	er HAL546 te oth	erminated at	2.0 m									
					2.5															
					3.0															
					3.5															
					4.0-										 		 			
					4.5-															
meth AD AS HA W HA	auger d auger s hand au washbo hand au	rilling crewi uger re uger	* ng*	sup M C o pen	port mud casing etration	N no resi ranging	nil stance g to	sampl B D E SS U## HP	les & field test bulk disturb disturbed s environmen split spoon undisturber hand pene	ts bed sample sample ntal sample sample d sample ##mr trometer (kPa)	n diameter	class s Clas moistur D dry	ification oil desc ased on ssificatio	symbo ription Unified n Syste	m		C V S F S V H	onsistency /S S St /St I	/ relative densi very soft soft firm stiff very stiff hard	ty
* e.g. B T V	bit show AD/T blank bi TC bit V bit	vn by t	suffix	wat	er Liev wat wat	Oct-12 wa el on date er inflow er outflow	ter shown	N N* VS R HB	standard p SPT - sam SPT with so vane shear refusal hammer bo	enetration test ple recovered olid cone r; peak/remoud puncing	(SPT) led (kPa)	M mo W we S sat Wp pla WI liqu	oist t curated istic limit uid limit				F V L V V	b /L /ID /D	friable very loose loose medium dens dense very dense	se



Borehole ID. HAL546-547 sheet: 1 of 1 **Engineering Log - Hand Auger** 773-GENZTAUC13086A project no. THE LAKES (2012) LIMITED client: 05 Oct 2017 date started: 05 Oct 2017 principal: date completed: THE LAKES, STAGE 3I GCR SBG project: logged by: **BOUNDARY OF LOT 546 AND 547** DBC location: checked by: position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: drill model: Hand Auger drilling fluid: hole diameter : 50 mm vane id.: drilling information material substance consistency / relative density DCP structure and material description vane classification go samples & field tests shear ⊕ remould ⊚ peak (blows/ 100 mm) additional obs vations method & support Ē penetrat moisture condition SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components graphic lo symbol Ê depth (water (kPa) R ORGANIC SILT: low plasticity, dark brown black, trace fine to medium grained sand. D to M TOPSOIL s L FILL |||||||SILTY SAND: fine to medium grained, brown 11 1 grey mottled dark brown. ||||||||||||||||0.5 11 11 Not Encountered ||||0.8 m: becoming mottled black |||||||8/12/2017 15:10 11 |||||11111 ₽ ż 1.0 TE RANGA IGNIMBRITE SILTY SAND: fine to medium grained, brown L to D 11111 | | | |111 mottled grey, minor clay. ||||||11111 111 11111 11 |||||||11111 111 1 1 1 1 11111 1.5 11 | | | | |11111 | | || | | |11111 | | | | |11111 a de | | || | | |11111 GCR MASTER. 111 11111 2.0 Hand Auger HAL546-547 terminated at 2.0 m | | |11111 ||||||Target depth 1111 ||||||11111 STAGE 31 |||||||11111 2.5 111 | | | | |11111 13086AP ||||| | | |11111 111 | | | | |11111 06_LIBRARY.GLB rev:AT Log COF BOREHOLE: NON CORED + DCP ||||| | | |11111 | | |11111 ||||||3.0 11111 111 ||||||||||11111 | | | |11111 ||||11111 11111 111 ||||||3.5 11111 111 11111 11111 111 ||||||11111 |||||||||4.0 ||||||||||11111 |||||||||| | |11111 ||||||111 11111

method AD auger drilling* AS auger screwing HA hand auger W washbore HA hand auger * bit shown by su e.g. AD/T B blank bit T TC bit	fix	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 with solid cone VS vane shear; peak/remouded (kPa) R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated 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



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 547

Borehole ID.HAL547sheet:1 of 1project no.773-GENZTAUC13086APdate started:05 Oct 2017date completed:05 Oct 2017logged by:ODSchecked by:DBC

positio	on: Not	Spe	cified					surface elevation: Not Specified	an	gle from horizontal:	90°	DCP id.:
drill m	odel: H	and /	Auger					drilling fluid:	hol	le diameter : 50 mr	n	vane id.: SL588
drilling information					mate	rial sub	stance					
nethod & support	penetration	vater	samples & field tests	SL (m)	depth (m)	graphic log	class ification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture condition	vane shear ⊕remoulded ⊕peak (t t) 00000 00000 00000 000000 0000000000	DCP blows/ 0 mm)	structure and additional observations
			VS UTP					ORGANIC SILT: non plastic, black. Sandy SILT: non plastic, orange brown mottled grey, sand is fine to medium grained. SILT: low plasticity, orange brown mottled grey, with minor to some clay and trace fine to medium grained sand	D to M	H 11111		TOPSOIL FILL
N-		t Encountered	VS >213 kPa		- - - 1.0-			0.9 m: becomes grey mottled grey brown with		 		-
		Ň	VS >213 kPa		-			1.1 m: with trace to minor clay and with minor fine to medium grained sand	W			
			VS >213 kPa		- 1.5— -			1.3 m: becomes orange brown mottled brown grey with minor clay and with trace fine grained sand	M			-
			VS >213 kPa		- - 							
								Hand Auger HAL547 terminated at 2.0 m Target depth				-
					- 3.0							
					3.5— - - -							-
					4.0							-
					4.5							
metho AD AS HA W HA	od auger o auger s hand au washbo hand au	Irilling crewi uger ore uger	* ng*	supp M r C c pene	port nud asing tration	N no res rangin refusa	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) N standard penetration test (SPT)	classifi soi bas Class moisture D dry M mois	ication symbol & I description sed on Unified ification System	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable
* e.g. B T V	bit show AD/T blank b TC bit V bit	vn by it	suffix	wate	er 10- levi wat	Oct-12 wa el on date er inflow er outflow	ater shown	N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	W wet S satur Wp plast WI liquid	rated ic limit d limit		VL very loose L loose MD medium dense D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 547 AND 548 location:

Borehole ID.	HAL547-548
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	PRM

DBC

checked by:

pos	ition: Not	Spe	cified					surface elevation: Not Specified	a	angle fro	om horizontal:	0°	DCP id.:
drill	model: H	and A	Auger			-		drilling fluid:	ł	nole dia	meter : 50 mm		vane id.: 4523
dr	illing info	rmati	on			mate	rial subs	stance					
method &	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	moisture condition	consistency / relative density	vane DC shear (blo ⊕remoulded ⊚peak 100 1 (kPa) 8 0 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	;P ws/ mm)	structure and additional observations
	Image: Constraint of the second sec	Not Encountered	VS UTP VS UTP VS >213 kPa		- - - - - - - - - - - - - - - - - - -			ORGANIC SILT: non plastic, dark brown-black. SILTY SAND: fine to medium grained, pale orange-brown-grey, with trace clay. Clayey SILT: non plastic, brown mottled pale brown, with trace fine grained sand.	M M to W	D H	- VSUTP		TOPSOIL FILL DCP REFUSAL
CUP_U_9_06_LIBRARY.GLB/REVAIL_L0g_COF_BOREHOLE: NON COREU + UCP_13086AP_STAGE 31 GCR_MAST					+ 2.0 - - - - - - - - - - - - - - - - - - -			Hand Auger HAL547-548 terminated at 2.0 m Target depth					
Mee AD AS HA W HA * e.g B T V	hthod auger of auger s hand a washbo hand a bit show bit show bit show DAD/T blank b TC bit V bit	Irilling crewi uger ore uger wn by it	* ng* suffix	sup M r C c pen wate	port mud casing etration er er ₩ leve wat wat	N no res rangin refusa Oct-12 wa el on date er inflow er outflow	nil istance g to 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) R refusal HB hammer bouncing	class b Cla moistur D dr M mo S sa Wp pla WI liq	sification soil desc based on assification re y bist et turated astic limit uid limit	n symbol & ription Unified n System	c > ⊗ F ⊗ > + F > L ≥ C >	onsistency / relative density S very soft firm firm it stiff St very stiff hard b friable 'L very loose loose MD medium dense b dense 'D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 548 location:

Borehole ID. HAL548 1 of 1 sheet: 773-GENZTAUC13086AP project no. 06 Oct 2017 date started: 06 Oct 2017 date completed: logged by: PRM DBC checked by:

position: Not Spe	cified				surface elevation: Not Specified	а	ngle fro	m horizontal:	90°	DCP id.:
drill model: Hand	Auger				drilling fluid:	h	ole dia	meter : 50 mn	ו ו	vane id.: 764
drilling informat	ion		mate	erial subs	stance					
method & support 1 2 2 penetration 3 8 water	samples & field tests	RL (m) denth (m)	graphic log	class ification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane [shear (b ⊕remoulded ⊚peak 10 (kPa) © ♀♀♀ ♀	DCP lows/ 0 mm)	structure and additional observations
Image: Second second	VS UTP VS UTP VS UTP VS UTP			clas sym	ORGANIC SILT: non plastic, dark brown-black. SILT: non plastic, pale grey-brown, with minor fine grained sand. 0.6 m: with trace clay 1.5 m: refusal on gravel Hand Auger HAL548 terminated at 1.5 m Refusal	D to M	H Let a contract a con	(k00) (k) (k00) (k) (k00) (k) 1 1 1 1 1 <td></td> <td>TOPSOIL FILL</td>		TOPSOIL FILL
method AD auger drilling HA hand auger W washbore HA hand auger * bit shown by e.g. AD/T B blank bit T TO bit	;* ing* suffix	support M mud C casin penetrat water	g ion rangi to-Oct-12 w level on date water inflow	nil istance ig to it ater a 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 with solid cone VS vane shear; peak/remouded (kPa) R refusal	class s b: Clas moistur D dry M mc W we S sat Wp pla Wi liqu	ificatior oil desc ased on ssificatio e vist t urated stic limit uid limit	I I I I I I I I I I I I I 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



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 548 AND 549

Borehole ID.	HAL548-549
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG
abaalaad bur	DBC

1004	auc	JII.		UNDAN			71 54	io Ar	10 549		C	пескей ру.	
pos	itior	n: Not	Spe	cified					surface elevation: Not Specified	ar	ngle fro	om horizontal: 9	0° DCP id.:
drill	mo	del: H	and A	Auger					drilling fluid:	hc	ole diar	meter : 50 mm	vane id.: SL817
dri	illin	g info	rmat	ion			mate	rial sub	ostance				
method &	Inddas	2 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	moisture condition	consistency / relative density	vane DC shear ⊕ remoulded ⊚ peak 100 m (kPa) 0 0 0 0 0 0 0 0 0 0	s/ s/ additional observations
1	1					_	\otimes		ORGANIC SILT: non plastic, dark brown	D to M			
				VS 231/ 45 kPa		-			Sandy SILT: low to medium plasticity, brown orange mottled pink white black, trace clay.	М	Н	● ○ 	FILL -
				VS >247 kPa		0.5-			Clayey SILT: low plasticity, brown orange mottled dark brown, trace fine to medium grained sand.			 ⊕ 	
HA			t Encountered	VS >247 kPa		- - 1.0-						 @ 	
			Ň	VS >247 kPa		-						 ⊕ 	
				VS 213/ 42 kPa		- 1.5— -							
				VS >247 kPa									
						- - 2.5 -			Target depth				
						- - 3.0							
						- - 3.5-							
						-							
						4.0							
						4.5							
Me AD AS HA	tho	d auger o auger s hand a	Irilling crewi	* ng*	sup Mr Cc pen	port mud casing	N	nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample C environmental sample	classi so ba Class	fication bil desc ised on sificatio	symbol & ription Unified un System	consistency / relative density VS very soft S soft F firm
+ e.g	. 	bit show	uger vn by	suffix	wate	er ↓ 10-0 ↓ 10-0	 no res rangin refusa Oct-12 wa el on date 	istance g to I ater shown	SS spin 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)	moisture D dry M moi W wet S satu Wp plas	st urated		ot Still VSt very stiff H hard Fb friable VL very loose L loose MD medium dense
T		TC bit				- wat	er outflow	ı	R refusal HB hammer bouncing	vvi liqui	ia iimit		D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 549 location.

Borehole ID. **HAL549** sheet: 1 of 1 773-GENZTAUC13086AP project no. 06 Oct 2017 date started: 06 Oct 2017 date completed: logged by: SBG DBC checked by:

nonition: N	ot C = -	oified					aurfage algorithm. Net Creating	-	nale f	m horizontel: 0	
position: N	lot Spe	CITIED					surface elevation: Not Specified	a	ingle fro	om norizontal: 9	90° DCP Id.:
drilling inf	Hanu .	Auger			moto	ial auba		n		meter : 50 mm	varie iu SL817
	Iormat				mater				>		
method & support 2 penetratior	3 water	samples & field tests	RL (m)	depth (m)	graphic log	classificatior symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative densit	vane DC shear (blov ⊕remoulded (kPa) © 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	가 structure and additional observations mm)
				-			ORGANIC SILT: non plastic, dark brown black.	D to M			TOPSOIL
		VS >247 kPa VS >247 kPa		- - 0.5			Clayey SILT: non plastic to low plasticity, brown orange mottled dark brown, trace fine to medium grained sand.	M	Н		
	ot Encountered	VS >247 kPa	l	- - 1.0-			Sandy SILT: low to medium plasticity, brown	_		 	
	z 	VS >247 kPa VS >247 kPa		- - - 15			orange, minor clay. Clayey SILT: low to medium plasticity, brown orange mottled dark brown.	_			
		VS >247 kPa									
				- <u>2.0</u> - - 2.5 -	~ ~ ~ ~		Hand Auger HAL549 terminated at 2.0 m Target depth				
				- 3.0— -							
				- 3.5— - -							
				4.0							
				4.5— - -							
method AD auge AS auge HA hand W wash HA hand	r drilling r screw auger bore auger)* ing*	supp M n C c pene	oort nud asing etration	N - no resis	nil stance	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand neartrometer (kPa)	class s bi Clas moistur	ification oil desc ased on ssificatio	n symbol & rription Unified on System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard
* bit sh e.g. AD/T B blank T TC bi V V bit	nown by c bit it	suffix	wate	er L leve wat wat	Cct-12 wat on date er inflow er outflow	ter shown	N stand penetration test (NFa) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	M mo W we S sat Wp pla WI liqu	pist t turated istic limit uid limit		Fb friable VL very loose L loose MD medium dense D dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 549 AND 550

Borehole ID.	HAL549-550
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM

DBC

checked by:

position: Not Specified		surface elevation: Not Specified	angle from horizontal:	90° DCP id.:
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: 764
drilling information				
amples 8 seamler a support light start water a support of α water a support water a support water a support water a support start a support s	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	A series of the	CP structure and additional observations
Image: Second second		ORGANIC SILT: non plastic, dark brown-black. SILT: non plastic, pale orange-brown, with minor fine grained sand. 0.5 to 0.8 m: with minor clay	D to M M VSt to H VSt uTP I I I I VS UTP I I I VS UTP I I I VS UTP I I I VS UTP I	II TOPSOIL II FILL II FILL II FILL II FILL
VS 197/ 1 1 1 1 1 1 1 1 1 46 kPa 1 1 1 1 1 1 VS >213 kF		Clayey SILT: low plasticity, brown, with minor fine grained sand.		
Y I	a 2.0 XXX 2.5	Hand Auger HAL549-550 terminated at 2.0 m Target depth		
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 TC bit V V bit	support M mud N nil C casing penetration ranging to refusion water 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 S saturated Wp plastic limit WI liquid limit	consistency / relative densityVSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL550
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG
checked by:	DBC

posi	tion: Not	Spe	cified					surface elevation: Not Specified	a	angle fro	om horizontal: 9	0°	DCP id.:
drill model: Hand Auger								drilling fluid:	Ľ	nole diar	neter : 50 mm		vane id.: SL817
drilling information ma						mate	rial sub	stance	_				
method & support	2 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	moisture condition	consistency / relative density	vane DC shear ⊕remoulded ⊚peak 100 n (kPa) ⊛ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P ws/ nm) ∞ ₽	structure and additional observations
					-			ORGANIC SILT: non plastic, dark brown-black.	М				
		Ð	VS >247 kPa					Clayey SILT: low plasticity, orange-brown mottled pink/black.		Н	-		FILL
- HA N		Not Encountered	VS >247 kPa VS >247 kPa		- - 1.0-						@ 		
5			VS >247 kPa		- - 1.5								
	,		VS >247 kPa		-								
					-2.0			Hand Auger HAL550 terminated at 2.0 m Target depth			+ + + + + + + + + + + + + + + + + + +		-
					- 2.5 - -	- - -							
					3.0-								
					- 3.5								
					- - 4.0-	-							
					- 4.5-								
					-	-							-
met AD AS HA W HA	hod auger o auger s hand a washbo hand a	Irilling crewi uger ore uger	* ng*	sup Mr Cc pen	port mud casing etration	N no resi ranging refusal	nil stance 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) N standard penetrometer test (CPT)	class b Cla moistur D dr	sification soil desc ased on ssificatio	n symbol & ription Unified n System	C S F S V F S V F	consistency / relative density /S very soft 5 soft 5 firm 5t stiff 7St very stiff 4 hard 5t friable
* e.g. B T V	bit shov AD/T blank b TC bit V bit	vn by it	suffix	wate	er 10- lev wat wat	Oct-12 wa el on date ter inflow ter outflow	ter shown	N* stanuaru penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	W we S sa Wp pla WI liq	turated astic limit uid limit			/L very loose L loose /D medium dense /D dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL550-551
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM

locat	location: BOUNDARY OF LOT 550 AND 551 checked by:									DBC	
position: Not Specified								surface elevation: Not Specified	angle from horizontal: 90°	DCP id.:	
drill model: Hand Auger								drilling fluid:	hole diameter : 50 mm vane id.: 764		
drilli	drilling information		mate	rial sub	stance						
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	vane shear (blows/ tissue errenauted break (kPa) (blows/ 100 mm)	structure and additional observations	
	3 6 7				-		0 0	ORGANIC SILT: non plastic, dark brown-black.	D to M		
.НА N		Not Encountered	VS 161/ 31 kPa VS 164/ 31 kPa					Clayey SILT: non plastic, pale brown mottled orange-brown, with trace pumice gravel, minor fine grained sand.	M VSt to H I<	FILL	
			VS 01P VS >213 kPa VS >213 kPa		- - 1.5 - - -			Clayey SILT: non plastic, pale brown mottled orange-brown, with trace pumice gravel, minor fine grained sand. 1.2 to 2.0 m: interbedded clayey SILT and Sandy SILT at approximately 0.2m intervals	- Vs UTP		
					2.0 			Hand Auger HAL550-551 terminated at 2.0 m Target depth			
meth AD AS HA W HA * e.g. B T V	od auger d auger s hand au washbo hand au bit show AD/T blank bi TC bit V bit	rilling crewir iger re iger n by t	∙ ng* suffix	sup M r C c pen wate	port mud casing etration - ○ ♡ er er er 10- leve wat	N no resis ranging refusal Oct-12 wa el on date er inflow er outflow	nil stance to ter 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 eshear; peak/remouded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated 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	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 551

Borehole ID.HAL551sheet:1 of 1project no.773-GENZTAUC13086APdate started:06 Oct 2017date completed:06 Oct 2017logged by:SBGchecked by:DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	00° DCP id.:
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: SL817
drilling information	material sub	ostance		
amples & sample	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	m m m m m m m m m m m m m m m m m m m	P structure and additional observations
E 00 - 00 S > 247 kP ↓ 1 1 1 ↓ 1 1 1 ↓ 1 1 1 ↓ 1 1 1 1 ↓ 1 1 1 ↓ 1 1 1 1 ↓ 1 1 1 1 ↓ 1 1 1 1 ↓ 1 1 1 1 ↓ 1 1 1 1 ↓ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		ORGANIC SILT: non plastic, dark brown-black. Clayey SILT: low plasticity, orange-brown mottled pink/black.	H	∞ = TOPSOIL TOPSOIL II FILL II II II II II II II II II
I I VS > 224/ KP I I I I I <t< td=""><td></td><td>Hand Auger HAL551 terminated at 2.0 m Target depth</td><td></td><td></td></t<>		Hand Auger HAL551 terminated at 2.0 m Target depth		
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 penetration ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow	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 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	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated 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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 551 AND 552

Borehole ID.	HAL551-552
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM

checked by: DBC

position: Not Specified			surface elevation: Not Specified	angle from horizontal:	90° DCP id.:
drill model: Hand Auger			drilling fluid:	hole diameter : 50 mm	vane id.: 764
drilling information		material subst	ance		
samples & samples & field tests	RL (m) depth (m)	graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	nd state b 4 2	CP structure and additional observations
E to N, p, S I	2 8 2a 		DRGANIC SILT: non plastic, dark brown-black. Clayey SILT: non plastic, pale orange-brown, with minor fine grained sand.	E ठ S	<pre>>> P</pre> TIT TOPSOIL TIT TOPSOIL TIT FIL
			Hand Auger HAL551-552 terminated at 2.0 m Target depth		
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 TC bit V V bit	support M mud C casing penetration water leve water water water water	N nil no resistance ranging to d refusal Cot-12 water et on date shown er inflow er 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 S saturated Wp plastic limit Wi liquid limit	consistency / relative densityVSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 552 location:

Borehole ID. HAL552 1 of 1 sheet: 773-GENZTAUC13086AP project no. 06 Oct 2017 date started: 06 Oct 2017 date completed: logged by: SBG DBC checked by:

position: Not Specified	sui	rface elevation: Not Specified	angle from horizontal:	90° DCP id.:	
drill model: Hand Auger	dril	illing fluid:	hole diameter : 50 mm	vane id.: SL817	
drilling information	material substance	e			
RL (m) RL	depth (m) graphic log class ification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	dial dial	CP structure and additional observations	
Image: Second	mg mg mg mg - - - DRG - - - Clay - - - - 1.0 - - - - - - - 1.0 - - - - - - - 1.0 - - - - - - - 1.0 - - - - - - - - - - - 1.0 - - - - - - - 1.0 - - - - - - - 1.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -	GANIC SILT: low plasticity, dark brown k. yey SILT: low plasticity, brown orange ted pink white, trace fine to medium ned sand. ID: fine to medium grained, pale grey you mottled black white, trace sub angular rel clasts, trace silt. Idy SILT: low plasticity, pale brown nege mottled pink white, trace clay. Idy SILT: low plasticity, pale brown nege mottled pink white, trace clay. Idy SILT: low plasticity, pale brown nege mottled pink white, trace clay.	H H H H H H H H H H H H H H H H H H H	•••• • • IIII TOPSOIL IIII FILL IIII IIII	
method sup AD auger drilling* M AS auger screwing* M Co G C HA hand auger Pen W washbore Pen HA hand auger Image: C W washbore Pen HA hand auger Image: C * bit shown by suffix Image: C e.g. AD/T Image: C B blank bit Image: C T T C bit Image: C V V bit Image: C	rt d N nil ing ation ranging to ranging to ranging to refusal 10-Oct-12 water 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 S saturated 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	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 552 AND 553

Borehole ID.	HAL552-553
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM

DBC

checked by:

p	position: Not Specified									surface elevation: Not Specified	i	angle fro	om horizontal:	90°	DCP id.:
d	drill model: Hand Auger									drilling fluid:		hole diar	meter : 50 mm		vane id.: SL817
H	drilling information ma					mate	rial sub	stance		>					
mothod 8	support	2 penetration	water	sar fie	mples & ld 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 densit	vane D shear (blo ⊕ remoulded ⊚ peak 100 (kPa) © ♀ ♀ ♀ ♀ ♀	CP ows/ mm)	structure and additional observations
	1									ORGANIC SILT: non plastic, dark brown-black.	D to M				TOPSOIL
				۷S	>247 kPa		- 0.5			Clayey SILT: non plastic, pale orange-brown mottled pale pink, with minor fine to medium grained sand.	М	VSt to H	- � 		FILL -
15:11 HA	z		Encountered	V 4	S 196/ 2 kPa		- - 10-						 ⊕ ⊕ 		-
>> 08/12/2017			Not	۷S×	>247 kPa		-			1.0 m: becoming moderstely plastic			 @ 		-
J < <drawingfile< td=""><td></td><td></td><td></td><td>V</td><td>S UTP</td><td></td><td>1.5</td><td></td><td></td><td>Sandy SILT: non plastic, pale brown-grey, sand is fine grained.</td><td></td><td></td><td> </td><td></td><td></td></drawingfile<>				V	S UTP		1.5			Sandy SILT: non plastic, pale brown-grey, sand is fine grained.					
STER.GF				V	S 127/ 0 kPa		2.0			Clayey SILT : non plastic, pale orange-brown mottled pale pink, with minor fine to medium \grained sand.	/			 	-
31 GCR_MA							-			Hand Auger HAL552-553 terminated at 2.0 m Target depth					-
3AP_STAGE							2.5								-
+ DCP 1308							-								-
ION CORED							3.0								-
OREHOLE: N							- 3.5								-
Log COF B							-								-
Y.GLB rev:AT							4.0								-
06_LIBRAR							4.5								-
CDF_0_9							-								-
	meth AD AS HA	auge auge hand	r drillin r screv auger	g* ving*		supp Mn Cc	nud asing	N	nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample	clas	sification soil desc based on assificatio	symbol & ription Unified n System		L consistency / relative density /S very soft S soft = firm
	W HA	wash hand	bore auger			wate	etration	 no res rangin ◄ refusa 	istance g to I	SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT)	moistu D di M m	re y oist			St stiff /St very stiff H hard Fb friable
	⊧ e.g. B T V	bit sh AD/T blank TC bi V bit	own b bit t	y suffix	ĸ		L 10-0 leve wate wate	Oct-12 wa el on date er inflow er outflow	ater shown v	N° SP1 - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	VV W S sa Wp pl WI lic	aturated astic limit juid limit			/L very loose loose MD medium dense D dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 553 location:

Borehole ID. HAL553 1 of 1 sheet: 773-GENZTAUC13086AP project no. date started: 06 Oct 2017 06 Oct 2017 date completed: logged by: SBG DBC checked by:

drilling information material substance	visit of particle angle iter iter iteration DCP (100mm) rial description city or particle characteristic, rry and minor components angle iter iteration DCP (100mm) vane id.: SL817 vane id.: SL817 vane id.: SL817 vane id.: SL817 vane id.: SL817 vane id.: SL817 vane id.: SL817 vane id.: SL817 vane id.: SL817 vane id.: SL817 vane id.: SL817 operation additional observations vane id.: SL817 to make the state of
drilling information material substance v to get	rial description city or particle characteristic, ry and minor components end table of the second
of potential Samples & field tests is samples & field tests is if if id tests is if id tests	rial description vane shear (blows/ ry and minor components Vane (blows/ remaided (blows/ signed) DCP (blows/ 100 mm) structure and additional observations v pasticity, dark brown D to M IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
Image: Second state of the second s	w plasticity, dark brown D to M I I I I I I I I I I I I I I I I I I I
↓ ↓ VS >247 kPa trace silt. ↓ ↓ ↓ ↓ Sandy SiLT: non place ↓ ↓ ↓ 2:0 Hand Auger HAL553 ↓ ↓ ↓ ↓	o medium plasticity, brown I
	Image: state
method AD auger drilling* AS support M samples & field tr B AS auger drilling* AS M M N Nil B bulk dist D HA hand auger M C casing D disturber E environn W washbore penetration SS split spo refusal SS split spo HA HA hand auger moresistance refusal no resistance refusal U## undisturk HP * bit shown by suffix e.g. M 10-Oct-12 water N* SPT - sa I evel on date shown Nc SPT with Nc SPT with	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 553 AND 554

Borehole ID.	HAL553-554
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM

checked by: **DBC**

position: Not Specified		angle from horizontal: 90)° DCP id.:	
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: 764
drilling information	material su	bstance		
samples & field tests	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	CH character ch	 structure and additional observations a 2
und u	11 11 12 <	Colour, secondary and minor components ORGANIC SILT: non plastic, dark brown-black. Clayey SILT: low plasticity, brown mottled pale brown/white. Hand Auger HAL553-554 terminated at 2.0 m Target depth	Image: New or sector of the sector	0 2 11 TOPSOIL 11 FILL 11 - 11
I I I	4.0	samples & field tests B bulk disturbed sample D disturbed sample	classification symbol & soil description based on Unified	
AS auger screwing* IA hand auger V washbore IA hand auger bit shown by suffix 2.g. AD/T 3 blank bit T C bit V C casing penetration water 10-Oct-12 water level on date sho water on or resistar water 10-Oct-12 water level on date sho water on or resistar water on or on on on on on on on on on on on on on		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 System moisture D dry M moist W wet S saturated Wp plastic limit WI liquid limit	F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 554 location:

Borehole ID.	HAL554
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	05 Oct 2017
date completed:	05 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	0° DCP id.:
drill model: Hand Auger	material subst	drilling fluid:	hole diameter : 50 mm	vane id.: 764
vo tro tro tro tro tro tro tro tro tro tr	(m) n (m) (m) n (m) (m) n (m) (m) n (m) (m) n (m) (m) n (m) (m) (m) (m) (m) (m) (m) (m) (m) (m)	material description SOIL TYPE: plasticity or particle characteristic,	→ Lis: vane DC vane DC vane DC shear ⊕ remoulded ⊕ premoulded ⊕ premoulded 00 pret	P structure and ws/ additional observations nm)
wate	RL (r depti	colour, secondary and minor components	6 4 2 2 200 (edy) and a condition of the	α ²
		ORGANIC SILT: non plastic, dark brown black.	D to M	TOPSOIL
VS UTP	0.5-	Clayey SILT: non plastic, brown orange mottled white black, minor fine to medium grained sand.	M Η γş.μτΡ	
VS UTP			 V\$ UTP 	
S Z ₩ Σ VS UTP				
	1.5	1.4 m: becoming slightly to moderatley plastic		
		1.8 m: becoming slightly plastic		
		Hand Auger HAL554 terminated at 2.0 m Target depth		
	2.5			
	3.0-			
	3.5-			
	4.0-			
method	support	samples & field tests	classification symbol &	consistency / relative density
AD auger drilling ⁻ AS auger screwing* HA hand auger W washbore HA hand auger	M mud N nil C casing penetration	B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter	based on Unified Classification System moisture	VS very soft S soft F firm St stiff VSt very stiff
* bit shown by suffix e.g. AD/T	water	HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone	D dry M moist W wet S saturated Wp plastic limit	H hard Fb friable VL very loose L loose
B blank bit T TC bit V V bit	water inflow water outflow	R refusal HB hammer bouncing	WI liquid limit	D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 554 AND 555

Borehole ID.	HAL554-555
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG
checked by:	DBC

location:	BC	BOUNDARY OF LOT 554 AND 555							С	hecked by	:	DBC
position: I	ion: Not Specified surface elevation: Not Specified							angle from horizontal: 90°		DCP id.:		
drill model	drill model: Hand Auger						drilling fluid:	h	ole dia	meter : 50 m	im	vane id.: 817
drilling information material sub					mate	rial subs	stance					
method & support 1 2 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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) S ♀ ♀ S	DCP (blows/ 00 mm)	structure and additional observations
	I			-			ORGANIC SILT: low plasticity, dark brown black mottled pink white.	D to M				TOPSOIL
	N	VS 240/ 45 kPa VS >247 kPa VS >247 kPa					Clayey SILT: low plasticity, brown orange mottled white black pink, minor fine to medium grained sand. 0.9 to 1.1 m: with pumiceous inclusions	M	Н			FILL
		VS UTP VS >247 kPa		- - 1.5 - - -			Sandy SILT: non plastic, brown grey mottled white black, sand fine to medium grained, trace clay.					
				- - - - - - - - - - - - - - - - - - -			Hand Auger HAL554-555 terminated at 2.0 m Target depth					
method AD aug AS aug HA han W was HA han * bits e.g. AD/ B blar T TCI V V/	jer drilling jer screw ad auger shbore ad auger d auger d auger hk bit bit bit	g* ing* / suffix	supj M r C c pene wate	etration	N no resi rangin refusal Oct-12 wa el on date er inflow er outflow	nil istance g to iter 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 b: Clas moistur D dry M mc W we S sat Wp pla WI liqu	e e oist t urated stic limit	i symbol & rription Unified in System	5 5 5 7 7 8 7 7 7 7 7 7 7 7 7 7 7 7 7 7	consistency / relative density /S very soft /S soft = firm St stiff /St very stiff /A hard -b friable /L very loose - loose MD medium dense 0 dense /D very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL555
sheet:	1 of 1
project no.	773-GENZTAUC13086AF
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM
ale a alea al les a	DBC

position: Not Specified surface elevation: Not Specified angle from horizontal: 9 drill model: Hand Auger drilling fluid: hole diameter : 50 mm drilling information material substance value 5 5 material description value 5 5 vane DC	0° DCP id.: vane id.: 764
drilling fluid: hole diameter : 50 mm drilling information material substance	vane id.: 764
drilling information material substance 5 5	P structure and
as Samples & ここ で、こので、こので、こので、こので、こので、こので、こので、こので、こので、この	P structure and
Depted dong Lip Field tests Lip <thlip< th=""> Lip Lip Lip</thlip<>	ws/ additional observations
ORGANIC SILT: non plastic, dark D to M IIII IIII IIII IIII IIII	
VS UTP VS UTP Sandy SILT: non plastic, pale orange-brown mottled brown, sand is fine to medium grained. M H IIII IIII IIII IIII IIII IIII IIII IIII IIII	
VS UTP VS	
² / ₂ VS >213 kPa 	
IIII VS UTP 1.5- IIII VS UTP IIII IIII IIII	
v VS >213 kPa 2.0 ₩	
Hand Auger HAL555 terminated at 2.0 m	
	ii
	ii
3.5	
	ii
	ii
	ii
	11
nethod AD support samples & field tests classification symbol & soil description AD auger drilling* M mud N nil B bulk disturbed sample soil description AS auger screwing* C casing D disturbed sample based on Unified	consistency / relative density VS very soft S soft
HA nand auger E environmental sample Classification System N washbore SS split spoon sample	F firm St stiff
HA hand auger no resistance U## undisturbed sample ##mm diameter moisture	VSt very stiff
ranging to HP hand penetrometer (kPa) D dry refusal N standard penetration test (SPT) M moist	H hard Fb friable
bit shown by suffix water N* SPT - sample recovered W wet S saturated	VL very loose
2.g. AD/T level on date shown VS vane shear; peak/remouded (kPa) Wp plastic limit	MD medium dense
T TC bit R refusal VVI inquire initial	U dense VD verv dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL555-556
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG

IOC	atio	on:	BO				checked by:	DBC			
position: Not Specified sur									surface elevation: Not Specified	angle from horizontal: 90°	DCP id.:
drill	drill model: Hand Auger								drilling fluid:	hole diameter : 50 mm	vane id.: SL817
dr	drilling information material sub							rial sub	stance		
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	vane e citit unitsion vitit	structure and additional observations
			Not Encountered water	VS 247 kPa VS 247 kPa VS 188/ 45 kPa VS 247 kPa VS 247 kPa VS 247 kPa	RL(m		Brahi	classi	Colour, secondary and minor components ORGANIC SILT: non plastic, dark brown black. Sandy SILT: non plastic, orange brown mottled white dark brown, sand is fine to medium grained. Clayey SILT: low plasticity, orange brown mottled white pale brown, trace fine to medium grained sand. Sandy CLAY: low to medium plasticity, orange brown, trace fine to medium grained sand. Hand Auger HAL555-556 terminated at 2.0 m Target depth	Ite Ite <td>TOPSOIL</td>	TOPSOIL
ULT_U_2_00_LIDRART.GLDIEV.AT LUU UUT DURENU						3.5					
MAC AS HA W HA * e.g B T V	etho) S A J.	d auger d auger s hand au washbo hand au bit show AD/T blank bi TC bit V bit_	rilling crewin iger iger iger n by t	∗ ng* suffix	supr M n C c pene wate	oort nud asing etration er er leve wate	N no resi rangini refusal Oct-12 wa on date er inflow er outflow	nil stance g to tter 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 S saturated Wp plastic limit Wi liquid limit	L consistency / relative density ////////////////////////////////////



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL556
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified	surface elevation: Not Specified	angle from horizontal: 90°	° DCP id.:	
drill model: Hand Auger	drilling fluid:	hole diameter : 50 mm	vane id.: SL817	
drilling information	material substance			
method & support tiend stantion % atter (m) RL (m) depth (m)	Dian Dian Dian Dian Dian Transform Transform Dian Transform SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	Comparing the second s	structure and additional observations	
Ξ δ - N (m) 3 - M - G I I I I VS >247 kPa 0.5 I I I VS >247 kPa 0.5 I I I VS >247 kPa 1.0 I I I VS >247 kPa 1.0 I I VS >247 kPa 1.5 I I VS UTP I I VS UTP I I I I I I I I I I I I I I I I I I I I I I I I	0 3 6 ORGANIC SILT: non plastic, dark brown black. SILTY SAND: fine to medium grained, orange brown mottled grey white. Clayey SILT: low plasticity, orange brown mottled white grey black, trace fine to medium grained sand. 1.5 m: with minor fine to medium grained sand 1.51 m: becomes slightly to moderately plastic Hand Auger HAL556 terminated at 2.0 m Target depth	E S S E E C	TOPSOIL FILL DCP REFUSAL	
method support AD auger drilling* AS auger drilling* HA hand auger W washbore HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V Vata	N nil samples & field tests N nil B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample Image: SS undisturbed sample V HP Image: SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) Oct-12 water N* ef on date shown NC ef inflow R refusal R er outflow HB	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated 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	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 556 AND 557

Borehole ID.	HAL556-557
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM

checked by: **DBC**

position: Not Specified							surface elevation: Not Specified	angle from horizontal:	90° DCP id.:	
drill model: Hand Auger						drilling fluid:			hole diameter : 50 mm	vane id.: 764
drilling information						mate	rial sub	stance		
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	Characteristic constraints of the constraints of t	CP structure and additional observations
- HA B		Not Encountered w	VS 179/ 31 kPa VS UTP VS UTP VS UTP	x				ORGANIC SILT: non plastic, dark brown-black. Clayey SILT: low plasticity, orange-brown, with trace fine grained sand.	E ⊠ ⊠ ≅ ≅ ∎	n ∞ [©]
			<u>31 kPa</u>		2.5- - - - - - - - - - - - - - - - - - -			Hand Auger HAL556-557 terminated at 2.0 m Target depth		
methe AD AS HA W HA * e.g. B T V	od auger d auger s hand au washbo hand au bit show AD/T blank bi TC bit V bit	rilling* crewin ger ger ger	, ıg* suffix	sup M C c pen wat	port mud casing etration - ∾ ∞ er er lev wat _ v wat	N no res rangin refusa Oct-12 wa el 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	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WI iiquid 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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL557
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified	surface elevation: Not Specified	angle from horizontal: 90)° DCP id.:
drill model: Hand Auger	drilling fluid:	hole diameter : 50 mm	vane id.: SL817
drilling information	material substance		
method & method & support	Bit Display Example material description Image: Display bit Display SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	DCF stear book	 structure and additional observations additional observations
A I	ORGANIC SILT: non plastic, dark brown-black. Clayey SILT: non plastic, orange-brown mottled white/black, with minor fine to medium grained sand.	M	TOPSOIL FILL -
⊈ z U U U U U U U U U U U U U U U	1.4 m: becoming slightly to moderately plastic		
VS 209/	1.8 m: becoming slightly plastic		
Y I 45 kPa 2.0 I I 2.5 I I 3.0 I I 3.0 I I 3.5 I I 4.5 I I 4.5	Hand Auger HAL557 terminated at 2.0 m Target depth	0 0 0 0 1 1 1 1 1 1	
method AD suger drilling* AS support AD auger drilling* AS M mud C casing 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	Samples & field tests N nil B bulk disturbed sample D disturbed sample E environmental sample E environmental sample B bulk disturbed sample E environmental sample E environmental sample D udisturbed sample H nudisturbed sample U## undisturbed sample N standard penetration test (SPT) N SPT - sample recovered VC Vane shear, peak/remouded (kPa) ater outflow HB hammer bouncing	soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wi<	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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 557 AND 558

Borehole ID.	HAL557-558
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM

checked by:

position: Not Specified surface elevation: Not Specified angle from horized drilling indocent drilling fluid: hole diameter : hole diameter : drilling information material substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation interval substance v total transformation onterval substance v total transformation onterval substance v total transformation onterval substance v total transf	0000000000000000000000000000000000000	DCP id.: vane id.: 764
drill model: Hand Auger drilling fluit: hole diameter: drilling information material substance with the properties of the state	50 mm DCP (blows/ 100 mm 1 1 1 1 1 1 1 1 1 1	vane id.: 764 structure and additional observations TOPSOIL
drilling information material substance drilling information material substance x upper state up	DCP (blows/ 100 mm	structure and additional observations
Boundary samples & field tests (iii) Dig Material description and field tests Value of tests Value of tests Image: Construction of the test of	DCP (blows/ 100 mm	structure and additional observations
Image: Second state in the se		TOPSOIL
I I <td>iliiii</td> <td></td>	iliiii	
I I	P 	
V VS UTP		
Image: Second and Sec		
support samples & field tests classification symbol ND auger drilling* M M N B bulk disturbed sample soil description Soil auger screwing* C casing D disturbed sample based on Unified IA hand auger penetration SS split spoon sample Classification System IA hand auger Image: Imag	1	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff
bit shown by suffix .g. AD/T B blank bit bit shown by suffix J → Tetusal water I → Tetusal water I → Tetusal water I → Tetusal water I → Tetusal water I → Tetusal water I → Tetusal water I → Tetusal W → Tetu		H hard Fb friable VL very loose L loose MD medium dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL558
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	SBG
checked by:	DBC

