32985 Redacted

Geoconsult
GEOTECHNICAL CONSULTANTS

GEOTECHNICAL INVESTIGATION REPORT

PROPOSED ALTERATION

1 ADAMS AVENUE,
MOUNT MAUNGANUI

TAURANGA CITY COUNCIL

Reference: TL488

Prepared: 19 February 2020

Issued to: Tauranga City Council
Attn: s 7(2)(f)(ii)

s 7(2)(f)(ii)

Issued on: 17 March 2020

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s 7(2)(a) – Privacy
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1. INTRODUCTION

This report presents the findings of a geotechnical investigation carried out for a proposed alteration to the existing amenities block at Mount Maunganui Beachside Holiday Park, 1 Adams Avenue, Mount Maunganui.

The purpose of our investigation was to assess subsoil conditions, quantify various geotechnical risks and determine the geotechnical suitability of the existing building platform for further development. We have also been asked to make recommendations regarding suitable foundation options.

This report has been prepared for Tauranga City Council (TCC) in accordance with our proposal letter dated 12 December 2019 and subject to a geotechnical review of the final plans, may be used in support of an application to TCC for building consent approval in respect of the proposed development as described herein.

2. SITE DESCRIPTION

2.1 General

The subject site (legally described as Section 19 Block VI Tauranga SD) is located at the base of Mount Maunganui. The site extends between the inner harbour (Pilot Bay) and the coastline (Mount Maunganui Beach) and is bound to the south-east by Adams Avenue. The site is currently occupied by the Mount Maunganui Beachside Holiday Park and the Mount Hot Pools. It comprises an irregular shaped property with an area of 51,500 m^2.

The existing amenities block is located within the northern half of the site, at the approximate centre of the Mount Holiday Park. It is understood that the existing single level heavyweight masonry block building comprises a conventional concrete slab on grade foundation with perimeter strip footings. A sealed accessway on the eastern and western side of the building provides vehicle access to near level camp sites which surround the existing structure. The camp sites are predominantly grass covered.

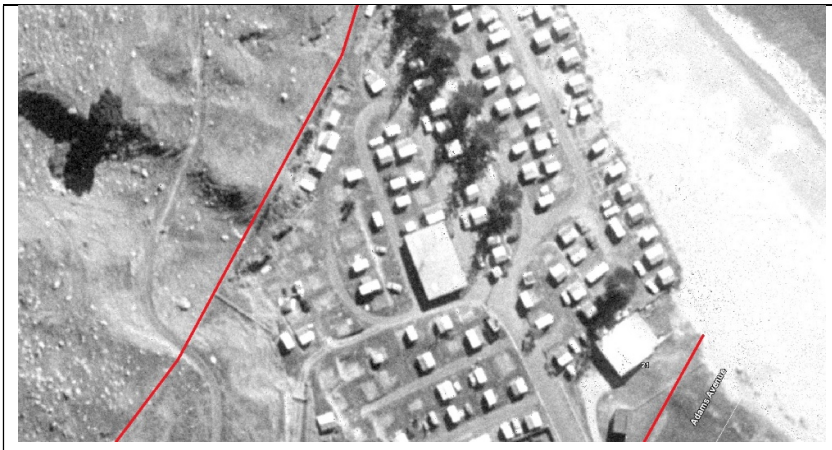
The Tauranga City Council GIS viewer indicates the existing building platform is at or near RL 6.4 m (Moturiki Datum).

A site plan is attached, drawing number TL488/1.

2.1 Historical Aerial Photographs

Aerial Photograph – 1943

This aerial photograph was taken during early development of the area. The walking track above the campground is absent, with adjacent slopes entirely in pasture. A localised depression on the slope can be identified while the proposed building platform appears somewhat lower than the surrounding topography.

	**Aerial Photograph – 1977** This aerial photograph shows the established campground. The walking track above the campground has been formed, with adjacent slopes still in pasture. A localised depression on the slope appears to have failed at some stage post 1943. The amenities block has been constructed with ground surface presumably raised as part of the development.
	**Aerial Photograph – 2011** This aerial photograph shows the amenities block has been replaced and/or extended to the north. A retaining wall has been constructed to the east of the building forming a lower and upper level camping sites. Vegetation has been established along the lower part of the slope.
	**Aerial Photograph – 2019** This aerial photograph shows the campground in its current form. Vegetation is being further established over the lower slope where the previously reference recent instability was observed.

2.2 Utilities

A review of the TCC GIS viewer indicates that a public sanitary sewer connection is available at the south-western corner of the existing building. It also indicates that stormwater reticulation is available to the site. The nearest available connection is a pipe that extends through a manhole on the eastern side of the existing amenities block.

3. GEOLOGY AND GEOMORPHOLOGY

The Geological Map of Rotorua[1] shows the subject site to be underlain by Holocene aged beach deposits of the Tauranga Group. Coastal beach deposits occur as active sand and pebbly beaches and sandy beach ridges near the coast between Mount Maunganui and Maketu. The beach deposits are described as consisting of marine gravel, sand and mud on modern beaches.

