



16 March 2022

Our Ref: 17672

Geoff Cawson

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Geotechnical Engineering Ltd
T/A Soil & Rock Consultants

Geotechnical Desktop Study for Proposed Apartment Development, 11-13 Fleet Street, Eden Terrace

1.0 Introduction

As requested by Geoff Cawson of Shackleton Developments Ltd, Soil & Rock Consultants (S&RC) have undertaken a geotechnical desktop study to support a proposed apartment development within the existing vacant lot at 11-13 Fleet Street, Eden Terrace. An existing two-level villa-style timber dwelling presently occupies the north-west corner of the site, and it is our understanding that this dwelling will be demolished to make way for the new development.

This desktop report is confined to geotechnical aspects of the proposed development and presents the details of our study including:

- Review of the geological setting and historical geotechnical investigation data
- Likely foundation options
- The geotechnical risks pertaining to those options
- The scope and costs associated with undertaking further geotechnical investigations at the site in order to provide sufficient technical data to progress to final design.

2.0 Proposed Development

A set of development plans has been received by S&RC (refer Appendix A). The reference for this set is:

- 11-13 Fleet Street, Eden Terrace, Shackleton Developments; PB&A Architects, November 2021, For Information, Rev B.

The drawing set consists of ten (10 No.) drawings (cover, and sheets labelled 938-SK01 to SK09) that show the general site information and setting; plan of existing site and surrounds; plans of proposed floor levels from Ground Floor to Level 8; 3D views; and elevations.

These drawings show that the proposed apartment development will comprise a 9-level structure arranged around a central stair and lift area. The Ground Floor level is partly set into the northern slope area in order to achieve a level carpark grade, though appears to be approximately at the existing ground level along the southern boundary.

There will be 59 apartments and an office occupying levels 1 to 8, and a general carpark and ancillary area within the ground floor level. Four carpark bays within the north-eastern corner of the ground floor area are labelled as 'Stacked Parking' and extend in height through to Level 1. A 3D perspective view, looking toward the southwest aspect of the development, is shown as Figure 1.

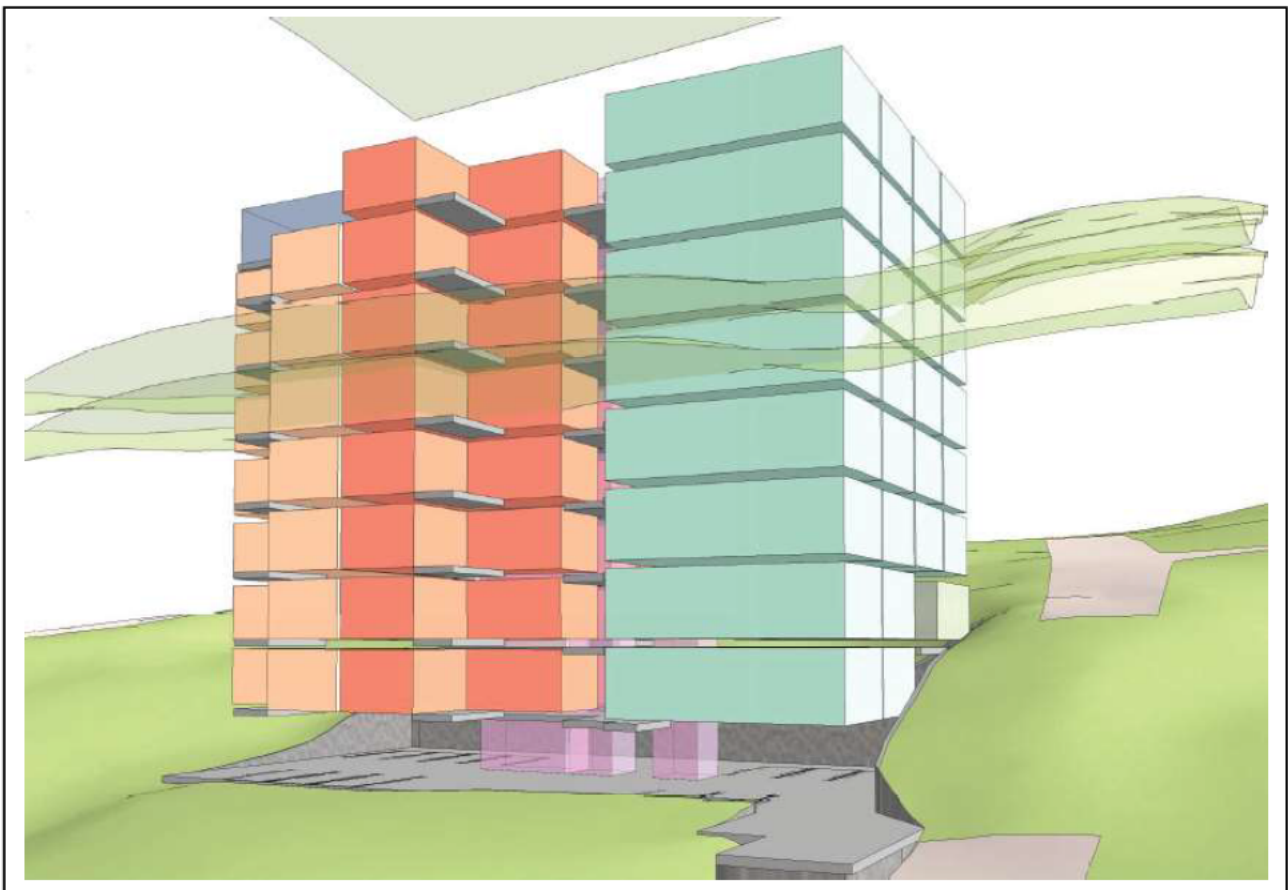


Figure 1: Drawing Extract – Perspective South (PB&A Architects, Dwg 938-SK08, Rev B, 02/11/2021)

3.0 Document Review

Current geological maps, historical geotechnical investigation reports, and Council property files were reviewed in order to provide:

- an overview of the geological setting
- relevant structural details pertaining to neighbouring properties (The information is limited to the information currently held on file by Auckland Council)
- soil characteristics and associated strength data across the site, upon which to make assumptions regarding likely foundation depths

The documents reviewed were:

- *Auckland Urban Area Geological Map, Sheet R11, Scale 1:50,000, GNS, 1992*
- *Site Survey Over Lots 1 & 2 LT 389386, 11 and 13 Fleet Street, Eden Terrace, Project No. 13199, Dwg SS01, 21/09/17, Axis Consultants*
- *Project Ref. 07159 – Geotechnical Investigation for Proposed Multi-storey Apartment Building At 11-13 Fleet Street, Newton, S&RC, 2007*
- *Project Ref. 13702 – Geotechnical Investigation for Multi-level Apartment Building, 11-13 Fleet Street, Newton, S&RC, 2013*
- *Project Ref. 17672 – Review of augerhole investigation log (AH01), 11-13 Fleet Street, Newton, S&RC, 2017*
- *Council Property File – 9 Fleet Street, Eden Terrace*
- *Council Property File – 15 Fleet Street, Eden Terrace*
- *Council Property File – 6 Piwakawaka Street, Eden Terrace*

3.1 Site Description

The development site comprises two properties legally described as Lot 91 deeds 1331 (0.0339 ha) and Pt Allot 5A Sec 7 SBRS of Auckland (0.0300 ha) giving a combined area of 0.0639 ha. The site is rectangular in shape, extends to the west of Fleet Street, and is located on the lower side slope of a valley feature. The ground slopes across the site and down to the south west levelling out towards the side boundary and the trough of the valley. Past earthworks resulted in formation of a near-level bench, part of which comprises the building platform for the existing dwelling at the front of the site.

Recently completed apartment buildings are present on the adjoining properties to the southwest and northwest of the site. The south-western building includes a single level basement car park that extends to the

common boundary between the properties. The adjoining property to the northeast is occupied by an older lightweight timber framed villa-style dwelling.

3.2 Geological Setting

Reference has been made to the Auckland Urban Area Geological Map, Sheet R11, Scale 1:50,000 dated 1992 which indicates that the site is underlain by weathered residual soils of the Waitemata Group. These soils are derived from weathering of the parent sedimentary sandstones and siltstones to form a mantle of residual soils typically comprising firm to very stiff clays, silts and sands of variable plasticity. These soils are prone to shrinkage in the summer when the groundwater tables are low and also prone to swelling in winter when the groundwater tables are high.

On steeper slopes the residual soils are prone to a translational failure mode when they become saturated. Generally movement of the residual soils often occurs at the contact between the weaker soil mantle and the underlying stronger, less-weathered material. Instability can also be associated with the perching of the groundwater table above the contact with the hard, less-weathered materials. The occurrence of deep-seated failures within the underlying sandstones and siltstones is relatively uncommon. When it does occur it is generally controlled by faults, joints or discontinuities within the sandstones and siltstones.

3.3 Previous Investigations and Subsoil Conditions

The S&RC investigations listed below have been previously undertaken at the site. The augerhole logs, investigation location plans, and indicative cross sections prepared utilising the investigation data has been reproduced and is presented in Appendices D and E.

3.3.1 Previous Investigation 2007

Fieldwork in 2007 comprised:

- inspection of the site
- drilling of three machine boreholes (MH1 to MH3) to depths ranging from 6.5m to 10.6m below ground level
- drilling of three hand augerholes (AH1 to AH3).

3.3.2 Previous Investigation 2014

The fieldwork comprised:

- re-inspection of the site
- drilling of two machine boreholes (MB01 to MB02)
- drilling of three hand augerholes (AH4 to AH6).

3.3.3 Previous Investigation 2017

The fieldwork comprised:

- re-inspection of the site
- drilling of one hand augerhole (AH01)

The October 2017 augerhole was undertaken within the northern area of the site, atop an area of apparent fill material. The purpose of the augerhole was to confirm the nature and depth of the fill materials and underlying natural soil deposits and compare with the 2014 cross-section profiles to see if additional earthworks had been undertaken in the intervening years. The augerhole log is presented in Appendix D, and a representative geological cross section A-A' through the site is shown in Appendix C. The augerhole location is shown overlaid on an aerial photograph of the site and is also presented in Appendix C.

Augerhole log AH01 shows non-engineered fill materials were encountered from the ground surface to 1.0m below ground level. Underlying the fill materials were weathered Waitemata Group deposits to the termination depth of the augerhole, before competent sandstone rock was reached at approximately 4.3m depth (inferred from DCP test). This soil profile generally concurs with the profile, material descriptions, and soil strengths presented on the cross-section drawings within the 2014 Report, and it is our opinion that it is unlikely that additional earthworks have been undertaken at the site since 2014.

The following descriptions of the subsoils have been reproduced from the 2014 Report. Upon review of the investigation log from the augerhole undertaken on 20/10/17, we concur that these descriptions generally reflect the fill and geological units present.

- **Topsoil and Fill.** Topsoil and fill were encountered at all but one test location to depths ranging from 0.5, to 1.9m below current ground level. The fill comprised grey and brown silt and clayey silt containing sand and gravel and of a firm to very stiff consistency. The fill in the 2014 boreholes MB01 and MB02 is likely to have originated from the earthworks that have taken place since 2007. Buried topsoil was encountered at several of the test locations.
- **Weathered Waitemata Group Soils.** These are the natural soils encountered within all five boreholes and six augerholes. They comprise grey and orange silts with varying clay content and of slight to high plasticity. Vane shear strength values ranged from 42kPa to unable to penetrate (UTP) which indicates a shear strength value in excess of 200kPa. The majority of values were in excess of 140kPa.

- **Weak Waitemata Group Sandstone and Mudstone.** These weak rocks underlie the weathered Waitemata Group soils and were found in MH1, MH2, and MH3 at depths of 2.9m, 3.0m and 4.0m and in MB01 and MB02 at depths of 3.3m and 4.0m respectively below current ground level.

- **Groundwater.**

2007: Groundwater was encountered on the day of drilling (10 April 2007) at depths of 2.5m, 5.2m, and 3.0m below ground level in MH1, MH2 and MH3 respectively. Similarly, groundwater was encountered on the day of drilling at 2.1m, 1.6m and 1.4m below ground level in AH1, AH2 and AH3 respectively. Following a period of nearly one month (4 May 2007) the groundwater table was re-measured in the three augerholes at 1.3m, 1.5m and 1.5m in AH1, AH2 and AH3 respectively.

2014: Groundwater was not encountered on the day of drilling (30 January 2014) in MB01 and MB02. Groundwater was encountered on the day of drilling (13 & 17 February 2014) at 1.3m, 3.2m and 4.6m below ground level in augerholes AH4, AH5 and AH6 respectively. The groundwater table was re-measured in the two boreholes and three augerholes on 24 February 2014 at 1.6m, 2.6m, 0.9m, 3.1m and 4.3m respectively.

2017: Groundwater was encountered on the day of drilling (20 October 2017) at a depth of 1.8m below ground level.

3.4 Adjacent Property Information

The following relevant information was obtained from electronic property files obtained from the Council:

3.4.1 9 Fleet Street, Eden Terrace

The most relevant geotechnical information with regard to foundation depths of the existing two-level structure is shown on a set of as-built drawings produced in March 2013, and original design drawings pertaining to the single-level structure from 1990 and 1996. The full drawing set references are:

- As Built Drawings, 9 Fleet St, Newton, for Merchant Homes Ltd, Dwg No.s Ex01-04 & A01, March '13
- 9 Fleet St, P.N. HC 96/8600, 3 of 6, Section A-A, 1996
- 9 Fleet St, P.N. 460, Internal Partitions + Extend Block Work, 14 August 1990

This 2013 drawing set shows the masonry wall and deck foundations both in elevation and cross-sectional views, and extracts are shown in Figure 2 below. Figure 3 shows the original masonry block wall and supporting piles as shown within the 1990 drawings. Refer to Appendix B for drawing copies relevant to the three adjoining properties.

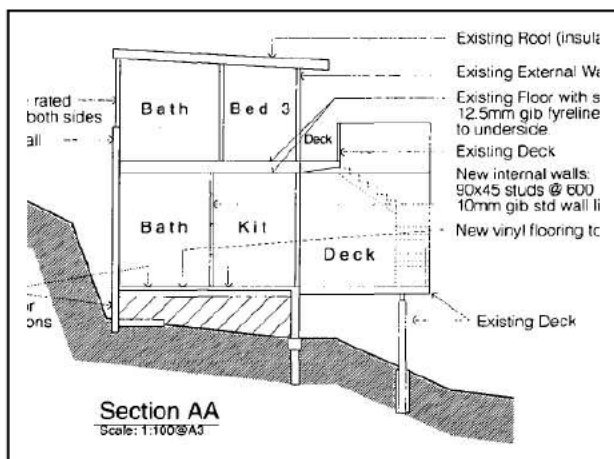


Figure 2: Drawing Extracts – 2013

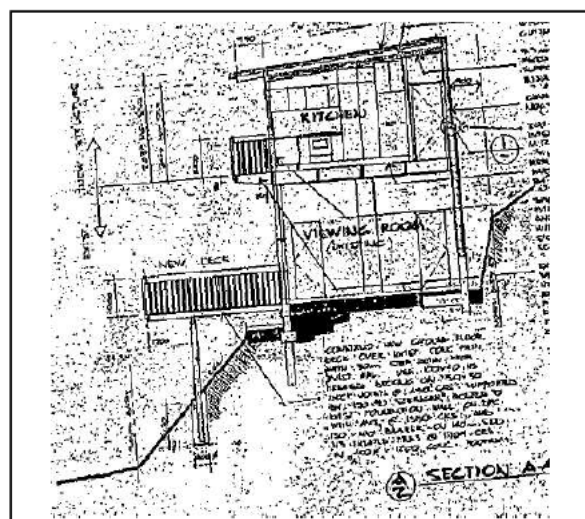
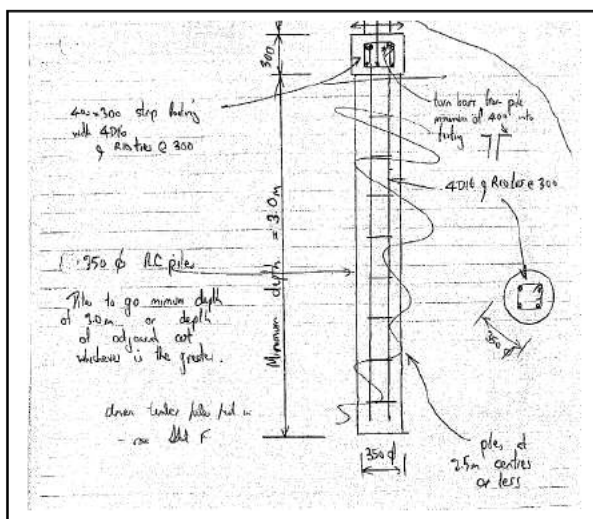
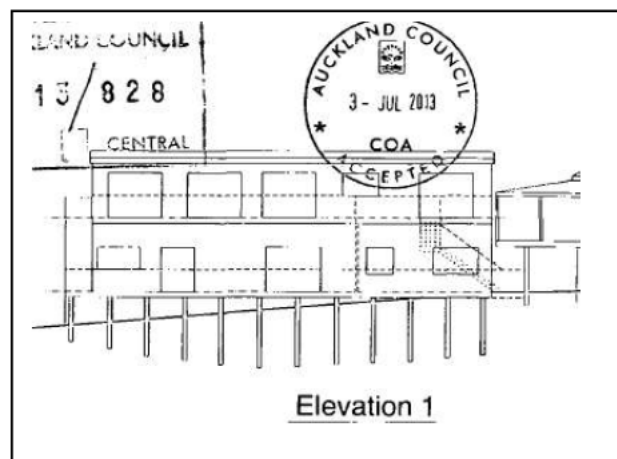


Figure 3: Drawing Extracts – Masonry wall and deck foundation details, August 1990 and 1994

These views show that the masonry and deck foundations are embedded below ground level a minimum of 3.0m and 1.5m respectively.