	41-		1	<u> </u>						ourfood alovation. Not One-Service		nale f	om horizort-l. C	<u>م</u>	
posi drill i	tior	1: [dol	vot · ц	Spec						surface elevation: Not Specified	a	ingle fr	om norizontal: 9	90°	DCP Id.: vane id : SI 817
dril	llin	a ir	. i i	rmati	on			mate	rial sub	stance	1				
method &		penetration		water	samples & field tests	RL (m)	depth (m)	graphic log	symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊚ peak (kPa) 0 80 50	CP ws/ mm)	structure and additional observations
				-			-		0 0	ORGANIC SILT: non plastic, dark brown black, trace fine to medium grained sand.	D to M	02			TOPSOIL
		 	 	Intered	VS 247 kPa		-			Sandy SILT: non plastic, brown orange mottled dark brown, sand fine to medium grained.	М	Н			FILL
— на —	_ ∠			Not Encol	VS 213/ 42 kPa		0.5			Clayey SILT: low plasticity, brown orange, minor fine to medium grained sand.					
					VS 247 kPa		- - 1.0-						 		
, ,			-		VS UTP			\bigotimes					- Vs U⊤P I I I		
							- - 1.5-			1.2 m: Refused at 3 different locations due to gravel hardfill Hand Auger HAL558 terminated at 1.2 m Refusal					
							-								
							2.0-								
							-								
							2.5-								
							-								
							3.0-								
							3.5-								
							-								
							4.0-								
							-								
							4.5								
							-								
met AD AS HA	tho á	d aug aug	erd ers dav	irilling crewii	* ng*	sup M C o	mud mud casing	N	nil	samples & field tests B bulk disturbed sample D disturbed sample	class s b	ification oil desc ased or ssification	n symbol & cription n Unified on System		consistency / relative density /S very soft S soft
W HA	۱ ۲	vas nan	hbo d ai	uger		pen	etration	 no res rangin 	istance g to	S split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moistur D dry	'e /			St stiff /St very stiff - hard
* e.g. B	t . /	oit s AD/	hov T	vn by it	suffix	wat	er Ileve	Oct-12 wa	ater shown	N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa)	M mo W we S sat Wp pla	oist t turated istic limi	t	F L N	-p friable /L very loose - loose /D medium dense
T V	1	TC I V bi	bit t			-	wat	er outflov	v	R refusal HB hammer bouncing	vvi liqi	uia iimit			D dense /D very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 558 AND 559

Borehole ID.	HAL558-559
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	06 Oct 2017
date completed:	06 Oct 2017
logged by:	PRM

logged by: **PRM** checked by: **DBC**

position: Not Specified		surface elevation: Not Specified	angle from horizontal:	0° DCP id.:					
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: 764					
drilling information	material subst	tance							
water water samples g samples	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	DO Set 20 DO DO DO DO DO DO DO DO DO DO	CP structure and additional observations					
Image: Second second		ORGANIC SILT: non plastic, dark brown-black. Clayey SILT: non plastic, orange-brown, with trace fine grained sand.	D to M I I I I I I I I I I I I I I I I I I I	III TOPSOIL III FILL III FILL III -		Hand Auger HAL558-559 terminated at 2.0 m Target depth			
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 refusal water 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 S saturated Wp plastic limit WI liquid limit	consistency / relative densityVSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense					



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 559

Borehole ID.HAL559sheet:1 of 1project no.773-GENZTAUC13086APdate started:10 Oct 2017date completed:10 Oct 2017logged by:PMchecked by:DBC

posi	sition: Not Specified sur			surface elevation: Not Specified		angle fro	om horizontal: 9	0° DCP id.:					
drill model: Hand Auger								drilling fluid:	hole diameter : 50 mm				vane id.: VH1447
dril	ling info	rmat	ion			materia	l substa	ance					
method & support	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 DC shear ⊕remoulded ⊚peak 100 n (kPa) S S S	⊃ vs/ nm)	structure and additional observations
AH S		Not Encountered w	VS 162/ 30 kPa VS >247 kPa VS >247 kPa VS >247 kPa VS >247 kPa VS >247 kPa	2				DRGANIC SILT: non plastic, dark brown plack. Sandy SILT: non plastic, pale brown mottled prange brown, sand fine to medium grained, minor slightly plastic clay.	<u> </u>	H	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </td <td></td> <td>TOPSOIL</td>		TOPSOIL
met AD AS	 	Irilling	* ng*	supp M n C c		N ni	F T	Hand Auger HAL559 terminated at 3.0 m Farget depth samples & field tests B bulk disturbed sample D disturbed sample	class	sification soil desc	I I I I I <	III IIII IIII IIII IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	
HA W HA * e.g. B T V	AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit			 no resistan ranging to refusal Oct-12 water el on date sho er inflow er outflow 	ace own	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 moistu D dr M m W we S sa Wp pla WI liq	re y oist et astic limit uid limit	n System	F St Fb VL L D VD	t very stiff hard friable very loose loose o medium dense dense very dense		



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL559-560
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	SBG

locat	location: BOUNDARY OF LOT 559 AND 560 checked												DBC
positio	on: Not	Spe	cified				surface elevation: Not Specified ang			angle from horizontal: 90°			DCP id.:
drill m	odel: Ha	and A	Auger					drilling fluid:	hole diameter : 50 mm			vane id.: VH4523	
drilli	ng info	rmati	on			mate	erial sub	stance					
				b .5 material description						vane	DCP	structure and	
method & support	1 2 penetrai 3	water	field tests	RL (m)	depth (m)	graphic lo	classificat symbol	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistenc relative der	Snear ⊕ remoulded ⊚ peak (kPa) 00 00 00 00 00 00 00 00 00 0	(DIOWS/ 100 mm)	additional observations
		Not Encountered	VS >215 kPa VS >215 kPa VS >215 kPa VS >215 kPa VS >215 kPa					SILTY SAND: fine to medium grained, pale brown orange. Sandy SILT: non plastic, pale brown orange mottled black white red, sand fine to medium grained. Silty CLAY: low to medium plasticity, brown orange, trace fine to medium grained sand. Sandy SILT: non plastic, sand fine to medium grained. Hand Auger HAL559-560 terminated at 2.0 m Target depth		Н			FILL - - - <t< th=""></t<>
method AD support Main auger drilling* M AS auger drilling* M HA hand auger C W washbore penetration HA hand auger water * bit shown by suffix e.g. e.g. AD/T blank bit T T C bit water		N no res rangin refusa Oct-12 wa el on date ter inflow ter outflov	nil istance ig to il 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	L Class b Cla Moistur D dry M mo V we S sa Wp pla WI liq	sification soil desc ased on ssification re y bist turated astic limit uid limit	n symbol & cription Unified on System		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				



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL560
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	PRM
abaakad bur	DRC

nosition	ostion: Not Specified Surface elevation: Not Specified										angle from horizontal: 90° DCP id ·					
drill mode	el: Ha	nd A	uaer					drilling fluid:	ة ا	nole diar	meter : 50	mm	90	vane id.: VH1447		
drilling	Illing information material subst							stance								
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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) 00 09 00	DC (blow 100 r	CP ws/ mm)	structure and additional observations		
					-			ORGANIC SILT: non plastic, dark brown black.	М					TOPSOIL		
			VS UTP		-			Sandy SILT: non plastic, pale orange brown, minor fine grained sand.	_	VSt to	 γs;ψτΡ			FILL		
		g	VS 166/		0.5			pale brown.		Н						
		incountere	39 kPa		-						⊕ ⊚ 					
		Not E	VS UTP		1.0						III Vs UтP					
					- - 15											
			VS UTP		-						VS UTP					
					- - 2.0											
								2.0 m: Refusal due to hardfill Hand Auger HAL560 terminated at 2.0 m Refusal								
					- 2.5											
					-											
					- 3.0											
					-											
					- 3.5 —											
					-											
					- 4.0 —											
					-											
					- 4.5—											
					-											
method				supp	- port	1		samples & field tests	clas	sification	symbol &			consistency / relative density		
AD au AS au HA ha	uger di uger so and au	illing* rewin ger	g*	M n C c	nud asing	N	nil	samples & tield tests B bulk disturbed sample D disturbed sample E environmental sample		soil description based on Unified Classification System				VS very soft S soft F firm		
HA ha	aorid01 and au	e ger				no res rangin ▼ refusa	stance g to	SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa)	moistu D dr	re y			ן י	St stiff VSt very stiff H hard		
bit shown by suffix .g. AD/T level on date shown			Oct-12 wa	iter shown	N Standard penetration test (SP1) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, neak/remounded (kPa)	M moist W wet S saturated Wp plastic limit					ru Triable VL very loose L loose MD medium dense					
3 blank bit T C bit / V bit				wat	er inflow er outflow		R refusal HB hammer bouncing	WÍliq	uid limit			;	D dense VD very dense			



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 560 AND 561

Borehole ID.	HAL560-561
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	SBG

DBC

locat	tion:	BO	UNDAF	RY C	DF LO	DT 5	50 AN		С	hecked by:	DBC		
positi	on: No	Spec	cified				surface elevation: Not Specified			angle fro	om horizontal: 9	90° DCP id.:	
drill m	nodel: H	and A	luger					drilling fluid:	ł	nole dia	meter : 50 mm	vane id.: SL817	
drilling information material su								stance					
method & support	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 DC shear ⊕remoulded ⊚peak 100 r (kPa)	CP structure and additional observations	
н на на на на на на на на на на на на на		Not Encountered	VS 227/ 58 kPa VS 173/ 48 kPa VS >247 kPa VS 158/ 39 kPa VS 144/ 32 kPa VS 140/ 29 kPa VS UTP VS 147/ 32 kPa					ORGANIC SILT: dark brown black. Clayey SILT: non plastic, brown, trace fine grained sand. Clayey SILT: low plasticity, pale pink brown mottled brown, trace fine to medium grained sand. Hand Auger HAL560-561 terminated at 3.0 m Target depth	M	H St VSt to H	- -	III TOPSOIL III FILL IIII FILL	
meth AD AS HA W HA * e.g. B T	I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I			uger drilling* uger drilling* uger drilling* uger screwing* and auger it shown by suffix D/T lank bit C bit			nil istance g to i ater 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	class s Cla moistu D dr M m W we S sa Wp pla WI liq	sification soil desc assed on assificatio re y oist et uturated astic limit uid limit		III III III III VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very lose L loose MD medium dense D dense VD very dense	



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 561 location:

Borehole ID. HAL561 1 of 1 sheet: 773-GENZTAUC13086AP project no. 10 Oct 2017 date started: 10 Oct 2017 date completed: logged by: PRM checked by: DBC

position	n: Not	Spec	cified					surface elevation: Not Specified		angle fro	m horizontal:	DCP id.:	
drill mo	del: Ha	nd A	luger					drilling fluid:	ł	nole diar	meter : 50 mn	n	vane id.: VH4523
drilling	g infor	mati	on			mate	rial subs	tance					
nethod & support	penetration	vater	samples & field tests	3L (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	consistency / elative density	vane [shear (b ⊕remoulded ⊛peak 10 (kPa) 0 8 9 8 8	DCP lows/ 0 mm)	structure and additional observations
	9 9 -	_	VS 129 kPa		-			ORGANIC SILT: non plastic, dark brown black.	D to M	02			
		Not Encountered	VS 192 kPa		- 0.5 -			Silty CLAY: low to medium plasticity, brown orange.	М	VSt	0 0 0 		FILL
			VS 215 kPa VS 215 kPa		- - 1.0 -			Clayey SILT: low plasticity, brown mottled pale grey pink white.		Н			-
								1.3 m: Refusal due to hardfill Hand Auger HAL561 terminated at 1.3 m Refusal					
method AD a AS a HA h W v HA h * b e.g. A B b T T	method AD suger drilling* AS support M AS auger screwing* HA M mud C HA hand auger Penetration W washbore water HA hand auger water * bit shown by suffix e.g. B blank bit ture T TC bit water		N no resi ranging refusal Oct-12 wa el on date er inflow er outflow	nil stance to ter 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	class s Cla moistu D dr M we S sa Wp pla WI liq	sification soil desc ased on ssificatio re y oist turated astic limit uid limit	symbol & ription Unified n System		consistency / relative density /S very soft /S soft = firm St stiff /St very stiff - hard -b friable /L very losse - losse MD medium dense 0 dense			



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 561 AND 562

Borehole ID.	HAL561-562
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	PRM

checked by: DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	0° DCP id.:			
drilling information	matoria	aniing ilula.					
annung montation an et hod samples & field tests samples & field tests	L (m) depth (m) graphic log	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	viewski strain viewski strain viewski strain viewski strain viewski strain ⊕ peak (Pa) 90 (Pa) P structure and vs/ additional observations				
- ∞ - ∞ > - 1 1 1 1 1 1 <td></td> <td>ORGANIC SILT: non plastic, dark brown black. Sandy SILT: non plastic, pale orange brown, sand fine to medium grained. Clayey SILT: low plasticity, pale orange mottled pale pink brown, trace to minor fine to medium grained sand. 1.6 m: becoming moderately plastic with trace fine grained sand Hand Auger HAL561-562 terminated at 2.0 m Target depth</td> <td>$\begin{array}{c c c c c c c c c c c c c c c c c c c$</td> <td>*** II TOPSOIL II II III	ORGANIC SILT: non plastic, dark brown black. Sandy SILT: non plastic, pale orange brown, sand fine to medium grained. Clayey SILT: low plasticity, pale orange mottled pale pink brown, trace to minor fine to medium grained sand. 1.6 m: becoming moderately plastic with trace fine grained sand Hand Auger HAL561-562 terminated at 2.0 m Target depth	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	*** II TOPSOIL II II III od 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 TC bit V Heit	support M mud N ni C casing penetration penetration ranging to refusal water 10-Oct-12 water level on date sho 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 van shear; peak/remouded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System D dry M moist W wet S saturated 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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL562
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	SBG
checked by:	DBC

posi	itio	n: N	lot S	Spec	ified					surface elevation: Not Specified	angle from horizontal: 90° DCP id.:	DCP id.:	
drill	mo	del:	На	nd A	uger					drilling fluid:	hole diameter : 50 mm vane id.: SL	.817	
drilling information							1	mate	rial sub	stance			
method & support	inddae	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		i ations	
			3	-	VS 120/		-		0 0	ORGANIC SILT : non plastic, dark brown black.			
					43 kPa		- - 0.5-			Silty CLAY: low to medium plasticity, brown orange.	M VSt (9)		
					48 kPa VS 215 kPa		-			Clayey SILT: low plasticity, pale brown orange mottled pink white black, trace fine to medium grained sand.			
				p	VS 215 kPa		- 1.0				H		
	 			Not Encountere	VS 215 kPa VS >247 kPa		- - 1.5-						
					VS >247 kPa		-				St to		
					VS 176/ 95 kPaUTP		2.0			Silty CLAY: low to medium plasticity, brown orange			
					VS 247 kPa		- 2.5— -			orango.			
	v				VS 247 kPa		- - <u>3.0</u>						
							-			Hand Auger HAL562 terminated at 3.0 m Target depth			
							3.5						
							- 4.0-						
							-						
method support AD auger drilling* M AS auger screwing* C				port mud casing	N	nil	samples & field tests B bulk disturbed sample D disturbed sample	classification symbol & consistency / relative dem soil description VS very soft based on Unified S soft	sity				
W HA	HA hand auger W washbore HA hand auger			no resistance ranging to refutual ranging to resistance ranging to resistance ranging to resistance ranging to refutual resistance refutual ref				F frm St stiff With the second sec					
* bit shown by suffix e.g. AD/T B blank bit T TC bit				■ ■ 10-1 leve wat	Oct-12 wa el on date er inflow er outflow	ter shown	N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	W wet VL very loose S saturated L loose Wp plastic limit MD medium de WI liquid limit D dense VD very dense VD very dense	ense				



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 562 AND 563 location.

Borehole ID.	HAL562-563
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	SBG

checked by

location: BOUNDARY OF LOT 562 AND 563								С	hecked by:	DBC		
position: Not Specified surface elevation: Not Specified								а	ingle fro	om horizontal: 90	° DCP id.:	
drill model: Hand Auger							drilling fluid:			ole dia	meter : 50 mm	vane id.: SV817
drilling	g infor	rmati	on			mate	rial sub	stance				
method & support	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 DCF shear ⊕ remoulded ⊚ peak 100 m (kPa) ⊛ ♀ ♀ ♀ ♀ ♀ ♀	s/ m) e
					-			ORGANIC SILT: non plastic, dark brown black.	D to M			TOPSOIL
			VS >247 kPa		0.5-			Clayey SILT: low to medium plasticity, brown orange.	M	St	-	FILL
		pə.	VS 198/ 69 kPa		- - 1.0-			1.0 m: becoming pale brown mottled black white		VSt		1 1 1 1 1
z		Not Encounter	VS 247 kPa		- 1.5-						⊕	- - - - - -
			VS 209/ 76 kPa		2.0-			Silty CLAY : medium plasticity, pale brown grey mottled dark brown, trace fine to medium grained sand.	M to W	St to VSt		
			VS 179/ 61 kPa VS 213/ 66 kPa		2.5-							
					3.0 - - -			Hand Auger HAL562-563 terminated at 3.0 m Target depth				
					3.5-	-						
					4.0-							
					4.5-							
method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger					port mud casing etratior	N no res rangin	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) N standard penetrom test (SPT)	class s b Cla moistur D dry	ification oil desc ased on ssificatio	n symbol & rription Unified on System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Eh friable
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit				er 10- lev wai wai	Oct-12 wa el on date ter inflow ter outflov	ater shown v	N* Serious perievation test (SFT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	W we S sa Wp pla WI liqu	turated stic limit	t	VL very loose L loose MD medium dense D dense VD very dense	



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL563						
sheet:	1 of 1						
project no.	773-GENZTAUC13086AP						
date started:	10 Oct 2017						
date completed:	10 Oct 2017						
logged by:	ODS						
abaakad bur	DRC						

positio	position: Not Specified surface elevation: Not Specified						angle from horizontal: 90				DCP id.:		
drill m	irill model: Hand Auger drilling fluid:								hole diameter : 50 mm				vane id.: SL588
drilli	drilling information material substance												
method & 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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak (kPa) © 05 00 00 00 00 00 00 00 00 00 00 00 00	P ws/ nm) ∞ ₽	structure and additional observations
HA H		Not Encountered	VS 164/ 49 kPa VS 213 kPa VS 213 kPa VS 180 kPa VS 213 kPa VS 109/ 72 kPa					ORGANIC SILT: non plastic, dark brown black. SILT: low plasticity, orange brown mottled brown grey, trace to minor fine to medium grained sand, minor clay. SILT: low plasticity, orange brown, trace fine grained sand, trace fine grained pumice, trace sub rounded gravel. 2.5 m: becoming slightly mottled grey	D to M	VSt to H		^{∞−} T	OPSOIL ILL .
, v		gallint	VS 213 KPa	suppr M n			nil	Hand Auger HAL563 terminated at 3.0 m Target depth	clas	sification	I I I I I <		sistency / relative density very soft
AS auger screwing* HA hand auger W washbore HA hand auger W washbore HA hand auger W washbore HA hand auger W washbore the hand auger W washbore W washbore W washbore W washbore W washbore W washbore W washbore W hand auger W hand auge				etration etration er Pr Value wate wate	no res rangin refusa Oct-12 wa el on date er inflow er outflow	istance g to ater shown	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	H Cla D dr M m W w S sa Wp pl WI lic	pased on assificatio re y oist et aturated astic limit juid limit	Unified n System	S S F VSt Fb VL D VD	soft firm stiff very stiff hard friable very loose loose medium dense dense very dense	


THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 563 AND 564 location:

Borehole ID.	HAL563-564
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	PRM

checked by:

location:	ecation: BOUNDARY OF LOT 563 AND 564								С	hecked by:		DBC		
position: Not Specified surface elevation: Not Specified drilling fluid:							surface elevation: Not Specified	angle from horizontal: 9			90°)° DCP id.:		
							drilling fluid:		nole diar	meter : 50 mm		vane id.: VH1447		
drilling in	nformat	ion			mate	rial sub	stance							
method & support 2 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	moisture condition	consistency / relative density	vane D0 shear ⊕remoulded ⊚peak 100 (kPa)	CP ows/ mm)	structure and additional observations		
		VS UTP		-			ORGANIC SILT: non plastic, dark brown black.	М				TOPSOIL		
				0.5-			Sandy SILT: non plastic, pale orange brown, sand fine grained.		VSt to H			FILL		
z		VS 176/ 48 kPa		- - - 1.0-			Clayey SILT: low plasticity, brown mottled pale orange brown, trace fine grained sand.			⊕ ©				
	Z 	VS 90/ 39 kPa VS 147/ 48 kPa		- - - 1.5-			Clayey SILT : low to medium plasticity, brown mottled pink dark brown, trace to minor fine grained sand.	_	St					
		VS 179/					SILT: non plastic, orange brown, trace fine grained sand.	_	VSt					
				2.5- -			Target depth	class	sification	I I I I I <				
method AD auge AS auge HA hand W wast HA hand * bits e.g. AD/ B blan	ler drilling ler screwi ad auger shbore ad auger shown by T nk bit	* ng* suffix	supj M r C c pend wate	port mud casing etration er er V lev wat	N no res rangin refusa Oct-12 wa el on date er 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 Nc SPT with solid cone VS vane shear; peak/remouded (kPa)	Class t Cla moistu D dr M m W we S sa W w W p pla	re y basted on issificatio re y bist et turated astic limit uid limit	i symbol & ription Unified n System	F S F S F S F S F S F S F S F S F S F S	consistency / relative density /S very soft /S soft F firm St stiff /St very stiff 4 hard /b friable /L very loose Ioose loose		