A review of the GNS Active Faults Database indicates the property is located approximately 35 km to the north-west of the Otamarakau Fault and approximately 40 km to the north-east of the Kerepehi Fault.

4. EXISTING GEOTECHNICAL INFORMATION

4.1 Geotechnical Reports

We are not aware of any existing geotechnical reports relating to this site, however, we have obtained and reviewed existing borehole information from nearby sites using the New Zealand Geotechnical Database (NZGD).

4.2 Natural Hazards

4.2.1 Liquefaction Hazard

The proposed building platform is located within an area identified by TCC to be at no risk of liquefaction during a design event, however; this is due to the resolution and accuracy of the mapped zones, which have resulted in the lower risk category associated with the adjacent higher ground being incorrectly applied to the lower ground. Given the similar topography immediately to the east of the proposed building platform is considered at risk of minor ground damage due to liquefaction, a site-specific liquefaction assessment as per MBIE Guideline Module 3 of the Earthquake Geotechnical Engineering Series will be required.

4.2.2 Flooding Risk

A review of the TCC GIS viewer indicates that the proposed building platform is considered to be at risk of flooding (0.1 to 0.25 m deep) in a 100-year event.

4.2.3 Tsunami Risk

The TCC GIS viewer indicates the entire property is located within a Tsunami Evacuation Zone.

5. PROPOSED DEVELOPMENT

We have been supplied with preliminary drawings (drawing no: A01 to A06) for the proposed alteration to the existing amenities block, prepared by Cullen Keiser Architecture. Based on this information and discussions with our client we understand that the proposed development will comprise construction of a single storey, masonry veneer clad extension to the northern end of the existing amenities block. The proposed extension will be supported on a concrete slab/pod raft type floor.

The location of the proposed alteration is shown on the attached site plan drawing number TL488/1.

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[1] *Leonard, G.S.; Begg, J.G.; Wilson, C.J.N. (compilers) 2010. Geology of the Rotorua Area. Institute of Geological and Nuclear Sciences 1:250 000 Geological Map 5. 1 Sheet + 102p. Lower Hutt, New Zealand: Institute of Geological and Nuclear Sciences Limited*

6. SITE INVESTIGATION

Our site investigation work comprised the following:

- A walk over visual appraisal of the site;
- 4 hand auger boreholes to depths between 3.0 and 6.4 m;
- 2 Scala penetrometer tests from the ground surface, immediately adjacent to selected hand auger boreholes; and
- The measurement of groundwater levels in the boreholes.

The approximate locations of all test positions are shown on our attached site plan, drawing number TL488/1. The borehole logs and Scala penetrometer test results are also attached. The soil descriptions given on the logs are in general accordance with the New Zealand Geotechnical Society's "Field Description of Soil and Rock." The groundwater levels were measured following drilling and are indicated on the borehole logs.

7. GROUND MODEL

7.1 Subsoil Conditions

Detailed descriptions of the subsoils encountered in the boreholes and cone penetration tests are attached. The subsoils were generally found to comprise:

- **Non-Engineered Fill (1.5 to 2.2 m thick)**, predominantly consisting of re-spread topsoil and re-worked loose to dense sands, overlying:
- **Historical Slip Debris (700 mm to 1.8 m thick)**, predominantly consisting of stiff to very stiff brown mottled orange brown clayey silt, overlying:
- **Beach Deposits (2.4 to 3.3 m bgl)**, predominantly consisting of medium dense to dense light brownish grey sand, as described below.

The results of the investigation indicate the proposed building platform is underlain by a significant depth of uncontrolled fill overlying historical slip debris. This correlates well with machine boreholes and test pits obtained from the NZGD. These were undertaken within the Mount Hot Pools by Shrimpton & Lipinski Ltd in 1990 and 2000, respectively. The fill comprises generally well compacted, re-worked sands. The variable depth of slip debris comprises clayey silt, with the source most likely a landslip or debris flow on the lower part of Mount Maunganui. The fill and slip debris overly medium dense to dense beach sands. Rhyolitic lava associated with the adjacent lava dome (Mount Maunganui) is inferred to underly the site at depth. This was not encountered within the tested depth, however, deeper machine boreholes undertaken by Shrimpton & Lipinski Ltd beneath the hot pools did encounter Rhyolite at depths of between 40 and 80 m below existing ground level.

Scala penetrometer tests were carried out from the ground surface immediately adjacent to selected boreholes to confirm the relative density of the fill/slip debris and from the base of a selected borehole to determine the density of the natural sands. The variably compacted fill material in SP2 (2.2 m thick) generally achieved values of <1 to 12 blows per 100 mm over the tested depth (2.2 m). The natural soils immediately below the fill at a depth of 2.4 m generally achieved values between 5 and 16 blows per 100 mm for the entire tested depth (5.0 m).

7.2 Groundwater Conditions

The groundwater level measured in the deeper hand auger borehole (HA01) following completion of drilling was found to be at a depth of 6.0 m below ground level or approximately RL 0.5 m (Moturiki Datum). Groundwater was not encountered within the tested depth of the remaining boreholes. This depth is considered representative of typical summer groundwater conditions on the site, but water levels may be higher following times of heavy or prolonged rainfall and/or tidal fluctuations.