3.4.2 15 Fleet Street, Eden Terrace

The most relevant geotechnical information with regard to foundation depths of the existing four-level apartment structure is shown on two sets of drawings produced in 2005 (Stage 1) and 2012 (Stage 2). The drawing sets are referenced thus:

- Basque Park Apartments, 15-15A Fleet Street, Newton, Issued for Structural Consent, Sept. 2005
- Architectural Drawings for Building Consent, Stage 2, 15 Fleet Street, Eden Terrace, July 2012

The drawings appear to show that a basement structure was constructed adjacent to 11-13 Fleet Street as part of the Stage 1 works in 2005 / 2006, though the apartments above were not constructed until sometime during or after 2012. Figure 4 shows a long-section elevation viewed from the north side of the Stage 1 development, taken from the 2005 drawing set. It appears to show that there is a one-level carpark basement area below the existing apartments. This is confirmed from the 2012 drawing set which shows a building cross-section viewed from the rear of the property (western aspect, shown in Figure 5).

In terms of building foundation structures and/or retaining solutions undertaken for the 2005 works along the northern boundary, a wall elevation drawing from 2006 appears to show a concrete pile and sprayed concrete wall was proposed. This wall is shown in Figure 6 and appears to found 10m below present ground level.

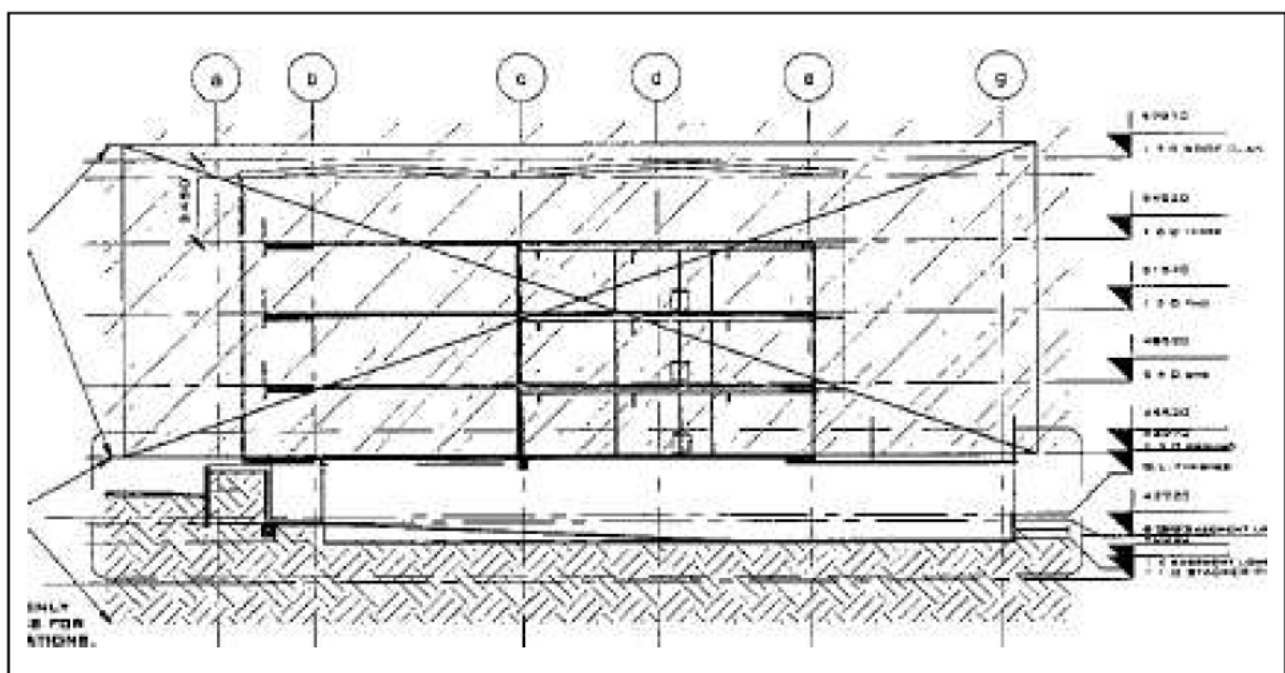


Figure 4: Drawing Extract – Long-section elevation Stage 1, 2005

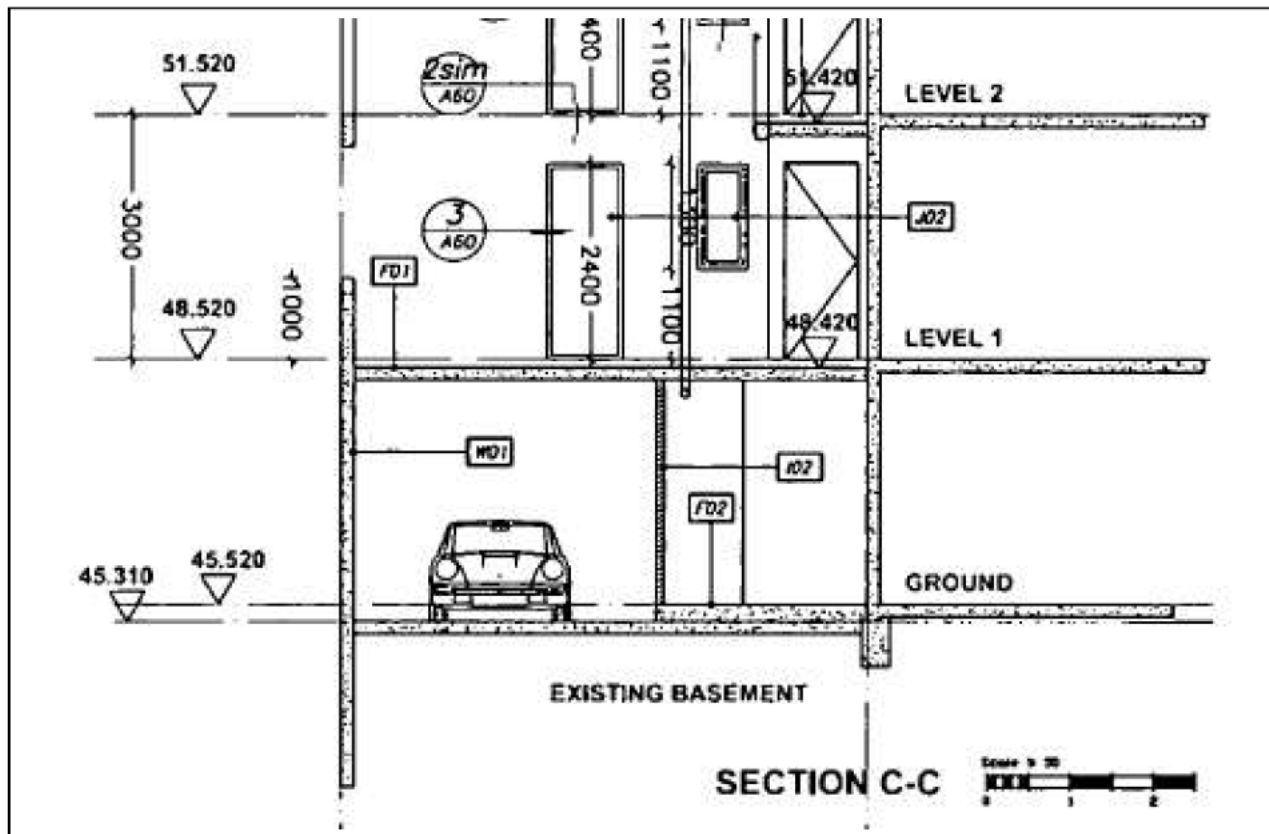


Figure 5: Drawing Extract – Cross-section, western aspect, 2012

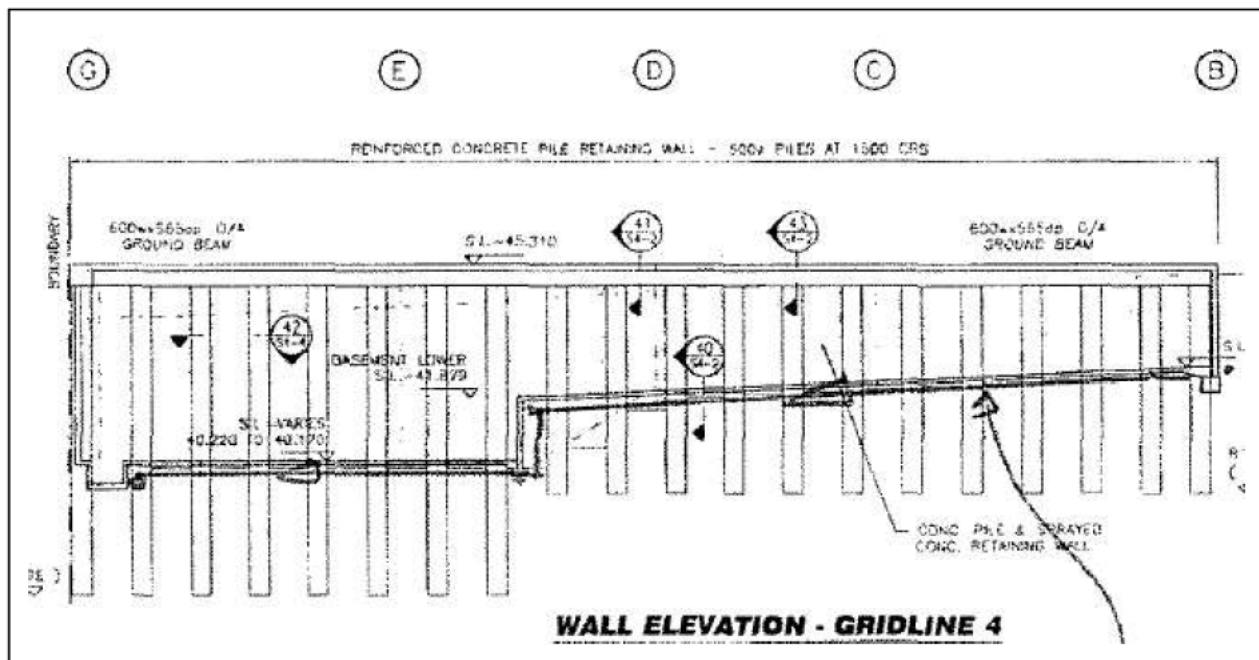


Figure 6: Drawing Extract – Concrete pile wall elevation, 2006

3.4.3 6 Piwakawaka Street Eden Terrace

Of interest on this site is the depth of the pile foundations supporting the vehicle access ramp adjacent to the western boundary of 11-13 Fleet Street, and to a lesser extent the type and depth of foundations supporting the apartment complex itself. The Council property file contained a structural drawing set dated April 2005 which presented cross-sections through the access ramp and apartment areas. The relevant cross-section is presented in Figure 7 and appears to show the access ramp and apartment ground floor structure is founded on concrete piles embedded 4m below existing ground level.

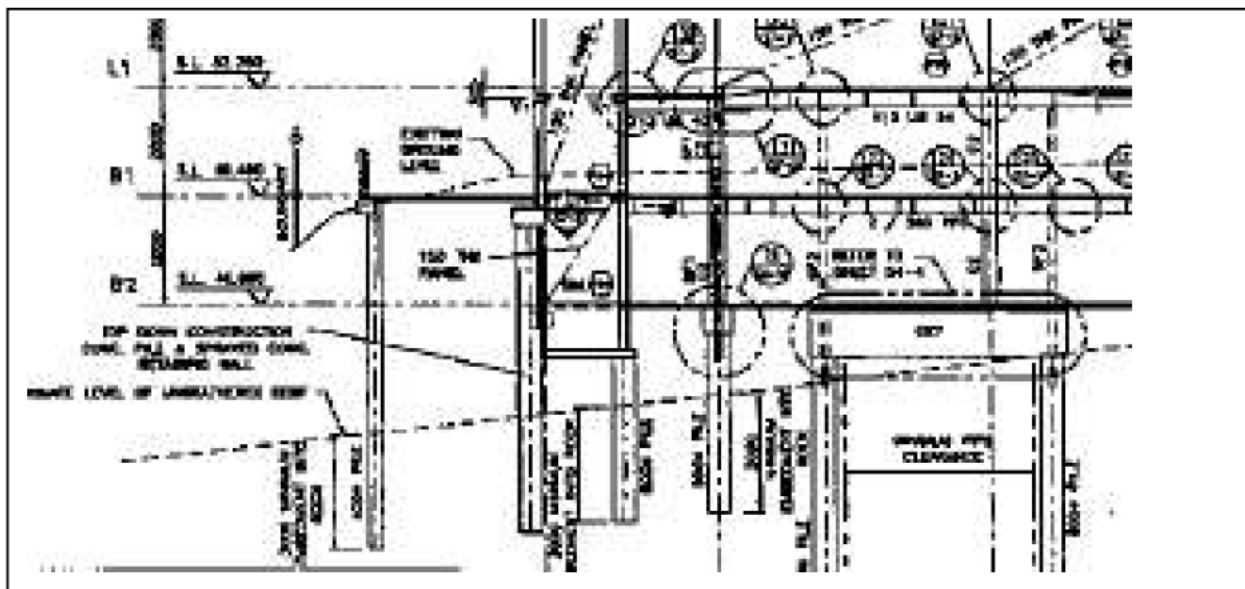


Figure 7: Drawing Extract – Access ramp and apartment structure founding piles, 2005

4.0 Liquefaction Potential

Liquefaction is a process in which loose saturated cohesionless soils are subject to temporary, but essentially full, loss of strength due to incremental pore pressure build-up under reverse cyclic shear loading generated during an earthquake. As a consequence of this temporary strength loss, the liquefied soil can deform and settle. Case histories show that liquefaction is limited almost exclusively to saturated, fine to medium grained sands and low plasticity silts. Liquefaction can only occur at and below the surface of the groundwater.

Whilst sands and/or sandy silts were encountered, the relatively dense composition and cemented nature of the Waitemata Group material is not conducive to significant liquefaction. Given the shallow rock level underlying the site the risk of liquefaction and damaging differential settlement affecting the building platform is low.

5.0 Proposed Development Foundations & Retaining

As the proposed apartment development does not include an underground carpark area, a slab-on-grade foundation pad at approximately the existing ground level supported on reinforced concrete piles founded on underlying sandstone rock, is envisaged as the likely foundation solution.

The northern boundary of the site, where there is an existing dwelling and elevated ground surface, will require a significant retaining wall in order to facilitate construction of the ground floor level. That is, construct a retaining wall utilising a top-down methodology to excavate to the required subgrade level in front of the wall.

It should be noted that the southern aspect of the apartment structure would likely be required to be supported on deep reinforced concrete piles in order to mitigate probable loading of the adjacent apartment basement wall that would otherwise occur. That is, the imposed loading from the proposed structure should be transferred to underlying competent sandstone rock, at a level below the founding level of the neighbouring support piles.

6.0 Geotechnical Considerations

The following geotechnical considerations have been developed based solely on the likely foundation solution as described above.

Slab-on-grade foundation pad, supported on piles:

- Underground services that run through the site will need to be protected or bridged, or be re-routed to an alternative location. A check of the Auckland Council Geomaps website shows only a Watercare pipe asset traversing the site along the road-frontage boundary. As such, underground services are not considered an issue.
- Seasonal shrink-swell of near-surface cohesive materials and associated differential settlements are an issue often seen with slab-on-grade construction. With this site the underlying competent sandstone rock is shallow (<3m depth below existing ground level) and as such a foundation slab could be suspended on short reinforced concrete piles to mitigate settlement concerns. Alternatively, a thickened hardfill raft could be constructed which would replace the near-surface fill and residual soils (~<1m thick) and mitigate settlement concerns as above.
- Fill materials have been identified on site, and may be deeper away from the investigation locations (i.e. may not be limited to the mound already identified within the northern area). Also, previous

published information does not refer to any contamination sampling/testing having been carried out with respect to these materials, hence it may be prudent to do so.