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL564
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	ODS
checked by:	DBC

									necked by.		DBC	
position: Not Specified surface elevation: Not Specified									angle from horizontal: 90°			DCP id.:
									iole dia	meter : 50 mm		vane IG.: SL588
	ormat	lon			mate	rial sub	stance		~		_	
method & support 1 2 penetratior	water	samples & field tests	RL (m)	depth (m)	graphic log	class ificatior symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative densit	vane DCf shear (blow ⊕ peak 100 m (kPa) g [©] [©] ^Q ^Q ^Q ^Q ^Q ^Q ^Q ^Q ^Q ^Q	ס vs/ nm) ∞ ₽	structure and additional observations
	Not Encountered	VS >213 kPa VS >247 kPa VS UTP VS 179/ 61 kPa VS >213 kPa VS 134/ 58 kPa VS >213 kPa					ORGANIC SILT: non plastic, dark brown black. SILT: non plastic, brown mottled orange brown grey, trace to minor fine to medium grained sand, trace to minor clay. SILT: low plasticity, orange brown, minor clay, trace fine to medium grained sand, trace fine grained pumice, trace sub rounded gravel.	D to M	H VSt H	- VS UTP - V		TOPSOIL
							Hand Auger HAL564 terminated at 3.0 m Target depth					-
method AD auger AD auger HA hand W washt HA hand * bit sho e.g. AD/T B blank T TC bit V V bit	drilling screwi auger auger auger own by bit	* ng* suffix	supr Mn Cc pene wate	etration	 no resi rangini refusal Cct-12 wa 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 Cla moistu D dr M m W we S sa Wp pla WI liq	sification soil desc pased on assification re y oist et uturated astic limit uid limit	n symbol & cription Unified on System	CO VS S F St VS F L M D VI VI	onsistency / relative density S very soft soft firm stiff St very stiff hard o friable very loose loose D medium dense dense O very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 564 AND 565

Borehole ID.	HAL564-565
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	SBG

checked by: **DBC**

positi	ion:	Not	Spe	cified					surface elevation: Not Specified	а	ngle fro	om horizontal: 90	DCP id.:		
drill model: Hand Auger									drilling fluid:	hole diameter : 50 mm vane id.: SV81		vane id.: SV817			
drilling information material							mate	rial sub	stance						
method & support	-	² 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	moisture condition	consistency / relative density	vane DCF shear (blow ⊕remoulded ⊚peak 100 m (kPa)	c structure and ss/ im) additional observations		
						-			ORGANIC SILT: non plastic, Dark brown black.	D to M			TOPSOIL		
				VS >247 kPa	VS >247 kP		- - 0.5—			Clayey SILT: low plasticity, brown orange mottled black dark brown and white.	М	Н		FILL - -	
			VS UTP		-			Silty CLAY: medium plasticity, brown orange mottled black dark brown, trace fine to medium grained sand.	W	St to VSt	1	- - .			
				tered	VS UTP		1.0							- - -	
			Not Encounte	VS UTP		- 1.5— -						 vs uтр 			
						VS 227/ 72 kPa		- 2.0-			Clayey SILT: medium plasticity, brown	M			
				VS 107/ 61 kPa		2.5-			orange, trace fine to medium grained sand.						
				VS 116/ 61 kPa		2.5			Silty CLAY: medium plasticity, dark brown mottled orange black blue, trace fine to medium grained sand.						
• •		 		VS 114/ 58 kPa					Hand Auger HAL564-565 terminated at 3.0 m						
						- - 3.5- -			Target depth						
						- 4.0-									
						- - 4.5-							 -		
						-									
meth AD AS HA W HA	sthod auger drilling* M auger screwing* C hand auger p washbore p hand auger p				sup M I C C pen	port mud casing etration	N - no resi rangin	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 s ba Clas moistur D drv	ification oil desc ased on ssificatio	n symbol & ription Unified n System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard		
* e.g. B T V	bit shown by suffix g. AD/T blank bit TC bit			er IO- Ievo wat wat	J refusai Oct-12 wa el on date er inflow er outflow	iter shown	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	M mo W we S sat Wp pla WI liqu	vist t turated stic limit uid limit		Fb friable VL very loose L loose MD medium dense D dense VD very dense				



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL565
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	PRM
checked by:	DBC

ocation					010					checked by.	
position: Not Specified angle from									angle from horizontal: 90	D° DCP id.:	
rill mode	el: Ha	nd A	uger			-		drilling fluid:	ł	nole diameter : 50 mm	vane id.: VH1447
drilling i	Infor	matio	on		1	mate	erial sub	stance			
support	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	Consistence Cons	o structure and s/ additional observations ₀ ♀
		Not Encountered	VS 144/ 29 kPa VS 140/ 25 kPa VS UTP VS 166/ 39 kPa VS UTP VS UTP					ORGANIC SILT: non plastic, dark brown black. Clayey SILT: non plastic, pale brown, minor fine grained sand. Clayey SILT: low plasticity, brown mottled pale brown. SILT: non plastic, brown, minor fine to medium grained sand. Clayey SILT: low plasticity, brown mottled pale brown.	M 	VSt to H VSt to H VS tro H VS UTP VS VS UTP VS VS VTP VS VS VTP VS VS VTP VS VS VTP VS VS VTP VS VS VS VS	I TOPSOIL II FILL II
			<u>VS UTP</u>		3.0 			Hand Auger HAL565 terminated at 3.0 m Target depth			
method AD aug AS aug HA har W wa: HA har HA har * bit e.g. AD B bla T TC V V b	iger dri iger sc ind aug ashbor ind aug showr D/T ank bit bit	illing* rewin ger ger n by s	g* uffix	sup M r C c pen wate	port mud casing etration er er ↓ 10- lev wat ↓ wat	N no ree rangir refusa Oct-12 w el on date ter inflow ter outflow	sistance sistance 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 s Cla moistu D dr M m W we S sa Wp pla WI liq	sification symbol & soil description vased on Unified sssification System re y oist at turated astic limit uid 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



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 565 AND 566

Borehole ID.	HAL565-566
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	10 Oct 2017
date completed:	10 Oct 2017
logged by:	SBG

DBC

checked by:

565 AND 566

drill model: Hand Auger drilling fluid: drilling information material substance visco visco visco <thvisco< th=""> visco</thvisco<>	hole diameter : 50 mm	vane id.: VH4523 P structure and additional observations m)
drilling information material substance v b b b b b b b b b b b b b b b b b b b	M U U U U U U U U U U U U U U U U U U U	P structure and vs/ additional observations m)
Solution Samples & field tests (i) i) ii) iiii) iii) iii) iii)	vane DC vane bear ⊕ remotion 0000 100 n 0000 00000 00000 000000 00000 0000000 00000 0000000 0000000 00000000 0000000 000000000000 000000000 000000000000000000000000000000000000	P structure and vs/ additional observations Im)
ORGANIC SILT: non plastic, dark brown D to N black. ORGANIC SILT: non plastic, dark brown D to N black.	M 1 1 1 1 1 1	m 2
		TT TOPSOIL
I 42 kPa I	I VSt ⊕ ♥	FILL
 VS 143/ VS 143/ VS 143/		
I I I IIII IIIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	⊕ ⊚	
VS 224 kPa 1.5 SILT: non plastic, brown orange.	H	
VS 224 kPa		
Hand Auger HAL565-566 terminated at 2.0 m Target depth		
iethod support samples & field tests clain D auger drilling* M M N Nil B bulk disturbed sample C S auger screwing* C casing D D bulk disturbed sample E environmental sample C	soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff
bit shown by suffix g. AD/T blank bit	dry moist wet saturated plastic limit liquid limit	H hard Fb friable VL very loose L loose MD medium dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 566 location:

Borehole ID. **HAL566** 1 of 1 sheet: 773-GENZTAUC13086A project no. date started: 12 Oct 2017 12 Oct 2017 date completed: logged by: PRM checked by: DBC

position: No	ot Specified				surface elevation: Not Specified	a	angle fro	om horizontal:	90°	DCP id.:	
drill model:	Hand Auger				drilling fluid:	ł	nole dia	meter : 50 mm	l	vane id.: 1447	
drilling inf	ormation		materia	material substance							
nethod & support 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	noisture	consistency / elative density	vane D shear ⊕remoulded ⊛peak 100 (kPa)	OCP ows/ mm)	structure and additional observations	
				0 bi	RGANIC SILT: non plastic, dark rown-black.	D to M	01	20 97 97 97 97 97 97 97 97 97 97 97 97 97		TOPSOIL	
H H H H	VS UTP	0.5		C	Clayey SILT: low plasticity, pale brown.	М	Н	-		FILL	
	VS UTP			gi gi	SILTY SAND: fine to medium grained, rey-brown.		MD to D	-		-	
		1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5			land Auger HAL566 terminated at 1.0 m lefusal					DCP REFUSAL	
method AD auger AS auger HA hand W washl HA hand * bit sh e.g. AD/T B blank T T C bit V V bit	r drilling* r screwing* auger bore auger own by suffix bit t	support M mud C casing penetratic water	N ni no resistan ranging to ranging to refusal 0-Oct-12 water evel on date sho vater inflow vater outflow	l ice wn	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 b Cla moistuu D dr M mo W we S sa Wp pla WI liq	sification soil desc assed on issificatio re y bist et turated astic limit uid limit	symbol & ription Unified n System	F F L L L L L	consistency / relative density /S very soft S soft firm St stiff /St very stiff h hard /L very loose AD medium dense /D very dense	



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 567 location:

Borehole ID. HAL567 1 of 1 sheet: 773-GENZTAUC13086AP project no. date started: 12 Oct 2017 12 Oct 2017 date completed: logged by: SBG DBC checked by:

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	0° DCP id.:
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: VH4523
drilling information	material subs	tance		
samples & field tests	depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	and the second	P structure and additional observations
a a a b b b b b b c		ORGANIC SILT: non plastic, dark brown black. Clayey SILT: non plastic to low plasticity, brown orange mottled black white. 1.0 m: Refused at 3 different locations due to gravel hardfill Hand Auger HAL567 terminated at 1.0 m Refusal	Bit Display Strategy of the second seco	*** 11 TOPSOIL 11 FILL 11 -
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	Alter Inflow water outflow 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 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 S saturated 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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL567-568
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	12 Oct 2017
date completed:	12 Oct 2017
logged by:	PRM

loca	atic	on:	BO	UNDAF	<u> </u>	FLC	DT 56	57 AN	ID 568		checked by:	
posi	itior	n: Not	Spec	cified					surface elevation: Not Specified	angle f	from horizontal: 90	DCP id.:
drill	mo	del: Ha	and A	Auger					drilling fluid:	hole di	ameter : 50 mm	vane id.: 1447
dri	illin	g info	mati	on			mate	rial sub	stance			
method &	linddins	2 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	moisture condition consistency / relative density	vane shear ⊕remoulded ⊚peak (PPa) B 2 9 9 8 0 100 mr	structure and additional observations
			Not Encountered	VS UTP VS UTP VS UTP VS UTP					ORGANIC SILT: non plastic, dark brown-black. Clayey SILT: low plasticity, brown.	М Н	V\$ UTP	TOPSOIL
						2.5			Hand Auger HAL567-568 terminated at 2.0 m Target depth			
mei AD AS HA W HA * e.g B T V		d auger d auger s hand au washbo hand au bit shov AD/T blank bi IC bit / bit	rilling' crewir iger iger n by : t	∙ ng* suffix	supp M r C c pend wate	port nud casing etration er Pr leve wate wate	N no resi rangini refusal 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	classificati soil de based c Classificat moisture D dry M moist W wet S saturatec Wp plastic lin WI liquid limi	on symbol & scription on Unified tion System	consistency / relative densityVSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense



Engineering Log - Hand Auger THE LAKES (2012) LIMITED client:

principal:

Г

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 568 AND 569

Borehole ID.	HAL568-569
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	12 Oct 2017
date completed:	12 Oct 2017
logged by:	PRM
checked by:	DBC

checked by:

Not S aifia

posit	ion: Not	Spec	cified					surface elevation: Not Specified	а	ngle fro	m horizontal	l: 90°	DCP id.:	
drill n	drill model: Hand Auger							drilling fluid:	h	ole diar	meter : 50 m	m	vane id.: 1447	
drill	drilling information material sub						rial sub	stance						
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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊚peak ((kPa) 00 00 00 00 00 00	DCP blows/ 00 mm)	structure and additional observations	
					-			ORGANIC SILT: non plastic, black.	D to M	Н				
HA		Not Encountered	VS UTP VS UTP					SILT: non plastic, pale grey brown, with minor fine grained sand and with trace clay.	M		- γs υτρ /s υτρ 		FILL -	
<u>+</u> +								1.0 m: Refusal due to gravel obstruction in hole Hand Auger HAL568-569 terminated at 1.0 m Refusal						
metil AD AS HA W HA *	hod auger of auger s hand au washbo hand au bit show AD/T	Irilling' crewir uger ore uger vn by s	⊾ ng* suffix	supr M n C c pene wate	er	N - no resi rangino ◄ refusal Oct-12 wa el on date	nil stance i to ter 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 penetration test (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone V/S wang beging penetration (when a penetration of the sample of the same of t	class ba Class moistun D dry M mo W wei S sat	ification oil desci ased on ssification e ist t urated stic limit	a symbol & ription Unified n System		consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose	
T V	TC bit V bit	ıı			wate	er outflow		R refusal HB hammer bouncing	WI liqu	ud limit			D dense VD very dense	



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL569
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	11 Oct 2017
date completed:	11 Oct 2017
logged by:	ODS
checked by:	DBC

positi	on: No	t Spe	cified					surface elevation: Not Specified	a	ingle fro	om horizontal: 9	00° DCP id.:
		and /	Auger			mete	del eule		ſ		meter : 50 mm	Vane Iu.: SL388
ariii		ormat				mate		stance		~		
method & support	1 2 penetratior	water	samples & field tests	RL (m)	depth (m)	graphic log	classificatior symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative densit	vane DC shear (blov ⊕ remoulded ⊚ peak 100 n (kPa) ର ହ ହ ର	:P structure and ws/ additional observations nm)
					-			ORGANIC SILT: non plastic, dark brown-black.	D to M			T TOPSOIL
			VS >213 kPa		- - 0.5-			SILT: non plastic, orange mottled brown, with trace clay and trace fine to medium grained sand.		Н		FILL
			VS >213 kPa		-							
		untered	VS >213 kPa		1.0— - -							
 		Not Enco	VS 175/ 63 kPa		- 1.5 - -			SILT: non plastic, black mottled orange-brown, with trace fine grained sand, no	M	VSt	- + + + + + + + + + + + + + + + + + + +	
			VS 106/ 37 kPa		- 2.0-			vootlets but trace organic odour. SILT: non plastic, orange mottled brown, with trace clay and trace fine to medium grained sand.			$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	
			VS 188/ 61 kPa		- - 2.5-						 ⊕ � 	
			VS 208/ 46 kPa					fine grained sand, with trace clay.		Н	-⊕ @ -⊕ ©	
					- 3.0 - - - 3.5 - -			Hand Auger HAL569 terminated at 3.0 m Target depth				
					- 4.0							
					4.5							
meth AD AS HA W HA	auger a auger a hand a washb hand a	drilling screwi iuger ore iuger	* ng*	sup M r C c pen	port mud casing etration	N - no resis ranging	nil stance j 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 b Cla moistur D dry	ification oil desc ased on ssificatio	n symbol & cription Unified on System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard
* B T V	bit shơ AD/T blank t TC bit V bit	wn by Dit	suffix	wate	er 10- leve wat wat	Ct-12 war Dct-12 war el on date er inflow er outflow	ter shown	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	M mo W we S sa Wp pla WI liqu	oist t turated istic limit uid limit	t	Fb friable VL very loose L loose MD medium dense D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL569-570
sheet:	1 of 1
project no.	773-GENZTAUC130864
date started:	12 Oct 2017
date completed:	12 Oct 2017
logged by:	SBG

locat	cation: BOUNDARY OF LOI 569 AND 5/0 checked by:										DBC			
positi	on: Not	Spe	cified					surface elevation: Not Specified	a	ingle fro	om horizontal:	90°	DCP id.:	
drill m	drill model: Hand Auger							drilling fluid:	hole diameter : 50 mm				vane id.:	
drilli	ing info	rmati	on			mate	rial sub	stance						
nethod & support	penetration	vater	samples & field tests	sL (m)	tepth (m)	jraphic log	class ification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture	onsistency / elative density	vane D0 shear @peak 100 (kPa)	CP ws/ mm)	structure and additional observations	
	- 0 0				-		0 0	ORGANIC SILT: non plastic, dark brown black.	D to M	02			TOPSOIL	
		Not Encountered						SILTY SAND: fine to medium grained, brown orange.	M	L to MD			FILL	
								Hand Auger HAL569-570 terminated at 2.0 m Target depth						
meth AD AS HA W HA * e.g. B T V	od auger d auger s hand au washbo hand au bit show AD/T blank bi TC bit V bit	Irilling crewi uger uger uger vn by	∙ ng* suffix	supp M r C c pend wate	etration	N no res rangin refusa Oct-12 wa el on date er inflow er outflow	nil istance ig to il 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 s b Cla moistuu D dry M mo S sa Wp pla WI liqu	sification coil desc ased on ssification re / bist turated astic limit uid limit	n symbol & cription Unified on System	c ∨ S F S ∨ F F V L M □ V	onsistency / relative density 'S very soft S soft firm firm St stiff 'St very stiff I hard ib friable '/L very loose Ioose loose MD medium dense 0 dense '/D very dense	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 570

Borehole ID.HAL 570sheet:1 of 1project no.773-GENZTAUC13086Adate started:12 Oct 2017date completed:12 Oct 2017logged by:PRMchecked by:DBC

		+ 0	aified					ourfood alovation: Not Charlie d		ngle f	m hori-o-t-l.	no _°	
posit	uon: No	i Spe	cified					surface elevation: Not Specified	6 L	angle fro	motor : E0 mm	νŪ°	DCP IG.:
uriii i a	drilling information					mata	rial auto	anining ilula.	r	iole dial			vane iū.:
arii		ormat				mate		stance		~		-	
method & support	2 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 densit	vane DC shear (blo ⊕remoulded ⊚peak 100 r (kPa) ⊛ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	:P ws/ mm)	structure and additional observations
					-			ORGANIC SILT: non plastic, dark brown black.	D to M				TOPSOIL
		countered			- - 0.5			Clayey SILT: non plastic, pale orange brown, minor fine grained sand.	M				FILL
- HH		Not En			- - - 1.0 -								BOUNCING/DCP REFUSAL
								1.2 m: Refused at 3 different locations due to gravel hardfill Hand Auger HAL570 terminated at 1.2 m Refusal					
					4.0								
Met AD AS HA W HA	hod auger hand a washb hand a	drilling screwi luger ore luger	* ng*	supp M r C c pene	port mud casing etration	- no res rangin ◄ refusa	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) N standard penetration test (SPT) N* SPT - sample recovered	class b Cla moistu D dr M ma W we	sification coil desc ased on ssificatio re y bist et	n symbol & rription Unified n System		consistency / relative density YS very soft S soft Firm stiff St very stiff H hard B friable V very loose
* e.g. B T V	bit sho AD/T blank t TC bit V bit	wn by oit	suffix		Vational Action of the second	Oct-12 wa el on date er inflow er outflow	ater shown	Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	S sa Wp pla WI liq	turated astic limit uid limit			ID medium dense dense dD very dense



11

Borehole ID. HAL570-571 sheet: 1 of 1 **Engineering Log - Hand Auger** 773-GENZTAUC13086A project no. THE LAKES (2012) LIMITED client: 12 Oct 2017 date started: 12 Oct 2017 principal: date completed: THE LAKES, STAGE 3I GCR SBG project: logged by: BOUNDARY OF LOT 570 AND 571 DBC location: checked by: position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: drill model: Hand Auger drilling fluid: hole diameter : 50 mm vane id.: VH4523 drilling information material substance consistency / relative density DCP structure and material description vane classification go samples & field tests shear ⊕ remould ⊚ peak (blows/ 100 mm) additional obs vations method & support Ē penetra moisture condition SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components graphic I symbol Ê depth (water (kPa) R ORGANIC SAND: non plastic, dark brown D to M TOPSOIL black. | | | | |Vot Encountered Clayey SILT: low plasticity, brown orange mottled dark brown white black, trace fine to VSt to H FILL VS 224 kPa Μ 11 1 ||||medium grained sand. | | | |Ψ ż 0.5 | |||||||1 VS 175/ 36 kPa | | |⊕ | ⊚ 11 ||||||||111 VS UTP ||||VS UTP 15:12 1.0 BOUNCING/DCP REFUSAL 1.0 m: Refused at 3 different locations due to 08/12/2017 111 gravel hardfill Hand Auger HAL570-571 terminated at 1.0 m Refusal 1111 ||||||111 11111 111 |||||||11111 111 1.5 111 | | | | |11111 ||||| | | |11111 No No | | | | |11111 STAGE 31 GCR MASTER.GPJ | | |11111 111 | | | |11111 2.0 1111 ||||| | | |11111 |||||||||1111 ||||||||||11111 11111 111 | | | | |2.5 11111 111 |||||||11111 13086AP ||||||||||11111 | | | | |11111 LIBRARY.GLB rev:AT Log COF BOREHOLE: NON CORED + DCP ||||| | | |11111 | | || | | | |11111 3.0 | | |11111 |||||||||||||||11111 11111 ||||| | | |11111 ||||||11111 ||||3.5 11111 111 ||||||11111 11111 111 |||||||||||||||4.0 ||||||||||11111 |||||||||11111 ||||||