8. GEOTECHNICAL ASSESSMENT

8.1 Liquefaction Assessment

Liquefaction is the process where saturated sand and silt grains temporarily lose strength and act as a fluid. This effect can be caused by a build-up of excess pore water pressure due to earthquake shaking and can result in significant damage to buildings and infrastructure.

For liquefaction and/or lateral spreading to occur, the subsoils must have the following properties:

- loose (compacted soils tend not to liquefy)
- sandy or silty (clays and gravels tend not to liquefy)
- saturated (only soils below the ground water table are susceptible to liquefaction)

Tauranga is an area of moderate seismic hazard. A review of the GNS Active Faults Database indicates the Otamarakau Fault is the nearest active fault, located approximately 30 km to the south-east of Tauranga. The relatively young deposits beneath the subject site comprise non-cohesive soils deposited within a high energy environment. In this instance, the depth to the groundwater table is approximately 6.0 m below existing ground level.

Our experience with similar sites in the vicinity is that the risk of liquefaction induced damage occurring in an SLS event (50 years) is very low to negligible and usually does not warrant consideration.

There is a risk of liquefaction occurring in the materials below the water table (6.0 m) in a ULS event (1:500-year event), with potentially 100 to 200 mm of settlement occurring at depth, however, where there is a raft of non-liquefiable soils at the surface and where that raft is greater than 3.5m thickness (in this case 6 m) the predicted settlement and deformation at the surface is usually sufficiently low that building collapse would be considered unlikely with appropriate foundations. For that reason, a detailed liquefaction assessment was not considered necessary provided the proposed building utilises a pod raft floor.

Lateral spreading is the lateral displacement of gently sloping ground caused by earthquake induced liquefaction. The site is located approximately 80 m to the south-west of the coastline and the groundwater table is 6.0 m below existing ground level. The site is therefore considered to be at low to moderate risk (<100 mm) of lateral spreading during a ULS design seismic event.

8.2 Slope Stability Assessment

The proposed building platform is located approximately 30 m from the base of Mount Maunganui, within the Mount Maunganui Beachside Holiday Park. Mount Maunganui or Mauao is a 232 m high rhyolitic lava dome located at the eastern entrance of the Tauranga Harbour. The upper part of the dome comprises near vertical rhyolitic bluffs while the more moderately inclined middle section is understood to comprise a thick mantle of residual volcanic soils overlying agglomerate. The base consists of highly eroded flow banded rhyolitic lava flows, which transition into the sea.

The bush covered upper part of the dome is predominantly at risk of rock fall along the exposed bluffs. In 2003, explosive experts removed up to 500 tonnes of unstable rock deemed to pose a risk to the campground in event of a minor earthquake[2]. Based on discussions with TCC it is understood that reference points identifying these possible risk areas are checked regularly for rock stability by Avalon Industrial Services with remedial measures undertaken as required. While intermittent rockfall has resulted in temporary closure of walking tracks in the past, management of this hazards means the risk of rockfall inundating the proposed addition to be remote.

The lower pasture covered slopes flanking the upper part of the dome have a history of recurring instability, particularly after or during heavy rainfall events. The proposed building platform was found to be underlain by a layer of historical slip debris; evidence the area has been inundated in the past. In 2014, a study was undertaken into the spatio-temporal distribution of mass movement on Mount Maunganui[3]. The study used aerial photographs between 1943 and 2011 to compile an inventory of mass movement on Mount Maunganui. The methods of failure observed over the middle part of the slope include rotational slides, debris flows and debris avalanches. Shallow rotational failures were predominantly observed along steep cut faces associated with the walking tracks while the debris flows typically occurred within valleys or gullies. The distribution map indicates that relatively large failures occurred on the steeper slope immediately above the holiday park in aerial photographs from 1959 and 1977. The extent of the associated debris lobes is unknown.

The failures occurred in what appear to be localised gullies immediately to the west and north-west of the amenities building, where stormwater runoff from the upper part of the dome would be expected to concentrate. Given the topography, the larger western failure may have resulted in some inundation of the existing building platform from the expected fan shaped debris lobe, particularly given the fluid nature of debris flows. The slip debris encountered during testing may or may not be associated with this event.

Aerial photographs indicate the amenities block was constructed prior to 1977. We are not aware of any inundation of the building platform within the lifetime of the structure. Like the existing structure, the proposed alteration will comprise heavyweight masonry block construction which would be expected to withstand some inundation from relatively fluid debris flows on the steeper slopes above the site. The proposed development is a minor alteration to the existing structure with occupancy of the building not expected to significantly increase. On this basis, the current risk to the building will not be increased. In the event some inundation of the building platform was to occur, consideration should be given to ensure there is safe egress from the building on the eastern and southern side of the structure.

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[2] Brideau, M. & Martin, Z. (2014). Spatio-temporal distribution of mass movements on Mount Maunganui, New Zealand.