- Adjacent buildings. Construction of any bored-pile type foundation wall has the potential to relieve lateral support from adjacent walls or foundations. Care must be taken that boring-type excavations are not excessively large or spaced in such a way as to cause collapse of the pile hole or lateral movement of adjacent structures. Survey monitoring of adjacent structures may be necessary during the works.

Northern boundary retaining

- Based on the measured groundwater levels from the previous investigations we consider it unlikely that excavations to facilitate a level building platform within the northern area of the site will encounter groundwater. As no dewatering would be required, the development would qualify as a Permitted Activity regarding groundwater impacts under the AUP.
- Displacement / deflection of the wall due to excessive lateral loading and/or insufficient member size and/or embedment into competent underlying materials. The site is underlain by shallow stiff Waitemata Group residual soils in turn underlain by Waitemata Group Sandstone rock. Provided the wall is engineer-designed in terms of loading magnitudes, wall member sizing, and embedment depths, displacements or deflections are not considered as a significant issue. Health and safety aspects of large scale excavations following wall construction need to be considered to ensure worker safety at heights.

7.0 Additional Geotechnical Investigations

A limited suite of geotechnical investigations have been undertaken to date within the site boundaries to gain a general appreciation of the geological profile underlying the site and the strength characteristics.

To allow for detailed design of foundations and retaining wall design along the northern boundary, supplementary geotechnical investigations should be undertaken. It is anticipated that these investigations would comprise drilling of two deep drillholes (likely 10m-15m depth) with associated laboratory testing of recovered core samples. Laboratory testing would likely take the form of unconfined compressive strength (UCS) testing of the underlying sandstone rock to aid in accurately determining the founding depth for piles.

The following fee estimate encompasses the likely costs associated with undertaking the above-mentioned site investigations, laboratory testing, and factual and interpretive design reporting.

Table 1: Estimated Costs for Site Investigations, Laboratory Testing, and Reporting

Item	Unit Cost	No of Units	Fee (\$)
Health and Safety – toolbox induction, services location	Lump Sum - Nominal		500.00
Rotary drillhole investigation (2x10m-15m), including installation of one standpipe piezometer for groundwater monitoring, and recovery of samples for laboratory UCS testing.	Lump Sum		12,000.00
S&RC geologist to supervise drilling operations and log recovered core, incl. travel	\$150	20	3,000.00
Survey investigation locations to obtain RL's	Lump Sum		300.00
Laboratory testing	Lump Sum		2,000.00
Site visits (x3) to monitor piezometer	\$150/hour	3 hrs	450.00
Borehole logs and site plan drawing	\$150/hour	3 hrs	450.00
Geotechnical Investigation Report (GIR)	Lump Sum		2,000.00
Table 1 Total: Estimated Cost of Site Investigations, Laboratory Testing, and Reporting			\$20,700.00

Notes:

- Above costs are an estimate only
- Cost estimate does not include design of foundations or retaining wall, or geotechnical inspections during construction

We trust the above is satisfactory. If you have any queries, please contact us at your convenience.

Yours faithfully

SOIL & ROCK CONSULTANTS

Prepared by:



Mark Sinclair
Principal Geotechnical Engineer
CMIPENZ, CPEng

Reviewed & Authorised by:



Bruce Green
Principal Geotechnical Engineer
CMIPENZ, CPEng

Appendix A

Architectural Drawing Set

PB&A.
ARCHITECTS
Paul Brown & Associates Limited

11-13 Fleet Street,
Eden Terrace

NOVEMBER 2021 | FOR INFORMATION | B



SITE INFORMATION

11 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 91 Deeds Reg 1331
335m²

13 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 90 Deeds Reg 1331
337m²

PROPERTY AREA: 672m²
(MORE OR LESS)

PLANNING/PAUP
H13: BUSINESS MIXED USE

OVERLAYS:
NATURAL HERITAGE: REGIONALLY
SIGNIFICANT VOLCANIC VIEWSHAFTS &
HEIGHT

SENSITIVE AREAS OVERLAY (RCP/DP) - E20,
MT EDEN VIEWSHAFTS

CONTROLS:
CENTRE FRINGE OFFICE CONTROL

MACROINVERTEBRATE COMMUNITY INDEX -
URBAN

MAX HEIGHT: 16m +2m

HRB CONTROLS:
NONE BASED ON MIXED USE NEIGHBOURS

YARDS:
NONE

SPECIAL:
FLOOD PRONE AREA
OVERLAND FLOWPATH
2000m² TO 4000m²

OUTLOOK/BUILDING SEPERATION:
PRINCIPAL OUTLOOK: 6m x 4m
SECONDARY OUTLOOK: 3m x 3m

PRIVATE OUTDOOR LIVING SPACE:
NONE

MIN DWELLING SIZE:
STUDIO: 30m²
1 OR MORE BED: 45m²

SCHEDULE OF ACCOMMODATION

TYPE	TYPE	NO OF BEDS	COUNT
APARTMENT	OFFICE	1	1
APARTMENT	TYPE A - 1 Bed	1	28
APARTMENT	TYPE B - 1 Bed	1	16
APARTMENT	TYPE C - 2 Beds	2	14
Total Units			59

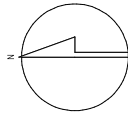
SCHEDULE OF AREAS (GROSS)

TYPE	TYPE	INT AREA	DECK AREA
APARTMENT	OFFICE	65.00 m²	
APARTMENT	TYPE A - 1 Bed	46.50 m²	8m²
APARTMENT	TYPE B - 1 Bed	44.00 m²	8m²
APARTMENT	TYPE C - 2 Beds	71.22 m²	

SCHEDULE OF CARPARKS

TYPE	COUNT
	13

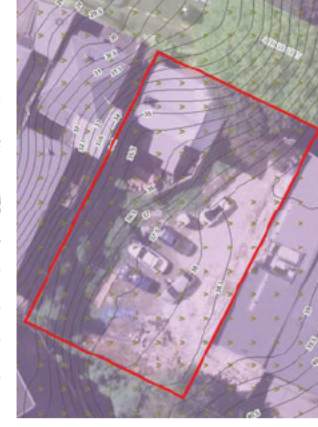
5000 x 2500mm - 40 deg





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Paul Berman & Associates Limited



VOLCANIC VIEW SHAFT

Eden Terrace
SHACKLETON DEVELOPMENTS



11 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 91 Deeds Reg 1331
335m²

PROPERTY AREA: 672m²
(MORE OR LESS)

H13: BUSINESS MIXED USE

**SENSITIVE AREAS OVERLAY (RCP/DP) - E20,
MT EDEN, VIEWSHAFTS**

CONTROLS:
CENTRE FRINGE OFFICE CONTROL

UNBAN

HIRB CONTROLS:

YARDS: **NONE**

SPECIAL:
E1000 PRONE AREA

OUTLOOK/BUILDING SEPERATION:

PRIVATE OUTDOOR LIVING SPACE

MIN DWELLING \$7F.

STUDIO: 30M²
1 OR MORE BED: 45M²

SCHEDULE OF AREAS (GROSS)			
TYPE	TYPE	INT AREA	DECK AREA
APARTMENT	OFFICE	66.20 m ²	
APARTMENT	TYPE A - 18nd	48.50 m ²	8m2
APARTMENT	TYPE B - 18nd	47.82 m ²	8m2
APARTMENT	TYPE C - 18nd	71.22 m ²	



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335m²

13 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 90, Deeds Reg 1331
337m²

PROPERTY AREA: 672m²
(MORE OR LESS)

PLANNING/AUP
H13: BUSINESS MIXED USE

OVERLAYS:
NATURAL HERITAGE: REGIONALLY
SIGNIFICANT VOLCANIC VENTS/SHAFTS &
HEIGHT

SENSITIVE AREAS OVERLAY (RCP/DP) - E20,
MT EDEN, VIEWS/SHAFTS

CONTROLS:
CENTRE FRINGE OFFICE CONTROL
MACROINVERTEBRATE COMMUNITY INDEX -
URBAN

MAX HEIGHT: 6m +2m

HRB CONTROLS:
NONE BASED ON MIXED USE NEIGHBOURS

YARDS:
NONE

SPECIAL:
FLOOD PRONE AREA
OVERLAND FLOWPATH
2000m² TO 4000m²

OUTLOOK/BUILDING SEPARATION:
PRINCIPAL OUTLOOK: 6m x 4m
SECONDARY OUTLOOK: 3m x 2m

PERMATE OUTDOOR LIVING SPACE:
NONE

MIN DWELLING SIZE:
STUDIO: 30m²
1 OR MORE BED: 45m²

SCHEDULE OF ACCOMMODATION			
TYPE	SUBTYPE	NO OF BEDS	COUNT
APARTMENT	STUDIO	1	1
APARTMENT	TYPE A - 1 Bed	1	28
APARTMENT	TYPE B - 1 Bed	1	16
APARTMENT	TYPE C - 2 Bed	2	14
Total Units			59

SCHEDULE OF AREAS (GROSS)			
TYPE	TYPE	INT AREA	DECK AREA
APARTMENT	OFFICE	65.00 m ²	
APARTMENT	TYPE A - 1 Bed	46.50 m ²	
APARTMENT	TYPE B - 1 Bed	42.28 m ²	Bed
APARTMENT	TYPE C - 2 Bed	71.22 m ²	Bed

SCHEDULE OF CARPARKS			
TYPE	TYPE	COUNT	
0005 x 2500mm + 40 deg		15	



L01
1:100

SITE INFORMATION

11 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 91 Deeds Reg 1331
335m²

13 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 90, Deeds Reg 1331
337m²

PROPERTY AREA: 672m²
(MORE OR LESS)

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OVERLAYS:
NATURAL HERITAGE: REGIONALLY
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MT EDEN, VIEWSHAFTS

CONTROLS:
CENTRE FRINGE OFFICE CONTROL
MACROINVERTEBRATE COMMUNITY INDEX -
URBAN

MAX HEIGHT: 16m +2m

HRB CONTROLS:
NONE BASED ON MIXED USE NEIGHBOURS

YARDS:
NONE

SPECIAL:
FLOOD PRONE AREA
OVERLAND FLOWPATH
2000m² TO 4000m²

OUTLOOK/BUILDING SEPARATION:
PRINCIPAL OUTLOOK: 6m x 4m
SECONDARY OUTLOOK: 3m x 2m

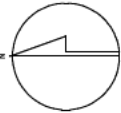
PRIVATE OUTDOOR LIVING SPACE:
NONE

MIN DWELLING SIZE:
STUDIO: 30m²
1 OR MORE BED: 45m²

SCHEDULE OF ACCOMMODATION			
TYPE	SPECIES	NO OF BEDS	COUNT
APARTMENT	STUDIO	1	1
APARTMENT	TYPE A - 1 Bed	1	28
APARTMENT	TYPE B - 1 Bed	1	16
APARTMENT	TYPE C - 2 Bed	2	14
Total Units			59

SCHEDULE OF AREAS (GROSS)			
TYPE	INT AREA	DECK AREA	
APARTMENT	OFFICE	68.00 m ²	
APARTMENT	TYPE A - 1 Bed	46.50 m ²	
APARTMENT	TYPE B - 1 Bed	42.00 m ²	Bed
APARTMENT	TYPE C - 2 Bed	71.20 m ²	Bed

SCHEDULE OF CARPARKS	
TYPE	COUNT
0205 x 2500mm + 40.00g	15



L2
1:100



938-SK06

02/11/2021

B

11-13 Fleet Street,
Eden Terrace
SHACKLETON DEVELOPMENTS

SITE INFORMATION
11 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 91 Deeds Reg 1331
335m²
13 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 90, Deeds Reg 1331
337m²
PROPERTY AREA: 672m²
(MORE OR LESS)
PLANNING/AUP
H13: BUSINESS MIXED USE
OVERLAYS:
NATURAL HERITAGE: REGIONALLY
SIGNIFICANT VOLCANIC VIEWSHAFTS &
HEIGHT
SENSITIVE AREAS OVERLAY (RCP/DP) - E20,
MT EDEN, VIEWSHAFTS
CONTROLS:
CENTRE FRINGE OFFICE CONTROL
MACROINVERTEBRATE COMMUNITY INDEX -
URBAN
MAX HEIGHT: 16m +2m
HRB CONTROLS:
NONE BASED ON MIXED USE NEIGHBOURS
YARDS:
NONE
SPECIAL:
FLOOD PRONE AREA
OVERLAND FLOWPATH
2000m² TO 4000m²
OUTLOOK/BUILDING SEPARATION:
PRINCIPAL OUTLOOK: 6m x 4m
SECONDARY OUTLOOK: 3m x 3m
PRIVATE OUTDOOR LIVING SPACE:
NONE
MIN DWELLING SIZE:
STUDIO: 30m²
1 OR MORE BED: 45m²

SCHEDULE OF ACCOMMODATION			
TYPE	TYPE	NO OF BEDS	COUNT
APARTMENT	STUDIO	1	1
APARTMENT	TYPE A - 1 Bed	1	28
APARTMENT	TYPE B - 1 Bed	1	16
APARTMENT	TYPE C - 2 Bed	2	14
Total Units			59

SCHEDULE OF AREAS (GROSS)			
TYPE	TYPE	INT AREA	DECK AREA
APARTMENT	OFFICE	68.00 m ²	
APARTMENT	TYPE A - 1 Bed	46.50 m ²	
APARTMENT	TYPE B - 1 Bed	42.00 m ²	
APARTMENT	TYPE C - 2 Bed	71.20 m ²	

SCHEDULE OF CARPARKS			
TYPE	TYPE	COUNT	
0005 x 2500mm + 40 deg		15	



SITE INFORMATION

11 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 91 Deeds Reg 1331
335m²

13 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 90, Deeds Reg 1331
337m²

PROPERTY AREA: 672m²
(MORE OR LESS)

PLANNING/UP
H13: BUSINESS MIXED USE

OVERLAYS:
NATURAL HERITAGE: REGIONALLY
SIGNIFICANT VOLCANIC VIEWSHAFTS &
HEIGHT

SENSITIVE AREAS OVERLAY (RCP/DP) - E20,
MT EDEN, VIEWSHAFTS

CONTROLS:
CENTRE FRINGE OFFICE CONTROL
MACROINVERTEBRATE COMMUNITY INDEX -
URBAN

MAX HEIGHT: 6m +2m

HRB CONTROLS:
NONE BASED ON MIXED USE NEIGHBOURS

YARDS:
NONE

SPECIAL:
FLOOD PRONE AREA

OVERLAND FLOWPATH
2000m² TO 4000m²

OUTLOOK/BUILDING SEPARATION:
PRINCIPAL OUTLOOK: 6m x 4m
SECONDARY OUTLOOK: 3m x 3m

PRIVATE OUTDOOR LIVING SPACE:
NONE

MIN DWELLING SIZE:
STUDIO: 30m²
1 OR MORE BED: 45m²

SCHEDULE OF ACCOMMODATION

TYPE	TYPE	NO OF BEDS	COUNT
APARTMENT	OFFICE	1	1
APARTMENT	TYPE A - 1bed	1	28
APARTMENT	TYPE B - 1bed	1	16
APARTMENT	TYPE C - 2bed	2	14
Total Units			59

**11 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021**
Lot 91 Deeds Reg 1331
335m²

13 FLEET STREET, EDEN TERRACE,
AUCKLAND 1021
Lot 90, Deeds Reg 1331
337m²

PLANNING/AUP
H13: BUSINESS MIXED USE

OVERLAYS:
NATURAL HERITAGE: REGIONALLY
SIGNIFICANT VOLCANIC VIEWSHAFTS &
HEIGHT

CONTROLS:
CENTRE FRINGE OFFICE CONTROL

MAX HEIGHT: 16m + 2m

YARD:
NONE

OVERLAND FLOWPATH
2000m² TO 4000m²

PRIVATE OUTDOOR LIVING

MIN DWELLING SIZE:
STUDIO: 30m²

SCHEDULE OF ACCOMMODATION			
TYPE	TYPE	NO OF BEDS	COUNT
APARTMENT	OFFICE	1	1
APARTMENT	TYPE A - 15sqd	1	28
APARTMENT	TYPE B - 15sqd	1	16
APARTMENT	TYPE C - 25sqd	2	14
Total Units			59

SCHEDULE OF AREAS (GROSS)			
TYPE	TYPE	INT AREA	DECK AREA
APARTMENT	OFFICE	66.00 m ²	
APARTMENT	TYPE A - 10bd	66.50 m ²	
APARTMENT	TYPE B - 10bd	47.82 m ²	8m ²
APARTMENT	TYPE C - 9bd	41.20 m ²	8m ²
APARTMENT	TYPE D - 8bd	31.20 m ²	

<u>SCHEDULE OF CARPARKS</u>	
TYPE	COUNT
5000 x 2500 mm - 90 dpa	18



PB&A.
ARCHITECTS
Paul Brown & Associates | limited

The information and design contained in this book and location is in relation to architectural intent only.