CDF_0_9_06					
meth AD AS HA W HA * e.g. B T V	od 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 ranging to refusion water 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 S saturated 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



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL571
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	11 Oct 2017
date completed:	11 Oct 2017
logged by:	ODS
checked by:	DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal:	l: 90° DCP id.:	
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: SL588	
drilling information	material sul	ostance			
samples sites samples samples samples samples samples set at a set	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	DC States States States States States States States States States States States States States States States States	CP structure and additional observations	
E d E d	$\vec{\alpha}$ $\vec{\alpha}$ $\vec{\beta}$ $\vec{\beta}$ $\vec{\beta}$ $\vec{\beta}$ $\vec{\beta}$ $0.5 - \frac{1}{2}$ $1.0 - \frac{1}{2}$ $1.0 - \frac{1}{2}$ $2.0 - \frac{1}{2}$ $2.5 - \frac{1}{2}$ $3.0 - \frac{1}{2}$ $4.0 - \frac{1}{2}$	ORGANIC SAND: non plastic, dark brown black. SILT: low plasticity, orange mottled brown, with minor clay, and trace fine grained sand. Hand Auger HAL571 terminated at 3.0 m Target depth	E X 3 20 <th< td=""><td>0.00 P III III FILL III FILL III III III IIII III IIII III IIII</td></th<>	0.00 P III III FILL III FILL III III III IIII III IIII III IIII	
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T	support M mud N nil C casing penetration refusal water 10-Oct-12 water level on date 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: neak/remouded (kPa)	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit	I I I I I I I I I I I I I I I I I I I I VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense	



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 571 AND 572

Borehole ID.	HAL571-572
sheet:	1 of 1
project no.	773-GENZTAUC13086A
date started:	12 Oct 2017
date completed:	12 Oct 2017
logged by:	PRM
checked by:	DBC

posi	tion: No	t Spe	cified					surface elevation: Not Specified	a	angle fro	om horizontal: 9	0°	DCP id.:
arili i	model: H	and /	huger			mate	vrial cub	arilling tiula:	ľ	iole dia	meter :		vane id.:
un		linat				mate	E E	material description		ity /	vane DC	P	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 dens	shear ⊕remoulded ⊚peak (blov 100 m (kPa) 03 ♀ ♀ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞	ws/ nm) ∞♀	additional observations
		Not Encountered v				0		0.0 m: Refusal on gravel after 3 tries Hand Auger HAL571-572 terminated at 0.0 m Refusal					
					4.5								
met AD AS HA W HA * e.g. B T	thod auger auger hand a washb hand a bit sho AD/T blank t TC bit	drilling screwi uger ore uger wn by bit	* ng* suffix	supp M n C c pene wate	oort nud asing etration	N no ress rangin ◄ refusa Oct-12 wa el on date er inflow	nil iistance ig to ii 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	class b Cla moistur D dr M mo W we S sa Wp pla WI liq	sification soil desc pased on issification re y bist et turated astic limit uid limit	n symbol & rription Unified on System	Cons VS S F St VSt H Fb VL L MD D	sistency / relative density very soft soft firm stiff very stiff hard friable very loose loose medium dense dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL572
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	12 Oct 2017
date completed:	12 Oct 2017
logged by:	PRM
checked by:	DBC

positi	on: I	Not	Spec	ified					surface elevation: Not Specified	ä	angle fro	om horizontal:	90°	DCP id.:
drill m	nodel	: Ha	nd A	uger			_		drilling fluid:	I	nole dia	meter : 50 mm	ı	vane id.: SV1447
drilli	ing iı	nfor	matio	on			mate	rial sub	stance		1			
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 (b ⊕remoulded ⊛peak 100 (kPa) © ♀ ♀ ♀ ♀	DCP lows/ 0 mm)	structure and additional observations
HA N			Not Encountered	VS UTP VS UTP VS UTP VS UTP VS UTP VS UTP VS UTP VS UTP VS 231/					ORGANIC SILT: non plastic, dark brown black. Clayey SILT: low plasticity, brown mottled orange brown, trace fine grained sand. Silty CLAY: low plasticity, pale orange mottled orange, minor fine grained sand. Clayey SILT: low plasticity, pale orange mottled orange, minor fine grained sand. Clayey SILT: low plasticity, brown mottled orange brown, trace fine grained sand.	M	Н	У\$ UTP		TOPSOIL
Meth AD AS HA W HA	Image: 1 Image: 1 Image: 1 Image: 1<	er dr d au	illing* rrewin ger ger	g*	supp C c c pene	3.5	no resi rangin refus	nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample S split spon sample U## undisturbed sample U## undisturbed sample U## undisturbed sample U## undisturbed sample U## undisturbed sample N standard poentration test (SPT)	clas t Cla Cla D dr	sification soil desc passed on assificatio re y oist			consistency / relative density /S very soft S soft = firm St stiff /St very stiff - hard = friable
* B T V	bit s AD/ blar TC I	show T nk bit bit	n by s	suffix	wate	er ▲ 10-1 leve wat → wat	Oct-12 wa el on date er inflow er outflow	ter shown	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	M m W w S sa Wp pla WI liq	oist et aturated astic limit juid limit			-o triable /L very loose L loose MD medium dense O dense /D very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 572 AND 573

Borehole ID.	HAL572-573
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	12 Oct 2017
date completed:	12 Oct 2017
logged by:	SBG
checked by:	DBC

positio	on: Not	Sper	ified			-		surface elevation: Not Specified	;	anale fro	om horizontal: 9	0°	DCP id.:
drill m	odel: Ha	and A	uger					drilling fluid:	I	nole dia	meter : 50 mm	•	vane id.: VH4523
drilli	ng infor	mati	on			mate	rial sub	stance					
method & support	2 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	moisture condition	consistency / relative density	vane DC shear ⊕remoulded ⊚peak 100 m (kPa) 8 0 9 9 8 0 0 m m	P vs/ nm)	structure and additional observations
A A					_	\otimes		ORGANIC SILT: non plastic, dark brown	D to M			ĨT	TOPSOIL
-HA - - N		Not Encountered	VS 194/ 41 kPa VS 198/ 35 kPa VS 190/ 37 kPa VS 136/ 32 kPa VS 211/ 55 kPa VS 211/ 47 kPa VS >224 kPa	8				SILT: non plastic to low plasticity, brown orange mottled white dark brown black, trace clay, trace fine to medium grained sand. Clayey SILT: low plasticity, pale orange brown, trace fine grained sand. 2.0 m: becoming mottled pink	M	VSt to H			FILL
meth AD AS HA W HA	I I I I	rilling* crewin ger re gger	ıg*	supp M r C c cro		N	nil	Hand Auger HAL572-573 terminated at 3.0 m Target depth	clas clas	sification soil desc pased on assificatio	I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I		consistency / relative density /S very soft S soft S stiff Kt stiff
* e.g. B T V	bit show AD/T blank bi TC bit V bit	n by s	suffix	wate	er Intervet wate wate	rangin refusa Oct-12 wa el on date er inflow er outflow	ater shown	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 dr M m W w S sa Wp pla WI liq	y oist et aturated astic limit juid limit		F F L N C	H hard Fb friable /L very loose loose MD medium dense O dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL573
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	12 Oct 2017
date completed:	12 Oct 2017
logged by:	ODS
checked by:	DBC

positio	n: Not	Sne	cified					surface elevation: Not Specified	я	nale fro	om horizontal	90°	- DCP id ·
drill mo	odel: Ha	and /	Auger					drilling fluid:	a h	ole dia	meter : 50 mm		vane id.: SL588
drillin	ıg info	rmat	ion			mate	rial sub	ostance					
method & support	2 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 D shear (bl ⊕remoulded ⊚peak 1000 (kPa) 33 00 05 00 00 00 100	CP ows/ mm) ∞∞₽	structure and additional observations
		ed	VS >213 kPa		- - - - 0.5 -			ORGANIC SILT: non plastic, dark brown black. SILT: low plasticity, orange-brown mottled brown, with trace to minor clay, and trace fine grained sand.	D to M	Н			TOPSOIL
z		Not Encounter	VS >213 kPa		- 1.0 - - 1.5			Sandy SILT: non plastic, grey, sand is fine to medium grained.	M				
, ,			VS >213 kPa VS 147/ 43 kPa					1.7 m: becoming mottled clayey SILT: low plasticity, pink					
					- - - 2.5 - -			Target depth					
					3.0	-							
					3.5 - - 4.0	-							
					- - 4.5 - -								
metho AD AS HA W HA	d auger d auger s hand au washbo hand au bit show	lrilling crewi uger ore uger vn by	∣ * ng* suffix	supp M r C c pene	oort nud asing etration ∎ ∎ ∎ ∎ ∎ ∎ ∎ ∎ ∎ ∎ 10-	N no resi rangino refusal Oct-12 wa	nil stance 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) N standard penetration test (SPT) N* SPT - sample recovered No SPT - sample recovered	class se Clas moistur D dry M mo W wei S set	ification oil desc ased on ssificatio e , ist t urated	h symbol & ription Unified n System		consistency / relative density /S very soft S soft infim St stiff /St very stiff H hard b friable /L very loose loose
e.g. B T V	AD/T blank bi TC bit V bit	it			lev wat	el on date ter inflow ter outflow	shown	NC SP1 with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Wp pla WI liqu	stic limit			IOOSE MD medium dense O dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

TC bit V bit

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 573 AND 574 location.

Borehole ID.	HAL573-574
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	PRM

location:	BC	UNDAF	RY O	FLC	DT 57	73 AN	ID 574		С	hecked by:	DBC
position: N	lot Spe	cified					surface elevation: Not Specified	â	angle fro	om horizontal: 90°	DCP id.:
drill model:	Hand /	Auger					drilling fluid:	ł	nole diar	meter : 50 mm	vane id.: SL817
drilling in	format	ion			mate	rial sub	stance			1	
method & support 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 DCP shear ⊕remoulded ⊚paid (kPa) © 2 2 8 0 4 9 ∞ 2	structure and additional observations
мион перета укламинутику области талк НА		VS UTP VS UTP VS UTP VS 176/ 30 kPa VS 176/ 21 kPa					Clayey SILT: non plastic, brown. 0.7 m: becoming slightly plastic Sandy SILT: non plastic, pale grey-brown, sand is fine to medium grained. Silty CLAY: non plastic, white-grey, with minor fine grained sand. Hand Auger HAL573-574 terminated at 2.0 m	M to W	VSt	θ 0	FILL -
							Target depth				
method AD auge AS auge HA hanc W wash HA hanc * bit si e.g. AD/1 B blanl T TC b V V	er drilling er screwi d auger hbore d auger hown by r k bit bit	* ng* suffix	supj M r C c pene wate	oort nud asing etration etration etration etration leve leve wate	 no resi rangini refusal Oct-12 was on date er inflow er outflow 	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 Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	class s Cla moistu D dr M me W we S sa Wp pla WI liq	sification soil desc ased on ssificatio re y bist st turated astic limit uid limit	n symbol & ription Unified n System	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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL574
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	SBG
checked by:	DBC

positi	ion: No	t Spe	cified					surface elevation: Not Specified	a	angle from h	norizontal: 9	90°	DCP id.:
drill n	nodel: H	land	Auger					drilling fluid:	ł	ole diamete	er : 50 mm		vane id.: SL817
drill	ing info	ormat	ion			material	substa	ance					
method & support	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 DC hear (blov peak 100 r (kPa) [©] ^Q ^Q ^Q ^Q ^Q ^Q ^Q ^Q ^Q ^Q	P ws/ mm)	structure and additional observations
			VS >247 kPa VS 196/ 61 kPa				0 0	DRGANIC SILT: non plastic, dark brown black. Clayey SILT: low plasticity, brown orange nottled black white grey. 0.4 m: becoming slightly to moderately plastic 0.6 m: with trace fine to medium grained sand	D to M	VSt to H H H			TOPSOIL FILL
HA		Not Encountered	VS >247 kPa VS >247 kPa		- - - 1.5 - - -		C S C S C C S C C	SILT: non plastic to low plasticity, brown brange, minor fine to medium grained sand. CLAY: medium plasticity, brown orange, trace silt. Clayey SILT: low plasticity, brown orange, race fine to medium grained sand.	-				
			VS >247 kPa		- 2.0— -		n	Sandy SILT: non plastic, pale brown grey nottled white black, trace clay.	W				MATUA SUBGROUP
			VS >247 kPa VS 179/ 42 kPa	l	- 2.5								
• •					- 3.0 -		F T	Hand Auger HAL574 terminated at 3.0 m					
metil AD AS HA W HA * e.g. B T V	hod auger auger hand a washb hand a bit sho AD/T blank I TC bit V bit	drilling screwi luger ore luger wn by bit	* ng* suffix	sup M r C c pen	port nud casing etration er er er lev wat	N nil	e n	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 b Cla moistur D dr M moi W we S sa Wp pla WI liq	sification syr soil descripti assed on Unif ssification Sy re y bist turated turated astic limit uid limit	nbol & ion ied <i>is</i> tem	F F L L	consistency / relative density /S very soft S soft F firm St stiff /St very stiff I hard Fb friable /L very loose /D medium dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

method & support

project: THE LAKES, STAGE 3I GCR

locatio

Borehole ID.	HAL574-575
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	PRM

loca	tion		во	UNDAR	Y O	FLC	OT 57	74 AN	ID 575		с	hecked b	by:	DBC
posit	ion:	Not	Spec	cified					surface elevation: Not Specified	a	angle fro	m horizon	tal: 90°	DCP id.:
drill r	node	I: Ha	and A	luger					drilling fluid:	ł	nole dia	neter : 50	mm	vane id.: SL817
dril	ling i	nfor	mati	on			mate	rial sub	ostance					
method & support	1 benetration	2 perieuauori 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	moisture condition	consistency / relative density	vane shear ⊕ remoulded @ peak (kPa) 00 00 000	DCP (blows/ 100 mm)	structure and additional observations
				VS UTP VS >247 kPa VS 179/ 45 kPa		- - - 0.5 - - - 1.0			Clayey SILT: low plasticity, brown, with trace fine grained sand.	M	H	, , , , , , , , , , , , , , , , , , ,		FILL
- HA			Not Encountered	VS 213/ 32 kPa VS UTP VS UTP		- - - 1.5 - - - - - - - - - - - - -			minor fine grained sand.	-	Н			
				VS 231/ 58 kPa VS >247 kPa		2.0			Silty CLAY: low plasticity, pale grey-brown, with minor fine to medium grained pumiceous sand. SILTY SAND: fine to medium grained, grey, with minor clay.	_				MATUA SUBGROUP
<u> </u>						3.0 — - - 3.5 — - - - - -			Hand Auger HAL574-575 terminated at 2.8 m Target depth					

<<DrawingFile>> 08/12/2017 15:12 Ă STAGE 31 GCR_MASTER.GPJ CDF_0_9_06_LIBRARY.GLB rev:AT Log COF BOREHOLE: NON CORED + DCP 13086AP_

	4.0			
method su AD auger drilling* M AS auger screwing* C HA hand auger C W washbore pe HA hand auger W * bit shown by suffix e.g. B blank bit T T TC bit - V V bit -	Apport mud N nil casing enertration Transing to refusal ater 10-Oct-12 water 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 S saturated Wp plastic limit WI liquid limit	consistency / relative densityVSvery softSsoftFfirmStstiffVStvery stiffHhardFbfriableVLvery looseLlooseMDmedium denseDdenseVDvery dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 575 location.

Borehole ID.	HAL575
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	SBG
checked by:	DBC

positi	on:	Not	Spec	cified			-		surface elevation: Not Specified		angle fro	om hori	izonta	, al: 90	0°	DCP id.:
drill m	node	el: Ha	and A	uger			_		drilling fluid:	l	nole dia	meter :	: 50 n	nm		vane id.: SL817
drilli	ing i	infor	mati	on			mate	erial sub	stance							
method & support	1 activition	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	van shea ⊕ remou ⊚ pea (kPa 03 02 02	e ar Ilded ak	DCF (blow 100 m	o /s/ nm) ∞ ₽	structure and additional observations
						-			ORGANIC SILT: non plastic, dark brown black.	D to M						TOPSOIL
				VS 213/ 42 kPa		-			Clayey SILT: non plastic, pale brown yellow mottled dark brown, trace fine to medium \grained sand.	м	VSt to H	 ⊕ 	@			FILL
				VS 196/ 45 kPa		0.5			SILT : low plasticity, brown orange, trace fine to medium grained sand.			(⊕ 	•			
				VS 129/ 42 kPa		- - 1.0-						 ⊕ ⊙ 				
			Intered	VS >247 kPa		-			SILT: non plastic to low plasticity, brown orange mottled black white, trace fine to medium grained sand, trace clay.				•			
HA N 			Not Encol	VS >247 kPa		- 1.5— -										
				VS 213/ 42 kPa		-			Sandy SILT: non plastic, brown orange mottled pale brown black, sand is fine to	-			0			
				VS 231/ 42 kPa		2.0			medium grained, trace clay.			 ⊕ 	 © 			
				VS >247 kPa		2.5-			Sandy SILT: non plastic, brown orange mottled white black, minor clay.				0			
				VS >247 kPa		-							0			
• •				VS >247 kPa		3.0 -			Hand Auger HAL575 terminated at 3.0 m Target depth							
						-										
						3.5										
						40-										
						-										
						- 4.5—										
						-										
meth AD	iod aud	aer d	rillina*		sup	port	<u> </u>	nil	samples & field tests	clas	sification soil desc	n symbo	ol &	Ī	ii c	consistency / relative density
AS HA W	aug har wa	ger s nd au shbo	crewir Iger re	ng*	C c	casing etration	1		D disturbed sample E environmental sample SS split spoon sample	l Cla	based on assificatio	Unified on Syste	m		S	S soft firm St stiff
HA hand auger			 no res rangin refusa 	sistance ng to al	U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT)	moistu D dr M m	re y oist				V F	/St very stiff H hard Fb friable				
* bit shown by suffix e.g. AD/T B blank bit T TO bit				■ 10- leve wat	Oct-12 wa el on date er inflow	ater e shown	N [*] SP1 - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal	VV W S sa Wp pl WI lic	et aturated astic limit juid limit				V L N	/L very loose loose MD medium dense dense		
I TC bit V V bit				- wat	er outflov	v	HB hammer bouncing						V	/D very dense		



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 575 AND 576 location:

Borehole ID.	HAL575-576
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	SBG
checked by:	DBC

checked by:

positi	on: No	Spe	ecified					surface elevation: Not Specified		angle from horiz	zontal: 90	D° DCP id.:
Irill m	nodel: H	and	Auger					drilling fluid:		hole diameter :	50 mm	vane id.: SL817
drill	ing info	rma	tion			mater	ial subs	tance				
support &	penetration	vater	samples & field tests	3L (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	onsistency / elative density bead @ 50 0%) bead @ 50 0%) bead @ 50 0%)	e DCP r (blows 100 mi	s/ s/ additional observations
	3 0 -				-			ORGANIC SILT: non plastic, dark brown black.	M			
			VS >247 kPa VS >247 kPa		- - 0.5-			SILT : non plastic, brown orange mottled black grey white, trace fine to medium grained sand.		VSt to H 	• • 	 FILL
			VS 142/ 45 kPa		- - 10-					 		
		ered	VS >247 kPa		-							
		Not Encounte	VS >247 kPa		- 1.5—			Sandy SILT: non plastic, pale grey brown mottled dark brown black, sand fine to medium grained, trace clay.			 • •	
			VS >247 kPa		- - 2.0-						 	
			VS >247 kPa VS 217/		-			SILT: non plastic, brown crange mettled black	_		¦€ 	
			42 kPa VS 234/ 42 kPa		- 2.5— -			white grey, minor fine to medium grained sand, minor clay.				
			VS >247 kPa	4	-30							
								Hand Auger HAL575-576 terminated at 3.0 m Target depth				
					-	-						
					4.0							
					4.5-							
			<u> </u>		-						 <u> </u>	
meth AD AS HA W HA	auger of auger of hand a washbo hand a	drilling screw uger ore uger	g* ing*	sup Mr Cc pen	nud asing etration	N 1 1- no resis	nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter	clas I Cli moistu	sification symbo soil description based on Unified assification Syster ure	1& n	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff
* e.g. B T	bit sho AD/T blank b TC bit	wn by iit	/ suffix	wate	er 10- lev wat	Oct-12 wate el on date s ter inflow	to er shown	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	D dr M m W w S sa Wp pl WI lic	ry noist et aturated lastic limit quid limit		H hard Fb friable VL very loose L loose MD medium dense D dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 576 location:

Borehole ID. HAL576 1 of 1 sheet: 773-GENZTAUC13086AP project no. 13 Oct 2017 date started: 13 Oct 2017 date completed: logged by: SBG DBC checked by:

position:	position: Not Specified							surface elevation: Not Specified	angle from horizo)° DCP id.:	
drill mode	Jrill model: Hand Auger							drilling fluid:	hole diameter : 50) mm	vane id.: SL817
drilling i	infor	nati	on			materia	al subst	tance			
method & support	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	mathef{construction} Construction	DCF (blow: 100 m	s/ structure and additional observations
L → H HA HA HA HA HA HA HA HA HA H		Not Encountered w	VS >247 kPa VS 209/ 42 kPa VS 134/ 29 kPa VS >247 kPa VS >247 kPa VS >247 kPa VS >247 kPa VS >247 kPa VS >247 kPa VS >247 kPa VS >247 kPa					ORGANIC SILT: non plastic, dark brown black. SILT: non plastic to low plasticity, brown orange mottled black grey white, trace fine to medium grained sand. Sandy SILT: non plastic, pale grey brown mottled black white, sand fine to medium grained. 1.6 m: becoming slightly plastic 1.61 m: becoming pale brown orange mottled black white SILT: non plastic, brown orange mottled black white SILT: non plastic, brown orange mottled black white SILT: non plastic, brown orange mottled black white grey, trace fine to medium grained sand, trace clay. Hand Auger HAL576 terminated at 3.0 m Target depth	E S		*** TOPSOIL FILL *** ** <
method AD aug AS aug HA han W was HA han * bit s e.g. AD/ B blar T TC	iger dri iger sc ind aug ashbor ind aug : showr D/T ank bit C bit	illing* rewir ger ger	ıg* suffix	supp M r C c pene wate	etration	N r - no resista ranging to refusal Oct-12 water I on date sh er inflow er outflow	nil ance o r nown	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 S saturated 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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

EASTERN BOUNDARY OF LOT 576 location:

Borehole ID.	HAL576b
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	PRM
checked by:	DBC

checked by:

position: Not Specified							surface elevation: Not Specified			angle fro	om horizontal: 9	90° DCP id.:	
drill n	nodel: Ha	and A	Auger					drilling fluid:		nole diar	meter : 50 mm		vane id.: SL817
drill	ing info	rmati	on			material	substa	ince					
nethod & support	penetration	vater	samples & field tests	sL (m)	lepth (m)	graphic log	symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture	consistency / elative density	vane DC shear ⊕ peak (kPa) S S S S	P ws/a nm)	structure and dditional observations
		-	VS 213 kPa		- - - 0.5-		s g	ILT: non plastic, brown, with minor fine rained sand. SILTY SAND: fine to medium grained, grey.				[∞] ² 	
		ared	VS >247 kPa		- - 1.0 -		S n 1	ILT: non plastic, brown, with trace fine to nedium grained sand.	W to S	VSt to H	- VSUTP 		- - - -
HA		Not Encounte	VS 231/ 25 kPa		- 1.5— -						+ + + + + + + + + + + + + + + + + + +		
			VS 213/ 29 kPa VS 173/ 32 kPa		- 2.0 - - -		0	Clayey SILT: low plasticity, brown mottled range-pink, with trace fine grained sand.				 	- Ja Subgroup - - -
			VS >247 kPa		2.5		p g s	Silty CLAY: low plasticity, orange mottled ale orange, sensitive, greasy, with trace fine rained sand.					
					3.5 		FT	land Auger HAL576b terminated at 3.0 m arget depth					
meth AD AS HA W HA * e.g. B T	hod auger d auger s hand au washbo hand au bit shov AD/T blank bi TC bit	Irilling crewi uger uger uger vn by it	∗ ng* suffix	sup M r C c pen wat	etration	N nil	e m	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 haammer bouncing	Clas Cla moistu D di M m W w S si Wp pl WI lig	sification soil desc based on assificatio re y oist et aturated astic limit uid limit	n symbol & ription Unified n System	consiste VS S F VSt H Fb VL L MD D VD	nrcy / relative density very soft soft firm stiff very stiff hard friable very loose loose medium dense dense very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL577
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified	surface elevation: Not Specified	angle from horizontal: 90°	90° DCP id.:		
drill model: Hand Auger	drilling fluid:	hole diameter : 50 mm	vane id.: SL817		
drilling information	material substance				
method & support support support a support a support a support a standard w atter (m) % a seldwes (m) (m) (m) (m) (m) (m) (m) (m) (m) (m)	Do o Do tree Do tree material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	Construction Const	structure and additional observations		
E is Ω is I I I I I I I VS 234/ I I 42 kPa - I I VS 234/ - I I VS 234/ - I I VS 247 kPa 0.5 - I I VS 196/ - I I VS 196/ - I I VS 247 kPa 1.0 - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >247 kPa - I I VS >38 kPa - I I VS 138/ - I I VS 134/ - I I VS	Image: Signal state of the	E S S S S S N Q Q S S N Q </td <td>₽ TOPSOIL FILL - - - - - - - - - - - - -</td>	₽ TOPSOIL FILL - - - - - - - - - - - - -		
• • • • • • • • • • • • • • • • • • •	N nil samples & field tests B bulk disturbed sample D disturbed sample E environmental sample Sit spon sample U## undisturbed sample U U## undisturbed sample U U## undisturbed sample U U## undisturbed sample U U## undisturbed sample U U## undisturbed sample U U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard nenetration test (SPT)	Image: Classification Symbol & Soci description Image: Classification Symbol & Soci description Image: Classification System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fh friable		
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	N standard penetration test (SPT) Oct-12 water N* SPT - sample recovered el on date shown NC SPT with solid cone er inflow VS vane shear; peak/remouded (kPa) er outflow HB hammer bouncing	W moist W wet S saturated Wp plastic limit WI liquid limit	rb Trable VL very loose L loose MD medium dense D dense VD very dense		



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 577 AND 578

Borehole ID.	HAL577-578
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	SBG
checked by:	DBC

posit	tio	n: No	ot Spe	ecified					surface elevation: Not Specified	á	angle fro	om horizon	tal: 90°	DCP id.:
drill n	mc	odel: I	land	Auger					drilling fluid:	ł	nole dia	meter : 50	mm	vane id.: SL817
drill	lin	ng inf	orma	tion	1		mate	erial sub	ostance		~	<u> </u>		1
method & support	:	 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) 36 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DCP (blows/ 100 mm)	structure and additional observations
	-		Not Encountered w	VS 138/ 39 kPa VS 144/ 42 kPa VS 158/ 39 kPa VS 247 kPa VS 247 kPa		0.5	5	5 0	Clayey SILT: low plasticity, brown orange mottled white black pink. 0.9 m: becoming brown orange	M	H	$\begin{array}{c} & & & \\ & & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & &$		FILL
									2.1 m: Refused at 3 different locations due to gravel hardfill Hand Auger HAL577-578 terminated at 2.1 m Refusal					
metl AD AS HA W HA * e.g. B T	ho	bit sho AD/T blank TC bit	drilling screw auger oore auger own by bit	g* ing* r suffix	sup M C pen wat	port mud casing etration er er ∎ 10-0 leve wat	N no res rangin refusa Oct-12 wa el on date er inflow er outflov	nil istance ig to il ater a 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	class s b Cla moistu D dr M moi W we S sa Wp pla WI liq	sification soil desc pased on assification re y oist et aturated astic limit uid limit	n symbol & cription I Unified on System		consistency / relative density VS very soft S soft F firm St stiff VS very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CORNER OF LOT 577

Borehole ID.	HAL577C
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	PRM
checked by:	DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 9	0° DCP id.:
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: SL817
drilling information	material subst	ance		
samples & samples & field tests	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	Discrete for the second	P structure and vs/ additional observations m)
Image: Second secon		Clayey SILT: non plastic, brown mottled white / dark brown/ pink.	M St to H I<	0 11 FILL - 11 FILL - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 - 11 11 11 11 11 11 1
		Hand Auger HAL577C terminated at 2.5 m Squeezing		
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 registration	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	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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 578 location:

Borehole ID.	HAL578
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	PRM
checked by:	DBC

positi	on: Not	Spe	cified					surface elevation: Not Specified		angle fro	m horizontal	l: 90°	DCP id.:
drill m	nodel: Ha	and A	Auger			moto	rial aub	drilling fluid:		nole diar	neter : 50 mi	m	vane id.: SL588
uriili		mat				mate		material description		j≦.	vane	DCP	structure and
method & support	1 2 penetratio 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 dens	shear ((⊕remoulded ⊚peak 10 (kPa) ਲ ⊉ ≌ 8	blows/ 00 mm)	additional observations
					-			ORGANIC SILT : non plastic, dark brown-black.	М				TOPSOIL
			VS 213 kPa		- - 0.5 -			SILT: low plasticity, orange brown mottled brown pale brown, trace fine grained sand, some clay.		VSt to H	 © D		FILL
		ncountered	S 213 kPaUT	P	-								-
√H Z		Not E	VS 213 kPa		1.0— - -								
			VS 187/ 75 kPa		- 1.5— -			1.5 m: poor recovery			 ⊕ ⊙		-
			VS 213 kPa		- - - 2.0								-
								Hand Auger HAL578 terminated at 2.0 m Squeezing					-
					- 2.5— -								-
					- - 3.0 <i>—</i>								-
					-								-
					3.5								-
					- 4.0—								-
					- - 4.5-								-
					-								-
meth AD AS HA	auger d auger s hand au	rilling crewii uger	* ng*	sup M r C c	port nud casing	N	nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample	clas Clas	sification soil desc based on assificatio	symbol & ription Unified n System		consistency / relative density /S very soft S soft firm
vv HA *	<pre>vv wasnoore HA hand auger * bit shown by suffix * bit shown by suffix</pre>					no resi ranging refusal	stance g to	SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered	moistu D di M m W w	ry noist et			st stiff /St very stiff H hard Fb friable /L very loose
e.g. B T V	e.g. AD/T B blank bit T TC bit V V bit				¥ leve wat	er inflow er outflow	shown	Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	S Sa Wp pl WI lic	aturated lastic limit quid limit			- loose MD medium dense D dense /D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 579 location.

Borehole ID.	HAL579
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	15 Oct 2017
date completed:	15 Oct 2017
logged by:	ODS
checked by	DBC

position: No	ot Spe	cified					surface elevation: Not Specified	-	angle fro	m horizontal	90°	DCP id.:
drill model: I	Hand A	Auger					drilling fluid:	ľ	nole diar	neter : 50 mm	-	vane id.: SL588
drilling infe	ormati	ion			mate	rial subs	tance					
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	moisture condition	consistency / relative density	vane D0 shear ⊕remoulded ⊚peak 100	P ws/ mm)	structure and additional observations
H H H H H H H H H H H H H H H H H H H	Not Encountered	VS >213 kPa VS 197/ 65 kPa VS >213 kPa VS >213 kPa			5		ORGANIC SILT: non plastic, black. SILT: non plastic, orange brown mottled brown, with trace fine grained sand.		VSt to			FILL
		VS 190/ 64 kPa		2.5			Hand Auger HAL579 terminated at 2.0 m Target depth					
				- 3.5 - - 4.0 - - - - - - - - - - - - - - - - - - -								
method AD auger AS auger HA hand a W washt HA hand a * bit sho e.g. AD/T B blank T TC bit V V bit	drilling screwi auger pore auger pwn by bit	ı * ng* suffix	suppo M mu C cas penetu	ort ud sing ration	N ⊢ no resia ranging refusal Oct-12 wa el on date er inflow er outflow	nil stance y to ter 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 b Cla moistur D dr M mo W we S sa Wp pla WI liq	sification soil desc assed on assification re y bist et turated astic limit uid limit	symbol & ription Unified n System	COI VS S F St VS H Fb VL L ME D VD	nsistency / relative density very soft soft firm stiff t very stiff hard friable very loose loose nedium dense dense very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 579 AND 580

Borehole ID.	HAL579-580
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	16 Oct 2017
date completed:	16 Oct 2017
logged by:	SBG
checked by:	DBC

٦

po	position: Not Specified							surface elevation: Not Specified			ingle fro	om horizontal: 9	0° DCP id.:	
dril	ll m	odel: H	and /	Auger					drilling fluid:	hole diameter : 50 mm vane id.: SL8			vane id.: SL817	
dı	rilli	ng info	rmat	ion			mater	ial sub	stance					
nethod &	upport	penetration	/ater	samples & field tests	KL (m)	epth (m)	raphic log	lassification ymbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	noisture ondition	onsistency / elative density	vane DC shear ⊕remoulded ⊚peak (kPa)	P vs/ nm)	structure and additional observations
v/A1 Log COF BOREHOLE: NON CORED + DCP 13088AP_STAGE 31 GCR_MASTEK.GPJ < <drammaphile>> 08/7/2017 15:12</drammaphile>			Not Encountered wat	VS 125/ 39 kPa VS 179/ 42 kPa VS 247 kPa VS 247 kPa VS 247 kPa VS 247 kPa	R		and	clas clas	ORGANIC SILT: non plastic, dark brown black. SILT: non plastic, brown orange mottled dark brown, trace fine to medium grained sand. 0.5 m: becoming slightly plastic 0.51 m: with trace clay Sandy SILT: non plastic, pale brown mottled orange black, sand is fine to medium grained, trace clay. SILT: non plastic to low plasticity, brown orange. Hand Auger HAL579-580 terminated at 3.0 m Target depth		VSt			\TOPSOIL / FILL
CDF_0_9_06_LIBRARY.GLB re L 8 : • * H M H & V 3	eth C S A , A g.	od auger of hand a washbc hand a bit show AD/T blank b TC bit	Irilling ccrewi uger uger vn by it	* ng* suffix	supp M r C c penn wate	4.5	N no resise ranging refusal Oct-12 wat sl on date se er inflow er outflow	nil stance to ter 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	class s b Clai moistur D dr M mi W we S sa WP pla Wi lig	sification coil desc ased on ssificatio re bist t turated astic limit uid limit	I I I I I I I I I I I I I I I I I I I I I I I I I I I		onsistency / relative density 'S very soft s soft firm St stiff YSt very stiff hard b friable /L very loose loose MD medium dense b dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL580
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	PRM
checked by:	DBC

posit	ion: N	ot Sp	ecified					surface elevation: Not Specified	i	angle fro	m horizontal:	90°	DCP id.:
drill r	nodel:	Hand	Auger			<u> </u>		drilling fluid:		hole diar	neter : 50 mm		vane id.: SL817
dril	ing int	torma	tion			mate	rial sub	stance		~			
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 DC shear (blo ⊕remoulded ⊛peak (kPa) ଛ ହ ହ ଛ	ws/ mm)	additional observations
		 			-			ORGANIC SILT: non plastic, dark brown-black.	М				TOPSOIL
		 	VS 213/ 35 kPa		0.5-			Clayey SILT: low plasticity, brown mottled pale brown, with trace fine to medium grained sand.		St to H	<pre> </pre>		FILL .
			VS 109/ 69 kPa		-			becoming orange mottled brown from 0.7m to 0.9m					
			VS 193/ 75 kPa		1.0								
			VS 162/ 42 kPa		- 1.5 -								
		 	VS 213/ 25 kPa		2.0-			1.8 m: becoming moderately plastic			□		
			VS 213/ 25 kPa		2.5-						 ⊕		
			VS UTP		-				M to W	/			
* *			VS UTP		3.0			Hand Auger HAL580 terminated at 3.0 m Target depth			- Vs U⊤⊳ 		
		 			3.5-								
		 			-								
		 			4.0								
					4.5-								
			 		-					-161			
met l AD AS HA W HA	hod auge auge hand wash hand	r drillin r screv auger bore auger	g* <i>i</i> ing*	sup M C pen	port mud casing etration	N I	nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter	Clas 	soil desc based on assificatio	ription Unified n System	C V S F S V	onsistency / relative density S very soft soft firm t stiff St very stiff
* e.g.	* bit shown by suffix e.g. AD/T B blank bit			Oct-12 wa el on date	g to Iter shown	HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa)	D di M m W w S sa Wp pl	ry ioist et aturated astic limit		H FI V L	hard b friable L very loose loose 1D medium dense		
⇒ Γ √	TC bi V bit	it		-	wat	er inflow er outflow		R refusal HB hammer bouncing	WI lic	quid limit		D	dense D very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL580-581
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	15 Oct 2017
date completed:	15 Oct 2017
logged by:	ODS

iocation: DOUNDART OF LOI 380 AND 381 checked by:												DBC	
position: Not Specified surface elevation: Not Specified										angle fro	om horizontal:	90°	DCP id.:
drill m	odel: Ha	and A	Auger					drilling fluid:	ł	nole dia	meter : 50 mm		vane id.: SL588
drilling information							rial subs	stance					
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 D shear (blu ⊕remoulded ⊛peak 100 (kPa) 36 9 9 8 8 8 8 1 100	CP ows/ mm) ∞∞♀	structure and additional observations
HA		Not Encountered	VS >213 kPa VS >213 kPa VS >213 kPa VS >213 kPa VS >213 kPa		0.5			SILT: non plastic, brown mottled grey.	D to M	Н			FILL
								Hand Auger HAL580-581 terminated at 2.0 m Target depth					
method AD support 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						N no resi rangin ◄ refusal Oct-12 wa el on date er inflow er outflow	nil stance g to ter 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 b Cla moistur D dr M mo S sa Wp pla WI liq	sification coil desc ased on ssification re y bist et turated astic limit uid limit	n symbol & rription Unified n System	6 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	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



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 581 location:

Borehole ID.	HAL581
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	16 Oct 2017
date completed:	16 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified		angle from horizontal: 90° DCP id.:				
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm vane id.: SL588			
drilling information	material subst	ance				
samples & field tests field tests	depth (m) graphic log class ification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	matrix matri	P structure and vs/ additional observations		
A III III III VS 231/ S8 kPa III III VS 82/ III VS 82/ III III VS 82/ VS 82/ III VS 82/ VS 8		DRGANIC SILT: non plastic, dark brown black. SILT: low plasticity, brown orange mottled black, trace clay. Clayey SILT: low to medium plasticity, brown brange mottled white black.	D to M M H H VSt VSt H H H H H H H H H H H H H	 		
I I V3 60/ 35 kPa I I Base I I Base I I V3 60/ 35 kPa I I V3 60/ 1000 I I V5 143/ 1000 I I V5 61 kPa I I V5 110 I I V5 110 I I V5 110 I I V5 110 VS 179/ V5 179/		Silty CLAY: low to medium plasticity, brown orange, trace fine to medium grained sand.	M to W H ⊕ ₀	 		
61 kPa	2.0-					
		Target depth		 		
method	4.5	samples & field tests	classification symbol &	consistency / relative density		
AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T	mud N nil casing enetration	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	soil description based on Unified Classification System moisture D dry M moist W wet S saturated W a plactic limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose		
e.g. AL/T B blank bit T TC bit V V bit	water outflow	VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Wp plastic limit WI liquid limit	MD medium dense D dense VD very dense		



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL581-582
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	15 Oct 2017
date completed:	15 Oct 2017
logged by:	ODS
	_

iocation: BOUNDARY OF LOT 581 AND 582 checked by:										oy:	DBC		
position: Not Specified surface elevation: Not Specified									a	angle fro	om horizor	ital: 90°	DCP id.:
drill model: Hand Auger								drilling fluid:	ł	nole dia	meter : 50	mm	vane id.: SL588
drilling information mate								ostance					
method & support	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)	DCP (blows/ 100 mm)	structure and additional observations
		w \$\$\$	VS 161/ 35 kPa VS 161/ 32 kPa S >213 kPa S >213 kPa S >213 kPa S >213 kPa S >213 kPa	2		5 5		SILT: non plastic, brown mottled grey.	Eð	H			FILL
					3.5			Hand Auger HAL581-582 terminated at 3.0 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 * bit shown by suffix e.g. AD/T B blank bit T TC bit					etration	N no res rangin refusa Dct-12 wa 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	class s b Cla moistur D dr M mo W we S sa Wp pla WI liq	sification soil desc pased on assification re y bist et turated astic limit uid limit	n symbol & ription Unified n System		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



THE LAKES (2012) LIMITED client:

principal:

CDF_0_9_06_LIBRARY CLB rev.AT Log COF BOREHOLE: NON CORED + DCP 13086AP_STAGE 31 GCR_MASTER.GPJ <<DrawingFile>> 08/12/2017 15:12

project: THE LAKES, STAGE 3I GCR

Borehole ID.	HAL582-583
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	16 Oct 2017
date completed:	16 Oct 2017
logged by:	SBG

loca	tior	n:	BOUNDARY OF LOT 582 AND 583 checked by:								DBC			
positi	osition: Not Specified surface elevation: Not Specified					angle from horizontal: 90°				DCP id.:				
drill n	drill model: Hand Auger drilling fluid: hole diameter : 50							meter : 50 mm		vane id.: SL817				
drilling information							mate	rial sub	stance					
method & support	-	² 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	moisture condition	consistency / relative density	vane DC shear ⊕remoulded ⊚peak 100 r (kPa) © ♀ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞	P ws/ mm)	structure and additional observations
						-			ORGANIC SILT: non plastic, dark brown black.	D to M				
			p	VS 247 kPa		- - 0.5 -			SILT: low plasticity, brown orange mottled black pink, trace clay.	М	Η			FILL
H H H			Not Encountere	VS 247 kPa VS 197/ 46 kPa		- - 1.0— -			Sandy SILT: non plastic, pale brown mottled	_				-
				VS >247 kPa		- - 1.5			grained.		VSt	 		-
				VS >247 kPa					Clayey SILT: low to medium plasticity, brown orange mottled dark brown.		Н			-
						- 2.0			Hand Auger HAL582-583 terminated at 2.0 m Target depth					-
						- 2.5 - -								-
						- 3.0— -								-
						- 3.5— -								-
						- 4.0								-
						- 4.5								-
						-								-
meth AD AS HA W HA	iod au ha wa ha	uger o uger s and a ashbo and a	drilling screwi uger ore uger	* ng*	supr M n C c pene		N no res rangin ▼ refusa	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) N standard penetration test (SPT)	class b Cla moistur D dry M mo	ification oil desc ased on ssificatio	n symbol & ription Unified n System	C V S F S V H F	onsistency / relative density S very soft soft firm t stiff St very stiff hard b friable
* B T V	bi Al bl T(V	t sho D/T ank b C bit bit	wn by iit	suffix	wate	er 10- leve wat wat	Oct-12 wa el on date er inflow er outflow	iter shown	N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	W we S sa Wp pla WI liqu	t turated istic limit uid limit		V L D V	L very loose loose ID medium dense dense D very dense


THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 583 location:

Borehole ID.	HAL583
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	13 Oct 2017
date completed:	13 Oct 2017
logged by:	PRM
checked by:	DBC

position	: Not	Spec	cified					surface elevation: Not Specified	а	angle fro	m horizont	al: 90°	DCP id.:
drill moo	del: Ha	and A	luger			·		drilling fluid:	h	nole diar	meter : 50 r	nm	vane id.: SL588, SL8 ²
drilling information r					tion material substance								
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊚ peak (kPa)	DCP (blows/ 100 mm	structure and additional observations
					-		C t	DRGANIC SILT : non plastic, dark brown-black.	М				TOPSOIL
			VS >213 kPa VS >213/		- 0.5— -		9 10 15	SILT: low plasticity, brown mottled pale orange-brown, with trace fine grained sand, some clay.		VSt to H	• • • 		FILL
		untered	42 kPa VS 191/		- - 1.0		r	Clayey SILT: low plasticity, orange-brown mottled pale orange, with trace fine to medium sand.					
z		Nater table enco	64 kPa VS 173/		- - 1.5-					St			
		<u> </u>	ы кРа VS 213/ 45 kРа				1	1.6 m: becoming dark brown mottled brown	M to W S	VSt to H			
			VS 213/ 48 kPa								♥ ♥ ⊕ •		
			VS 222/ 86 kPa		2.5— - -								-
							H 7	Hand Auger HAL583 terminated at 3.0 m Target depth					
					- - 4.0								-
					- - 4.5 - -								-
method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger			N n	il	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 s b Cla moistur D do	sification soil desci ased on ssification	symbol & ription Unified n System		consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard			
* b e.g. A B b T T V V	it show D/T lank bi C bit	n by : t	suffix	wat	er Lieve wat wat	Cct-12 water or date sh er inflow er outflow	own	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	M mo W we S sa Wp pla WI liq	, bist turated astic limit uid limit			Fb friable VL very loose L loose MD medium dense D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 583 AND 584

Borehole ID.	HAL583-584
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	16 Oct 2017
date completed:	16 Oct 2017
logged by:	PRM

locat	location: BOUNDARY OF LOT 583 AND 584								checked by:	DBC	
positio	on: No	t Spe	cified					surface elevation: Not Specified	ang	gle from horizontal: 90°	DCP id.:
drill m	drill model: Hand Auger d							drilling fluid:	hol	e diameter : 50 mm	vane id.: 1447
drilli	drilling information material sub						rial sub	stance			
method & 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	moisture condition	visite visi	structure and additional observations
					_			ORGANIC SILT: non plastic, dark brown black.	М		
			VS 196/ 25 kPa		- - 0.5 <i>-</i> -			Clayey SILT: low plasticity, brown mottled pale brown, with trace fine grained sand.	V	St to I <td>FILL</td>	FILL
61.61 7 107 <i>0</i>		ole encountered	VS >247 kPa VS UTP		- - 1.0						-
		d water tat	VS 186/ 29 kPa		- - 1.5 -			1.4 m: becoming brown mottled pale brown/ orange-brown/ dark brown	S		
			VS >247 kPa		- 2.0-						
			VS UTP		- 2.5 -						- - -
			VS UTP		-					1/s/uтр 	-
			VSUIP		3.0 			Hand Auger HAL583-584 terminated at 3.0 m Target depth			
metha AD AS HA W HA * e.g. B T V	od auger hand a washb hand a bit sho AD/T blank t TC bit V bit	drilling screwin ore uger wn by bit	∙ ng* suffix	sup M r C c pen wate	port mud casing etration er er ₩ leve wate wate	N no res rangin ◄ refusa Oct-12 wa el on date er inflow er outflow	nil istance g to ter 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	classifi soi bas Classi Classi D dry M mois W wet S satur Wp plasti WI liquid	cation symbol & description ed on Unified fifcation System fifcation System table table fifcation fifcation fiftatio	consistency / relative density /S very soft S soft = firm St stiff /St very stiff H hard Fb friable /L very loose loose VID medium dense O dense /D very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 584

Borehole ID.HAL584sheet:1 of 1project no.773-GENZTAUC13086APdate started:16 Oct 2017date completed:16 Oct 2017logged by:SBGchecked by:DBC

posit	ior	n: No	Spe	cified					surface elevation: Not Specified	angle from horizontal: 90° DCP id.:
drill n	no	del: H	and /	Auger			<u> </u>		drilling fluid:	hole diameter : 50 mm vane id.: SL817
drilling information							mate	rial sub	ostance	
method & support		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	Legendary Sector Secto
	•		-		_	-		0.0	ORGANIC SILT: non plastic, dark brown	
		VS 144/ 63 kPa VS 213/ 63 kPa		- - 0.5 - -			Clayey SILT: low to medium plasticity, brown orange mottled pale brown black white, trace fine to medium grained sand. 0.6 m: with minor fine to medium grained sand	M I I I VSt P<@		
		ncountered	VS 247 kPa		- 1.0 - - -				H	
чи – И И – И И – И	:		Not En	VS 247 kPa		1.5— - -				
			VS 222/ 90 kPa		- 2.0— -			Sandy SILT: non plastic to low plasticity, pale brown grey mottled black white orange, sand is fine to medium grained, minor clay.	s W	
				VS 247 kPa VS 247 kPa		- 2.5— - -				M
• •		i i i				3.0-			Hand Auger HAI 584 terminated at 3.0 m	
									Target depth	classification symbol &
meti AD AS HA W HA * e.g. B T V	hoc a i t t t	d auger o auger s nand a washbo nand a bit shoo AD/T blank b TC bit / bit	drilling screwi uger ore uger wn by it	* ng* suffix	supj M r C c pene wate	etration	N no res rangin refusa Oct-12 wa el 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	classification symbol & soil description consistency / relative density based on Unified VS very soft Classification System F firm moisture VSt very stiff D dry H hard M moist Fb friable W vert VL very loose L loose L loose Wp plastic limit MD medium dense VI very dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 584 AND 585

HAL584-585
1 of 1
773-GENZTAUC13086AP
26 Oct 2017
26 Oct 2017
ODS

logged by: ODS checked by: DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 90	DCP id.:
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: SL588
drilling information	material sub	stance		
water a samples & samples	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	and the second	s/ m) e
▲ ▲ VS 122/ 26 kPa ↓ ↓ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.5-	SILT: non plastic, orange mottled brown.	D to M VSt to H H H H H H H H H H H H H H H H H H	FILL
5 ⊈ z ↓ 2 2 VS 156/ 43 kPa	1.0-			
U U U U U U U U U U U U U U U U U U U			$\begin{array}{c c} & & & \\ & & \\ & \\ & \\ \\ & \\ \\ & \\ \\ & \\ \\ & \\ \\ & \\ \\ & \\ \\ \\ & \\$	
		Hand Auger HAL584-585 terminated at 2.0 m Target depth		
	4.5			
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud N nil C casing penetration Tanging to ranging to ranging to ranging to refusal water ↓ 10-Oct-12 water	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 split coope	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose I loose
e.g. AD/T B blank bit T TC bit V V bit	 level on date shown water inflow water outflow 	VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Wp plastic limit WI liquid limit	MD medium dense D dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 585

Borehole ID.	HAL585
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	16 Oct 2017
date completed:	16 Oct 2017
logged by:	SBG
abaakad bu:	DRC

osition: Not Specified		surf	ace elevation: Not Specified	angle from horizonta	al: 90° DCP id.:
rill model: Hand Auger		drilli	ng fluid:	hole diameter : 50 m	nm vane id.: SL817
drilling information		material substance			
method & support a support a support a support water after a support a suppo	Bles & RL (m) depth (m) depth (m)	graphic log classification symbol	material description DIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition condition consistency / readve sign condition readve sign condition readve sign condition condit	DCP structure and (blows/ additional observations 100 mm)
I I I I I I I I I I I VS 2 I I I S0 I I I VS 2 I I I S1 I I I VS 2 I I I S1 I I I	47 kPa .196/ kPa .134/ kPa .1.0 .134/ .1.0 .1.	0.6 m 0.6 m 0.6 m 0.2 m 0.6 m 0.2 m 0.6 m 0.2 m	ANIC SILT: non plastic, dark brown non plastic to low plasticity, brown e mottled black white. : becoming slightly plastic with trace clay ay SILT: low to medium plasticity, brown e mottled black white. : with trace fine to medium grained sand by SILT: non plastic to low plasticity, pale a grey mottled black white orange, minor	D to M I I I I I I I M I I I I I I VSt to I I I I I I I I I I I I I I I I I I W I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I	V + 0.00- TOPSOIL FILL
	KPa 3.0 3.0 3.0 3.5 3.5 4.0 4.0 4.0 4.5 - 4.5 - - - - - - - - - - - - - - - - - - -	Hand Targe	Auger HAL585 terminated at 3.0 m t depth	Classification symbol & classification symbol	
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 TC bit V V bit	M mud C casing penetration water level water water	N nil E E ranging to « refusal N ct-12 water N on date shown V r inflow F r outflow F	bulk disturbed sample disturbed sample environmental sample soplit spoon sample undisturbed sample ##mm diameter hand penetrometer (kPa) standard penetration test (SPT) SPT - sample recovered SPT with solid cone vane shear; peak/remouded (kPa) refusal hammer bouncing	soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WI liquid limit	VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very lose L loose MD medium dense D dense VD very dense



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 585 and 586

Borehole ID.	HAL585-586
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	16 Oct 2017
date completed:	16 Oct 2017
logged by:	ODS
checked by:	DBC

position: Not Specified drill model: Hand Auger							surface elevation: Not Specified			angle fro	om horizont	tal: 90°	DCP id.:
						drilling fluid:			ł	nole dia	meter : 50 ı	mm	vane id.: SL817
drilling information						mate	rial sub	stance					1
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	moisture condition	consistency / relative density	vane shear ⊕remoulded ⊛peak (kPa)	DCP (blows/ 100 mm	structure and additional observations
HA		16/10/17, perched water table	VS 83/ 16 kPa VS 84/ 20 kPa VS 213 kPa VS >213 kPa VS >213 kPa VS >213 kPa	<u>~</u>		5 		ORGANIC SILT: non plastic, dark brown black. SILT: low plasticity, orange mottled brown, with minor clay, and trace fine grained sand. 1.5 m: with pale pink clayey silt inclusions	S	St	$\begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} $		FILL
↓ ↓						***		Hand Auger HAL585-586 terminated at 3.0 m Target depth					
metho AD AS HA W HA * e.g. B T	od auger hand a washb hand a bit sho AD/T blank TC blank	drilling screwi auger ore auger wwn by bit	* ng* suffix	supp M m C ca penee wate	etration	N ← no resi rangin ← refusal Oct-12 was 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 b Cla moistur D dr M mo S sa Wp pla WI liq	sification coil desc ased on ssificatio re y bist st turated astic limit uid limit	n symbol & ription Unified n System		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



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 586

Borehole ID.HAL586sheet:1 of 1project no.773-GENZTAUC13086APdate started:16 Oct 2017date completed:16 Oct 2017logged by:SBGchecked by:DBC

position: Not Specified		surface elevation: Not Specified	angle from horizontal: 90)° DCP id.:
drill model: Hand Auger		drilling fluid:	hole diameter : 50 mm	vane id.: 1447
drilling information				
samples & sample	RL (m) depth (m) graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	Comparing the second s	s/ structure and additional observations
	0.5	ORGANIC SILT: non plastic, dark brown black. Clayey SILT: low plasticity, brown mottled pale brown/pink/orange-brown, with trace fine to medium grained sand.	М	I TOPSOIL
VS >209/ 39 kPa VS >247/ 39 kPa				
H		 1.5 m: with trace black charcoal inclusions (no organic odour) 1.6 m: no black charcoal inclusions 	+ + + + + + + + + + + + + + + + + + +	
VS 213/ 35 kPa VS >247 kPa	2.0-			
VS >247 kP	2.5-			
	3.0	Hand Auger HAL586 terminated at 3.0 m Target depth		
	4.5-			
method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud N nil C casing penetration ranging to ranging to water 10-Oct-12 water	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 split cone	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose
e.g. AD/ I B blank bit T TC bit V V bit	water outflow	VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Wp plastic limit WI liquid limit	MD medium dense D dense VD very dense



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: BOUNDARY OF LOT 586 AND 587

Borehole ID.	HAL586-587
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	16 Oct 2017
date completed:	16 Oct 2017
logged by:	SBG
checked by	DBC

positior	osition: Not Specified surface elevation: Not Specified									angle from horizontal: 90° DCP id.:					
drill mo	del: Ha	and A	Auger					drilling fluid:	hole diameter : 50 mm vane id.: SL817						
drillin	g info	mati	on			mate	rial subs	tance							
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 /	vane DC shear (blov ⊕remoulded ⊚peak (kPa) 8,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0	CP ws/ mm)				
		Not Encountered v	VS 222/ 50 kPa VS 183/ 25 kPa VS 247 kPa VS 247 kPa					ORGANIC SILT: non plastic, dark brown black. SILT: non plastic to low plasticity, brown orange mottled white black dark brown, trace fine to medium grained sand, trace clay. 0.7 m: becoming pale brown orange mottled black white Sandy SILT: non plastic, pale brown grey mottled black brown white, sand fine to medium grained. SILT: low plasticity, brown orange, trace fine to medium grained sand. SILTY SAND: fine to medium grained, pale grey mottled black brown. Hand Auger HAL586-587 terminated at 2.0 m Target depth	D to M M VSt H	- - <td>TOPSOIL FILL FILL MATUA SUBGROUP MATUA SUBGROUP III IIII IIII</td>	TOPSOIL FILL FILL MATUA SUBGROUP MATUA SUBGROUP III IIII IIII				
method support AD auger drilling* AD 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		N no ress rangin refusa Oct-12 wa el on date er inflow er outflow	nil istance g to tter 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	classificat soil de based Classifica D dry M moist W wet S saturate Wp plastic li WI liquid lim	d d mit 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								



THE LAKES (2012) LIMITED client:

principal:

project: THE LAKES, STAGE 3I GCR

CENTRE OF LOT 507

Borehole ID.	HAL587
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	16 Oct 2017
date completed:	16 Oct 2017
logged by:	ODS
checked by:	DBC

locatio	n:	CE	NTRE C)F L	OT 5	587		checked by: DBC					
position	: Not	Spe	cified					surface elevation: Not Specified	angle from horizontal: 90° DCP id.:				
drill moo	del: Ha	and A	Auger			<u> </u>		drilling fluid:	hole diameter : 50 mm vane id.: SL588				
drilling	g infor	mati	on			mate	rial sub	stance					
method & support	method & support bort benetration benetrat		graphic log	classificatior symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	unitian construction construct							
					-			ORGANIC SILT: non plastic, dark brown					
			VS >213 kPa		- - 0.5-			SILT: non plastic to low plasticity, brown orange mottled white black dark brown, trace fine to medium grained sand, trace clay.	I I </td				
		pə.	VS >213 kPa		- - 1.0-								
- НА - Л		Not Encounter	VS 182/ 40 kPa		- - 1.5-				WSt to ⊕ I </td				
			VS 157/ 40 kPa		- - 2.0-				$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$				
			VS >213 kPa		- - - 2.5-								
• •			V3 ~2 13 KF a					Hand Auger HAI 587 terminated at 2.7 m					
					- - 3.0			Squeezing					
					- - 3.5-								
					-								
					4.0								
					4.5								
method support AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger		N − no resi rangin ▼ refusal	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) N standerd explanation test (SPT)	classification symbol & soil description consistency / relative density based on Unified S soft Classification System F firm moisture VSt very stiff D dry H hard M moist Eb fridulo								
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit		Oct-12 wa el on date er inflow er outflow	ater shown	N stanuaru penetration test (SP1) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	Invisit FD Trable W wet VL very loose S saturated L loose Wp plastic limit MD medium dense WI liquid limit D dense VD very dense VD very dense								



THE LAKES (2012) LIMITED client:

principal:

position: Not Specified

drill model: Hand Auger

drilling information

project: THE LAKES, STAGE 3I GCR

BOUNDARY OF LOT 587 AND 588 location:

Borehole ID.	HAL587-588
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	SBG

DBC checked by: surface elevation: Not Specified angle from horizontal: 90° DCP id.: drilling fluid: hole diameter : 50 mm vane id.: DR2244 material substance DCP (blows/ structure and additional observations material description ncy / density vane shear ഹ ⊂

∞ŏ		ration		samples &		Ê	boj	ation	material description	ບຼີສີ່ vane l ວິດີສີ່shear (b		DCF	P structure and ws/ additional observations							
nethod	Inddn	peneti	vater	field tests	SL (m)	lepth (r	Iraphic	dassific	SOIL TYPE: plasticity or particle characteristic colour, secondary and minor components	2,	noistur	onsiste elative o	() ()	peak (Pa)	10)0 m	ım)			
		9 / 7 	>		ш	ъ		00	ORGANIC SILT: non plastic, dark brown		M	02	1 25 5	11	1	4 0 0	» ₽ 	TOPSOIL		
				VS >182 kPa		0.5-			SILT: non plastic, brown orange, trace fine medium grained sand.	to		VSt to H		 @ 				FILL		-
5:13				VS 141/ 43 kPa									 ⊕ 	 						-
r / Luz/21/80 <			Intered	VS 92/ 37 kPa		1.0			Clavey SILT: low plasticity, brown orange		_	St	•	 						-
awingrile>	 z 		Not Encol	VS >182 kPa		1.5-			trace fine to medium grained sand.		_									
ER.GPJ < <u< td=""><td></td><td></td><td></td><td>VS >182 kPa</td><td></td><td></td><td></td><td></td><td>SILT: non plastic, brown orange mottled pin trace clay, trace fine to medium grained sa</td><td>າk, nd.</td><td></td><td>VSt to H</td><td></td><td></td><td></td><td></td><td> </td><td></td><td></td><td>-</td></u<>				VS >182 kPa					SILT: non plastic, brown orange mottled pin trace clay, trace fine to medium grained sa	າk, nd.		VSt to H					 			-
31 GCR_MASI				VS >182 kPa		2.0-														-
1086AP_STAGE				VS >192 kDa		2.5-								9 						
				V3 2 102 KFa		20-			Silty CLAY: low to medium plasticity, brow orange mottled black.	'n	_									-
CDF_0_9_06_LIBRARY (SLB REVALL LOG COF BUREHULE: NUN VUREU						3.5- 3.5- 4.0- 4.5-			Hand Auger HAL587-588 terminated at 3.0 Target depth	ιm										
met AD AS HA W HA	method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger			sup M I C C pen	port mud casing etration	N − no res rangir	I nil sistance ng to al	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diamet HP hand penetrometer (kPa) N standard penetration test (SPT)	er	class s Cla moistu D dr M mo	sification soil desc ased on ssificatio re	syn riptic Unifi n Sys	ibol 8 on ed stem	<u>}</u>		L C S F S V F F	consistency / re /S v S s St s /St s /St s /St h fb fr	lative density ery soft oft rm tiff ery stiff ard iable		
* B T V	* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit		wat	er ▲	Oct-12 w el on date ter inflow ter outflow	ater e shown w	N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/remouded (kPa) R refusal HB hammer bouncing)	W we S sa Wp pla WI liq	et turated astic limit uid limit						/L v . lc /D m) d /D v	ery loose oose nedium dense ense ery dense			



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CENTRE OF LOT 588

Borehole ID.	HAL588
sheet:	1 of 1
project no.	773-GENZTAUC13086AP
date started:	26 Oct 2017
date completed:	26 Oct 2017
logged by:	SBG
checked by:	DBC

position: Not Specified surface elevation: Not Specified angle from horizontal:								angle fro	om horizontal:	90°	DCP id.:
drill n	nodel: Hand Auge	r				drilling fluid:	ł	nole dia	meter : 50 mm		vane id.: DR2244
urm	5			-+'		material description		sity	vane D	CP	structure and
method & support	mas same same water	iples & I tests	RL (m)	depth (m)	graphic lo	SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency relative den	shear (ble ⊕ remoulded ⊚ peak 100 (kPa) 00 00 00 00 00 00 00 00 00 00 00 00 00	ows/ mm) ₂∞♀	additional observations
HA	VS > VS > VS = VS = VS = VS = VS = VS = VS = VS =	182 kPa 182 kPa 182 kPa 182 kPa		1.0- 1.0- 1.5- 1.5- 1.5-		Clayey SILT : low plasticity, orange brown mottled brown, with trace fine grained sand.	M	VSt			FILL
	I VS> I I I<	182 kPa				Hand Auger HAL588 terminated at 2.0 m Target depth					- - - - - - - - - - - - - - - - - - -
method AD auger drilling* AS support M AS auger screwing* HA M 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 Ilevel o water i Ilevel o water i V bit		N nil no resistance ranging to refusal L-12 water in date shown inflow putflow	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 b Cla moistu D dr M mo S sa Wp pla WI liq	sification soil desc ased on ssificatio re y bist et turated astic limit uid limit	a symbol & ription Unified n System	CC VS S F VS H Ft VI L M M D VI	onsistency / relative density S very soft firm t stiff St very stiff hard b friable L very loose loose D medium dense dense D very dense			



client: THE LAKES (2012) LIMITED

principal:

project: THE LAKES, STAGE 3I GCR

location: CORNER OF LOT 588

Borehole ID.HAL588Csheet:1 of 1project no.773-GENZTAUC13086APdate started:26 Oct 2017date completed:26 Oct 2017logged by:PRMchecked by:DBC

position: Not Specified	surface elevation: Not Specified	angle from horizontal: 90°	DCP id.:
drill model: Hand Auger	drilling fluid:	hole diameter : 50 mm	vane id.: DR2244
drilling information	material substance		
with the second	(L) U C C C C C C C C C C C C C C C C C C	DCP (blows/ brows/	structure and additional observations
E 0 - 0 0 2 0 2 0 2 0 0 0 0 0 0 0 0 0 0 0	8 5 3 a 9 5 5 a 15 1 SILT: non plastic, brown orange mottled black white, minor fine to medium grained sand. 15 1 1 15 1 1 15 1 1 15 1 1 15 1 1 16 1 1 17 1 1 18 2.4 m: shear vane possibly slipping on gravel 19 10 1 10 1 1 10 1 1 10 1 1 10 1 1 10 1 1 10 1 1 15 1 1 16 1 1 17 1 1 18 1 1 19 1 1 10 1 1 10 1 1 10 1 1 10 1 1	E 8 8 9 8 9 9 9 9 8 8 1 1 1 1 1 1 1 1 1 1 M VSt to H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <t< th=""><th></th></t<>	
method AD supp M m AD auger drilling* Main 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 bit shown by suffix e.g. AD/T B blank bit T T C bit V V bit	t samples & field tests j N nil B bulk disturbed sample ing D disturbed sample ation E environmental sample ing N SS split spoon sample ing U## undisturbed sample ing U## undisturbed sample ing N standard penetrometer (kPa) ing N standard penetrometer (kPa) ing N* SPT - sample recovered ing N* SPT with solid cone ing VS vane shear; peak/remouded (kPa) water outflow HB hammer bouncing	ciassification symbol & soil description based on Unified Classification System D dry M moist W wet S saturated W plastic limit W 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

Appendix E – Fill Test Summary Tables



FILL TEST RESULTS											
		Sun	mary of earthfill	test data							
				Result							
Test Number	Date	Test RL (m)	Air Voido (%)	Shear Vane	Scala (blows per	Pass/Fail					
			Air volas (%)	(kPa)	100mm)						
A-295	07/40/0007	40.3	2.0	232+	-	Pass					
A-296	27/12/2007	38.0	0.0	243+	-	Pass					
A-297		38.1	0.0	243+	-	Pass					
A-298		36.5	0.0	222+	-	Pass					
A-299		36.6	4.1	243+	-	Pass					
A-300		35.8	0.0	218+	-	Pass					
A-301	28/12/2007	37.3	0.0	243+	-	Pass					
A-302		40.1	0.0	235+	-	Pass					
A-303		36.8	0.7	243+	-	Pass					
A-304		35.7	0.0	223+	-	Pass					
A-305		36.3	0.0	243+	-	Pass					
B-23	5/11/2014	45.05	-	209	-	Pass					
B-24	5/11/2014	40.32	-	100		Pass					
B-23		30.46	1	190		Pass					
B-35		30.40	3.6	199	-	Pass					
B-36		30.09	-1.3	216	-	Pass					
B-37	1	29.44	2	125	-	Fail - Area Reworked					
B-38	1	28.65	7.8	174	-	Pass					
B-39]	29.44	9.8	177	-	Pass					
B-40	27/11/2014	29.56	8.5	179	-	Pass					
B-41	27/11/2014	30.20	-1.3	162	-	Pass					
B-42	l	30.02	1.4	200	-	Pass					
B-43	ł	30.38	2.7	186	-	Pass					
B-44		30.04	4.9	185	-	Pass					
B-45		29.62	-2.7	124	-	Fail					
B-46		29.74	2.8	210	-	Pass					
B-47		40.70	4.1	196	-	Pass					
B-60A		46.70	14.8	232	-	Fail - Area Reworked					
B-01A		48.39	10.9	232	-	Fall - Area Reworked					
B-02A	•	40.20	4	232	-	Pass					
B-644		40.12	0.3	120	-	Fass Fail - Area Reworked					
B-65Δ		44.01	2.5	232		Pass					
B-66		43.35	57	232	-	Pass					
B-67		42.65	5.3	220	-	Pass					
B-68	11/02/2015	42.71	6	215	-	Pass					
B-69		43.57	6.2	231	-	Pass					
B-70	1		1.9	107	-	Fail - Area Reworked					
B-71]	31.90	11.5	114	-	Fail - Area Reworked					
B-72		32.03	2.1	232	-	Pass					
B-73		31.69	2.3	232	-	Pass					
B-74		32.09	3.4	198	-	Pass					
B-75		32.01	1.3	206	-	Pass					
B-76	{	33.01	3.7	196	-	Pass					
B-77	ł	32.18	1.6	159	-	Pass					
	{	32.42	-0.4	194	-	Pass					
D-19 R_20	1	33.01	-1.3	<u>230</u>	-	Pass					
B-81	1	31 97	47	162	-	Pass					
B-82	1	32.80	8.2	200	-	Pass					
B-83	1	31.82	4	232	-	Pass					
B-84	1	32.69	6.8	158	-	Pass					
B-85	1	31.67	0.4	201	-	Pass					
B-86]	32.34	2.2	159		Pass					
B-87		31.70	-2.2	225	-	Pass					
B-88	ļ	32.00	0	195	-	Pass					
B-89	l	30.96	-0.5	232	-	Pass					
B-90	l	31.87	3.4	232	-	Pass					
B-91	ł	30.49	10.4	196	-	Pass					
B-92	12/02/2015	31.19	5.5	232	-	Pass					
B-93		32.30	2.7	183	-	Pass					
B-94	4	32.55	3.0 E 4	210	-	Pass					
D-90 R_06	1	31.12 22.24	5.4 1 1	232	-	Pass					
R_07	1	32.04 31.62	<u>+</u> .। _२.२	220	-	Fddd Pace					
R-98	1	31 71	84	232	-	Pass					
B-99	1	32.63	0.3	196	-	Pass					
B-100	1	32.31	3.2	222	-	Pass					
B-101	1	31.61	3.5	213	-	Pass					
B-102]	32.76	0.9	219	-	Pass					
B-103]	31.23	2.4	UTP	-	Pass					

				Result		
Test Number	Date	Test RL (m)	Air Voids (%)	Shear Vane (kPa)	Scala (blows per 100mm)	Pass/Fail
B-104		32 74	9.7	232		Pass
B-104		31.77	9.7	232		Pass
B-106		32.80	0.4	232	-	Pass
B-107		31.94	0.3	219	-	Pass
B-108		32.66	3.7	232	-	Pass
B-109		31.72	6.5	230	-	Pass
B-130		32.12	0.3	149	-	Pass
B-131		31.54	3	232	-	Pass
B-132		32.30	-0.5	188	-	Pass
B-133		31.49	2.1	227	-	Pass
B-134		32.10	-2	172	-	Pass
B-135	13/02/2015	31.17	6.1	203	-	Pass
B-136		31.66	2	213	-	Pass
B-137		30.82	12.4	110	-	Fail
B-138		32.17	-0.4	190	-	Pass
B-139		31.01	1.4	220	-	Pass
B-141		31.62	2.0	220		Pass
B-143		32.56	1.0	232	-	Pass
B-144		31.48	0.5	157	-	Pass
B-145		32.28	0	189	-	Pass
B-146		31.02	0.2	229	-	Pass
B-147		31.74	7.1	232	-	Pass
B-148		30.22	4.7	232	-	Pass
B-149		31.32	6.2	232	-	Pass
B-150		30.03	7.6	218	-	Pass
B-151		30.51	-0.9	194	-	Pass
B-152		29.09	7.1	178	-	Pass
B-153		29.66	3.7	232	-	Pass
B-154	16/02/2015	29.20	6.7	198	-	Pass
B-155	10,02,2010	30.00	2.8	224	-	Pass
B-156		29.46	4.6	212	-	Pass
B-157		30.63	7	232	-	Pass
B-158		30.09	-2.1	194	-	Pass
B-159		31.91	0.4	207	-	Pass
B-160		31.01	-0.2	232	-	Pass
B-101		29.96	2.0	213	-	Pass
D-102		30.49	3.0	232	-	Pass
B-164		31.05	5.7 6.1	230	-	Pass
B-165		31.67	6.6	232		Pass
B-166		30.80	4.8	232		Pass
B-167		30.64	1.7	231	-	Pass
B-218	0/10/00/5	43.92	4.3	206	-	Pass
B-219	9/10/2015	43.51	3.4	183	-	Pass
B-249		29.59	8.0	206	-	Pass
B-250	18/12/2015	29.94	3.5	206	-	Pass
B-251		30.29	-0.2	206	-	Pass
B-255		32.18	Relative Compaction=97%	-	2 - 7	Fail
B-256		32.43	Relative Compaction= 96.2%	-	> 5	Pass
B-257		32.39	Relative Compaction=105.3%	-	> 5	Pass
B-258	2/02/2016	31.57	Relative Compaction=91.7%	-	> 5	Pass
B-259	_,,,,,,	32.70	Relative Compaction=94%	-	> 3	Fail
B-260		31.58	Relative Compaction=89.5%	-	> 4	Fail
B-261		32.01	Relative Compaction=93.2%	-	> 5	Pass
B-263		28.50	Relative Compaction=94.7%		1 - 4	Fall
B-204		29.40	11.0	012		Pass
D-200 R-266		29.33	-1.0 5.1	202		Pass
D-200 R_267		21.50	5.4			Eddos Daec
B-207 R-268		31.07		202		Г d d d d D d e c
B-269		31.00	11 1	202		г азэ Расс
B-270		31.12	-7.9	202		Pass
B-271		31.46	-0.7	201		Pass
B-272		31.28	2.3	UTP		Pass
B-273		31.66	8.6	202		Pass
B-274	1	31.50	0.7	202		Pass
B-275		31.11	-0.4	202		Pass
B-276		30.91	0.0	152		Pass
B-277		30.53	6.3	143		Pass
B-278		31.52	7.7	-	> 5	Pass
B-279		31.20	-0.3	192		Pass
B-280		31.54	6.9	202		Pass
B-281		31.22	0.4	202		Pass
B-282		31.48	5.4	UTP		Pass
B-283		31.19	5.0	202		Pass
B-284		31.40	1.2	202		Pass
B-285		31.08	-2.4	202		Pass

				Result			
Test Number	Date	Test RL (m)	Air Voids (%)	Shear Vane (kPa)	Scala (blows per 100mm)	Pass/Fail	
B-286	00/00/0040	31.33	2.7	UTP		Pass	
B-287	26/02/2016	30.96	6.6	190		Pass	
B-288		31.28	0.7	UTP		Pass	
B-289		30.92	2.4	202		Pass	
B-290		31.62	0.7	128		Fail	
B-291	1	31.14	-2.8	157		Pass	
B-292	1	31.47	-3.8	138		Fail	
B-293	1	31.12	-2.8	202		Pass	
B-294	1	31.43	1.5	159		Pass	
B-295	1	31.14	-0.7	202		Pass	
B-296	1	31.61	0.9	201		Pass	
B-297	1	31.21	-2.8	179		Pass	
B-298		31.06	1.3	198		Pass	
B-299]	30.76	5.3	UTP		Pass	
B-300	1	31.04	6.8	169		Pass	
B-301	1	30.79	7.1	169		Pass	
B-302		31.53	1.2	202		Pass	
B-303		31.15	1.8	202		Pass	
B-304	1	31.61	2.5	UTP		Pass	
B-305	1	31.21	0.2	202		Pass	
B-306	1	32.08	1.3	UTP		Pass	
B-307		31.81	7.2	202		Pass	
B-308		31.60	-1.2	198		Pass	
B-309		31.25	4.3	196		Pass	
B-321		36.70	2.0	153		Pass	
B-322		35.73	2.0	169		Pass	
B-323	0/11/2016	37.74	3.0	178		Pass	
B-324	9/11/2010	35.20	2.0	159		Pass	
B-325		33.61	0.0	202		Pass	
B-330		38.17	7.0	186		Pass	
B-336		41.51	7.0	202		Pass	
B-337		40.98	4.0	149		Pass	
B-338		41.03	5.0	202		Pass	
B-339		43.27	8.0	197		Pass	
B-340		41.86	2.0	162		Pass	
B-341		42.58	1.0	168		Pass	
B-342	5/12/2016	43.88	2.0	171		Pass	
B-343		36.13	2.0	193		Pass	
B-344		37.62	0.0	195		Pass	
B-345		40.43	5.0	202		Pass	
B-346	4	37.42	11.0	193		Pass	
B-347	1	36.25	-2.0	198		Pass	
B-348		35.90	3.0	172		Pass	
B-349	4	43.97	9.0	202		Pass	
B-350		43.80	7.0	183		Pass	
B-351	14/12/2016	42.84	4.0	184		Pass	
B-352	4	44.49	7.0	187		Pass	
B-353		37.27	6.0	185		Pass	

Notes

1 Shear strength for NDM tests calculated from average of 4 vane tests at each test location. UTP = unable to penetrate.

2 A Solid Density of between 2.4 t/m³ and 2.6 t/m³ was assumed for fills depending on source material.

3 All test locations and elevations surveyed by JMC Ltd.

4 For failed test results, refer to Section 6.2.2 of Coffey GCR ref: GENZTAUC13086AP-AM

Appendix F – Static Settlement Results



GENZTAUC13086AP-AM THE LAKES STAGE 3I GEOTECHNICAL COMPLETION REPORT SETTLEMENT MONITORING

SETTLEMENT VS TIME



SETTLEMENT (mm)

DATE

GENZTAUC13086AP-AM THE LAKES STAGE 3I GEOTECHNICAL COMPLETION REPORT SETTLEMENT MONITORING



SETTLEMENT VS TIME (LOG SCALE)



TIME (days, log scale)

SETTLEMENT (mm)



SETTLEMENT VS TIME



DATE

GENZTAUC13086AP-AM THE LAKES STAGE 3I GEOTECHNICAL COMPLETION REPORT SETTLEMENT MONITORING



SETTLEMENT VS TIME (LOG SCALE)



TIME (days, log scale)

SETTLEMENT (mm)



SETTLEMENT (mm)

GENZTAUC13086AP-AM THE LAKES STAGE 3I GEOTECHNICAL COMPLETION REPORT SETTLEMENT MONITORING

SETTLEMENT VS TIME



Appendix G – Harrison Grierson Drawings



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ERMS OF BAY OF PLENTY	<u> </u>	, o -	RETAINING WALL (P	RIVATE)	
BENCHMARK BM 1343 RL			HALF BLACK' EXPOS	SED RETE	
S		***	'RIVERLEA GOLD' EX AGGREGATE CONCE	XPOSED RETE	
CARRIED OUT TO TCC IDC			BERM/RESERVE GR/	ASS	
VE FOOTPATHS ARE 1.5m EXPOSED AGGREGATE		\square	GARDEN		
N LETDOWNS AND PATH	FREAD		GRAVEL TRACK		
SERVE ARE 'RIVERLEA GATE CONCRETE.		202	MULTIMAT 100		
- WAYS ARE 'HALF BLACK'			STAIDS		
HAVE BEEN SUPPLIED BY HAVE BEEN CONFIRMED			STAIRS		
13m LENGTH OF 180mm	K1		KERB LINE AND REF	ERENCE	
	C)	TCC BENCHMARK	СИТ	
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139618-AB401

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F THE MOTURIKI DATUM.		//	2.4m NOISEWALL (F	PRIVATE)
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BENCHMARK BM 1343 RL		- * * * *	HALF BLACK' EXPOS	SED
с.			'RIVERLEA GOLD' F)	(POSED
S CARRIED OUT TO TOC TOC		44	AGGREGATE CONCR	ETE
CARGED COT TO TOCIDO			BERM/RESERVE GRA	ASS
VE FOOTPATHS ARE 1.5m			GARDEN	
LA USED AUGREGATE			GANDEN	
N LETDOWNS AND PATH			GRAVEL TRACK	
GATE CONCRETE.			ΜΗΙ ΤΙΜΔΤ 100	
F WAYS ARE 'HALF BLACK'			HIGELINAT 100	
HAVE BEEN SUPPLIED BY			STAIRS	
HAVE BEEN CONFIRMED				EDENCE
13m LENGTH OF 180mm		<u>K1</u>	KERB LINE AND REF	ERENCE
		0	TCC BENCHMARK	
		*	AS BUILT STREETLI	GHT
		63	AS BUILT TREE	
		.	AS BUILT SIGN	
		$\rightarrow \rightarrow \rightarrow$	NANAKO STREAM	
		ISSUE STATUS:		
STAGE 3I			FINAL	AS BUILT
F/TRANSPORTATION AS	BUITI T D		SCALES: 1:500 - 41	

STREETSCAPE/TRANSPORTATION AS BUILT PLANS SHEET 2 TCC IP 101782 STREETSCAPE/TRANSPORTATION AS BUILT PLANS SHEET 2 TCC IP 101782 STREETSCAPE/TRANSPORTATION AS BUILT PLANS SHEET 2 TCC IP 101782 STREETSCAPE/TRANSPORTATION AS BUILT PLANS SHEET 2 DRAWING NO: 139618-AB402 D



	1520-139618-01 SCALES: 1:1000 - A1 1:2000 - A3				
SHEET 4	DRAWING No:				
TCC IP 101782	13961	8-AE	3404		



3 (ZONE 3) EARTHWORKS	ISSUE STATUS:	CONSTRUCT	ION
STERN GULLY RESERVE	PROJECT No: 1510-137845-01	SCALES: AS SHOWN	A1
CROSS SECTIONS SHEET	DRAWING No:		REV
CROSS SECTIONS SHEET	137845	5-01-668	В





STAGE 3I	ISSUE STATUS: FINAL AS BUILT						
S BUILT OUTLET DETAILS	PROJECT No: 1520-139618-01	SCALES: 1:100 - A1 1:200 - A3	A1				
TCC ID 101782	DRAWING No:	•	REV				
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SURVEY DATE:

SIGNED:

REF REVISIONS

STAGE 3I	ISSUE STATUS:	FINAL AS B	AS BUILT		
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TCC ID 101782	DRAWING No:			REV	
100 IF 101702	135952	2-AE	3403	C	



STORMWATER LINE C LONGSECTION

SCALE 1:125 - A1, 1:250 - A3





				ORIGINATOR: TCH DRAWN:	DATE: 18.01.18 DATE:	SIGNED:	PLOT BY: PLOT DATE:	TRS	ASSOCIATION OF CONSULTING ENGINEERS	ISO 9001 QUALITY	TAURANGA OFFICE	PROJECT:	TITLE:
С	FINAL AS BUILT	тсн	19.01.18	TRS CHECKED:	18.01.18 DATE:	SIGNED:	SURVEY BY:	19.01.18	ACENZ NEW ZEALAND	ROPERTY OF.	TAURANGA 3110 T +64 7 578 0023	Summu	POND 2 AS B
B	FINAL AS BUILT	TCH	19.01.18	TCH APPROVED:	19.01.18	SIGNED	SURVEY DATE:	-	AND MAY NOT BE REPRODUCED OR ALTERE THE WRITTEN PERMISSION OF HARRISON	D, WITHOUT	W www.harrisongrierson.com	THE LAKES (2012) LIMITED	
REF	REVISIONS	BY	DATE	GPR	19.01.18			-	ACCEPTED FOR UNAUTHORISED USE OF THI	S DRAWING.			

- 95mm ORIFICE AT RL 29.30

POND 2 RL 27.66

STAGE 3I	ISSUE STATUS: FINAL AS BUI				
JILT STORMWATER LONG SECTION	PROJECT No: 1520-139618-01	SCALES:	AS SHOWN	A1	
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