[3] Unknown (2003, 7 November). Rockfall danger closes Mauao. *Bay of Plenty Times*

9. RECOMMENDATIONS

9.1 Foundations

9.1.1 Piled Raft Foundation

The subsoils at this site were found to comprise a 2.4 to 3.3 m thick layer of non-engineered fill and slip debris overlying medium dense to dense natural sands. Given the deeper soils below the groundwater are potentially susceptible to liquefaction and the near surface soils comprise non-engineered fill overlying slip debris, the founding conditions are outside the criteria for "Good Ground" given in NZS3604:2011.

In this instance, the variably compacted fill material and slip debris may be subject to ongoing settlement over time and/or under additional load and are not considered suitable to support building loads. Given the significant depth of uncontrolled fill and slip debris within the proposed building platform and potentially liquefiable soils below the groundwater table in a ULS design event it is recommended that all building loads be supported on a piled raft type foundation.

Pile foundations embedded into the natural sands encountered at depths between 2.4 and 3.3 m will be required to support all building loads during static conditions. In addition, to address the risk of liquefaction within the pile founding depth during an ULS event and to meet the life safety requirements the pile foundations should support a raft type foundation. The raft type floor will give the building resilience in a ULS design event, where there is a temporary loss of support due to liquefaction of at-risk soils beneath the pile foundation and subsequently the structure they support.

Given the variable depth of unsuitable soils and the proximity to the existing structure, bored piles are considered the most appropriate piling method. Screw piles are also considered appropriate but would require further input from a specialist contractor.

Pile foundations should be embedded a minimum depth of 4.0 m below ground level at least 1.0 m into the denser natural sands, whichever is greater. In this instance the groundwater table (>6.0 m) is not expected to be encountered within the pile depth, however some casing may be required. Temporary works are the responsibility of the contractor.

For design purposes a geotechnical ultimate end bearing capacity of 900 kPa is considered available for 450 mm diameter piles at a minimum depth of 4.0 m.

Foundations for the proposed addition will require specific design by a suitably qualified CPEng (Structural) and reviewed by a Geo-Professional[4] to confirm they meet the requirements of this report. Bored pile foundations should be inspected by a suitably qualified Geo-professional during construction to check for soft/loose spots as may occur naturally.

9.2 Earthworks

The site is near level and it is anticipated that no significant cut or fill earthworks are proposed at the property except for the stripping of existing vegetation. The proposed addition will comprise a pod-raft floor supported on pile foundations. Existing fill and unsuitable soils may remain in place provided that the piles are embedded to the required minimum depths as discussed in the foundations section above. All excavated topsoil and unsuitable material should be removed from site or stockpiled away from the building platform and/or earthworks area.

[4] *Chartered Professional Engineer specialising in geotechnical engineering (CPEng(Geotech)) or Professional Engineering Geologist (PEngGeol), both as administered by Engineering NZ.*

9.3 Stormwater Management

Stormwater from paved areas, roofs, tank overflows and all other sources should be collected in sealed pipes and discharged into the Council stormwater system. Concentrated stormwater flows should not be allowed to discharge onto or into the ground close to the buildings or on sloping ground as this would be detrimental to foundation conditions.

9.4 Plan Review

Detailed development plans should be reviewed when they are available. This should include geotechnical review of the foundation design and building layout prior to building consent. This is to ensure that the information used as the basis of this report is consistent with final development proposals and that the recommendations outlined in this report have been interpreted correctly.

9.5 Site Inspections during Construction

Geotechnical inspection of the bored pile foundation excavations will be required during construction to check they meet the requirements outlined above and as determined in pile design. This is to confirm expected ground conditions and to ensure compliance with the recommendations contained in this report.

It is the Client's responsibility to ensure that we are notified of any required inspections and that we are given adequate notice to carry out the inspections (at least 48 hours). We will issue a certification letter upon successful completion of the inspected works.

10. LIMITATIONS

The recommendations and opinions contained in this report are based on the subsoils encountered at discrete test locations. We have made assumptions about the nature of the ground conditions across the site based on this limited subsoil information and actual ground conditions may vary from those assumed in this report. If any variations from the assumed ground conditions are found to exist during construction the matter should be referred to Geoconsult.

This report has been prepared solely for the benefit of Tauranga City Council as our client and their nominated agents for the purposes of the specific brief as stated in this report. Geoconsult accepts no liability in respect to any matters arising from the use of the information given in this report by any other person or organisation or for any other purpose except that it may be relied upon by Council in support of an application for building consent approval for the proposed development as described herein.