Paul Brown & Associates Limited

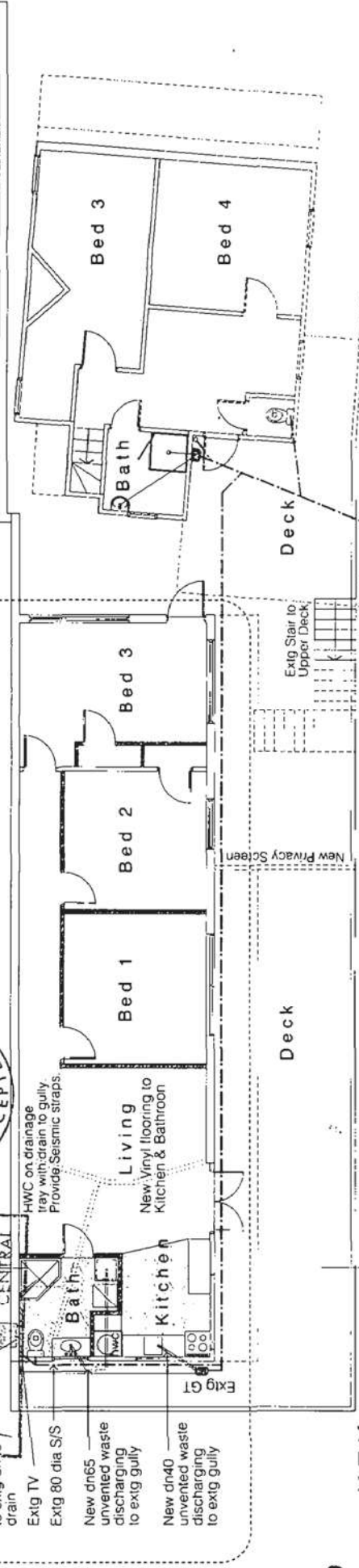
11-13 Fleet Street,
Eden Terrace
SHACKLETON DEVELOPMENTS

Appendix B

Relevant Council File Drawings from Adjacent Properties

AUCKLAND COUNCIL
 3 - JUL 2013
 Area of Work
 COA
 ACCEPTED

CON 2013 / 8209
 CENTRAL
 Connect s/s to extg dn40 drain
 Extg TV
 Extg 80 dia S/S
 New dn65 unvented waste discharging to extg gully
 New dn40 unvented waste discharging to extg gully



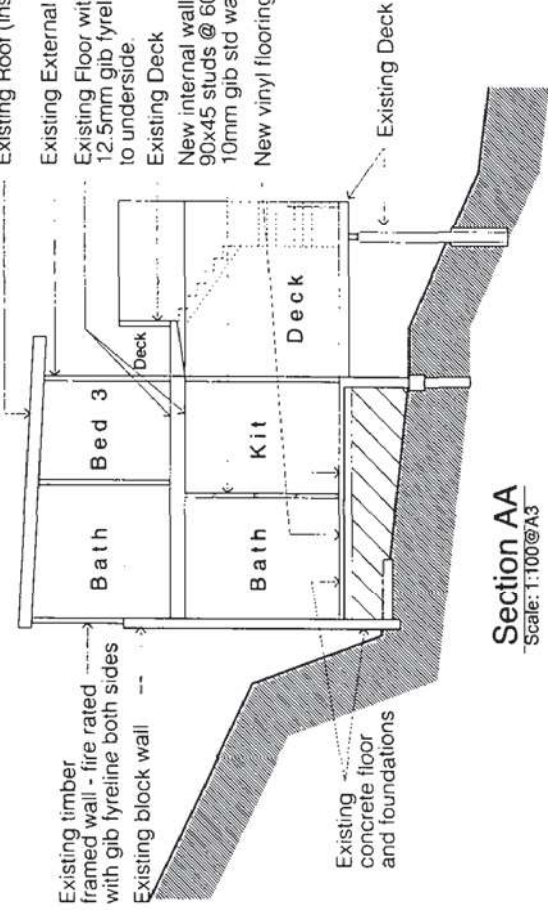
KEY

- Existing walls to remain
- New Walls
- Walls to be removed

Lower Floor Plan

Scale: 1:100@A3
 Showing interior alterations to Lower Floor of Flat, and S/S drainage

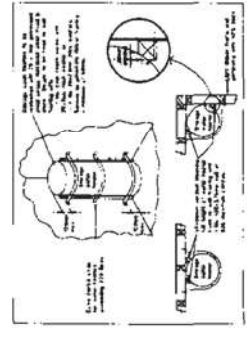
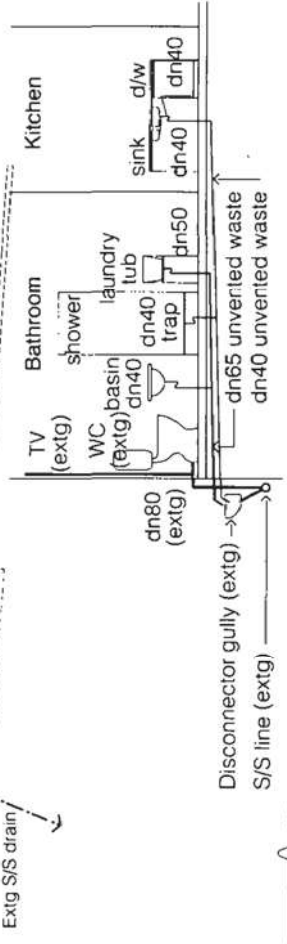
- Existing Roof (insulated)
- Existing External Walls (insulated)
- Existing Floor with sound batts and 12.5mm gib tyrelime fire rated ceiling to underside
- Existing Deck
- New internal walls: 90x45 studs @ 600 crs, nogs @ 800 crs. 10mm gib std wall lining, Paint finish
- New vinyl flooring to wet areas



Section AA

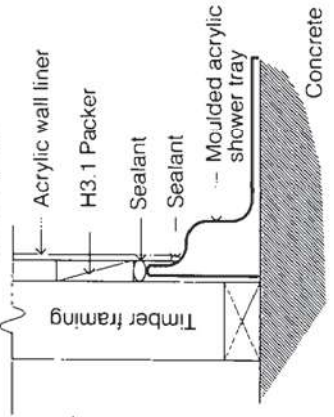
Scale: 1:100@A3

Plumbing Schematic



Shower Installation

Scale: 1:5

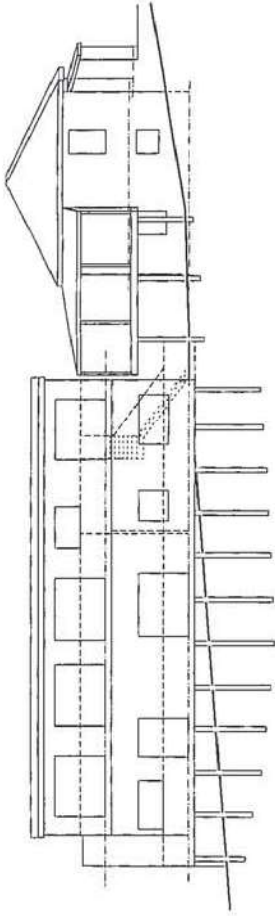


Certificate of Acceptance Drawing
 showing changes made to Lower Floor
 9 Fleet Street, Newton; Auckland City
 for Merchant Homes Ltd

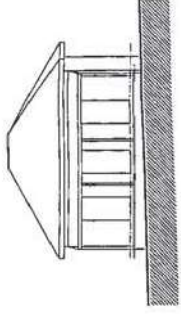
DAVIS
 DESIGN CONSULTANTS
 32 BALMAIN ROAD, BIRKENHEAD
 Ph & Fax (09) 418 3466 MOB 021 125 7210
 eM davisdesign@vodafone.co.nz

Lower Floor & Drainage Plan
 Section AA
 Details

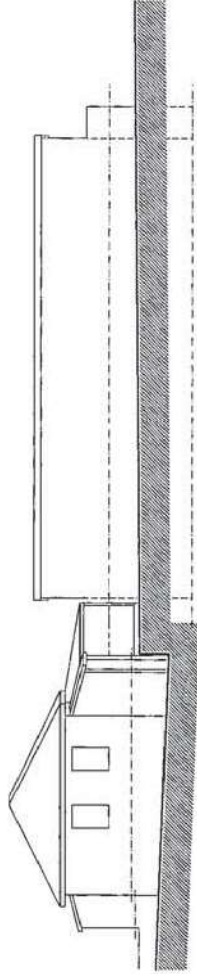
Scale: As shown @ A3
 Date: March 2013
 DWG N.O.
 REV
 A01



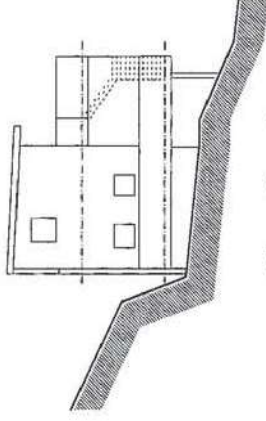
Elevation 1



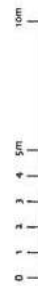
Elevation 2



Elevation 3



Elevation 4



Elevation Key

As Built Drawings
9 Fleet Street, Newton, Auckland City
for Merchant Homes Ltd

DAVIS
DESIGN CONSULTANTS

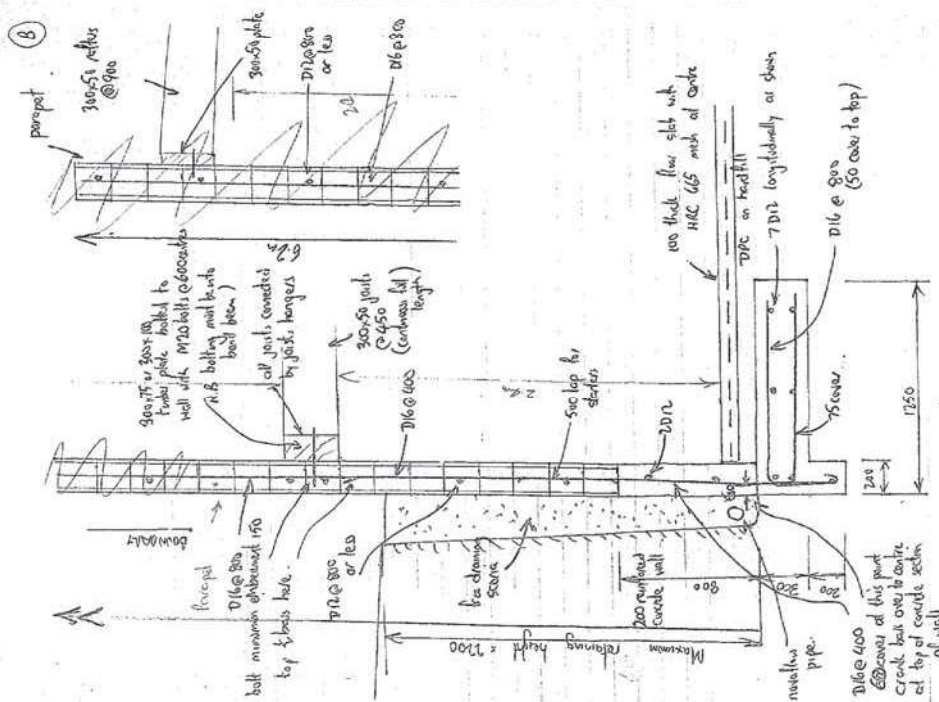
32 BALMAIN ROAD, BIRKENHEAD
Ph & Fax (09) 418 3466 MOB 021 125 7210
eM davisdesign@vodafone.co.nz

Elevations

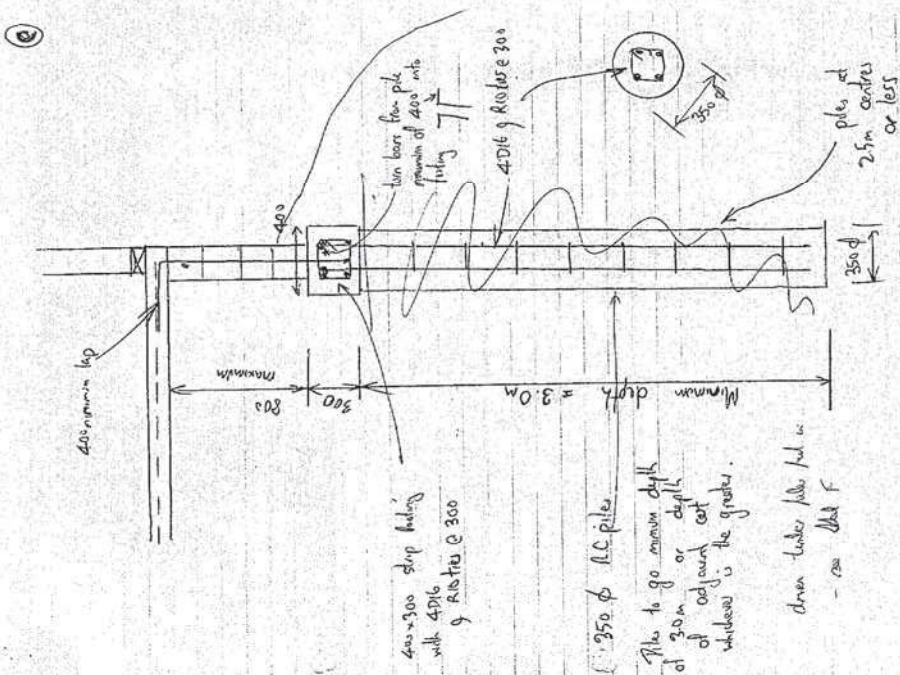
Scale : 1:200 @ A3
Date : March 2013
DWG N.O.

REV

EX03
-



BOUNDARY RETAINING WALL - FIREWALL



(A2)

9 FLEET STREET

P.N. 460

14 AUGUST 1990

INTERNAL PARTITIONS + EXTEND

Block work

1 of 12

NOT APPROVED 10N
HCP

DESCRIPTION	IQ SP	DATE APPROV.	SIGNATURE OFFICER
BUILDING	KB		
PURCHASE & DELIVERY	SI	12/16/80	✓
DARKENING WOODS			
GRASS			
MILK			
TILLY			
STREET LIGHTS	✓	4/7/81 BY X	
DECKING	✓	REPAIR 12/20/80	
STRUCTURAL	✓	28/9/80 NC	26/2
PAINTING	✓	12/24/80 CAG	✓
NOTE			

Any permit is issued subject to all laws being complied with in accordance with all relevant Acts, Regulations and By-Laws.

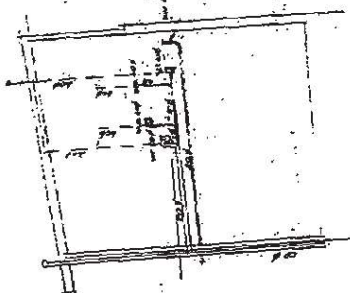
Approved for the Town of _____

 Town Engineer

Date: 14-8-80

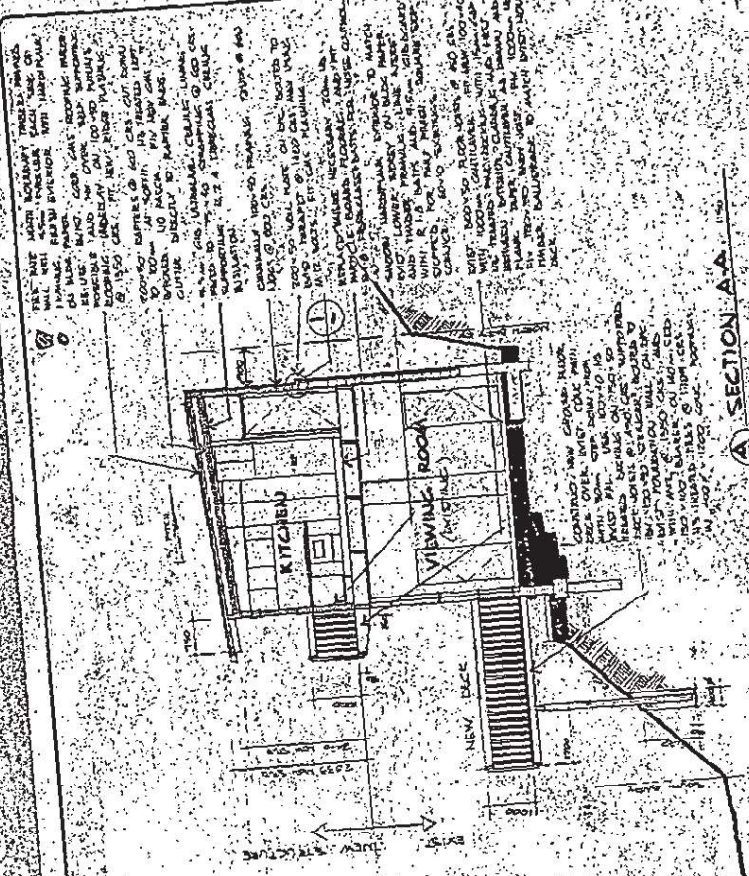
Detail

194. 890.

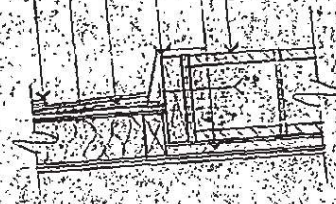


PLUMBING SCHEMATIC
 NEW TOP FLOOR
 EXIST. CHIMNEY FLOOR
 NEW TOP FLOOR
 EXIST. CHIMNEY FLOOR

Revised
 Drawings of plumbing
 and related to the structure



SECTION A-A



FIRE WALL DETAIL

9 FLEET STREET
P. No. HC 916/8600

3 of 6

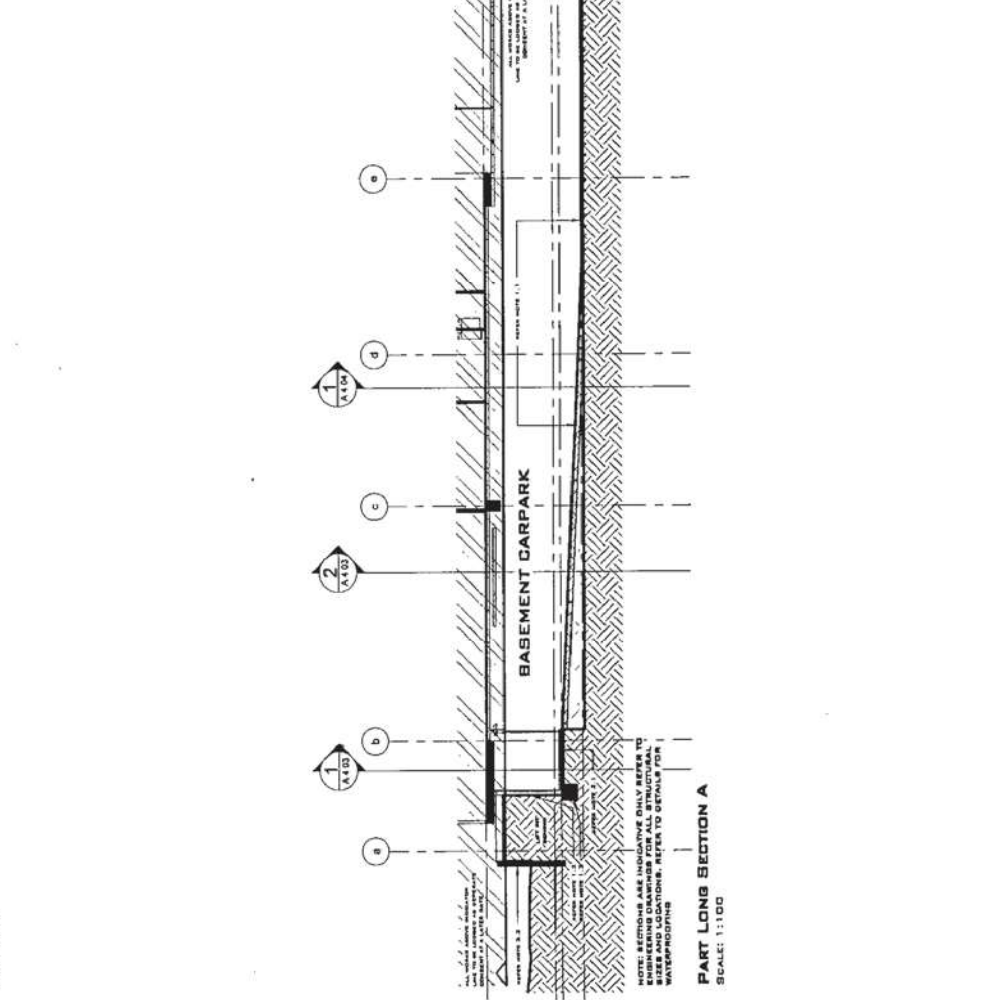
ADDITIONS FOR DESMOND HO
AT 9 FLEET STREET, NEWTON

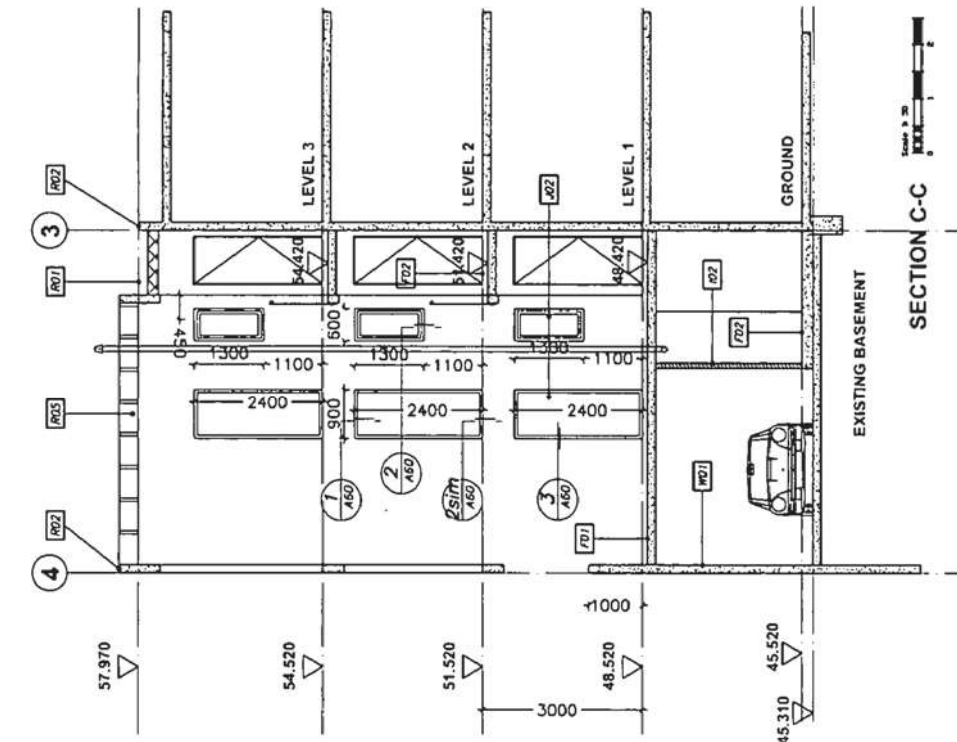
John van Cingel
 1114 E 7th Ave
 S. Portland, Oregon 97214
 Tel. 503/241-1114

SECTION PLUMBING SCHEMATIC
3

[illegible]

NT SEPTEMBER 05





SECTION C-C

- WALL:**
- W01** 150MM PRECAST PANEL, SELECTED MI-BUILD ELASTOMETRIC PAINT FINISH TO THE EXTERNAL FACE.
- INTERNALLY DIRECTLY GLUE CERAMIC TILES (THIS ONLY HAPPENS IN THE BATHROOM)
- OR ELSEWHERE
- INTERNAL LINED WITH 10MM GIB ON 45X45 N3 BATTEN WITH 40MM POLYSTYRENE SHEET R1.4
- W02** FRR 60/60/60, E_x 90 x 45 TIMBER FRAMED INTERNAL TENACITY WALLS STUD AT 600MM CTRS
- 1.5MM GIB FORTLENE ON EACH SIDE, STOPPED FOR A GRADE 4 PAINT FINISH WITH 75MM THERMAL GRADE FIBREGLASS OR 95MM AUTEX GREENSTUF IN THE WALL CAVITY.
- W03** E_x 90 x 45 TIMBER FRAMED INTERNAL WALLS STUD AT 600MM CTRS MAY 4 WOGS AT ROOM MAX CTRS. 1 LAYER 10MM GIB INTERNAL LINING ON BOTH SIDE, STOPPED FOR A GRADE 4 PAINT FINISH, 10MM GIB ADHULINE TO WET AREA.

- | | |
|--------|--|
| FLOOR: | |
| [F01] | CONCRETE SLAB REINFORCED TO ENGINEERS SPECS, REFER TO ENGINEERS DRAWINGS |
| [F02] | POLISHED CONC. FLOOR AND SELECTED HI-BUILD ELASTOMERIC PAINT FINISH |
| [F03] | CERAMIC TILES ON ACOUSTIC UNDERLAY ON AREA MAP 300 AS WATERPROOF MEMBRANE FOR BATHROOM TANKING |
| [F04] | PREFINISHED T&G TIMBER FLOORING ON ACOUSTIC UNDERLAY |
| | CEILING/SOFFIT: |
| [C01] | 10mm STANDARD GIB CEILING LINING ON TIMBER BATTEN, STOP FOR SELECTED PAINT FINISH |
| [C02] | 4.5mm VILLABOARD SOFFIT LINING WITH CONCEALED STOPPED JOINTS, SELECTED PAINT FINISH |
| [C03] | 13mm AQUALINE WITH VAPOUR BARRIER, WITH ENAMEL PAINT FINISH |

- | | | | | | |
|--------------|---|--|--|--|--|
| INSULATION: | | | | | |
| [101] | R3.0 THERMAL CEILING INSULATION BATTS | | | | |
| [102] | 75MM THERMAL GLASS FIBREGLASS OR 95MM AUTEX GREEN STUF ACROUSTIC BATTS | | | | |
| [103] | R1.4 POLYSTYRENE INSULATION XPS 40MM | | | | |
| [104] | R3.6 THERMAL CEILING INSULATION BATTS JOINTERY: | | | | |
| [101] | ALUMINIUM WINDOW/DOOR JOINTERY WITH DOUBLE GLAZE | | | | |
| [102] | ALUMINIUM WINDOW JOINTERY: WITH FIRE GLASS TO ACHIEVE FRR 60/60/60 | | | | |
| [103] | INTERNAL HOLLOW CORE DOOR, PAINT FINISH | | | | |
| [104] | AUTOMATIC GARAGE DOOR, SELECTED FINISH, ENSURE DOOR TYPE DOES NOT CLASH WITH BULKHEAD IN GARAGE | | | | |
| [105] | 860MM WIDE ENTRANCE FIRE DOOR FRR 60/60/60 | | | | |

[illegible]

WANBIN SUN
ARCHITECTURAL SERVICES
Mobile: 021-900184
Email: artitect@hotmail.com

MEMBER ASSOCIATION WITH:
BROWN & THOMPSON
CONSULTING ENGINEERS
PH: 09 376 2413
office@brownthompson.co.nz

TONY
 TONY
 tony_821@hotmail.com
 021280088

PROJECT **NEW APARTMENT BUILDING
AT 15 FLEET STREET.
NEWTON**

DRAWING TITLE

1:100@A3

DRAWN BY	CHECK BY
----------	----------

PROJECT NO.	

05/2013/08

APRIL 23 2013

05-3220301

2002



- NOTE: FOR GENERAL NOTES REFER TO DRC 55-1
1. WITH PANEL CONCRETE STRENGTH TO BE 20 MPa (Wt) AT 28 DAYS
2. CONCRETE TO 2 TO PROVIDE BALANCE CONCRETE
3. SPLIT BEAMS TO BE APPROXIMATELY 10% OF CASTING ANY CONCRETE
4. ALL ENDWORK TO BE COMPLETED ON SITE
5. REFER TO AIR REGISTRATION FOR QUANTIFICATION
6. TRAFFIC ON ARCHWAYS ARE BANNED UPON COMPLETION OF CONSTRUCTION OF ARCHWAYS. DURING CONSTRUCTION, TRAFFIC WILL BE DIVERTED TO THE SIDE OF THE ROAD.

WALL ELEVATION - GRIDLINE 4

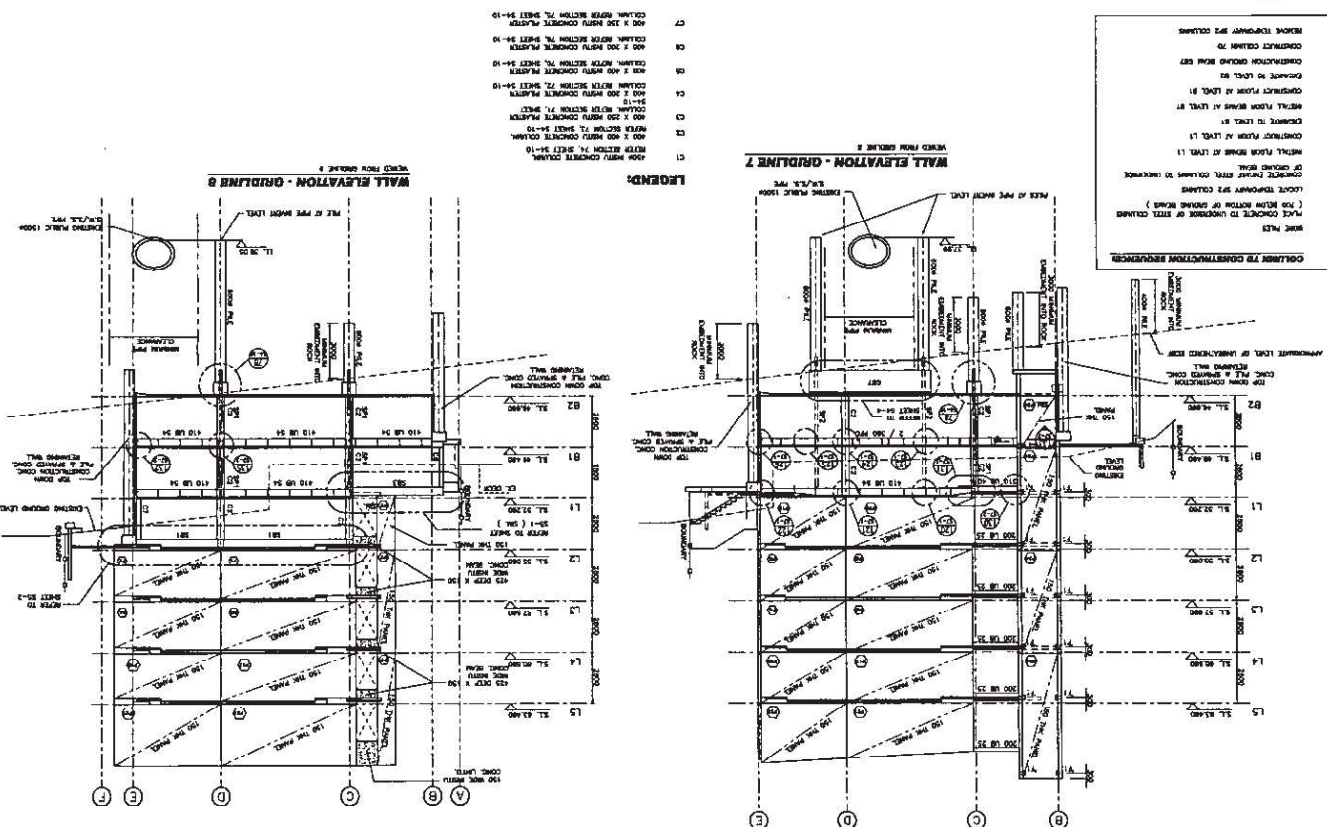
COLLECTOR ID# 41415

[illegible]

CITY ENVIRONMENTS
24 MAR 2006
PROCESSED

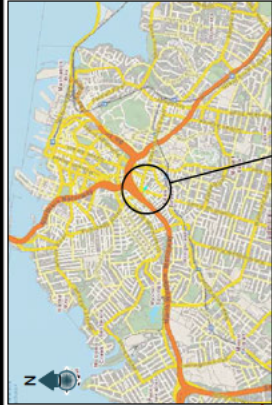
 $\frac{3}{5}$

ALL DIMENSIONS TO BE CHECKED ON SET
CONCRETE AND CONCRETE
CONSTRUCTION IS TO PROVIDE REINFORCED CONCRETE
AND DIMENSIONS FOR APPROVAL PRIOR TO
BE
CONCRETE TO BE
ON (MIN.) 28 DAYS
REINFORCED CONCRETE TO BE
FOR CONCRETE WORKS REFER TO Dwg. 20-1.



Appendix C

S&RC Drawings (Site Plan & Cross-section)



SITE LOCATION

KEY:

- Road, Road name
- Existing boundary
- Wastewater Line, manhole
- Stormwater Line, manhole
- Local Water Supply Line
- Major contour
- Minor contour
- AH01
- Approximate Hand Augerhole Locations, Soil and Rock Consultants, October 20, 2017
- Approximate Cross Section Locations, Soil and Rock Consultants, October 20, 2017

NOTES:

- Locations of features approximate only.
- Location of all buried services to be verified prior to construction.
- Original sheet size A3.
- Boundary information on this Site plan adapted from Auckland Council Aerial Photographs and/or GIS Data.
- Soil & Rock Consultants Site plan adapted from Auckland Council Aerial Photographs and/or GIS Data.
- Location Map information from Auckland Council Aerial Photographs and/or GIS Data.

DESIGN REVIEWS CHECK LIST	
DRAFTING	☐
CHECKED BY	_____
DATE	_____
ENGINEERING	☐
CHECKED BY	_____
DATE	_____



DATE	REV	DESCRIPTION

Soil & Rock Consultants
For well-grounded solutions

Unit 1, 131 Lincoln Road, Waiwaka
PO Box 21-2 Henderson, Waiwaka 950
Ph 08 835 17 0 Fax 08 835 18 7
www.srconsult.co.nz

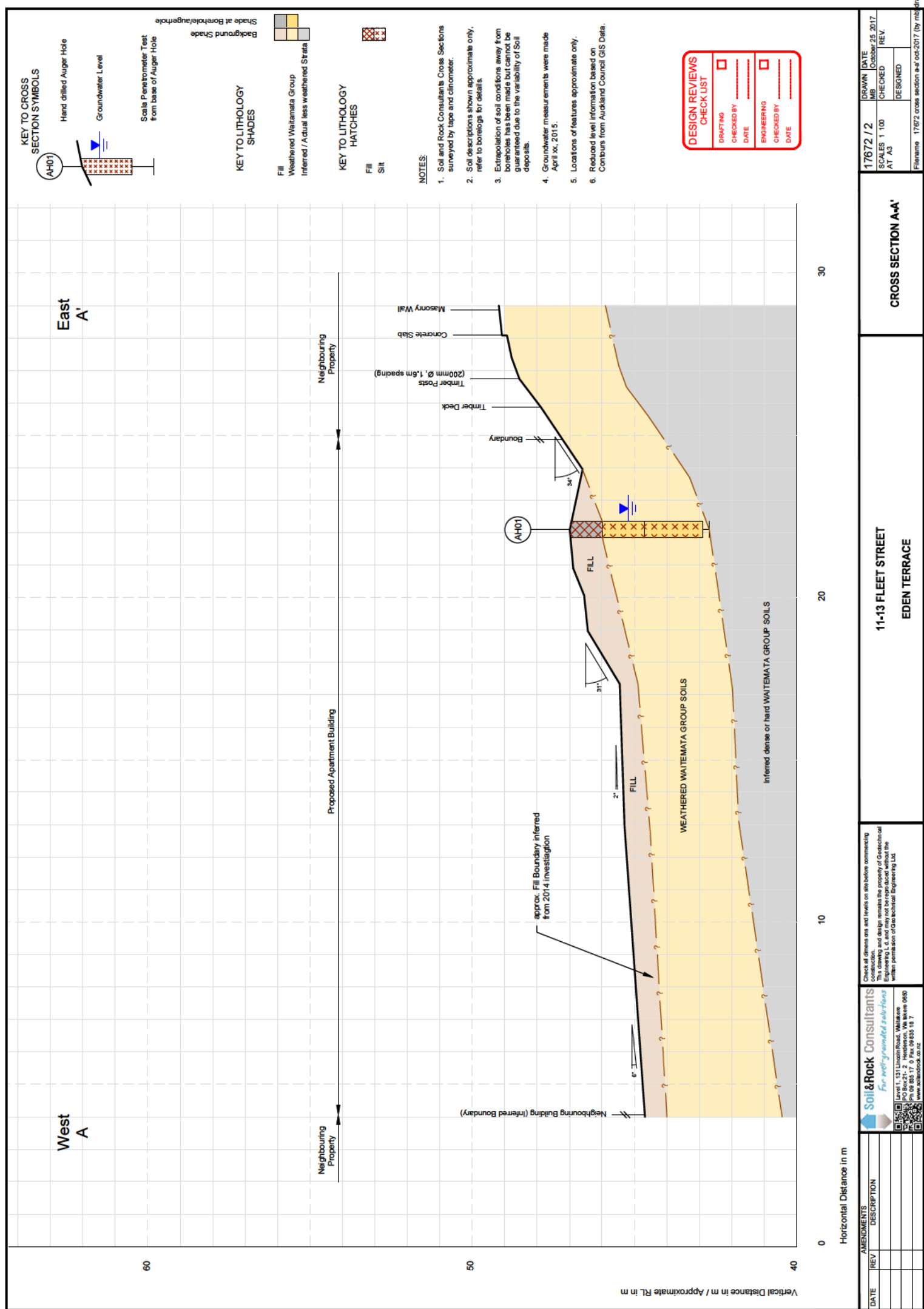
Check all dimensions and have a on file before commencing construction.
The design and construction of this project is the responsibility of Soil & Rock Consultants Ltd and may not be reproduced without the written permission of Geotechnical Engineering Ltd.

11 - 13 FLEET STREET
EDEN TERRACE

SITE PLAN

DRAWN	DATE	17672 / 1
MB	October 20, 2017	
CHECKED	REV	
AT A3	DESIGNED	

Filename: 17672 site plan oct-2017 (By mb).dwg

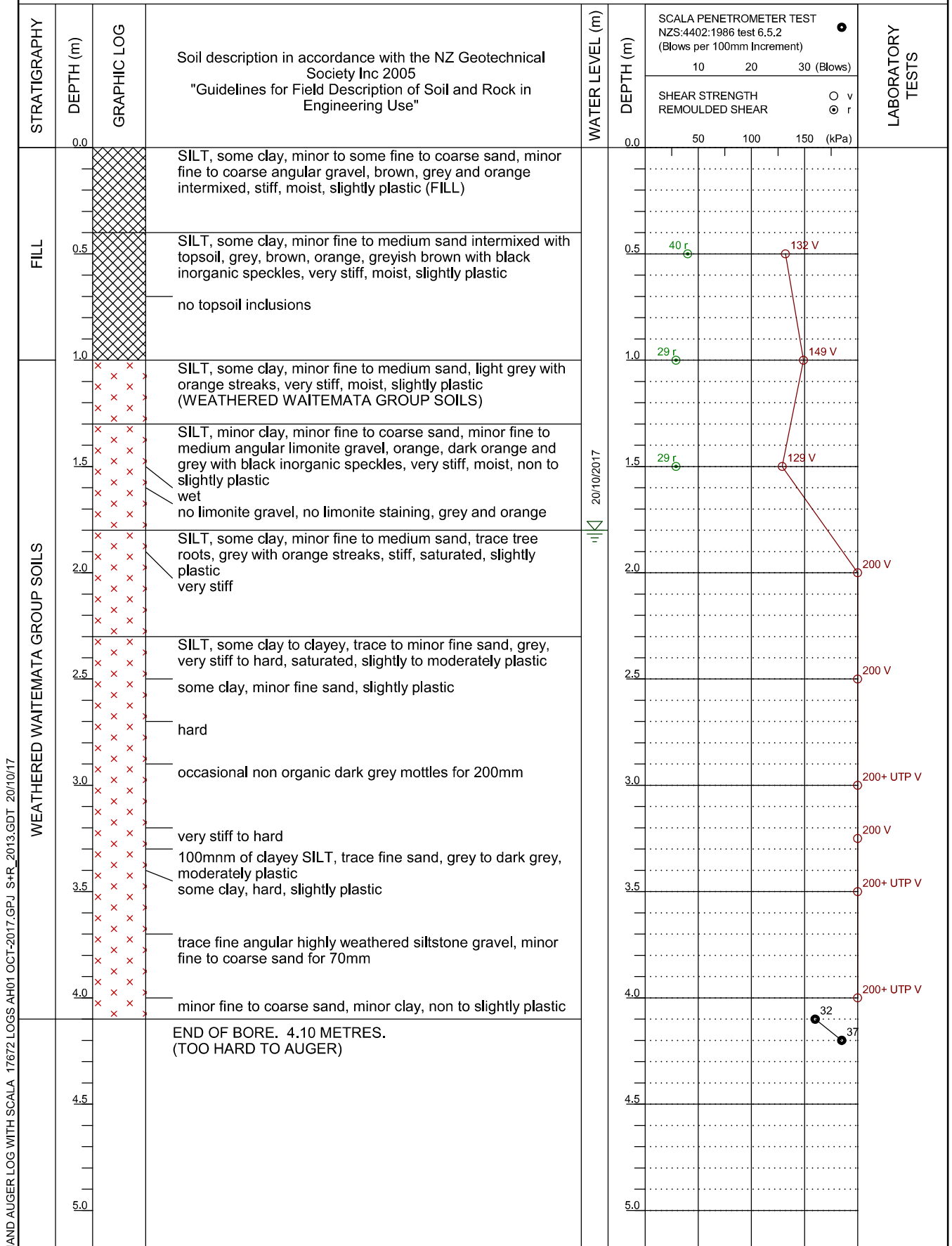


Appendix D

Augerhole and Scala Test Log (2017)

Drill Type: 50mm Hand Auger
Drilled By: MB
Date Started: 20/10/17
Date Finished: 20/10/17

Project No: 17672
Coordinates:
Ground Elevation:
Water Level: 1.8m 20/10/2017

Logged By: MB
Shear Vane No - Calibration Date: GEO765 - 29/08/2017
Surface Conditions: Slightly Sloping, Soil


HAND AUGER LOG WITH SCALA 17672 LOGS AH01 OCT-2017.GPJ S+R 2013.GDT 20/10/17


SCALA PENETROMETER SHEET - TABLE OF BLOWS PER INCREMENT

JOB NAME: 11-13 Fleet Street,
Eden Terrace

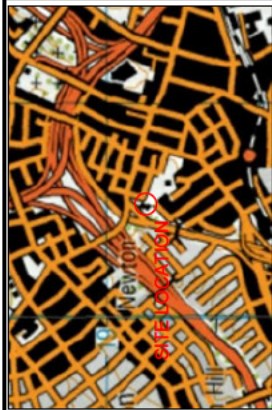
JOB NO: 17672 TESTED BY: MB DATE: 20/10/2017

Depth of Penetration [mm]	AH01											
DEPTH START [m] ➡	4.10											
50 mm	14											
100	18											
150	17											
200	20+											
250												
300												
350												
400												
450												
500												
550												
600												
650												
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1700												
1750												
1800												
1850												
1900												
1950												
2000												
DEPTH END [m] ➡	4.30											

Testing Method: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Appendix E

Previous Site Investigation Data (2007 & 2014)



LOCATION MAP 1: 25 000

1756535 m E
5918615 m N

6
LOT 2
DP 126088

9
Lot 1
DP 147371
0.0337

- KEY:
- AH1
 - MH1
 - AH04
 - MB01
 - A
 - A'

Approximate Auger hole Locations, Soil and Rock Consultants, 2 May & 3 Dec 2007 Ref 07159
Approximate Machine Borehole Locations, Soil and Rock Consultants, 10 April 2007 Ref 07159
Approximate Auger hole Locations, Soil and Rock Consultants, 13-17 February 2014
Approximate Machine Borehole Locations, Soil and Rock Consultants, January 30, 2014
Approximate Cross Section Locations, Soil and Rock Consultants, January 30, 2014

NOTES:

- Locations of features approximate only.
- Location of all buried services to be verified prior to construction
- Original sheet size A3
- Boundary information on this Site plan adapted from information on Quickmap by Custom Software and Land Information New Zealand (LINZ)
- Site plan adapted from information on Quickmap by Custom Software and Mike Webber
- Location Map information from LINZ Topo Map Website <http://www.topomap.co.nz/>

AMENDMENTS	
DATE	REV DESCRIPTION

Check all dimensions and levels on site before commencing construction. This drawing and design remain the property of Geotechnical Engineering Ltd. and may not be reproduced without the written permission of Geotechnical Engineering Ltd.



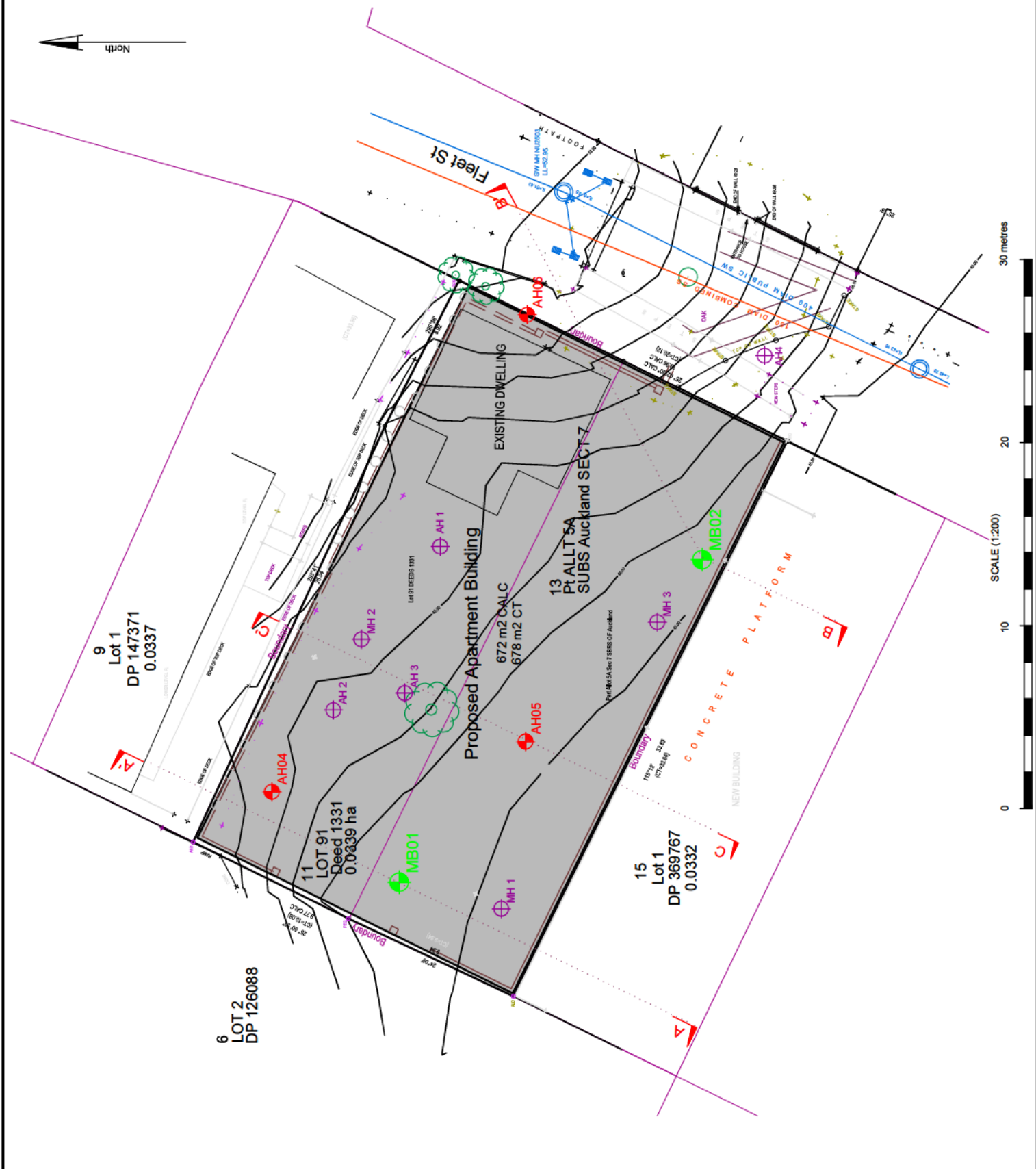
Level 1, 131 Lincoln Road, Waiwaea
PO Box 21-2, Hainesville, Waiwaea 0650
Phone: 06 336 8315
www.soilrock.co.nz

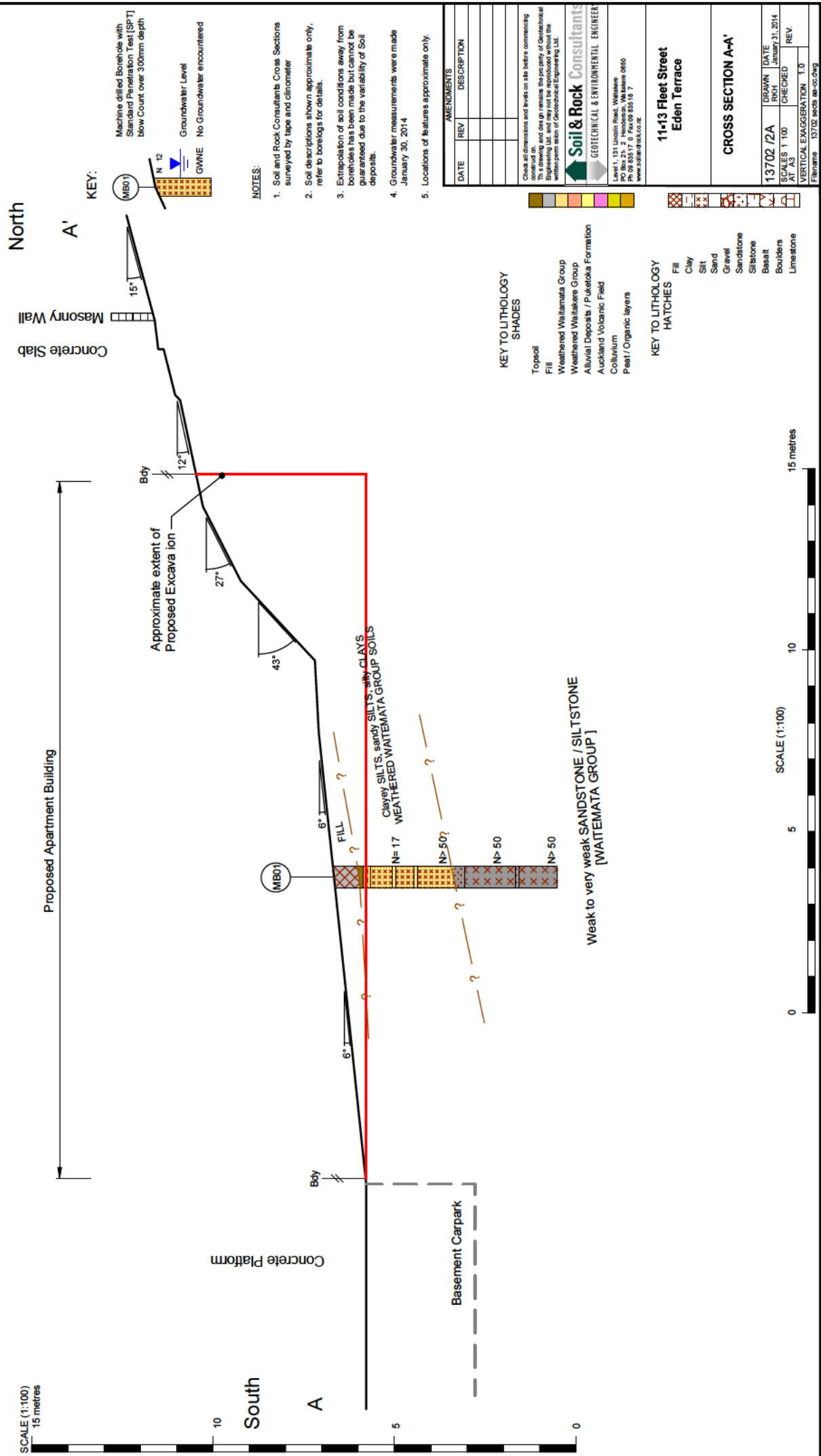
11-13 Fleet Street
Eden Terrace

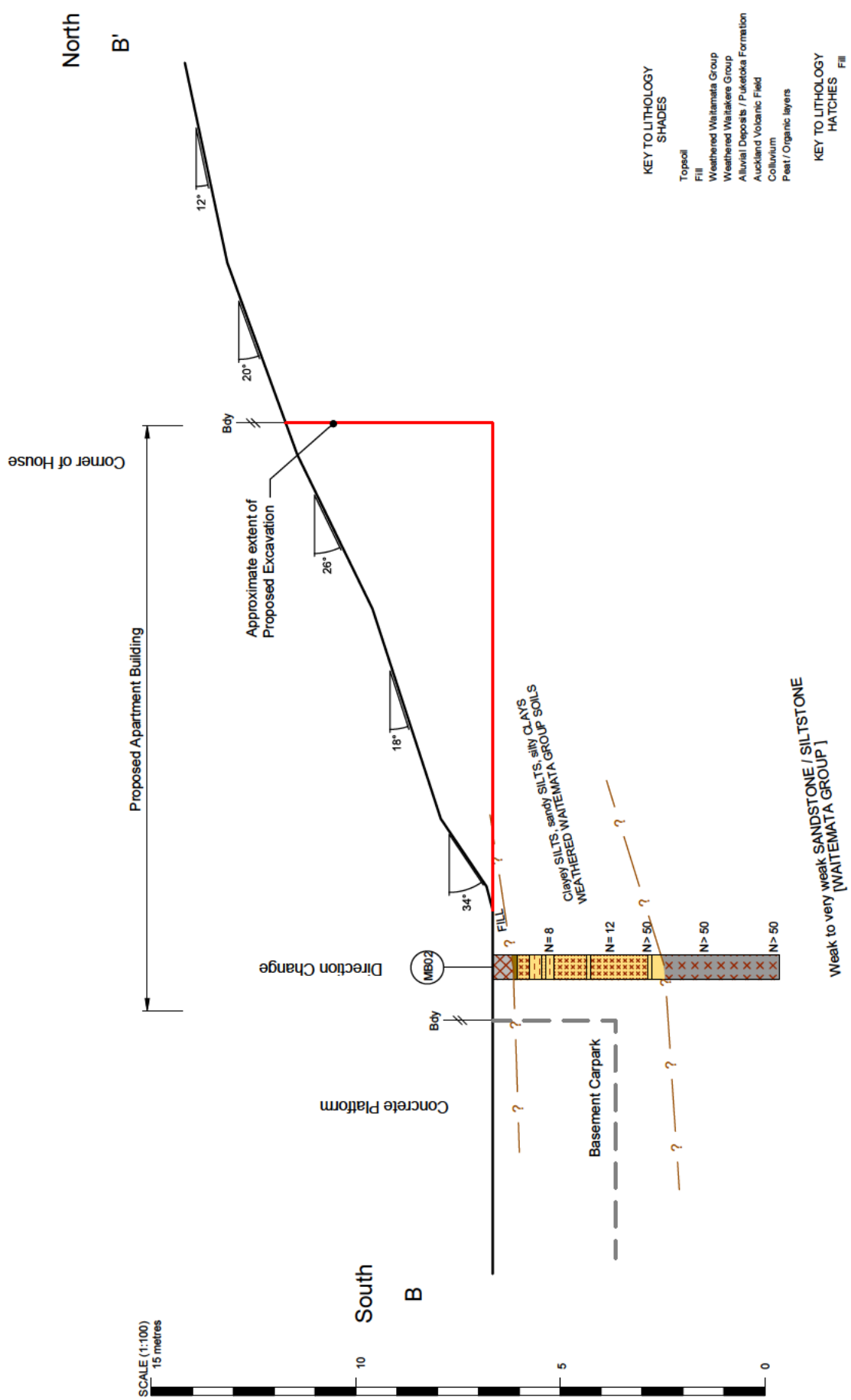
SITE PLAN

DATE	DRAWN	DATE
13/02/14	RKH	January 31, 2014
SCALE	1:200	CHECKED
AT AS		REV

Filename: 131702 site plan.dwg





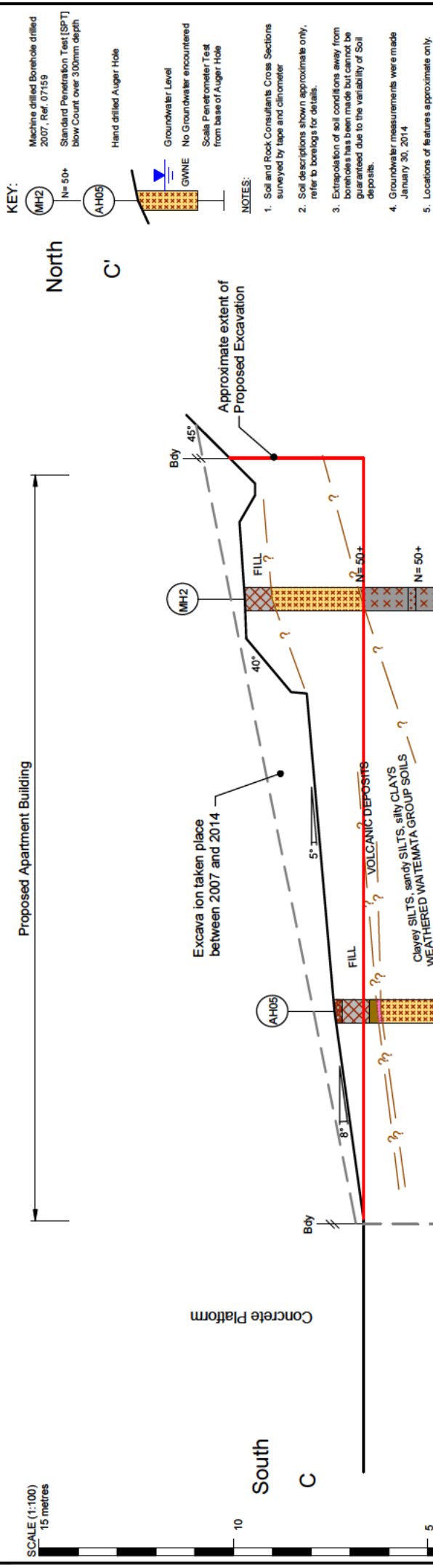


- NOTES:**
1. Soil and Rock Consultants Cross Sections surveyed by tape and clinometer
 2. Soil descriptions shown approximate only, refer to borelogs for details.
 3. Extrapolation of soil conditions away from boreholes has been made but cannot be guaranteed due to the variability of Soil deposits.
 4. Groundwater measurements were made January 30, 2014
 5. Locations of features approximate only.

AMENDMENTS	
DATE	DESCRIPTION
Check all dimensions and levels on site before commencing construction. This drawing and design remain the property of Geotechnical Engineering Ltd. and may not be reproduced without the written permission of Geotechnical Engineering Ltd. Soil & Rock Consultants GEOTECHNICAL & ENVIRONMENTAL ENGINEERS Level 1, 131 Lincoln Road, Waitakere PO Box 21 - 2, Henderson, Waikato 0650 Phone: 09 308 8888 Fax: 09 308 8818 www.soilrock.co.nz	
11-13 Fleet Street Eden Terrace	
CROSS SECTION B-B'	
13702 /2B	DRAWN DATE
AT AS	RKH January 31, 2014
100	CHECKED
1.0	REV
VERTICAL EXAGGERATION	



SCALE (1:100)



Check all dimensions and levels on site before commencing work. This drawing and design remain the property of Geotechnical Engineering Ltd. and may not be reproduced without the written permission of Geotechnical Engineering Ltd.

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**11-13 Fleet Street
Eden Terrace**

CROSS SECTION C-C'

DATE	REV	DESCRIPTION

13702 /2C	DRAWN	DATE
		February 18, 2014

SCALE 1:100	CHECKED	REV

VERTICAL EXAGGERATION 1:10

Filename 13702 section C-C.dwg

KEY TO LITHOLOGY SHADES

Topsail
Fill
Weathered Waiatemea Group
Weathered Waiatemea Group
Alluvial Deposits / Puketaka Formation
Auckland Volcanic Field
Colluvium
Peat / Organic layers

KEY TO LITHOLOGY HATCHES

Fill
Clay
Silt
Sand
Gravel
Sandstone
Siltstone
Basalt
Boulders
Limestone

SCALE (1:100)

0 5 10 15 metres

Drill Type:	Machine Borehole	Project No:	13702	Logged By:	DEG
Drilled By:	DCN Drilling Ltd	Coordinates:		Shear Vane No - Calibration Date:	GEO119 - 25/06/2013
Date Started:	30/1/14	Ground Elevation:		Surface Conditions:	Slight slope, gravelled
Date Finished:	30/1/14	Water Level:	1.7m 24/02/2014		

MACHINE LOG-FULL_SPT 13702 MB 01-02 JAN14.GPJ S+R_2013.GDT 28/2/14

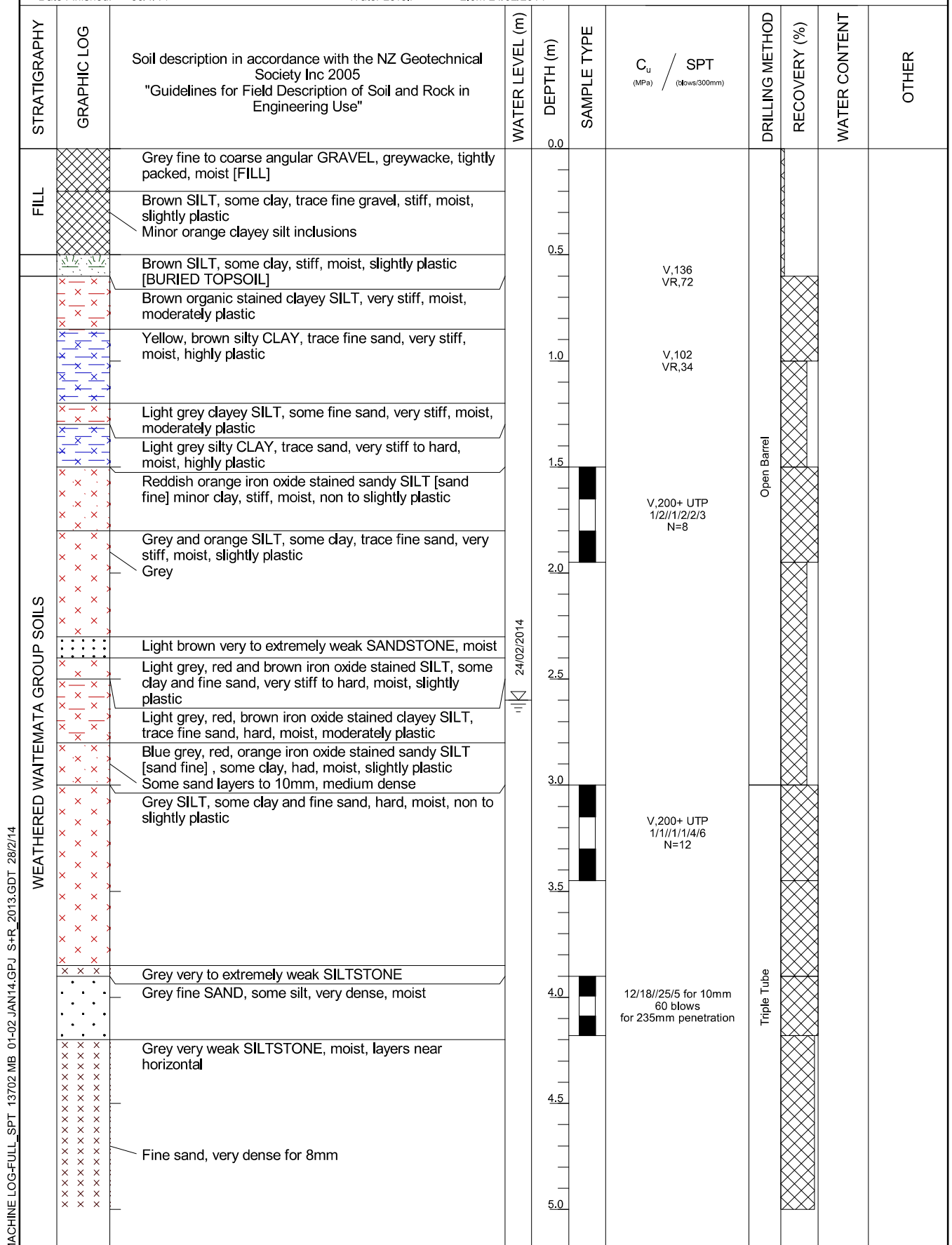
STRATIGRAPHY	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SAMPLE TYPE	C_u (MPa) / SPT (blows/300mm)	DRILLING METHOD	RECOVERY (%)	WATER CONTENT	OTHER
				0.0						
		Grey, fine to coarse grained angular Greywacke GRAVEL, loosely packed, dry [GRANULAR FILL]								
		trace silt								
		Brown, yellow streaks, SILT, some clay, trace fine sand, trace silty CLAY inclusions, firm, moist, slightly plastic [TOPSOIL/FILL]		0.5		V,31 VR,9				
		piece of orange plastic								
		Brown, SILT, some clay, firm, moist, slightly plastic [BURIED TOPSOIL]		1.0		V,68 VR,3				
		Yellow and orange, silty CLAY, stiff, moist, highly plastic [WEATHERED WAITEMATA GROUP SOILS]								
		Orange and yellow, clayey SILT, minor fine grained sand, stiff, moist to wet, moderately plastic								
		Dark red, limonite silty fine grained SAND, medium dense, wet		1.5						
		Light grey, orange, yellow, SILT, some clay, some fine grained sand, very stiff to hard, moist, slightly plastic								
		yellow, clayey SILT, some fine grained sand, very stiff, moderately plastic for 80mm								
		Dark red, yellow, dark orange, silty fine grained SAND, some iron oxide staining, medium dense, moist some silt		2.0		V,200+ UTP 1/2//4/3/4/6 N=17				
		Grey, SILT, some clay, trace fine sand, hard, moist, slightly plastic								
		Grey, fine grained SAND, some silt, medium dense, moist very dense		2.5		V,200+ UTP				
		Grey, silt, minor clay, some fine grained sand, hard, moist, non to slightly plastic								
		Grey, clayey SILT, trace fine grained sand, hard, moist, moderately plastic								
		very dense, fine grained sand for 20mm		3.0		5/11//12/14/20 for 60mm 62 blows for 360mm penetration				
		some interbedded very weak siltstone layers 5-15mm thick, near horizontal								
		Grey, fine grained SANDSTONE, very weak, moist [WEATHERED WAITEMATA GROUP]		3.5						
		fracture dipping 60 degrees, rough, no iron oxide coating								
		Grey, SILTSTONE, very weak, moist								
		very dense, fine grained SAND for 50mm		4.0						
		extremely weak to very weak fine grained sandy SILTSTONE								
		very weak SILTSTONE		4.5		60 for 140mm 60 blows for 140mm initial penetration				
				5.0						

Drill Type: Machine Borehole	Project No: 13702	Logged By: DEG
Drilled By: DCN Drilling Ltd	Coordinates:	Shear Vane No - Calibration Date: GEO119 - 25/06/2013
Date Started: 30/1/14	Ground Elevation:	Surface Conditions: Slight slope, gravelled
Date Finished: 30/1/14	Water Level: 1.7m 24/02/2014	

STRATIGRAPHY	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SAMPLE TYPE	C_u (MPa) / SPT (blows/300mm)	DRILLING METHOD	RECOVERY (%)	WATER CONTENT	OTHER
WAITEMATA GROUP		Grey, fine grained SANDSTONE, weak, moist		5.0						
		Grey, SILTSTONE, very weak, moist								
		fine grained sandy SILTSTONE for 60mm		5.5						
				6.0		10/42//8 for 5mm 60 blows for 155mm penetration				
		END OF BORE. 6.16 METRES. [Target Depth]		6.5						
				7.0						
				7.5						
				8.0						
				8.5						
				9.0						
				9.5						
				10.0						

MACHINE LOG-FULL_SPT_13702 MB 01-02 JAN14.GPJ S+R_2013.GDT 28/2/14

Drill Type: Machine Borehole	Project No: 13702	Logged By: DEG
Drilled By: DCN Drilling Ltd	Coordinates:	Shear Vane No - Calibration Date: GEO119 - 25/06/2013
Date Started: 30/1/14	Ground Elevation:	Surface Conditions: Level, grassed
Date Finished: 30/1/14	Water Level: 2.6m 24/02/2014	



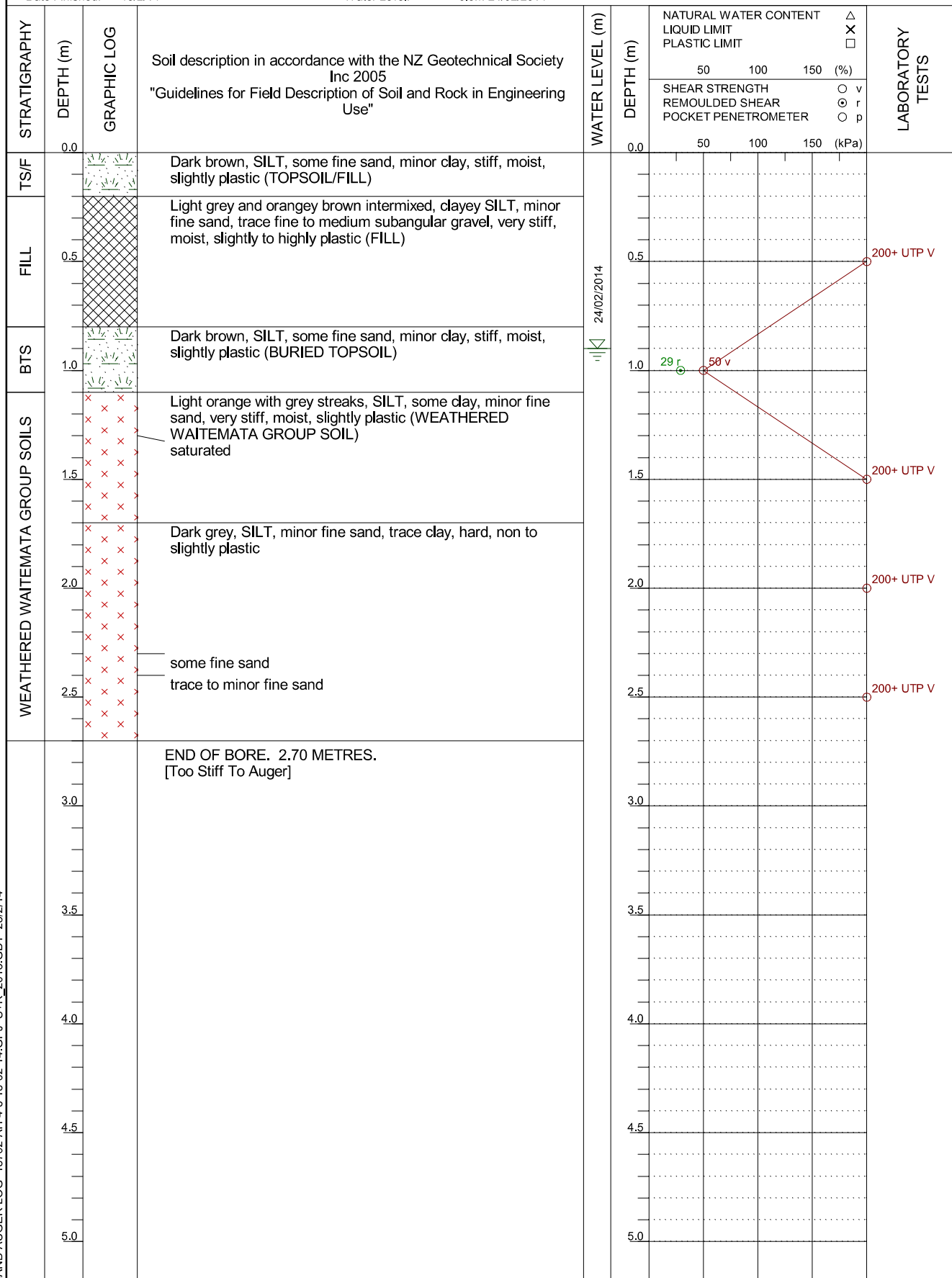
MACHINE LOG-FULL_SPT_13702 MB 01-02 JAN14.GPJ S+R_2013.GDT 28/2/14

Drill Type: Machine Borehole	Project No: 13702	Logged By: DEG
Drilled By: DCN Drilling Ltd	Coordinates:	Shear Vane No - Calibration Date: GEO119 - 25/06/2013
Date Started: 30/1/14	Ground Elevation:	Surface Conditions: Level, grassed
Date Finished: 30/1/14	Water Level: 2.6m 24/02/2014	

STRATIGRAPHY	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SAMPLE TYPE	C_u (MPa) / SPT (blows/300mm)	DRILLING METHOD	RECOVERY (%)	WATER CONTENT	OTHER
WEATHERED WAITEMATA GROUP SOILS		Grey very weak SILTSTONE, moist, layers near horizontal		5.0						
		Fracture dipping 50 °, rough, no infill Fracture dipping 70 °, rough, no infill Fine sand, very dense for 10mm		5.5		60 for 135mm 60 blows for 135mm initial penetration	Triple Tube			
				6.0						
				6.5						
				7.0		60 for 140mm 60 blows for 140mm initial penetration				
		END OF BORE. 7.14 METRES. [Target Depth]		7.5						
				8.0						
				8.5						
				9.0						
				9.5						
				10.0						

MACHINE LOG-FULL_SPT_13702 MB 01-02 JAN14.GPJ S+R_2013.GDT 28/2/14

Drill Type: Hand Auger	Project No: 13702	Logged By: KO
Drilled By: KO	Coordinates:	Shear Vane No - Calibration Date: DR1768 - 12/02/2013
Date Started: 13/2/14	Ground Elevation:	Surface Conditions: Slopped Soil
Date Finished: 13/2/14	Water Level: 0.9m 24/02/2014	



HAND AUGER LOG 13702-AH-4-6 13-02-14.GPJ S+R_2013.GDT 28/2/14

CLIENT: Fleet Ltd

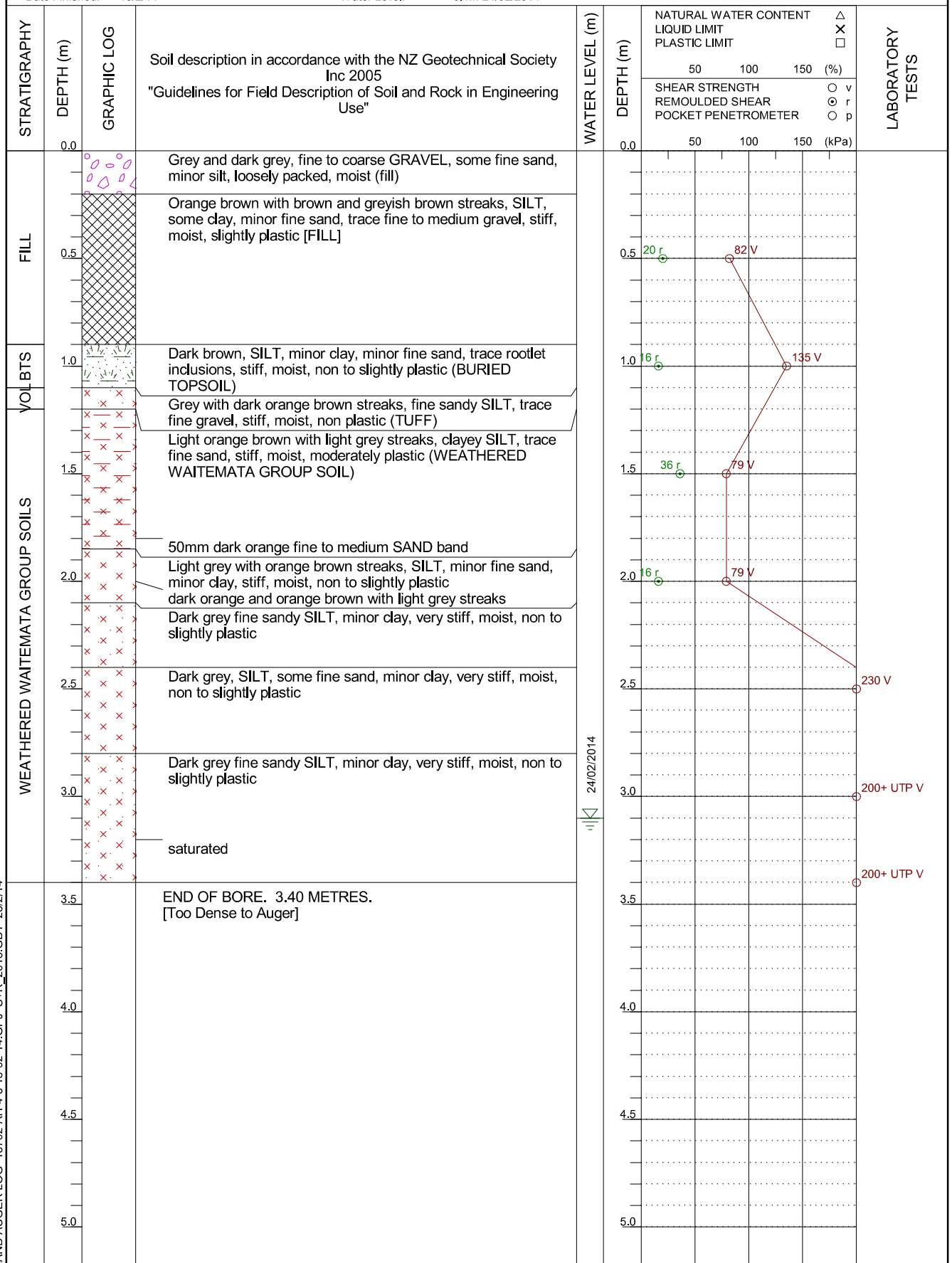
Auger Hole No: AH05

PROJECT: Geotechnical Investigation, 11-13 Fleet Street, Eden Terrace

Sheet 1 of 1

 Drill Type: Hand Auger
 Drilled By: TS
 Date Started: 13/2/14
 Date Finished: 13/2/14

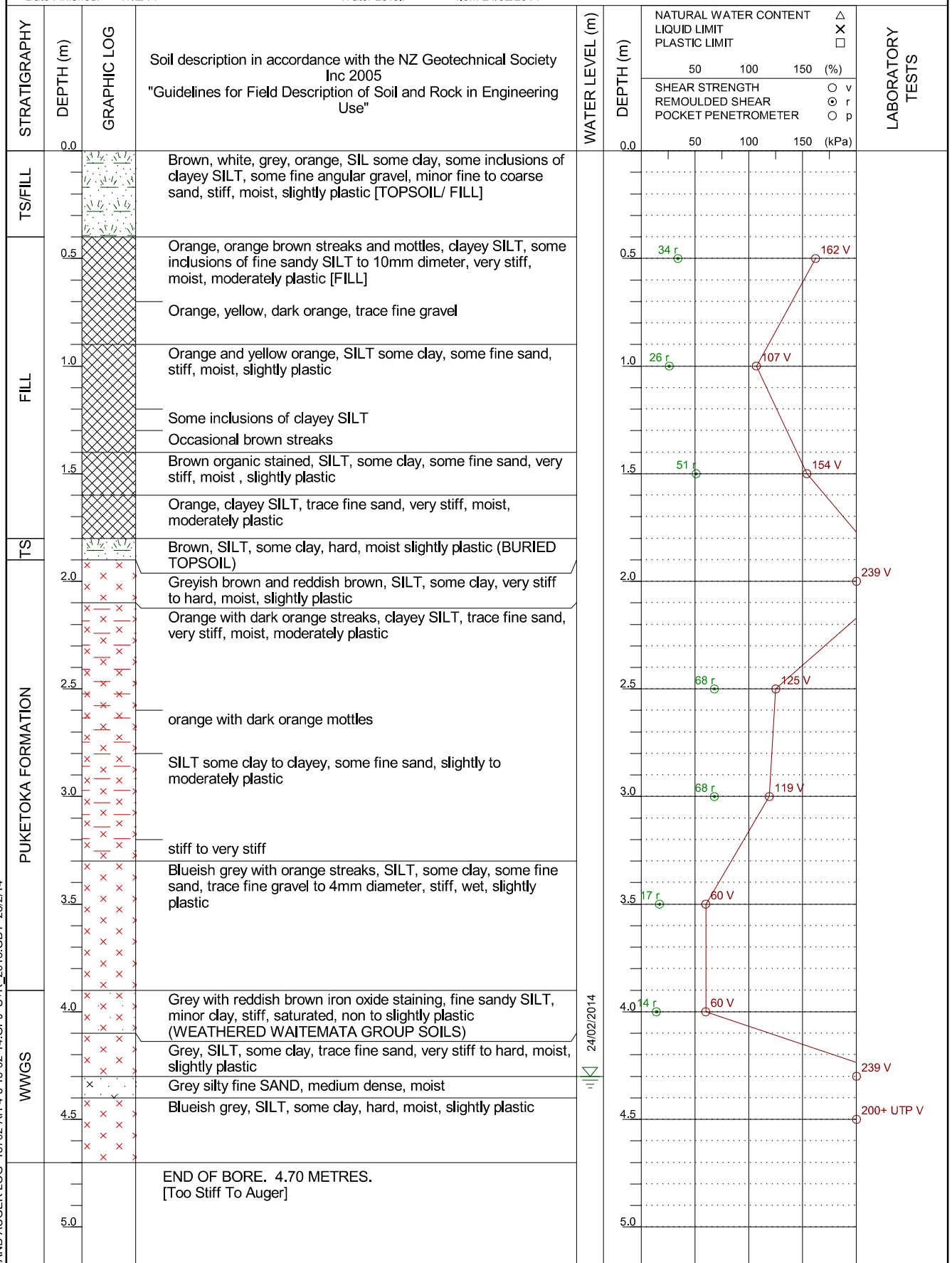
 Project No: 13702
 Coordinates:
 Ground Elevation:
 Water Level: 3.1m 24/02/2014

 Logged By: TS
 Shear Vane No - Calibration Date: GEO122 - 2/09/2013
 Surface Conditions: Level Hardfill Carpark


HAND AUGER LOG 13702-AH-4-6 13-02-14.GPJ S+R_2013.GDT 28/2/14

Drill Type: Hand Auger
 Drilled By: DEG
 Date Started: 17/2/14
 Date Finished: 17/2/14

 Project No: 13702
 Coordinates:
 Ground Elevation:
 Water Level: 4.3m 24/02/2014

 Logged By: DEG
 Shear Vane No - Calibration Date: GEO119 - 25/06/2013
 Surface Conditions: In Garden


HAND AUGER LOG 13702-AH-4-6 13-02-14.GPJ S+R_2013.GDT 28/2/14