GEOCONSULT

Author:

Reviewed:

Technical Review by:

Notes:

1. LOCATIONS OF ALL FEATURES ARE APPROXIMATE ONLY.
2. THIS DRAWING IS BASED ON TAURANGA COUNCIL GIS PHOTOGRAPHY.
3. DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

Key:

HAND AUGER BOREHOLE LOCATION

SCALA PENETROMETER TEST

PROPOSED ALTERATION

REV:	DESCRIPTION:	BY:	DATE:
-	-	-	-

STATUS: NOT FOR CONSTRUCTION

Geoconsult

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P: 07 281 1314 W: www.geoconsult.co.nz

PROJECT: TAURANGA CITY COUNCIL PROPOSED ALTERATION

SITE: 1 ADAMS AVENUE, MOUNT MAUNGANUI

TITLE: SITE PLAN

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1 : 200	FEB 2020	RM	PW

SHEET NO:	DRAWING NO:	REVISION:
1 OF 1	TL488/1	-

BOREHOLE LOG

HA01

Drill Method: Hand Auger
Hole Dia: 50mm
Date Drilled: 11/02/20

Drilled By: [redacted]
Logged By s 7(2)(a) – Privacy
Checked B [redacted]

PROJECT NO: TL488
PROJECT: 1 Adams Avenue, Mount Maunganui

Geology	DRILLING: Method	DRILLING: % Recovery	SUBSURFACE PROFILE: Depth (m)	SUBSURFACE PROFILE: Symbols	SOIL/ROCK DESCRIPTION	Depth (m)	Groundwater	SAMPLES: Depth (m)	SAMPLES: Type	UNDRAINED SHEAR STRENGTH	FIELD TESTS: SPT N Value	FIELD TESTS: Others
					Ground Surface					Peak (kPa) 0 50 100 150 200; Residual (kPa) 0 50 100 150 200		
FILL	HAND AUGER	100	0.0		TOPSOIL							
					Fine to medium SAND with some intermixed topsoil; dark brown mixed grey brown. Loose to medium dense, moist, well graded.							
			1.0		Fine to medium SAND with trace organics; orange brown mixed grey brown. Medium dense, moist, well graded.							
					- becomes dark brown intermixed with topsoil, wet							
SLIP DEBRIS					Clayey SILT with trace sand and gravel; greyish brown mixed orange brown. Stiff, moist to wet, low plasticity.					22 96		
			2.0									
BEACH DEPOSITS			3.0		Fine to medium SAND; yellow brown. Medium dense to dense, moist, uniformly graded.							
			4.0		- dark grey to black							
			5.0		- dark orange brown streaked black							
					- becomes yellow brown							
					- becomes black							
					- becomes yellow brown, wet							
			6.0		- becomes dark brown, saturated							
					End of borehole at 6.4 mbgl. (Target depth)		GROUNDWATER ENCOUNTERED (11/02/20)					

Remarks:

Sheet: 1 of 1

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Fax: (09) 835 3926

BOREHOLE LOG

HA02

Drill Method: Hand Auger
Hole Dia: 50mm
Date Drilled: 11/02/20

Drilled By: s 7(2)(a) – Privacy
Logged By: s 7(2)(a) – Privacy
Checked By:

PROJECT NO: TL488
PROJECT: 1 Adams Avenue, Mount Maunganui

Geology	Method	% Recovery	Depth (m)	Symbols	SOIL/ROCK DESCRIPTION	Depth (m)	Groundwater	Depth (m)	Type	UNDRAINED SHEAR STRENGTH	SPT N Value	Others
					Ground Surface					Peak (kPa) 0 50 100 150 200 / Residual (kPa) 0 50 100 150 200		
FILL	HAND AUGER	100	0.0		TOPSOIL							
					Fine SAND; dark grey brown. Loose to medium dense, dry to moist, well graded.							
			1.0		Gravelly SILT; light whitish grey. Hard, dry to moist, poorly graded.							
					Silty fine SAND; brown. Loose to medium dense, moist, well graded.							
					- some gravel							
			2.0							22 108		
*					Clayey SILT; brown mixed orange brown. Stiff, wet, low plasticity.							
			3.0									
**					Silty SAND; yellow brown. Medium dense to dense, moist, uniformly graded.							
					- becomes wet							
					End of borehole at 3.5 mbgl. (Target depth)							
			4.0									
			5.0									
			6.0									

Remarks: *SLIP DEBRIS **BEACH DEPOSITS

Sheet: 1 of 1

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BOREHOLE LOG

HA03

Drill Method: Hand Auger
Hole Dia: 50mm
Date Drilled: 11/02/20

Drilled By: [redacted] s 7(2)(a) – Privacy
Logged By: [redacted]
Checked By: [redacted]

PROJECT NO: TL488
PROJECT: 1 Adams Avenue, Mount Maunganui

Geology	Method	% Recovery	Depth (m)	Symbols	SOIL/ROCK DESCRIPTION	Depth (m)	Groundwater	Depth (m)	Type	UNDRAINED SHEAR STRENGTH (• Peak (kPa) • 0 50 100 150 200; □ Residual (kPa) □ 0 50 100 150 200)	SPT N Value	Others
					Ground Surface							
FILL	HAND AUGER	100	0.0		Fine to medium SAND with minor organics; orange brown mixed grey brown. Medium dense, dry to moist, uniformly graded.							
			1.0									
SLIP DEBRIS					Clayey SILT; brown mixed orange brown. Stiff, wet, low plasticity.							
			2.0									
			3.0									
*					Fine SAND; orange brown. Medium dense to dense, moist, uniformly graded.							
					End of borehole at 3.4 mbgl. (Target depth)							
			4.0									
			5.0									
			6.0									

Remarks: *BEACH DEPOSITS

Sheet: 1 of 1

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BOREHOLE LOG

HA04

Drill Method: Hand Auger
Hole Dia: 50mm
Date Drilled: 11/02/20

Drilled By: s 7(2)(a) – Privacy
Logged By: s 7(2)(a) – Privacy
Checked By:

PROJECT NO: TL488
PROJECT: 1 Adams Avenue, Mount Maunganui

Geology	DRILLING: Method	DRILLING: % Recovery	SUBSURFACE PROFILE: Depth (m)	SUBSURFACE PROFILE: Symbols	SOIL/ROCK DESCRIPTION	Depth (m)	Groundwater	SAMPLES: Depth (m)	SAMPLES: Type	UNDRAINED SHEAR STRENGTH	FIELD TESTS: SPT N Value	FIELD TESTS: Others
					Ground Surface					• Peak (kPa) • 0 50 100 150 200 □ Residual (kPa) □ 0 50 100 150 200		
FILL	HAND AUGER	100	0.0		Fine to medium SAND with minor organics; orange brown mixed grey brown. Medium dense, dry to moist, uniformly graded.							
			1.0									
*			2.0		Clayey SILT; brown mixed orange brown. Stiff, wet, low plasticity.							
**					Fine SAND; orange brown. Medium dense to dense, moist, uniformly graded.							
			3.0		End of borehole at 3.0 mbgl. (Target depth)							
			4.0									
			5.0									
			6.0									

Remarks: *SLIP DEBRIS **BEACH DEPOSITS

Sheet: 1 of 1

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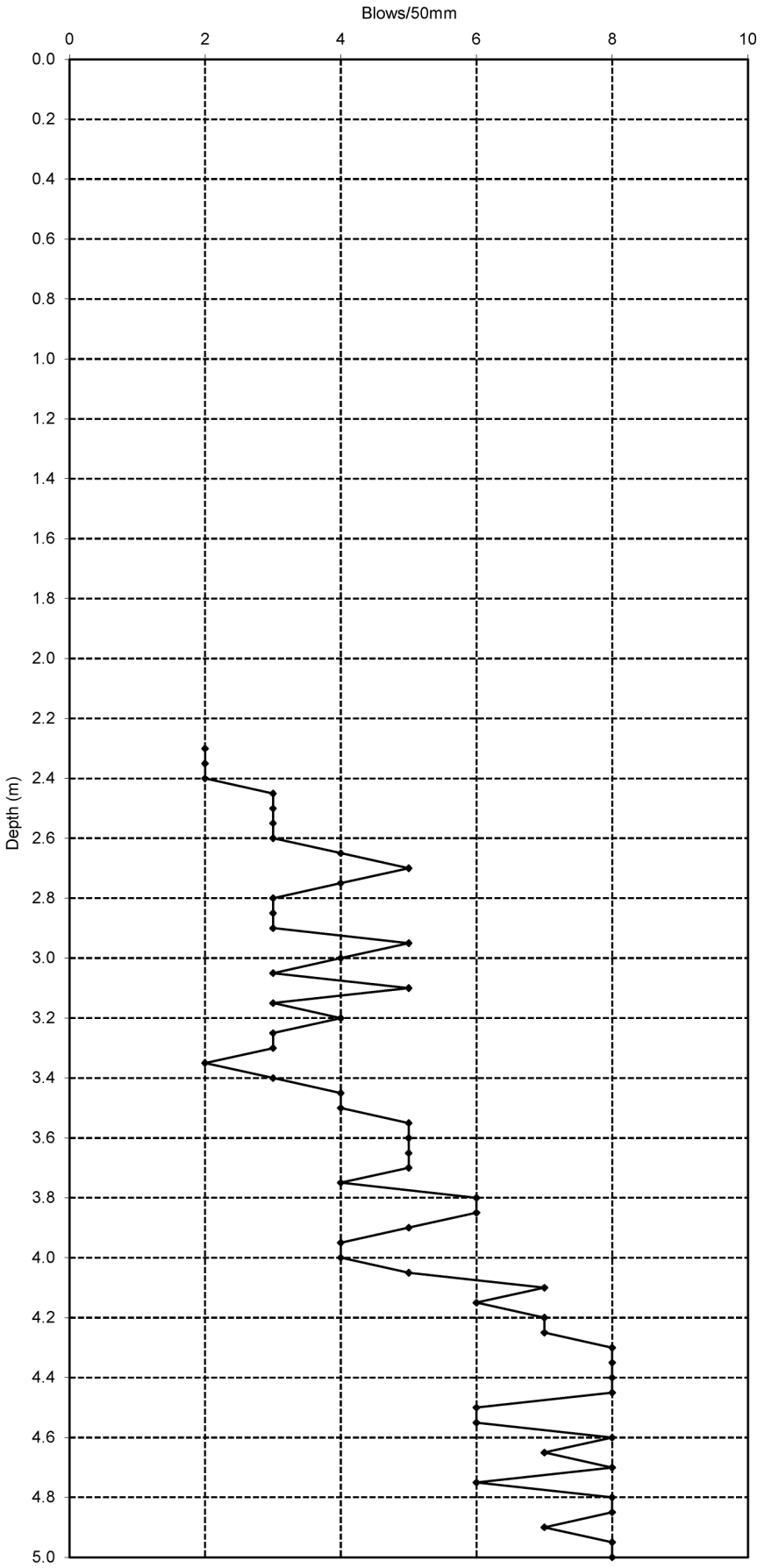
SCALA PENETROMETER TEST PROBE

No. **SP1**

Test Location: HA04	Test carried out By: [redacted]	GCL. ref.:	TL488
N:	Logged by: s 7(2)(a) – Privacy	Project:	Proposed Alteration
E:	Checked by:	Location:	1 Adams Avenue, Mount Maunganui
Elevation:	Date of test: 19/02/2020	Client:	TCC
Datum:			

Depth (m)	Blows/ 50 mm	Depth (m)	Blows/ 50 mm	Depth (m)	Blows/ 50 mm
0.05	0	3.05	3	6.05	
0.10	0	3.10	5	6.10	
0.15	0	3.15	3	6.15	
0.20	0	3.20	4	6.20	
0.25	0	3.25	3	6.25	
0.30	0	3.30	3	6.30	
0.35	0	3.35	2	6.35	
0.40	0	3.40	3	6.40	
0.45	0	3.45	4	6.45	
0.50	0	3.50	4	6.50	
0.55	0	3.55	5	6.55	
0.60	0	3.60	5	6.60	
0.65	0	3.65	5	6.65	
0.70	0	3.70	5	6.70	
0.75	0	3.75	4	6.75	
0.80	0	3.80	6	6.80	
0.85	0	3.85	6	6.85	
0.90	0	3.90	5	6.90	
0.95	0	3.95	4	6.95	
1.00	0	4.00	4	7.00	
1.05	0	4.05	5	7.05	
1.10	0	4.10	7	7.10	
1.15	0	4.15	6	7.15	
1.20	0	4.20	7	7.20	
1.25	0	4.25	7	7.25	
1.30	0	4.30	8	7.30	
1.35	0	4.35	8	7.35	
1.40	0	4.40	8	7.40	
1.45	0	4.45	8	7.45	
1.50	0	4.50	6	7.50	
1.55	0	4.55	6	7.55	
1.60	0	4.60	8	7.60	
1.65	0	4.65	7	7.65	
1.70	0	4.70	8	7.70	
1.75	0	4.75	6	7.75	
1.80	0	4.80	8	7.80	
1.85	0	4.85	8	7.85	
1.90	0	4.90	7	7.90	
1.95	0	4.95	8	7.95	
2.00	0	5.00	8	8.00	
2.05	0	5.05		8.05	
2.10	0	5.10		8.10	
2.15	0	5.15		8.15	
2.20	0	5.20		8.20	
2.25	0	5.25		8.25	
2.30	2	5.30		8.30	
2.35	2	5.35		8.35	
2.40	2	5.40		8.40	
2.45	3	5.45		8.45	
2.50	3	5.50		8.50	
2.55	3	5.55		8.55	
2.60	3	5.60		8.60	
2.65	4	5.65		8.65	
2.70	5	5.70		8.70	
2.75	4	5.75		8.75	
2.80	3	5.80		8.80	
2.85	3	5.85		8.85	
2.90	3	5.90		8.90	
2.95	5	5.95		8.95	
3.00	4	6.00		9.00	



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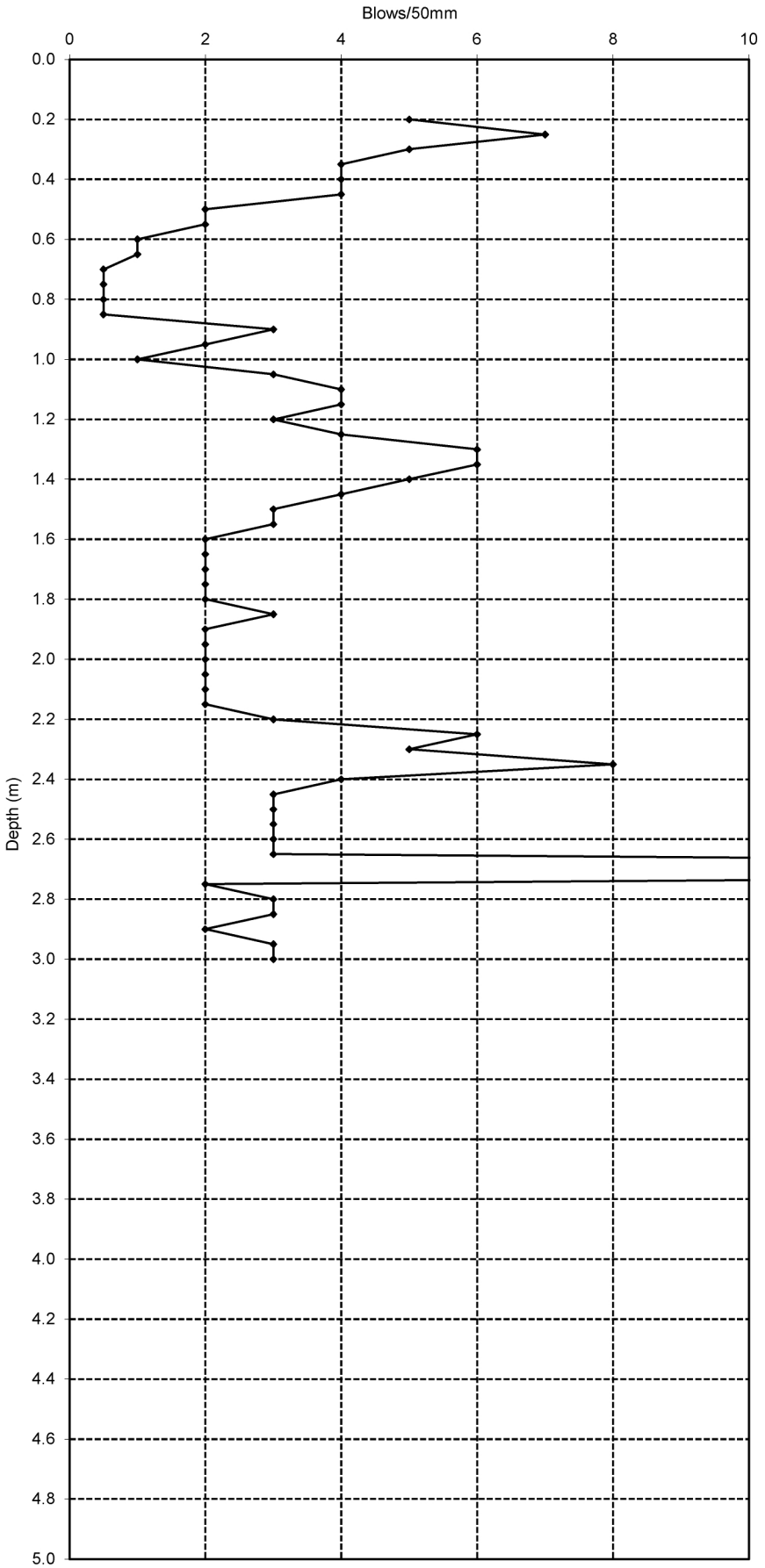
Remarks:

SCALA PENETROMETER TEST PROBE

No. **SP2**

Test Location:	Test carried out By:	GCL. ref.:	TL488
N:	Logged by: s 7(2)(a) – Privacy	Project:	Proposed Alteration
E:	Checked by:	Location:	1 Adams Avenue, Mount Maunganui
Elevation:	Date of test: 19/02/2020	Client:	TCC
Datum:			

Depth (m)	Blows/ 50 mm	Depth (m)	Blows/ 50 mm	Depth (m)	Blows/ 50 mm
0.05	0	3.05		6.05	
0.10	0	3.10		6.10	
0.15	0	3.15		6.15	
0.20	5	3.20		6.20	
0.25	7	3.25		6.25	
0.30	5	3.30		6.30	
0.35	4	3.35		6.35	
0.40	4	3.40		6.40	
0.45	4	3.45		6.45	
0.50	2	3.50		6.50	
0.55	2	3.55		6.55	
0.60	1	3.60		6.60	
0.65	1	3.65		6.65	
0.70	0.5	3.70		6.70	
0.75	0.5	3.75		6.75	
0.80	0.5	3.80		6.80	
0.85	0.5	3.85		6.85	
0.90	3	3.90		6.90	
0.95	2	3.95		6.95	
1.00	1	4.00		7.00	
1.05	3	4.05		7.05	
1.10	4	4.10		7.10	
1.15	4	4.15		7.15	
1.20	3	4.20		7.20	
1.25	4	4.25		7.25	
1.30	6	4.30		7.30	
1.35	6	4.35		7.35	
1.40	5	4.40		7.40	
1.45	4	4.45		7.45	
1.50	3	4.50		7.50	
1.55	3	4.55		7.55	
1.60	2	4.60		7.60	
1.65	2	4.65		7.65	
1.70	2	4.70		7.70	
1.75	2	4.75		7.75	
1.80	2	4.80		7.80	
1.85	3	4.85		7.85	
1.90	2	4.90		7.90	
1.95	2	4.95		7.95	
2.00	2	5.00		8.00	
2.05	2	5.05		8.05	
2.10	2	5.10		8.10	
2.15	2	5.15		8.15	
2.20	3	5.20		8.20	
2.25	6	5.25		8.25	
2.30	5	5.30		8.30	
2.35	8	5.35		8.35	
2.40	4	5.40		8.40	
2.45	3	5.45		8.45	
2.50	3	5.50		8.50	
2.55	3	5.55		8.55	
2.60	3	5.60		8.60	
2.65	3	5.65		8.65	
2.70	32	5.70		8.70	
2.75	2	5.75		8.75	
2.80	3	5.80		8.80	
2.85	3	5.85		8.85	
2.90	2	5.90		8.90	
2.95	3	5.95		8.95	
3.00	3	6.00		9.00	



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Remarks: