



Douglas Partners

Geotechnics | Environment | Groundwater

Report on
Geotechnical Investigation

Proposed Student Accommodation
104-116 Regent Street, Redfern

Prepared for
Perpetual Corporate Trust Limited ATF for WH PH
PBSA Trust

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.



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Report on Geotechnical Investigation

Proposed Student Accommodation

104-116 Regent Street, Redfern

1. Introduction

This report presents the results of a geotechnical investigation undertaken by Douglas Partners Pty Ltd (DP) for the proposed student accommodation development at 104-116 Regent Street, Redfern (the site). The investigation was commissioned by Wee Hur (Australia) Pty Ltd on behalf of Perpetual Corporate Trust Limited ATF for WH PH PBSA Trust. The work was undertaken in accordance with Douglas Partners' proposal P99740.01.P.001.Rev0, dated 18 March 2021.

The investigation included the drilling of four boreholes and installation of three groundwater monitoring wells, together with a review of published geological mapping and previous studies and investigations undertaken by DP and others on the subject site and adjacent sites. Findings from the investigation and review are provided in this report together with comments relating to design and construction issues.

The site is located adjacent to the new Sydney Metro City and Southwest rail tunnels which are currently under construction. Detailed geotechnical impact analysis using numerical modelling is expected to be required during detailed design.

2. Proposed Development

The proposal comprises the redevelopment of the site as summarised below:

- Construction of an 18-storey building comprising a total of 9,562m² gross floor area with a mix of land use activities including:
 - Level 1: 72 m² of retail floorspace, 490m² of communal area for the student accommodation, 102 bicycle parking spaces, loading and waste management facilities and ancillary services and facilities.
 - Upper levels: student accommodation providing a total of 411 beds, including ensuite rooms, studios and two-bedroom configurations, with indoor and outdoor communal spaces on Levels 2, 4 and 16 and additional indoor communal areas on Levels 2 and 4.
- Hard and soft landscaping within the outdoor communal terraces on the roof-top of the podium level and Levels 4 and 16.
- Public domain improvements including provision of a landscaped through-site link connecting William Lane to Margaret Street and associated improvements to the Regent Street and Margaret Street frontages, including awnings and footpath upgrades.

3. Site Description

The site is roughly trapezoidal in shape and covers one lot with an area of approximately 1400 m². The site is bordered by Regent Street to the east, Margaret Street to the south, and two similar 18-storey student accommodation developments to the north and west, each with a single basement. These two adjacent developments are expected to be constructed prior to the site development.

The site was formerly occupied by a BP Service Station, which has undergone demolition and remediation works. It is understood that the remediation work included removal of the underground petroleum storage system (UPSS), the associated piping, filling points and fuel vents, and the contaminated soil and any perched groundwater surrounding the UPSS.

Prior to the remediation work, the site sloped gently towards the south-west with the surface elevations from approximately RL 25 m to RL 23 m, relative to Australian height datum (AHD). The remediation work created a minor depression in site level towards the southern site boundary, with an approximately 1 m maximum drop from the original ground surface levels. A photo showing the site conditions after remediation is in Figure 1 below.



Figure 1 – Site Photo, looking towards west and south-western corner

Prior to our field work, it is understood that additional fill had been placed to level the southern part of the site with granular soils. It is unclear whether the backfilling for remediation and the further site

levelling followed engineered fill procedures with the required geotechnical inspections and testing during the earthworks.

The development is located along Regent Street and close to the new Sydney Metro City and Southwest line Tunnels (managed by Sydney Metro), which are below the site and are currently under construction. Based on the survey drawings (ref: 51281-001DT, Sheets 1-3, by LTS Lockley Pty Ltd, dated 6 July 2021), the “First and Second Reserves” extend approximately north-south below the site, with the tunnel crown at least 34 m below the ground surface. The LTS survey drawing showing the Sydney Metro tunnels relative to the site is included in Appendix B.

Regent Street is also classified as a State Road, that is, it is managed by Roads and Maritime Services (RMS, now part of TfNSW).

The Illawarra Relief Rail Tunnels (managed by Sydney Trains) are running parallel to Gibbons Street to the west of the site, with a horizontal offset of at least 40-50 m. The site is considered to be beyond any Reserve Zones of the Illawarra Relief Tunnels.

4. Site Geology

Reference to the Sydney 1:100 000 Geological Series Sheet 9130 indicates that the site is located within Quaternary-aged transgressive dunes typically comprising medium to fine-grained sand. The boundary with Triassic-aged Ashfield Shale occurs about 140 m to the west of the site. Ashfield Shale typically comprises black to dark grey shale and laminite and weathers to residual clay.

The 1:25 000 Acid Sulphate Soil Risk map for Botany Bay indicates that the site does not lie within an area known for acid sulphate soils. The site also does not occur within an area mapped for known soil salinity issues.

5. Previous Investigations

DP has undertaken the following geotechnical investigations in the area surrounding the site:

- 90-102 Regent Street in 2019 (north of the site). This investigation included three cored boreholes, two machine-augered boreholes and two hand-augered boreholes. This site is currently at detailed design development stage.
- 13-23 Gibbons Street, in 2018 (west of the site). This Investigation included drilling of three cored boreholes, three shallow boreholes and the installation of two groundwater monitoring wells.

DP has also previously completed geotechnical investigations on the following nearby sites:

- 39-61 Gibbons Street in 1987 and 1993 (DP Ref. 10133 and 19660);
- 9 Gibbons Street in 1971 (DP Ref. 3090);
- 32 Rosehill Street in 1980 (DP Ref. 6810); and
- 44-78 Rosehill Street in 1988 (DP Ref. 11650).

In addition, DP has undertaken geotechnical investigations for the adjacent Sydney Metro City and Southwest rail tunnels and also for the future Waterloo Station, and is therefore familiar with the geology in the area.

A previous geotechnical investigation on the subject site was carried out by PSM Consult Pty Ltd in July 2020, concurrently with an environmental investigation by JBS&G. The geotechnical investigation included drilling of four shallow boreholes to maximum depths of 7.0 m using augering techniques. No rock coring was undertaken.

Four groundwater monitoring wells were previously installed on site by BP Australia Pty Ltd in 2008. A most recent groundwater monitoring report dated 18 June 2020 was provided to DP, which contains the groundwater level measurement records.

6. Field Work Methods

The field work for the current investigation included:

- four rock cored boreholes (BH1 to BH4) to depths between 9.5 m and 24.8 m with truck/track mounted drilling rigs, using a combination of augering, rotary wash boring and NMLC rock coring techniques.
- Disturbed soil samples were collected from the tip of the auger and Standard Penetration Tests (SPTs) were undertaken at regular depth intervals throughout the soil profile.
- Three standpipes were installed in the three boreholes (BH1, BH3 and BH4) following the completion of drilling. This involved inserting Class 18 uPVC screen and casing to the required depths, backfilling the screened length with gravel, plugging the top of the gravel with bentonite pellets and backfilling the casing with drilling spoil. Construction details for the standpipe are shown on the schematic diagram included on the borehole logs attached. The standpipes were purged of water after installation.
- Measurements of the water levels were carried out on 28 September 2021 at BH4. The other two wells (BH1 and BH3) were covered by site sheds therefore no measurement was taken from these wells.

The new borehole locations, together those of the previous boreholes drilled by DP and others are shown on Drawing 1 in Appendix B.

The boreholes were logged and sampled by an experienced geotechnical engineer.

The ground surface levels (relative to AHD) and coordinates for the boreholes are shown on the borehole logs and were obtained by a surveyor (LTS Lockley Pty Ltd).

7. Field Work Results

7.1 Subsurface Profile

Details of the subsurface conditions encountered in the boreholes are given in the borehole logs in Appendix C, together with notes explaining descriptive terms and classification methods used.

The subsurface materials encountered at the borehole locations may be summarised as follows:

FILL:	Fill generally extended to depths of between approximately 2 m and 4.5 m, with a localised deepening encountered at BH4 to approximately 8 m depth. The upper layer of fill to approximately 3 m depth was mostly granular materials with variable degrees of compaction. The lower layer of fill generally comprised a mixture of silt, clay, sand and gravel, with a trace of foreign materials such as brick, glass, sandstone fragments, charcoal and timber fragments, in a generally loose and soft condition; over
Alluvial / Residual CLAY:	Mostly stiff, very stiff and hard clay to depths of between approximately 7 m to 9.5 m. Extremely weathered shale of hard clay consistency was encountered over the lower 1-2 metres; over
Laminite and Siltstone: (Ashfield Shale)	Laminite and siltstone bedrock below depths of between 7 m and 9.5 m and continuing to the termination depths of BH1 to BH3. The rock profile generally includes a weathered profile of very low to low strength, fragmented to fractured laminite around 1 m to 4 m thick over medium to high strength or stronger, fresh and slightly fractured to unbroken laminite.
Sandstone (Hawkesbury)	Medium to coarse grained sandstone bedrock was encountered below a depth of 23.9 m at BH4. The sandstone is generally fresh, of high to very high strength and unbroken.

7.2 Groundwater

Groundwater seepage was observed during auger drilling between 2.5 m and 4 m depth. The use of water during rock coring precluded any further observation of the groundwater during rock coring in BH1 to BH4.

Groundwater level was measured within the monitoring well in BH4 on 28 September 2021 and found to be at 3.9 m depth (RL 20.9 m, relative to AHD).

Groundwater levels will fluctuate with climatic conditions and may temporarily rise following periods of rainfall.

7.3 Rock Strength Testing

Selected samples of the rock core were tested in the laboratory to determine the Point Load Strength Index (Is_{50}) values to assist with the rock strength classification. The results of the testing are shown

on the borehole logs at the appropriate depth. The I_{s50} values for the rock ranged from 0.08 MPa to 4.6 MPa, indicating very low to very high strength rock.

8. Comments

Comments on earthworks, excavation support, groundwater and foundations are provided in the following sections.

8.1 Geotechnical Considerations Relating to the Rail Corridor

The twin TBM rail tunnels of “Sydney Metro – City and Southwest” line, which is currently under construction, pass below the site such that the “First and Second Reserves” extend approximately north-south, with the tunnel crown at least 34 m below the ground surface. The proposed development is required to take these tunnels into consideration in accordance with “Transport for NSW (TfNSW) and Sydney Metro –Technical Services, Sydney Metro Underground Corridor Protection, Technical Guidelines”.

The above-mentioned guideline document (ref: Document No. iCentral SM-20-00081444, Revision 2, dated April 2021) provides the technical requirements to assess and manage the risks associated with developments near existing and future underground Metro infrastructure. It defines and uses the tunnel protection reserve zones to provide restrictions to the adjacent development activities such as basement excavation and the construction of new building foundations. The protection reserve zones are categorised into “First Reserve” and “Second Reserve”.

The “First Reserve” comprises the ground that immediately surrounds the underground metro infrastructure, and represents the area that must not be encroached upon by any future construction or development. Beneath the project site, the uppermost extent of the First Reserve is understood to be at RL -0.1 m, which appears to be defined by the extent of the Sydney Metro substratum, based on the LTS survey drawing in Appendix B. The First Reserve is not expected to be encroached upon by any of the construction activities for the proposed development.

The “Second Reserve” surrounds the First Reserve and covers the areas where future development works have the potential to impact on the performance of the support elements of underground infrastructure, Metro operations or the feasibility of planned Metro infrastructure. The uppermost extent of Second Reserve is defined as 25 m above First Reserve (ie. at RL 24.9 m), which roughly coincides with the existing site surface level. Therefore, any minor bulk excavation, if required, is expected to only extend slightly into the top of the Second Reserve. However, further encroachment upon Second Reserve is envisaged to be required for localised deepened excavations, shallow footings, piled foundations and for the embedment of any shoring walls.

Based on previous experience, all of the above activities will generally be acceptable by TfNSW and Sydney Metro but a geotechnical impact assessment (possibly including 2D or 3D numerical modelling) of excavation and building foundations will be required, together with ground movement and vibration monitoring, and dilapidation surveys of the tunnels to assess and monitor the impact of the proposed development on the underground Metro infrastructure. The extent of assessment and

monitoring required at various project stages is subject to discussion and agreement from TfNSW/Sydney Metro.

8.2 Excavation Conditions

Since there is no basement excavation proposed for the development at this stage, it is expected that the construction of the building will require minor excavation of the existing fill near the surface, which should be achievable using conventional earthmoving equipment. The fill may contain building rubble (e.g. bricks, concrete fragment, tiles, etc) left over from previous demolition and remediation works on site.

8.3 Disposal of Excavated Material

All excavated materials, including any piling spoils, will need to be disposed of in accordance with the provisions of the current legislation and guidelines including the *Waste Classification Guidelines* (EPA, 2014). Further reference should be made to the existing environmental investigation results and reports by others.

8.4 Vibration Monitoring

Given that the ground excavation will be very minor and rock excavation will only occur during the piling penetration, it is expected that vibrations from the construction works will be relatively minor.

However, based on previous experience, TfNSW usually requires vibration monitoring within existing tunnels when construction works are carried out within the second rail reserve. It will be necessary to use appropriate methods and equipment to keep ground vibrations within the rail tunnel and at adjacent buildings and structures within acceptable limits. The level of acceptable vibration is dependent on various factors including the type of building structure (e.g. reinforced concrete, brick, etc.), its structural condition, founding conditions, the frequency range of vibrations produced by the construction equipment, the natural frequency of the building and the vibration transmitting medium.

Ground vibration can be strongly perceptible to humans at levels above 2.5 mm/s peak particle velocity (PPV). This is generally much lower than the vibration levels required to cause structural damage to most buildings. The Standard AS/ISO 2631.2 – 2014 “Mechanical vibration and shock – Evaluation of human exposure to whole-body vibration – Vibration in buildings (1 Hz to 80 Hz)” suggests an acceptable daytime limit of 8 mm/s PPVi for human comfort.

The Sydney Metro Underground Corridor Protection Technical Guidelines suggests a maximum acceptable vibration limit of 15 mm/s PPVi for the rail tunnels with cast in situ concrete linings that are in good condition and 20 mm/s PPVi for rail tunnels supported using precast concrete segment lining, however this is subject to confirmation by TfNSW/Sydney Metro. Shallow excavations and piling work is unlikely to approach these nominated levels at the tunnel.

Based on the DP’s experience and with reference to AS/ISO 2631.2, it is suggested that a maximum PPVi of 8 mm/s (measured at the first occupied level of existing buildings) be provisionally employed

at this site for both architectural and human comfort considerations, although this vibration limit may need to be reduced if there are sensitive structures or equipment in the area.

As the magnitude of vibration transmission is site specific, it is recommended that a vibration trial be carried out at the commencement of construction. These trials may indicate that smaller or different types of construction equipment or approaches to demolition are required to reduce vibration to acceptable levels.

8.5 Dilapidation Surveys

Dilapidation surveys should be carried out on surrounding buildings, pavements and sensitive structures that may be affected by the construction works. The dilapidation surveys should be undertaken before the commencement of any construction work in order to document any existing defects so that any claims for damage due to construction related activities can be accurately assessed. As mentioned in Section 8.1, a dilapidation assessment of the tunnels may be required by TfNSW.

8.6 Subgrade Preparation for Lightly-Trafficked Pavements and Slabs-on-Grade

The existing fill, including the fill placed during the site remediation and releveling, is assumed to be 'uncontrolled' in the absence of compaction records. The deeper fill encountered in BH4 appears to be poorly compacted and uncontrolled at depth and it is understood that other areas of similar deeper fill were encountered in the previous contamination assessments. Our investigation and review of the previous investigations on site also indicated that the fill is generally of variable thicknesses and compaction.

Where design subgrade levels for pavements and slabs on grade are close to the current ground surface, the existing fill should be removed and replaced as engineered fill to a depth that is appropriate for the loads from the pavement or the ground slab to be supported. This could include construction of a 1 m thick bridging layer of compacted granular material such as a good quality, high strength crushed sandstone or similar over the deeper fill. However, it is noted that construction of slabs and pavements on uncontrolled filling that is left in place (i.e. below bridging layers) may result in variable and more unpredictable settlement due to the inherent variability of uncontrolled fill. Further investigation using cone penetration tests (CPTs) could be carried out to assess the fill consistency and compaction and to allow estimation of settlements once slab/pavement loads are known.

The extent of earthworks required will depend on slab loads and settlement tolerances. Where slabs are to be fully suspended on piles then no significant earthworks are required to improve the existing fill compaction.

From a geotechnical perspective, the upper layer of non-contaminated fill at the site is considered to be suitable for re-use as engineered filling, provided that it is free of oversize particles (>100 mm) and deleterious material. The suitability of re-using site-won filling should be further considered from a contamination perspective.

Subgrade preparation for lightly trafficked pavements, lightly loaded slabs-on-ground and/or raising site levels should incorporate the following:

- stripping of uncontrolled fill and any obvious unsuitable material (vegetation, organic topsoil, deleterious material, oversize material larger than 100 mm diameter) to an appropriate depth depending on the design surcharge;
- rolling of the exposed subgrade with at least 8 passes of a smooth drum roller with a minimum static weight of 10 tonnes, subject to vibration concerns. The final pass (test roll) of the subgrade should be inspected by a geotechnical engineer to detect any soft spot or heaving areas. Any soft spots detected during test rolling would generally need to be stripped to a stiffer base or to a depth of approximately 0.5 m, subject to confirmation by a geotechnical engineer, and replaced with engineered fill;
- engineered fill for replacing soft spots or raising site levels should be placed in layers of 300 mm maximum loose thickness (although dependent upon the size of the compaction equipment) and compacted to a dry density ratio of between 98% and 102% relative to Standard compaction with moisture contents strictly within 2% of Standard optimum moisture content (OMC). The existing fill and sandy/clayey soils on site should generally be suitable for re-use as engineered fill provided it has a maximum particle size of 100 mm and moisture content within 2% of Standard OMC; and
- density testing of each layer of fill should be undertaken in accordance with AS 3798-2007 “Guidelines for Earthworks for Commercial and Residential Developments” to verify that the specified density ratios have been achieved.

A CBR of 5% for granular subgrade is recommended for the preliminary design of pavement and slab-on-grade, assuming subgrade preparation is carried out in accordance with the methodology described above. Further testing of subgrade soils and any imported material should be carried out to confirm CBR values for design.

8.7 Excavation Support

No basement excavation is currently proposed for the development. However, minor excavation for levelling the site, construction of building cores and high-level footings may be required. Vertical excavations within fill and natural soil will require both temporary and permanent support during and after construction. It is expected that temporary batters will be possible for excavation works set back a sufficient distance from the site boundaries. If temporary batters are not possible, then shoring should be used to provide the required excavation support.

8.7.1 Batter Slopes

Suggested temporary and permanent batter slopes for unsupported excavations above the water table, up to a maximum height of 3 m are shown in Table 1. If surcharge loads are applied near the crest of the slope, then further geotechnical review and probably flatter batters or soil stabilisation may be required.

Table 1: Recommended Batter Slopes

Exposed Material	Max. Temporary Batter Slope (H : V)	Max. Permanent Batter Slope ⁽¹⁾ (H : V)
Granular Fill and Natural Sandy Soil	1.5 : 1	2 : 1
Natural Clayey Soil	1 : 1	2 : 1

Notes: (1) Provided batter slope is protected from erosion (e.g. shotcrete and dowel support)

8.7.2 Retaining Walls

It is likely that minor retaining structures may be required along the site boundaries to provide a level building platform for the ground floor of the building, where there is no room for battering.

Table 2 outlines material and strength parameters that could be used for the design of new shoring/retaining walls and to design lateral support systems for the small-scale retaining wall.

Table 2: Parameters for Retaining Wall Design

Material	Dry Unit Weight (kN/m³)	Coefficient of Active Earth Pressure (K_a)	Coefficient of Earth Pressure at Rest (K_o)	Ultimate Passive Earth Pressure*
Granular Fill	20	0.4	0.6	K _p = 2.5
Natural Sandy Soil (at least loose to medium)	20	0.3	0.5	K _p = 3.5
Natural Clayey Soil (at least stiff)	20	0.3	0.5	100 kPa

Notes: *Ultimate values and only below bulk excavation level. May need to be reduced where batter slopes are located nearby.

Unless the material behind the existing basement walls is effectively free draining, hydrostatic pressure should be assumed to act on the full height of the basement walls to account for increases in groundwater levels caused by significant rainfall events and flooding. Surcharge pressures from adjacent structures, construction machinery and traffic should also be incorporated into the design of retaining walls as necessary.

8.8 Foundations

For the currently envisaged 18-storey building, relatively high column loads are expected. It is considered that structural loads should be transferred into the underlying bedrock using piles socketed into at least medium strength (or better) rock.

Continuous flight auger (CFA) or bored piles are likely to be suitable for this site, however, casing through the upper fill and natural sandy soils (if encountered) should be expected to prevent the upper section of the holes from collapsing, if bored piles are adopted. Groundwater should be expected within the open pile holes and therefore allowance for pumping to remove water or the use of 'tremmie' methods to place concrete should be considered. Issues with collapsing soils and groundwater may

be particularly problematic for bored pile in deeper fill areas as encountered in BH4. Relatively high seepage flows can sometimes occur within the fractured laminate and this should be considered by the piling contractor..

Recommended maximum design pressures for the various rock strata are presented in Table 3. For piles shaft adhesion values for uplift (tension) may be taken as being equal to 70% of the values for compression.

The foundation design parameters given in Table 3 assume that the pile excavations are clean and free of loose debris, with pile sockets free of smear and adequately roughed immediately prior to concrete placement.

Settlement of a pile is dependent on the loads applied to the pile and the foundation conditions in the socket zone and below the pile toe. The total settlement of bored pile designed using the 'allowable' parameters provided in Table 3 should be less than 1% of the pile diameter upon application of the design load.

By way of example, a 1.2 m diameter bored piles socketed 3 m within medium strength rock would safely support a (Working) column load of about 7000 kN, based on the parameters given in Table 3.

An appropriate geotechnical strength reduction factor should be applied when using the limit-state approach as outlined in AS 2159 – 2009 Piling – Design and installation.

Table 3: Parameters for Foundation Design

Foundation Stratum	Maximum Allowable Pressure		Maximum Ultimate Pressure		Young's Modulus (MPa)
	End Bearing (kPa)	Shaft Adhesion ⁽¹⁾ (Compression) (kPa)	End Bearing (kPa)	Shaft Adhesion ⁽¹⁾ (Compression) (kPa)	
Very Low Strength Rock	-	70	-	100	-
Low to Medium Strength Rock	-	150	-	300	-
Medium Strength Rock	3,500	300	15,000	500	500
High Strength Rock	6,000	500	40,000	1000	1500

Notes: (1) Shaft adhesion applicable for the design of bored piers, uncased over rock socket length, or CFA piles where adequate sidewall cleanliness and roughness is achieved.

8.9 Seismicity

In accordance with AS1170-2007 "Structural Design Actions, Part 4: Earthquake Actions in Australia" a hazard factor (Z) of 0.08 and a site subsoil Class C_e is considered to be appropriate for the site.

8.10 Groundwater

Groundwater has been measured on the site and the adjacent sites at between RL 16.2 m and RL 20.9 m (i.e. depths below the existing ground surface varying between approximately 3 m and 9 m). The high fluctuations in the measured groundwater table levels may be attributed to the particularly dry season before 2020, a temporary rise by at least 1-2 m following heavy and prolonged rainfall and the intermittent perched water table above the clay soil layer.

In light of the fact that there is no basement proposed for the development and the depths of any localised excavation are unlikely to exceed 3 m, DP expect that there will be no impact on groundwater levels/quality, no impact in terms of the NSW Aquifer Interference Policy, and no requirement to obtain a dewatering license or approval under the Water Act 1912 or Water Management Act 2000. This advice is subject to review and approval from the project planner and Council. Any seepage that may occur following heavy rainfall is likely to be associated with surface runoff and rainfall and will presumably be removed under Council approvals.

9. Limitations

Douglas Partners (DP) has prepared this report for this project at 104-116 Regent Street, Redfern in accordance with DP's proposal P99740.01.P.001.Rev0, dated 18 March 2021. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Perpetual Corporate Trust Limited ATF for WH PH PBSA Trust for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during the current and previous investigations carried out by DP or others. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached notes and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope for work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the geotechnical components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

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This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

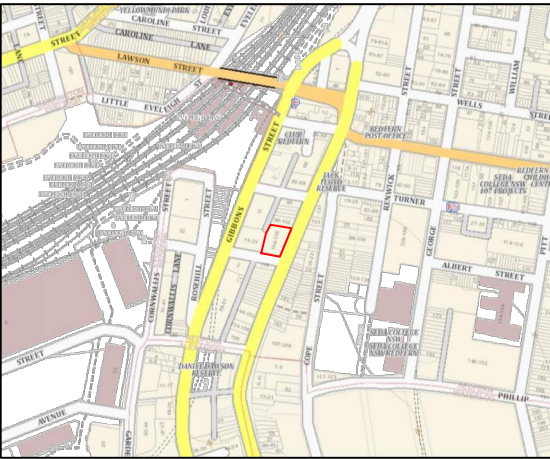
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

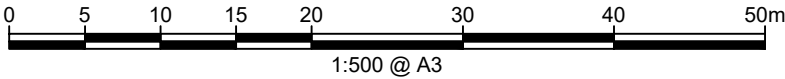
Appendix B

Drawings



Locality Plan

NOTE:
1: Base image from MetroMap (Dated 30.07.2021)



LEGEND

- Approximate Site Boundary
- ◆ PSM Borehole Locations
- ◆ BP Monitoring Well Locations
- ◆ DP Borehole Locations (86266.03 - 2018)
- ◆ DP Borehole Locations (86852.00 - 2019)
- ◆ DP Borehole Locations (99740.01 - 2021)



CLIENT: Prepetual Corporate Trust Limited ATF for WH PH PBSA Trust	
OFFICE: Sydney	DRAWN BY: MG
SCALE: 1:500 @ A3	DATE: 29.09.2021

TITLE: **Test Location Plan**
Proposed Student Accommodation
104-116 Regent Street, Redfern



PROJECT No:	99740.01
DRAWING No:	1
REVISION:	0

LEGEND

BENCH MARK	▲
WINDOW	W
HEAD/SILL	H/S
PIT WITH METAL LID	□ MLID
PROPOSED BOREHOLE	● BH1

PROPOSED BOREHOLE DETAILS

1. PROPOSED BOREHOLES ARE 0.11m DIAMETER IN SOIL AND 0.076m DIAMETER IN ROCK
2. PROPOSED LOCATION AND DEPTHS ARE AS SHOWN IN THE PLAN AND RELEVANT SECTIONS

NOTES

1. THE BOUNDARIES HAVE NOT BEEN MARKED ON GROUND
2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY NSW LAND REGISTRY SERVICES AND ARE SUBJECT TO FINAL SURVEY
3. BOUNDARIES WITHIN THIS FILE HAVE BEEN ADDED FROM DCDB DATA OBTAINED FROM NSW LAND REGISTRY SERVICES AND ARE APPROXIMATE ONLY
4. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM BENCHMARK IN KERB FROM LINKER SURVEY PLAN REFERENCE 170638 R.L. 24.35 (A.H.D.) IN GIBBONS STREET
5. CONTOUR INTERVAL 1.0 m
6. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
7. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELS. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
8. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
9. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH
10. UNDERLAY SURVEY RECEIVED BY 'REALSERVE' REF: 75573JP DATED: 27-06-2020



0 2 4 6 8 10
SCALE 1:100 @ A1

H	00/00/00	—	00
G	00/00/00	—	00
F	00/00/00	—	00
E	00/00/00	—	00
Revision	Date	Description	Reference

D	00/00/00	—	00
C	00/00/00	—	00
B	06/07/21	BOREHOLE LOCATIONS AND SECTIONS D-G AMENDED	004
A	19/05/21	PROPOSED BOREHOLE LOCATIONS AND SECTIONS ADDED	003
Revision	Date	Description	Reference

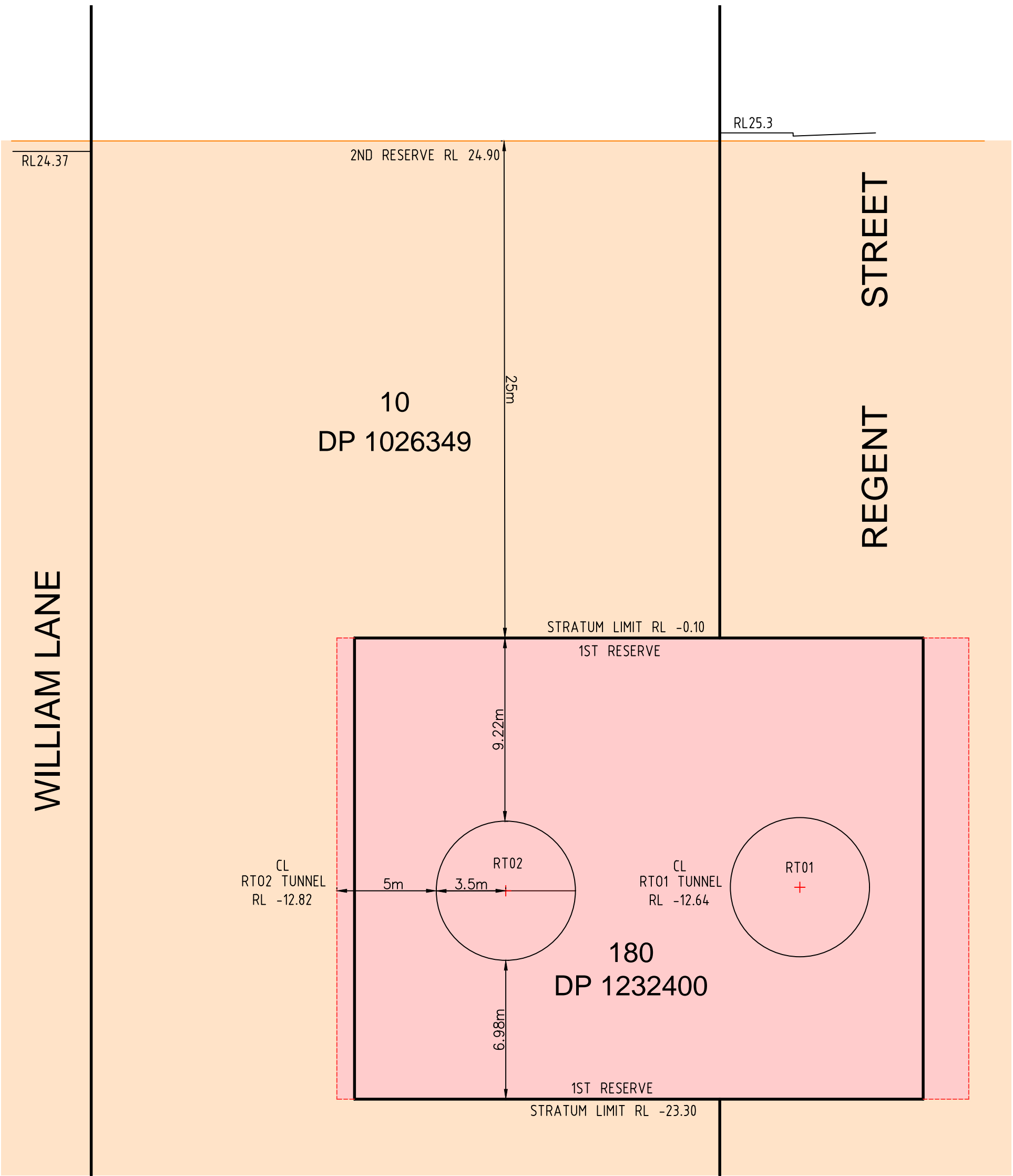
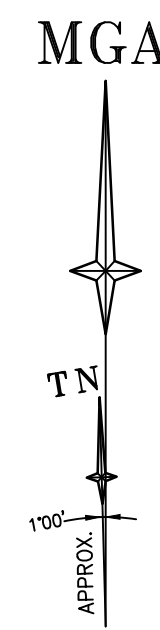


www.lts.com.au | P 1300 587 000

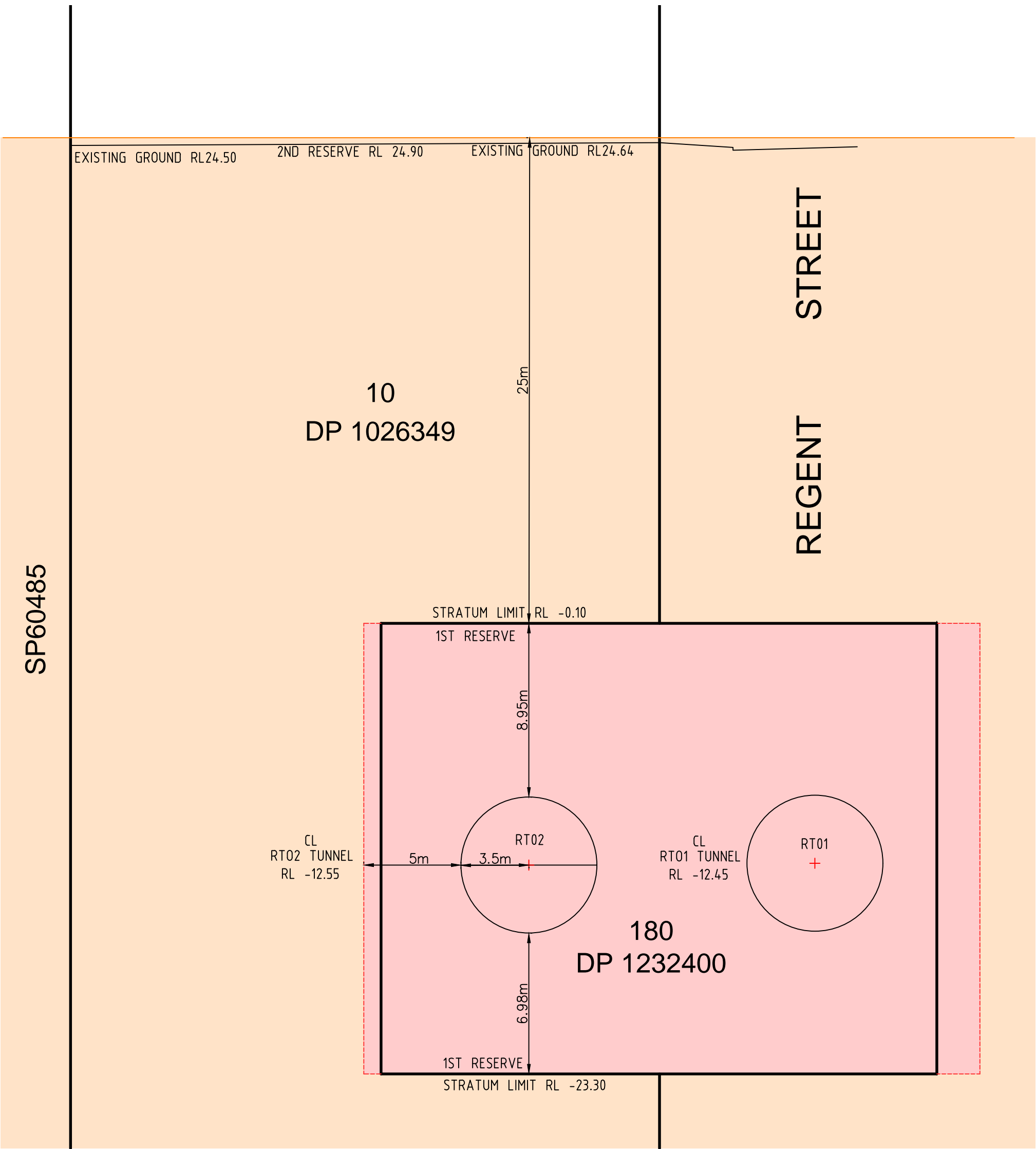
THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:
Registered Surveyor NSW

Client The Trust Company (Australia) Limited ATF WH Redfern Trust
Drawing title
PLAN OF PARTIAL DETAIL AND LEVELS OVER PART OF
LOT 10 IN DP 1026349 KNOWN AS
No 104-116 REGENT STREET, REDFERN

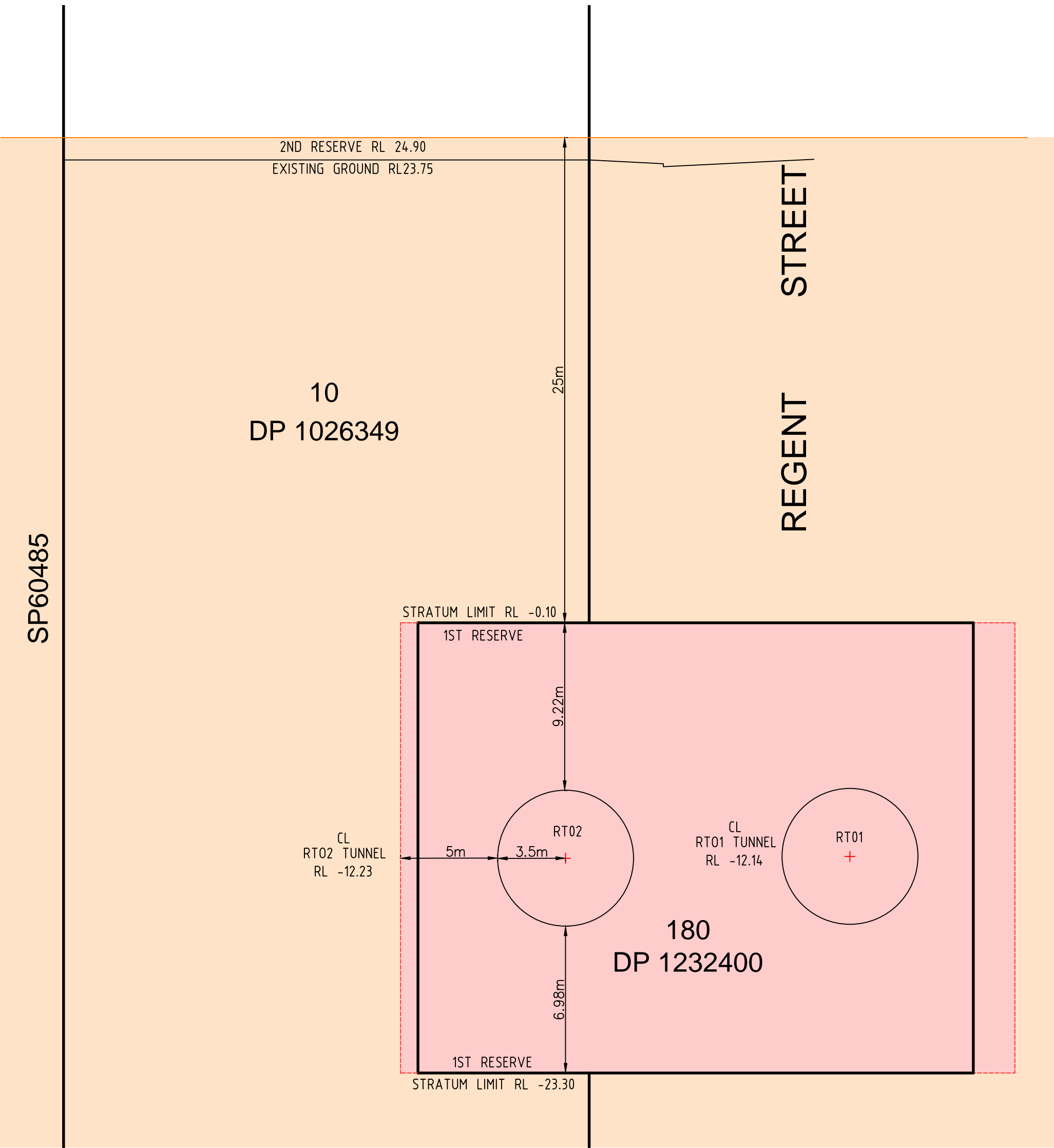
datum
AHD
site Area
N/A
LGA
SYDNEY
reference number
51281 001DT
scale
1:100
date of survey
11/03/2021
SHEET
OF 1



CROSS SECTION A-A

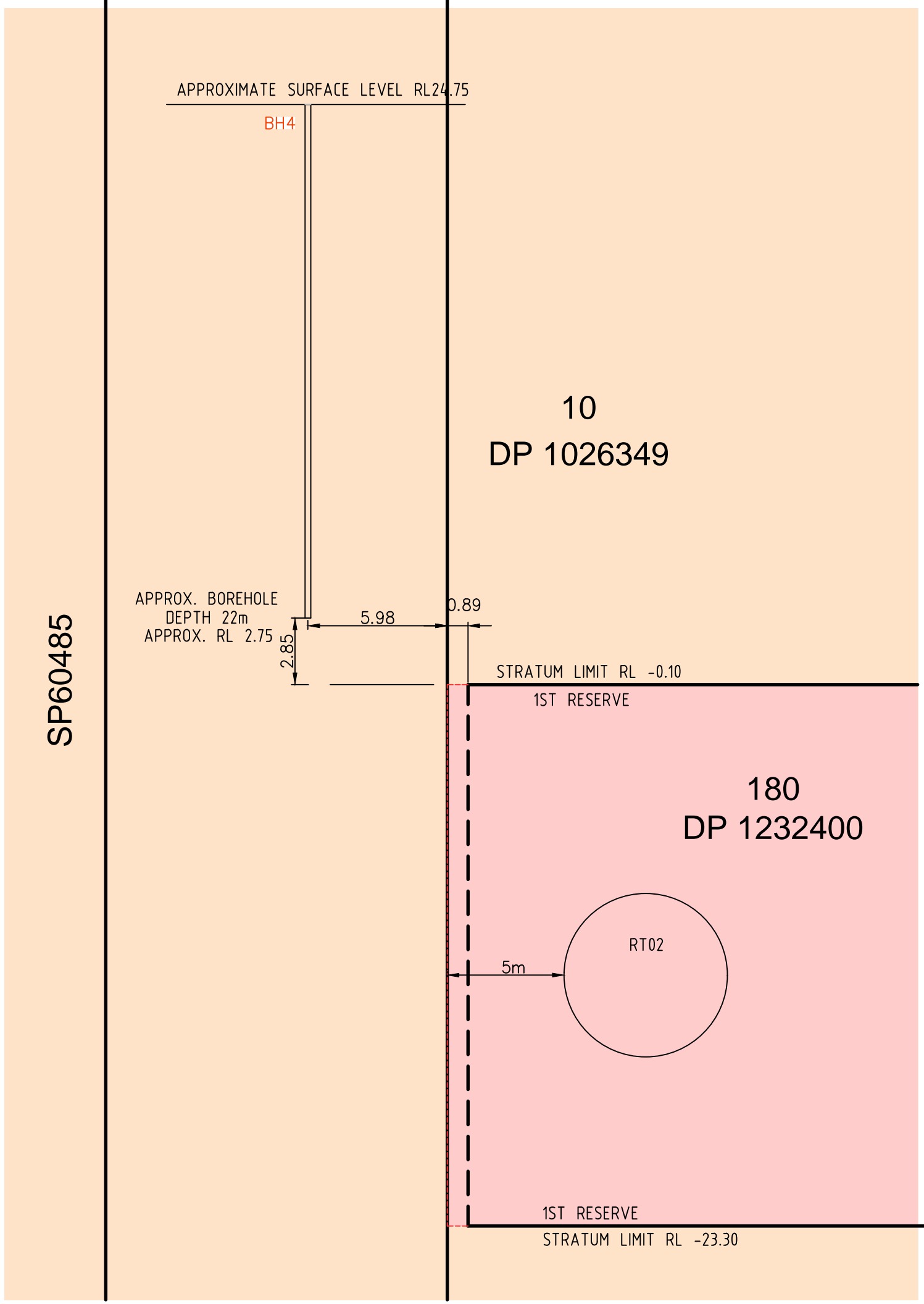
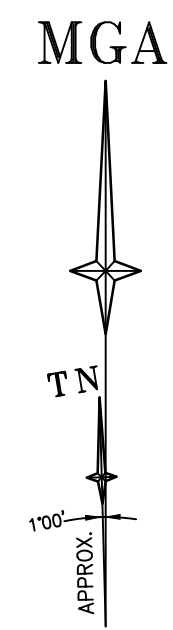


CROSS SECTION B-B

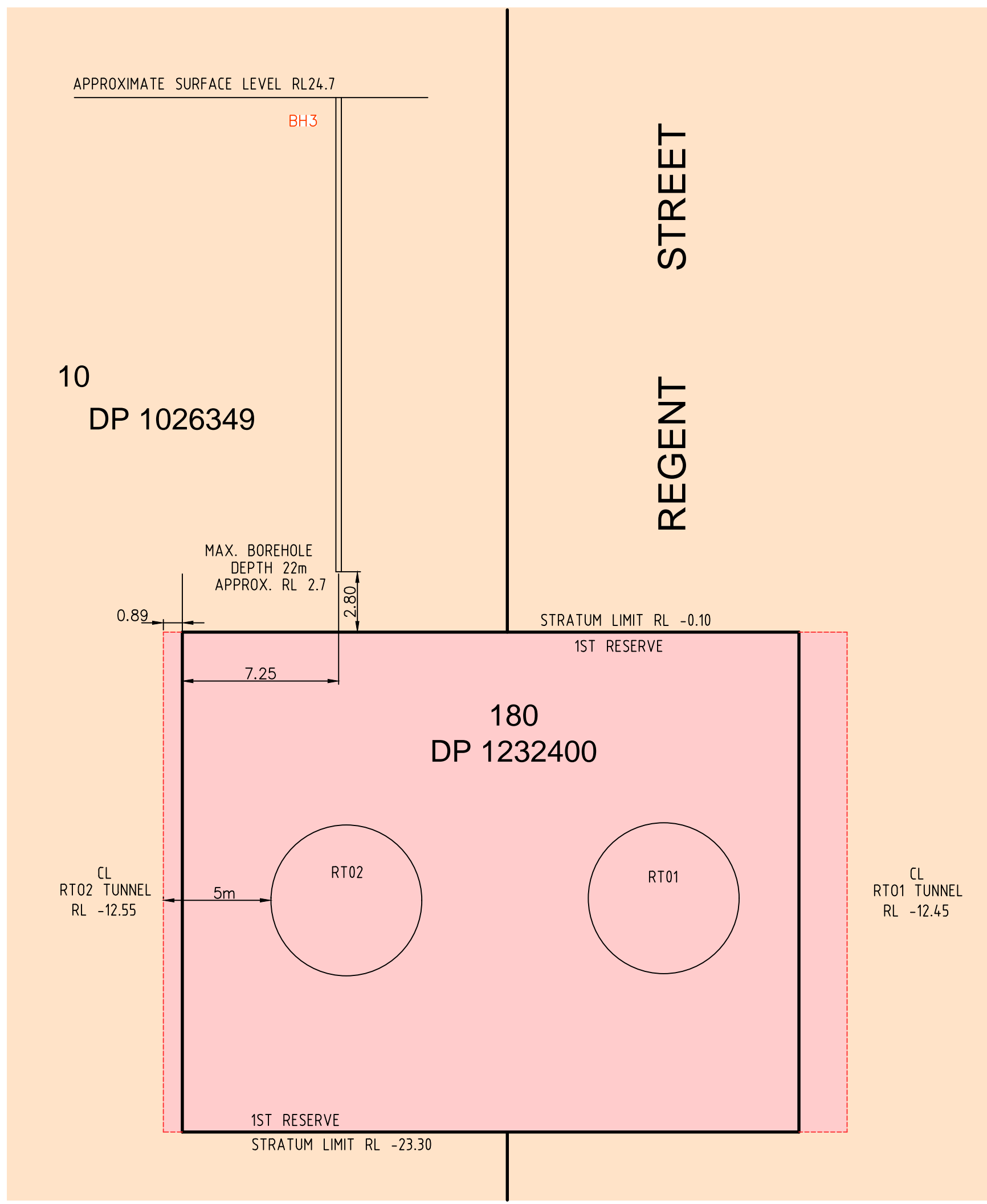


CROSS SECTION C-C

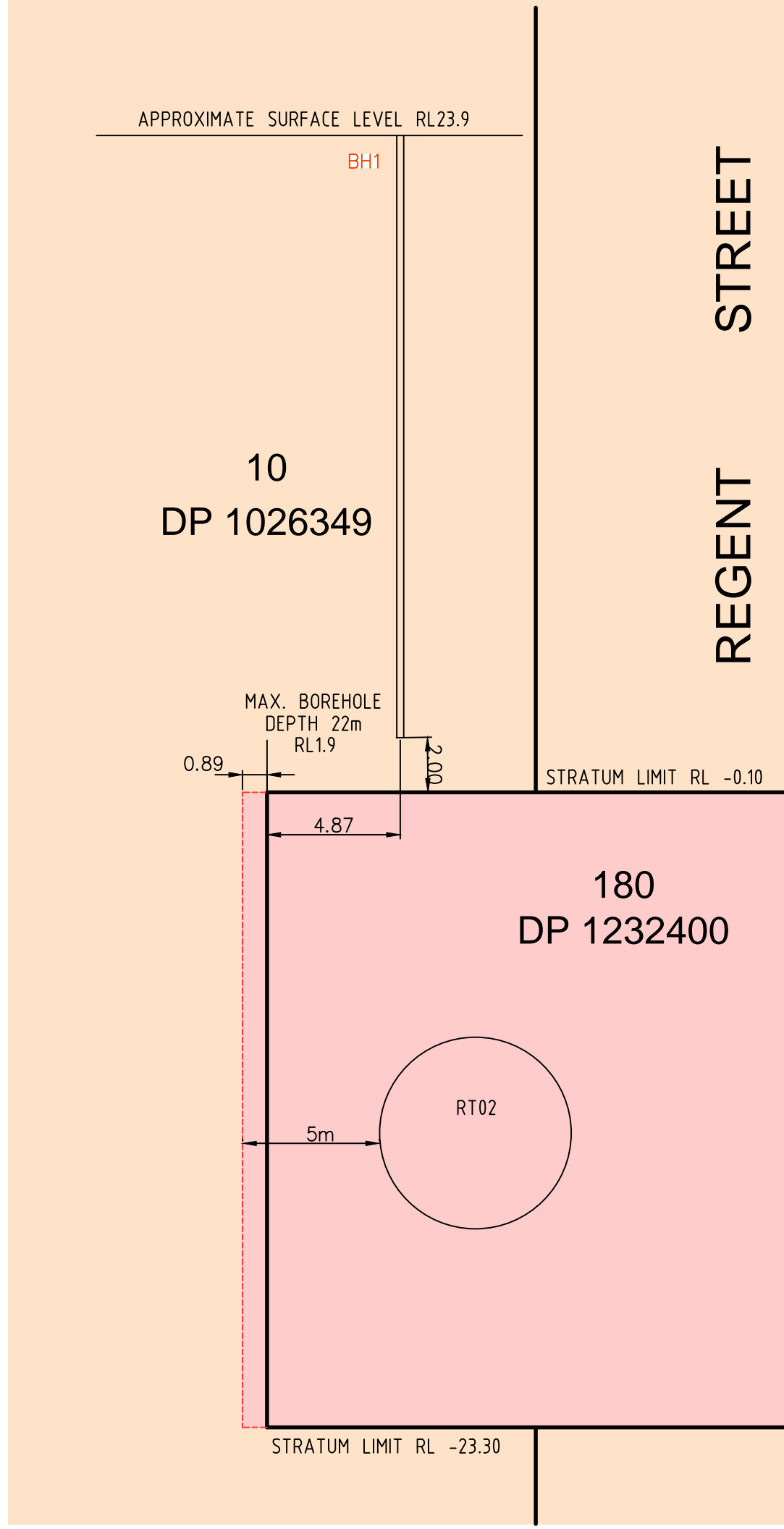
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G	00/00/00	—	00	C	00/00/00	—	00
F	00/00/00	—	00	B	06/07/21	BOREHOLE LOCATIONS AND SECTIONS D—G AMENDED	004
E	00/00/00	—	00	A	19/05/21	PROPOSED BOREHOLE LOCATIONS AND SECTIONS ADDED	003
Revision	Date	Description	Reference	Revision	Date	Description	Reference



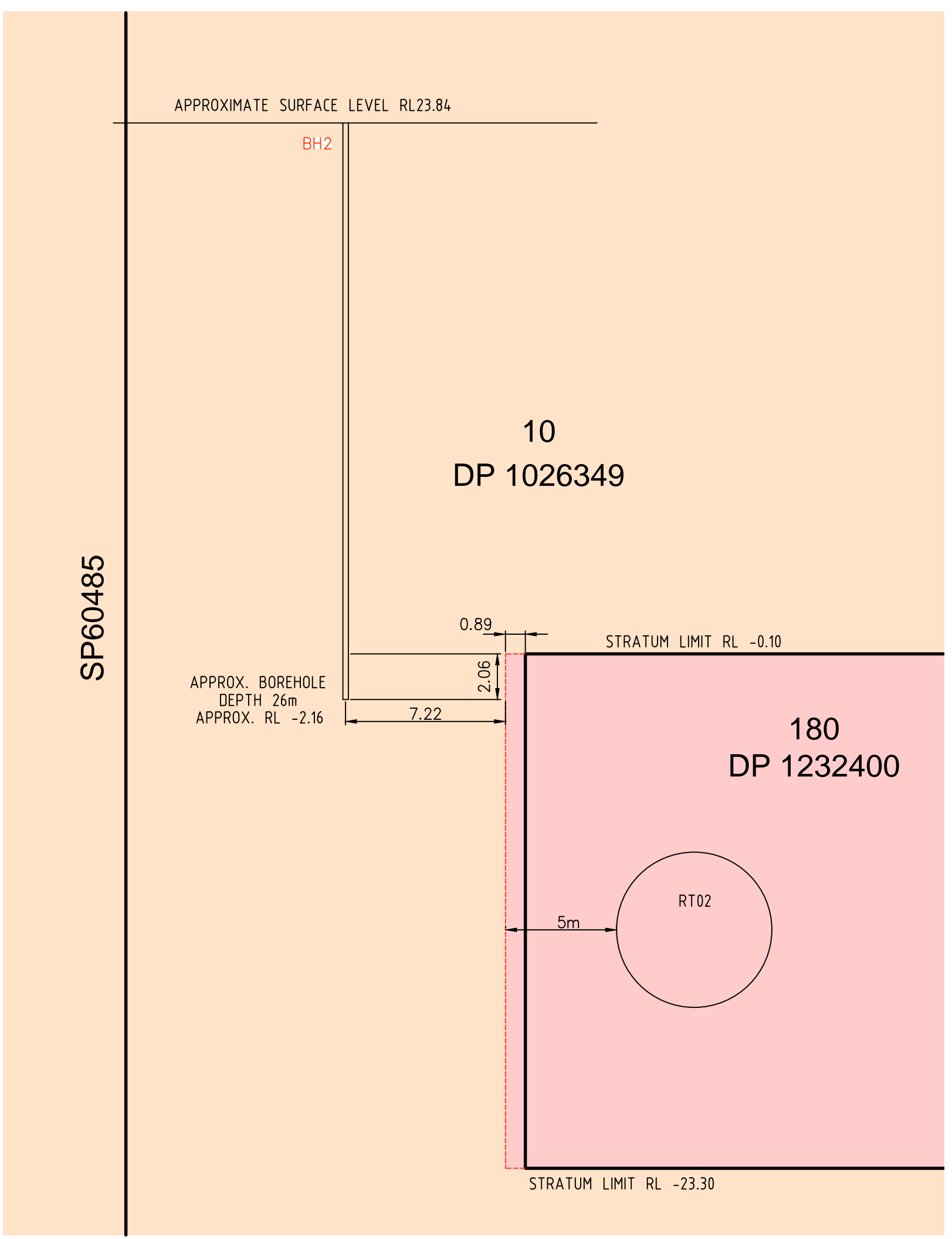
CROSS SECTION D-D



CROSS SECTION E-E



CROSS SECTION F-F



CROSS SECTION G-G

NOTES
1. BOREHOLES DIAMETERS ARE SHOWN DIAGRAMMATICALLY ONLY - SEE SHEET 1 FOR PROPOSED BOREHOLE DIAMETERS

H	00/00/00	-	00	D	00/00/00	-	00
G	00/00/00	-	00	C	00/00/00	-	00
F	00/00/00	-	00	B	06/07/21	BOREHOLE LOCATIONS AND SECTIONS D-G AMENDED	004
E	00/00/00	-	00	A	19/05/21	PROPOSED BOREHOLE LOCATIONS AND SECTIONS ADDED	003
Revision	Date	Description	Reference	Revision	Date	Description	Reference

Appendix C

Field Work Results



Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:
4,6,7
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:
15, 30/40 mm

Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.



Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	19 - 63
Medium gravel	6.7 - 19
Fine gravel	2.36 - 6.7
Coarse sand	0.6 - 2.36
Medium sand	0.21 - 0.6
Fine sand	0.075 - 0.21

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

Term	Proportion of sand or gravel	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	>30%	Sandy Clay
With	15 - 30%	Clay with sand
Trace	0 - 15%	Clay with trace sand

In coarse grained soils (>65% coarse)

- with clays or silts

Term	Proportion of fines	Example
And	Specify	Sand (70%) and Clay (30%)
Adjective	>12%	Clayey Sand
With	5 - 12%	Sand with clay
Trace	0 - 5%	Sand with trace clay

In coarse grained soils (>65% coarse)

- with coarser fraction

Term	Proportion of coarser fraction	Example
And	Specify	Sand (60%) and Gravel (40%)
Adjective	>30%	Gravelly Sand
With	15 - 30%	Sand with gravel
Trace	0 - 15%	Sand with trace gravel

The presence of cobbles and boulders shall be specifically noted by beginning the description with 'Mix of Soil and Cobbles/Boulders' with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	Density Index (%)
Very loose	VL	<15
Loose	L	15-35
Medium dense	MD	35-65
Dense	D	65-85
Very dense	VD	>85

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;

- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
Soil tends to stick together.
Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
Soil tends to stick together, free water forms when handling.

Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- 'Moist, dry of plastic limit' or 'w < PL' (i.e. hard and friable or powdery).
- 'Moist, near plastic limit' or 'w ≈ PL' (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- 'Moist, wet of plastic limit' or 'w > PL' (i.e. soils usually weakened and free water forms on the hands when handling).
- 'Wet' or 'w ≈ LL' (i.e. near the liquid limit).
- 'Wet' or 'w > LL' (i.e. wet of the liquid limit).



Rock Strength

Rock strength is defined by the Unconfined Compressive Strength and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $Is_{(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Abbreviation	Unconfined Compressive Strength MPa	Point Load Index * $Is_{(50)}$ MPa
Very low	VL	0.6 - 2	0.03 - 0.1
Low	L	2 - 6	0.1 - 0.3
Medium	M	6 - 20	0.3 - 1.0
High	H	20 - 60	1 - 3
Very high	VH	60 - 200	3 - 10
Extremely high	EH	>200	>10

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Residual Soil	RS	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely weathered	XW	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible
Highly weathered	HW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately weathered	MW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	No signs of decomposition or staining.
<i>Note: If HW and MW cannot be differentiated use DW (see below)</i>		
Distinctly weathered	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.

Rock Descriptions

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq 100 \text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

Douglas Partners



Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U ₅₀	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

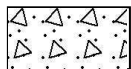
General



Asphalt



Road base



Concrete



Filling

Soils



Topsoil



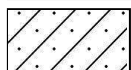
Peat



Clay



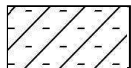
Silty clay



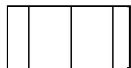
Sandy clay



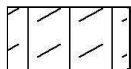
Gravelly clay



Shaly clay



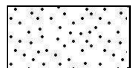
Silt



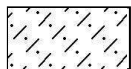
Clayey silt



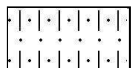
Sandy silt



Sand



Clayey sand



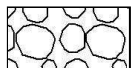
Silty sand



Gravel



Sandy gravel



Cobbles, boulders



Talus

Sedimentary Rocks



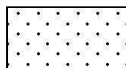
Boulder conglomerate



Conglomerate



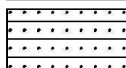
Conglomeratic sandstone



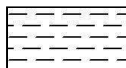
Sandstone



Siltstone



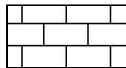
Laminite



Mudstone, claystone, shale

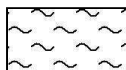


Coal

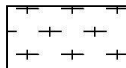


Limestone

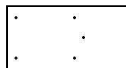
Metamorphic Rocks



Slate, phyllite, schist

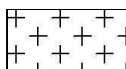


Gneiss



Quartzite

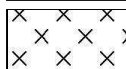
Igneous Rocks



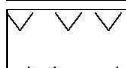
Granite



Dolerite, basalt, andesite



Dacite, epidote



Tuff, breccia



Porphyry

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.9 AHD
EASTING: 333516.6
NORTHING: 6248156.7
DIP/AZIMUTH: 90°/-

BORE No: BH1
PROJECT No: 99740.01
DATE: 30/8/2021
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
23 22 21 20 19 18 17 16 15 14	0.3	FILL/Sandy GRAVEL: fine to medium, pale grey-brown, angular to subrounded igneous gravel, medium to coarse sand, generally in a loose condition, dry																A/E			PID<1ppm
																		A/E			PID<1ppm
	1.0	FILL/Gravelly SAND: fine to coarse, pale grey-brown, fine to medium, angular to subrounded igneous gravel, generally in a medium dense condition, dry																A/E			PID<1ppm
	1.4																	A/E			PID<1ppm
	2.0	FILL/GRAVEL: fine to coarse gravel, pale grey, trace sandstone fragments, generally in a dense condition, dry																A/E			PID=5ppm
	3.0	FILL/Gravelly SAND: fine to coarse, pale grey-brown, fine to medium, angular to subangular igneous gravel, trace metal fragments, slag and charcoal, generally in a medium dense condition																A/E			PID=4ppm
	4.0	Below 4.0m: wet																A/E			PID=2ppm
	4.5																				
	5.0	CLAY CI: medium plasticity, pale grey, trace silt, w>PL, apparently stiff, alluvial																A/E			PID<1ppm
	5.5																				
	6.0	CLAY CH: high plasticity, pale grey mottled brown, w~PL, apparently very stiff, alluvial/possibly residual																A/E			PID<1ppm
	6.5																				
	6.8	CLAY CI: medium plasticity, pale grey brown, w<PL, apparently hard, residual																A/E			PID<1ppm
	7.0																				
7.3	LAMINITE: pale grey brown, approximately 70% siltstone interlaminated with 30% fine grained sandstone, medium strength, highly to moderately weathered, fragmented to fractured, Ashfield Shale																C	40		PL(A) = 0.5	
8.0																					
9.0																					
9.5	Bore discontinued at 9.5m																C	100		PL(A) = 0.4	

RIG: Track-mounted rig **DRILLER:** Groundtek Drilling Services **LOGGED:** SI **CASING:** HQ to 6.8m
TYPE OF BORING: Solid flight auger (TC-bit) to 6.7m; Rotary to 7.0m; NMLC Coring to 7.5m; Rotary to 8.8m; NMLC Coring to 9.5m
WATER OBSERVATIONS: Free groundwater at 4.0m whilst augering
REMARKS: Groundwater well installed to 9.0m (screen 9.0-6.0m; blank 6.0-0.1m; gravel 9.0-5.5m; bentonite 5.5-5.0m; backfill to 0.1m; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND			
A Auger sample	G Gas sample	PID Photo ionisation detector (ppm)	
B Bulk sample	P Piston sample	PL(A) Point load axial test Is(50) (MPa)	
BLK Block sample	U Tube sample (x mm dia.)	PL(D) Point load diametral test Is(50) (MPa)	
C Core drilling	W Water sample	pp Pocket penetrometer (kPa)	
D Disturbed sample	> Water seep	S Standard penetration test	
E Environmental sample	≡ Water level	V Shear vane (kPa)	

BORE: BH1

PROJECT: 99740.01

AUGUST 2021



7.50 – 9.50m

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.8 AHD
EASTING: 333503.5
NORTHING: 6248156.3
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 99740.01
DATE: 23/8/2021
SHEET 1 OF 3

[illegible]

REMARKS: Hole backfilled with grout

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)



BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.8 AHD
EASTING: 333503.5
NORTHING: 6248156.3
DIP/AZIMUTH: 90°/-

BORE No: BH2
PROJECT No: 99740.01
DATE: 23/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			Test Results & Comments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault		Type	Core Rec. %	RQD %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	10.5	LAMINITE: dark grey and pale grey, 70% siltstone & 30% sandstone laminations, medium then high strength, slightly weathered then fresh, slightly fractured then unbroken, Ashfield Shale																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

RIG: Comacchio 305

DRILLER: LC

LOGGED: TM

CASING: HW to 5.5, HQ to 7.0m

TYPE OF BORING: Solid flight auger (TC-bit) to 5.5m; Rotary to 7.0m; NMLC-Coring to 22.52m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Hole backfilled with grout

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.8 AHD
EASTING: 333503.5
NORTHING: 6248156.3
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 99740.01
DATE: 23/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering				Graphic Log	Rock Strength				Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing						
			EW	HW	MW	SW		FS	FR	Ex Low	Very Low			Low	Medium	High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
		SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale <i>(continued)</i>																			
	21																	C	100	100	PL(A) = 1
	22																	C	100	99	PL(A) = 1.7
	22.52	Bore discontinued at 22.52m Target depth reached																			PL(A) = 1.8
	23																				
	24																				
	25																				
	26																				
	27																				
	28																				
	29																				

RIG: Comacchio 305

DRILLER: LC

LOGGED: TM

CASING: HW to 5.5, HQ to 7.0m

TYPE OF BORING: Solid flight auger (TC-bit) to 5.5m; Rotary to 7.0m; NMLC-Coring to 22.52m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Hole backfilled with grout

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

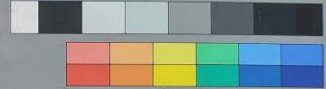
BORE: BH2

PROJECT: 99740.01

AUGUST 2021



Project No: 99740.01
BH ID: BH2
Depth: 7.0 - 11.0 m
Core Box No.: 1



99740.01 REDFERN BH2 START 7.0 m



7.00 - 11.00m

BORE: BH2

PROJECT: 99740.01

AUGUST 2021



Project No: 99740.01
BH ID: BH2
Depth: 11.0 - 16.0 m
Core Box No.: 2



11.00 - 16.00m

BORE: BH2

PROJECT: 99740.01

AUGUST 2021



Douglas Partners
Geotechnics | Environment | Groundwater

Project No: 99740.01

BH ID: BH2

Depth: 16.0 - 21.0 m

Core Box No.: 3



16.00 – 21.00m

BORE: BH2

PROJECT: 99740.01

AUGUST 2021



Douglas Partners
Geotechnics | Environment | Groundwater

Project No: 99740.01

BH ID: BH2

Depth: 21.0 - 22.52 m

Core Box No.: 4



21.00 – 22.52m

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/-

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering						Graphic Log	Rock Strength					Water	Fracture Spacing (m)				Discontinuities		Sampling & In Situ Testing					
			EW	HW	MW	SW	FS	FR		Ex Low	Very Low	Low	Medium	High		Very High	Ex High	0.01	0.05	0.10	0.50	1.00	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %	RQD %
24.7	0.7	FILL/Gravelly SAND: fine to coarse, dark grey, fine to medium, subangular to angular igneous gravel, dry																					A/E			PID<1ppm	
23.1		FILL/SAND: fine to coarse, dark brown, trace fine to medium subrounded gravel, moist, generally in a loose condition																					A/E			PID<1ppm 2,2,2 N = 4 PID<1ppm PID<1ppm	
22.2	2.2	CLAY CI: medium plasticity, orange-brown and grey, with fine to medium sand, w<PL, stiff, alluvial																					S/E			3,4,5 N = 9 PID<1ppm	
21.4	3.5	CLAY CI-CH: medium to high plasticity, pale grey and red-brown, trace fine ironstone gravel, w<PL, very stiff, residual																					S/E			5,9,12 N = 21 PID<1ppm	
20.5	5.0	CLAY CI: medium plasticity, pale grey and red-brown, with fine to medium ironstone gravel, w<PL, hard, relict rock structure, extremely weathered Ashfield Shale																					S/E			15,25 refusal PID<1ppm	
19.6	6																										
18.684	6.84	LAMINITE: grey dark grey and orange-grey, 70% siltstone & 30% sandstone laminations, very low and low strength, highly weathered, highly fractured, Ashfield Shale																					C	100	0	6.84m: Fg 120mm 7.12m: Cs 40mm 7.2m: J80°, ir, ro, fe stn 7.3m: Ds 20mm 7.34m: J80°, ir, ro, fe stn 7.37-7.52m: Cs x3, 5-30mm 7.52m: J70°, un, ro, cly co 7.93m: Cs 20mm 8.22m: J20°, st, ro, fe stn 8.41m: Cs 15mm 8.68m: Ds 70mm	
17.8	7.8	LAMINITE: dark grey and pale grey with some orange staining, 60% siltstone & 40% sandstone laminations, low to medium strength, moderately to slightly weathered, fractured, Ashfield Shale																									PL(A) = 0.5
16.8																											PL(A) = 0.52
15.9	9																						C	100	15		PL(A) = 0.14
15.975	9.75	LAMINITE: as below																									

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing				
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
	14	LAMINITE: dark grey and pale grey, 50% siltstone & 50% sandstone laminations, medium then high strength, fresh, slightly fractured then unbroken, Ashfield Shale																			PL(A) = 0.85	
	11																					PL(A) = 2.9
	13																					PL(A) = 2.3
	12																					PL(A) = 2.3
	12																					PL(A) = 2.3
	13		Below 12.7m: 70% siltstone & 30% sandstone																			PL(A) = 2.2
	14																					PL(A) = 2.5
	15																					PL(A) = 3.4
	16		Below 12.7m: 80% siltstone & 20% sandstone																			PL(A) = 1.5
	17																					PL(A) = 1.4
	17.51	SILTSTONE: dark grey and pale grey, 95% siltstone & 5% sandstone laminations, medium then high strength, fresh, unbroken, Ashfield Shale																			PL(A) = 1.1	
	18																					PL(A) = 1.1
	19																					PL(A) = 1.7
	19.42																					PL(A) = 1.7

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/-

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering				Graphic Log	Rock Strength				Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing						
			EW	HW	MW	SW		FS	FR	Ex Low	Very Low			Low	Medium	High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
		SILTSTONE: dark grey and pale grey, 95% siltstone & 5% sandstone laminations, medium then high strength, fresh, unbroken, Ashfield Shale <i>(continued)</i> Below 20.57m: fractured																			PL(A) = 1.6
	4																	C	100	95	PL(A) = 1.6
	21																				
	3																	C	100	80	
	22	22.04	Bore discontinued at 22.04m Target depth reached																		PL(A) = 1.9
	2																				
	23																				
	1																				
	24																				
	0																				
	25																				
	-1																				
	26																				
	2																				
	27																				
	3																				
	28																				
	4																				
	29																				
	5																				

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BORE: BH3

PROJECT: 99740.01

AUGUST 2021



Douglas Partners
Geotechnics | Environment | Groundwater

Project No: 99740.01

BH ID: BH3

Depth: 5.54-10.0m

Core Box No.: 1



99740.01 REDFERN BH3 START 5.54m

6

7

8

9

5.54 – 10.00m

BORE: BH3

PROJECT: 99740.01

AUGUST 2021



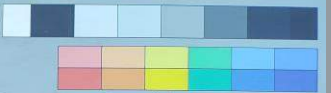
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Project No: 99740.01

BH ID: BH3

Depth: 10.0-15.0m

Core Box No.: 2



10

11

12

13

14

10.00 – 15.00m

BORE: BH3

PROJECT: 99740.01

AUGUST 2021



Project No: 99740.01
BH ID: BH3
Depth: 15.0-20.0m
Core Box No.: 3



15.00 – 20.00m

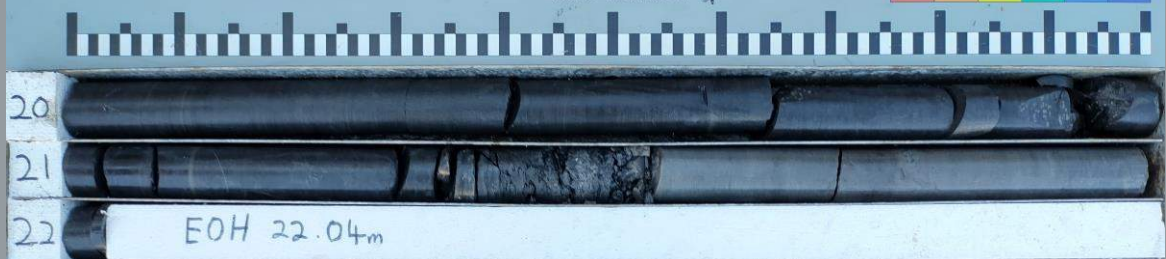
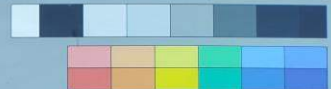
BORE: BH3

PROJECT: 99740.01

AUGUST 2021



Project No: 99740.01
BH ID: BH3
Depth: 20.0-22.04m
Core Box No.: 4



20.00 – 22.04m

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/-

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing				
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
	0.2	FILL/Gravelly SAND: fine to coarse, dark grey sand, fine to medium, subangular to angular igneous gravel, dry																A/E			PID<1ppm	
	24																	A/E			PID<1ppm	
	1	FILL/Gravelly SAND: fine to coarse, dark brown, fine to medium angular to subrounded sandstone and igneous gravel, moist, generally in a loose condition																A/E*			*BD1/170821, PID<1ppm	
																		S			2,1,1 N = 2 PID<1ppm PID<1ppm	
	23																	A/E			PID<1ppm PID<1ppm	
	2																	A/E*			*BD2/170821, PID<1ppm	
																		A/E			PID<1ppm 0,0,1 N = 1 PID<1ppm PID<1ppm	
	22																	S			PID<1ppm	
	3																	A/E			PID<1ppm	
		Below 3.5m: with clay, wet																A/E			PID<1ppm	
	21																	A/E			PID<1ppm	
	4																	A/E*			*BD3/170821, PID<1ppm	
																		S			1,0,0 N = 0 20% sample recovery, PID<1ppm	
	20																				PID<1ppm	
	5.0	FILL/Gravelly CLAY: low to medium plasticity, dark brown, fine to medium subangular igneous gravel, trace wood and glass fragments, w>PL, generally in a very soft condition																A/E			PID<1ppm	
																		A/E			PID<1ppm 0,0,0 N = 0 0% sample recovery, PID<1ppm	
	6																				PID<1ppm 0,0,0 N = 0 0% sample recovery, PID<1ppm	
																		A/E			PID<1ppm	
	7																	S			0,0,0 N = 0 0% sample recovery, PID<1ppm	
																					PID<1ppm	
	8.0	CLAY Cl: medium plasticity, pale grey, w<PL, stiff, residual																A/E*			*BD4/170821, PID<1ppm	
	9																					
	9.5	LAMINITE: as below																				
	15																					
	10.0																		C	100	15	PL(A) = 0.08

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
	10.7	LAMINITE: grey dark and grey with orange staining, 60% siltstone & 40% sandstone laminations, very low then medium strength, slightly weathered, fractured, Ashfield Shale																C	100	15	PL(A) = 1.5
	11	LAMINITE: dark grey and pale grey, 60% siltstone & 40% sandstone laminations, high, slightly weathered then fresh, slightly fractured then unbroken, Ashfield Shale																			PL(A) = 3.4
	12																				PL(A) = 2.3
	12																	C	100	100	PL(A) = 2.9
	13																				PL(A) = 2.5
	14																				PL(A) = 2.1
	15	Below 15m: 80% siltstone & 20% sandstone laminations																C	100	100	PL(A) = 2.5
	16																				PL(A) = 3
	17																				PL(A) = 1.4
	17.51	SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale																C	100	100	PL(A) = 2
	18																				
	19																	C	100	95	

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/-

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW	FS	FR	Ex Low	Very Low	Low	Medium	High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %	RQD %	Test Results & Comments
	21	SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale (continued) Below 20.35m: slightly fractured														20.35m: J50°, pl, sm, cln		C	100	95	PL(A) = 1.5
	21.5	LAMINITE: dark grey and pale grey, 60% siltstone & 40% sandstone laminations, high strength, fresh, slightly fractured, Ashfield Shale														20.83m: J60°, pl, sm, cln 20.92m: J85°, pl, sm, cln 21.4m: J80°, pl, sm, cln 21.55m: J40°, sheared, 50mm 21.67m: J80°, ir, ro, cln 21.78m: J60°, pl, ro, cln 21.83m: J80°, pl, ro, cln 22.22m: J60°, ir, ro, cln					PL(A) = 1.1
	22																				PL(A) = 1.9
	23	Below 23.0m: unbroken														22.52m: J30°, pl, ro, cln & J50, ir, sm, cln 22.95m: J70°, pl, sm, cly co 23m: J40°, pl, sm, cln		C	100	100	PL(A) = 2.7
	23.9	SANDSTONE: medium to coarse grained, pale grey, very high then high strength, fresh, unbroken, Hawkesbury Sandstone														23.89m: B0°, pl, ro, cln					PL(A) = 4
	24																				
	24.81	Bore discontinued at 24.81m Target depth reached																			PL(A) = 2.6
	25																				
	26																				
	27																				
	28																				
	29																				

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BORE: BH4

PROJECT: 99740.01

AUGUST 2021



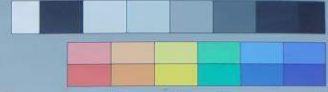
Douglas Partners
Geotechnics | Environment | Groundwater

Project No: 99740.01

BH ID: BH4

Depth: 9.5-14.0m

Core Box No.: 1



99740.01 REDFERN BH4 START 9.50m



9.50 – 14.00m

BORE: BH4

PROJECT: 99740.01

AUGUST 2021



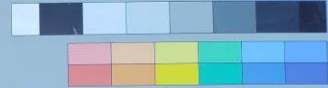
Douglas Partners
Geotechnics | Environment | Groundwater

Project No: 99740.01

BH ID: BH4

Depth: 14.0-19.0m

Core Box No.: 2



14.00 – 19.00m

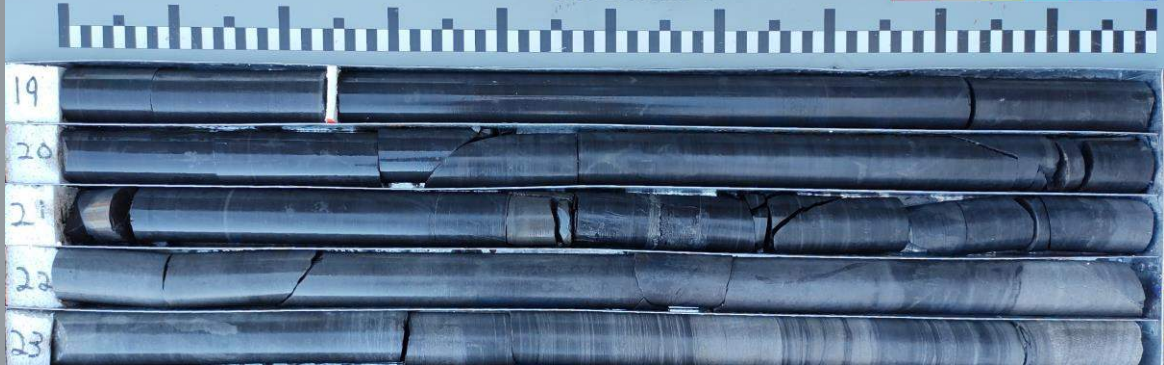
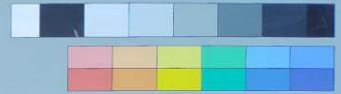
BORE: BH4

PROJECT: 99740.01

AUGUST 2021



Project No: 99740.01
BH ID: BH4
Depth: 19.0-24.0m
Core Box No.: 3



19.00 – 24.00m

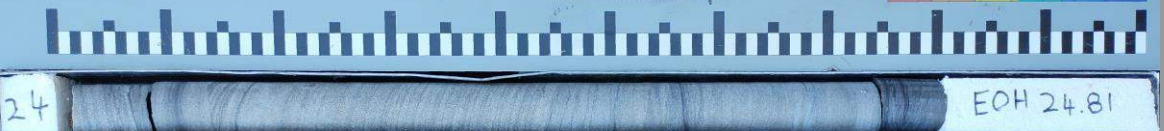
BORE: BH4

PROJECT: 99740.01

AUGUST 2021



Project No: 99740.01
BH ID: BH4
Depth: 24.0-24.81m
Core Box No.: 4



24.00 – 24.81m

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.9 AHD
EASTING: 333516.6
NORTHING: 6248156.7
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 99740.01
DATE: 30/8/2021
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.3	FILL/Sandy GRAVEL: fine to medium, pale grey-brown, angular to subrounded igneous gravel, medium to coarse sand, generally in a loose condition, dry		A/E	0.0		PID<1ppm			Gatic cover
				A/E	0.2					
				A/E	0.4		PID<1ppm			
				A/E	0.5					
	1.0	FILL/Gravelly SAND: fine to coarse, pale grey-brown, fine to medium, angular to subrounded igneous gravel, generally in a medium dense condition, dry		A/E	0.9		PID<1ppm		1	
				A/E	1.0					
				A/E	1.4		PID<1ppm			
				A/E	1.5					
	1.4	FILL/GRAVEL: fine to coarse gravel, pale grey, trace sandstone fragments, generally in a dense condition, dry		A/E	1.9		PID=5ppm		2	
				A/E	2.0					
				A/E	2.9		PID=4ppm			
				A/E	3.0					
	2	FILL/Gravelly SAND: fine to coarse, pale grey-brown, fine to medium, angular to subangular igneous gravel, trace metal fragments, slag and charcoal, generally in a medium dense condition		A/E	3.9		PID=2ppm		3	
				A/E	4.0					
				A/E	4.5		PID<1ppm			
				A/E	4.9					
	4.5	CLAY CI: medium plasticity, pale grey, trace silt, w>PL, apparently stiff, alluvial		A/E	5.0		PID<1ppm		5	
				A/E	5.5					
				A/E	5.9		PID<1ppm			
				A/E	6.0					
	5.5	CLAY CH: high plasticity, pale grey mottled brown, w~PL, apparently very stiff, alluvial/possibly residual		A/E	6.7		PID<1ppm		6	
				A/E	6.8					
				A/E	7.0		PID<1ppm			
				A/E	7.35					
	6.5	CLAY CI: medium plasticity, pale grey brown, w<PL, apparently hard, residual		A/E	7.5		PL(A) = 0.5		7	
				A/E	7.35					
				A/E	7.5					
				A/E	9.1					
	6.8	LAMINITE: pale grey brown, approximately 70% siltstone interlaminated with 30% fine grained sandstone, medium strength, highly to moderately weathered, fragmented to fractured, Ashfield Shale		C	9.3		PL(A) = 0.4		8	
				C	9.5					
				C	9.5					
				C	9.5					
	7.3			R	9.1				9	
				R	9.3					
				R	9.5					
				R	9.5					
	9.5	Bore discontinued at 9.5m								

RIG: Track-mounted rig **DRILLER:** Groundtek Drilling Services **LOGGED:** SI **CASING:** HQ to 6.8m
TYPE OF BORING: Solid flight auger (TC-bit) to 6.7m; Rotary to 7.0m; NMLC Coring to 7.5m; Rotary to 8.8m; NMLC Coring to 9.5m
WATER OBSERVATIONS: Free groundwater at 4.0m whilst augering
REMARKS: Groundwater well installed to 9.0m (screen 9.0-6.0m; blank 6.0-0.1m; gravel 9.0-5.5m; bentonite 5.5-5.0m; backfill to 0.1m; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND			
A Auger sample	G Gas sample	PID Photo ionisation detector (ppm)	
B Bulk sample	P Piston sample	PL(A) Point load axial test Is(50) (MPa)	
BLK Block sample	U Tube sample (x mm dia.)	PL(D) Point load diametral test Is(50) (MPa)	
C Core drilling	W Water sample	pp Pocket penetrometer (kPa)	
D Disturbed sample	W Water seep	S Standard penetration test	
E Environmental sample	W Water level	V Shear vane (kPa)	

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/-

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		FILL/Gravelly SAND: fine to coarse, dark grey, fine to medium, subangular to angular igneous gravel, dry		A/E	0.4 0.5		PID<1ppm			Gatic cover
	0.7	FILL/SAND: fine to coarse, dark brown, trace fine to medium subrounded gravel, moist, generally in a loose condition		A/E	0.9 1.0		PID<1ppm 2.22 N = 4 PID<1ppm PID<1ppm			Blank pipe 0.0-16.0m
	2.2	CLAY CI: medium plasticity, orange-brown and grey, with fine to medium sand, w<PL, stiff, alluvial		S	1.4 1.45 1.5					
				A/E						
				S/E	2.5 2.95		3.45 N = 9 PID<1ppm			
	3.5	CLAY CI-CH: medium to high plasticity, pale grey and red-brown, trace fine ironstone gravel, w<PL, very stiff, residual		S/E	3.5 3.95		5.9,12 N = 21 PID<1ppm			
	5.0	CLAY CI: medium plasticity, pale grey and red-brown, with fine to medium ironstone gravel, w<PL, hard, relict rock structure, extremely weathered Ashfield Shale		S/E	5.0 5.3 5.54		15,25 refusal PID<1ppm			
	6.84	LAMINITE: grey dark grey and orange-grey, 70% siltstone & 30% sandstone laminations, very low and low strength, highly weathered, highly fractured, Ashfield Shale		C	7.4 7.65		PL(A) = 0.5			Backfill 0.0-14.0m
	7.8	LAMINITE: dark grey and pale grey with some orange staining, 60% siltstone & 40% sandstone laminations, low to medium strength, moderately to slightly weathered, fractured, Ashfield Shale		C	8.1 9.0		PL(A) = 0.52 PL(A) = 0.14			
	9.75	LAMINITE: as below			9.9		PL(A) = 0.85			

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		LAMINITE: dark grey and pale grey, 50% siltstone & 50% sandstone laminations, medium then high strength, fresh, slightly fractured then unbroken, Ashfield Shale			10.0					
					10.0					
	11				11.0		PL(A) = 2.9			
				C						
	12				12.0		PL(A) = 2.3			
		Below 12.7m: 70% siltstone & 30% sandstone			12.8					
	13				13.0		PL(A) = 2.2			
	14				14.0		PL(A) = 2.5			
				C						
	15				15.0		PL(A) = 3.4			
		Below 12.7m: 80% siltstone & 20% sandstone			15.78					
	16				16.0		PL(A) = 1.5			
	17				17.0		PL(A) = 1.4			
				C						
	17.51									
		SILTSTONE: dark grey and pale grey, 95% siltstone & 5% sandstone laminations, medium then high strength, fresh, unbroken, Ashfield Shale								
	18				18.0		PL(A) = 1.1			
	19				19.0		PL(A) = 1.7			
				C						
					20.0		PL(A) = 1.6			

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		SILTSTONE: dark grey and pale grey, 95% siltstone & 5% sandstone laminations, medium then high strength, fresh, unbroken, Ashfield Shale (<i>continued</i>)								
		Below 20.57m: fractured								
	21			C	21.0		PL(A) = 1.6			
					21.08					
				C						
	22.04	Bore discontinued at 22.04m Target depth reached			22.0		PL(A) = 1.9			
					22.04					
	23									
	24									
	25									
	26									
	27									
	28									
	29									

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U _s	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/-

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details
				Type	Depth	Sample	Results & Comments		
	0.2	FILL/Gravelly SAND: fine to coarse, dark grey sand, fine to medium, subangular to angular igneous gravel, dry		A/E	0.0		PID<1ppm		Gatic cover
				A/E	0.1				
		FILL/Gravelly SAND: fine to coarse, dark brown, fine to medium angular to subrounded sandstone and igneous gravel, moist, generally in a loose condition		A/E	0.4		PID<1ppm		
				A/E	0.5				
	1			A/E*	0.9		*BD1/170821, PID<1ppm		
				S	1.0		2,1,1 N = 2 PID<1ppm		Blank pipe 0.0-3.0m Backfill 0.0-2.0m
				A/E	1.45		PID<1ppm		
				A/E	1.5		PID<1ppm		
				A/E*	1.9		*BD2/170821, PID<1ppm		
				A/E	2.0				Bentonite 2.0-2.5m
				A/E	2.4		PID<1ppm		
				S	2.5		0,0,1 N = 1 PID<1ppm		
	2			A/E	2.95		PID<1ppm		
				A/E	3.0		PID<1ppm		
				A/E	3.1				
				A/E	3.4		PID<1ppm		
				A/E	3.5				
		Below 3.5m: with clay, wet		A/E*	3.9		*BD3/170821, PID<1ppm		
				S	4.0		1,0,0 N = 0 20% sample recovery, PID<1ppm	28-09-21	
				A/E	4.45				
				A/E	4.9		PID<1ppm		
	5.0	FILL/Gravelly CLAY: low to medium plasticity, dark brown, fine to medium subangular igneous gravel, trace wood and glass fragments, w>PL, generally in a very soft condition		A/E	5.0				
				A/E	5.4		PID<1ppm		
				S	5.5		0,0,0 N = 0 0% sample recovery, PID<1ppm		
				A/E	5.95				Machine slotted PVC screen 3.0-9.0m
				A/E	6.5		PID<1ppm		Gravel 2.5-10.5m
				S	7.0		0,0,0 N = 0 0% sample recovery, PID<1ppm		
				A/E	7.45				
	8.0	CLAY Cl: medium plasticity, pale grey, w<PL, stiff, residual		A/E*	8.3		*BD4/170821, PID<1ppm		
				A/E*	8.5				
				C	9.5				
	9.5	LAMINITE: as below							
				C	9.8		PL(A) = 0.08		Blank pipe 9.0-10.5m
	10.0								

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	>	Water seep
E	Environmental sample	≡	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	10.7	LAMINITE: grey dark and grey with orange staining, 60% siltstone & 40% sandstone laminations, very low then medium strength, slightly weathered, fractured, Ashfield Shale		C					End cap	
	11	LAMINITE: dark grey and pale grey, 60% siltstone & 40% sandstone laminations, high, slightly weathered then fresh, slightly fractured then unbroken, Ashfield Shale			10.8		PL(A) = 1.5			
					11.2					
					11.3		PL(A) = 3.4		Bentonite 10.5-12.0m	
	12									
				C	12.3		PL(A) = 2.3			
	13									
					13.3		PL(A) = 2.9			
	14									
					14.0		PL(A) = 2.5			
					14.2					
	15	Below 15m: 80% siltstone & 20% sandstone laminations		C	15.0		PL(A) = 2.1			
	16									
					16.3		PL(A) = 2.5			
					16.55					
	17				17.0		PL(A) = 3			
	17.51	SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale		C	18.0		PL(A) = 1.4			
	18									
					19.0		PL(A) = 2		Backfill 120-24.8m	
	19				19.25					
				C						

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale (<i>continued</i>) Below 20.35m: slightly fractured			20.1		PL(A) = 1.5			
	21			C	21.3		PL(A) = 1.1			
	21.5	LAMINITE: dark grey and pale grey, 60% siltstone & 40% sandstone laminations, high strength, fresh, slightly fractured, Ashfield Shale			21.95		PL(A) = 1.9			
	22				22.0					
	23	Below 23.0m: unbroken		C	23.0		PL(A) = 2.7			
	23.9				24.0		PL(A) = 4			
	24	SANDSTONE: medium to coarse grained, pale grey, very high then high strength, fresh, unbroken, Hawkesbury Sandstone			24.8		PL(A) = 2.6			
	24.81	Bore discontinued at 24.81m Target depth reached			24.81					
	25									
	26									
	27									
	28									
	29									

RIG: Explora

DRILLER: SS

LOGGED: TM

CASING: HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	>	Water seep
E	Environmental sample	≡	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

Appendix D

Borehole Logs from Adjacent Sites

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 22.9 AHD
EASTING: 333532
NORTHING: 6248203.2
DIP/AZIMUTH: 90°/-

BORE No: BH1
PROJECT No: 86852.00
DATE: 17 - 20/9/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing				
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium				High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault
	0.15	CONCRETE																A/E			
	0.3	FILL/Silty CLAY: low plasticity, brown - grey, trace rounded concrete gravel, moist																A/E*			
22	1	Silty CLAY CL: low plasticity, brown - red, trace fine sand, w>PL, appears stiff, residual																A/E			
		1.0m brown mottled grey																A/E			
21	2	Silty CLAY CL: low plasticity, pale grey - brown, w>PL, appears very stiff, residual																A/E			
20	3																				
19	4																	A			
18	5	Silty CLAY CL: low plasticity, grey - brown, trace angular highly weathered shale gravel, w>PL, appears hard, residual (extremely weathered rock)																A			
17	6	LAMINITE: dark grey - pale grey and brown grey, 60% siltstone and 40% sandstone laminations, low to medium strength, slightly weathered, fractured, Ashfield Shale																C	100	57	PL(A) = 0.4
16	7	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, low to medium strength, fresh, slightly fractured, Ashfield Shale																C	80	27	PL(A) = 0.4
15	8	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, low to medium strength, fresh, slightly fractured, Ashfield Shale																C	100	60	PL(A) = 0.2
14	9	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, medium and high strength, fresh, slightly fractured, Ashfield Shale																C	100	100	PL(A) = 1.4
13	10.0																				

RIG: Rig 1 (CE150)

DRILLER: BG Drilling

LOGGED: NB

CASING: HQ to 5m

TYPE OF BORING: Diacore to 0.15m; solid flight auger (TC-bit) to 5.35m; NMLC-coring to 12.9m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 10.9m (screen 3-10.9m; gravel 2-12.9m; bentonite seal 0.2-2m; gatic cover); *BD1/200919 is replicate of 0.5-0.6m sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 22.9 AHD
EASTING: 333532
NORTHING: 6248203.2
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86852.00
DATE: 17 - 20/9/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing				
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
		SILTSTONE: dark grey - pale grey, 90% siltstone and 10% sandstone laminations, medium and high strength, fresh, slightly fractured to unbroken, Ashfield Shale																			PL(A) = 0.4
12	11																	C	100	100	PL(A) = 1.7
																		C	100	100	
																		C	100	95	PL(A) = 2.4
	12																	C	100	100	
	12.9	Bore discontinued at 12.9m																			PL(A) = 2
	13																				
	14																				
	15																				
	16																				
	17																				
	18																				
	19																				

RIG: Rig 1 (CE150)

DRILLER: BG Drilling

LOGGED: NB

CASING: HQ to 5m

TYPE OF BORING: Diacore to 0.15m; solid flight auger (TC-bit) to 5.35m; NMLC-coring to 12.9m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 10.9m (screen 3-10.9m; gravel 2-12.9m; bentonite seal 0.2-2m; gatic cover); *BD1/200919 is replicate of 0.5-0.6m sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	WL	Water level	V	Shear vane (kPa)

BORE: 1

PROJECT: REDFERN

SEPTEMBER 2019



Project No: 86852.00
BH ID: BH1
Depth: 5.35-10
Core Box No.: Box 1 of 1



5.35-10.0m

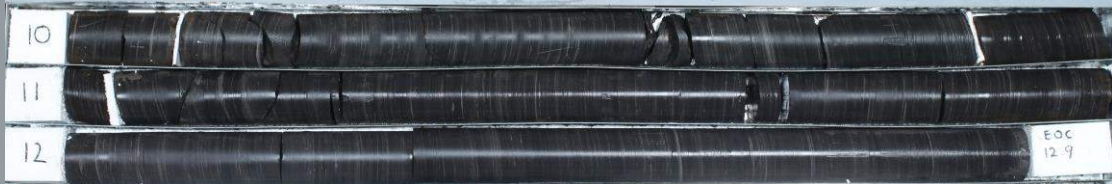
BORE: 1

PROJECT: REDFERN

SEPTEMBER 2019



Project No: 86852.00
BH ID: BH1
Depth: 10-12.9
Core Box No.: Box 2 of 2



10.0-12.9m

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 24.5 AHD
EASTING: 333508.7
NORTHING: 6248204
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86852.00
DATE: 19/9/2018 - 20/9/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering						Graphic Log	Rock Strength					Water	Fracture Spacing (m)				Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW	FS	FR		Ex Low	Very Low	Low	Medium	High		Very High	Ex High	0.01	0.05	0.10	0.50	1.00	B - Bedding S - Shear	J - Joint F - Fault	Type
	0.15	CONCRETE																							
-24		FILL/Gravelly SAND: fine to medium sand and fine gravel, dark grey, trace brick fragments, moist, appears moderately to well compacted																				A/E			
-1	0.8	Sandy CLAY CL: low plasticity, orange brown, fine sand, w>PL, appears firm, possibly alluvial																				A/E			
-23																						A/E			
-2	2.1	Silty CLAY CL: low plasticity, brown-orange, trace fine sand, w>PL, stiff, residual																				A/E			
-22																						A/E			
-3																									
-21																									
-4	4.0	Silty CLAY CL: low plasticity, pale grey-red, trace angular highly weathered shale gravel, w>PL, appears hard, residual (extremely weathered rock)																				A			
-20																									
-5																						A			
-19																									
-6																									
-7																									
-17	7.5	LAMINITE: brown - grey, very low to low strength, Ashfield Shale																							
-8																									
-16																									
-9																									
-15	9.62	LAMINITE: see over																							
																						C	100	0	PL(A) = 0.6

RIG: Rig 5 (Trailer Mounted) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 8m
TYPE OF BORING: Diacore to 0.15m; solid flight auger (TC-bit) to 9.62m; NMLC-coring to 13.69m
WATER OBSERVATIONS: No free groundwater observed whilst augering
REMARKS: Groundwater monitoring well installed to 12.3m (screen 5-12.3m; gravel 4-13.69m; bentonite seal 0.15-4m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test ls(50) (MPa)
		PL(D)	Point load diametral test ls(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)



BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 24.5 AHD
EASTING: 333508.7
NORTHING: 6248204
DIP/AZIMUTH: 90°/-

BORE No: BH2
PROJECT No: 86852.00
DATE: 19/9/2018 - 20/9/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering						Graphic Log	Rock Strength						Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing			
			EW	HW	MW	SW	FS	FR		Ex Low	Very Low	Low	Medium	High	Very High			Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
14	10.43	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, medium and high strength, slightly weathered, slightly fractured, Ashfield Shale																C	100	0	PL(A) = 0.8	
11		LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, medium and high strength, fresh, slightly fractured to unbroken, Ashfield Shale																C	93	93	PL(A) = 2	
13																						
12	12.2	LAMINITE: dark grey - pale grey, 80% siltstone and 20% sandstone laminations, high strength, fresh, slightly fractured to unbroken, Ashfield Shale																			PL(A) = 1.7	
12																		C	100	95		
13																						
11	13.69	Bore discontinued at 13.69m																			PL(A) = 1.3	
14																						
10																						
15																						
9																						
16																						
8																						
17																						
7																						
18																						
6																						
19																						
5																						

RIG: Rig 5 (Trailer Mounted) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 8m
TYPE OF BORING: Diacore to 0.15m; solid flight auger (TC-bit) to 9.62m; NMLC-coring to 13.69m
WATER OBSERVATIONS: No free groundwater observed whilst augering
REMARKS: Groundwater monitoring well installed to 12.3m (screen 5-12.3m; gravel 4-13.69m; bentonite seal 0.15-4m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND			
A Auger sample	G Gas sample	PID Photo ionisation detector (ppm)	
B Bulk sample	P Piston sample	PL(A) Point load axial test Is(50) (MPa)	
BLK Block sample	U Tube sample (x mm dia.)	PL(D) Point load diametral test Is(50) (MPa)	
C Core drilling	W Water sample	pp Pocket penetrometer (kPa)	
D Disturbed sample	> Water seep	S Standard penetration test	
E Environmental sample	≡ Water level	V Shear vane (kPa)	

BORE: 2 PROJECT: REDFERN SEPTEMBER 2019



Project No: 86851.00
BH ID: BH2
Depth: 9.62-13.69m
Core Box No.: 1 of 1



9.62-13.69m

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 26.0 AHD
EASTING: 333522.1
NORTHING: 6248231.8
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86852.00
DATE: 20/9/2018
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)				Discontinuities		Sampling & In Situ Testing					
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium		High	Very High	Ex High	0.01	0.05	0.10	0.50	1.00	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
26	0.05	ASPHALTIC CONCRETE																								
		FILL/Silty SAND: fine to medium, dark grey with ash/charcoal, moist, appears poorly and variably compacted																					A/E			
		1.0m: trace ash																					A/E			
	1.2	Sandy CLAY CL: low plasticity, orange brown, fine sand, w>PL, appears soft, possibly alluvial																				S				0,0,1 N = 1
																							A/E*			
	2.0	Silty CLAY CL: low plasticity, brown - red, trace fine sand, w>PL, stiff, residual																								
																							S			4,6,8 N = 14
	3.5	Silty CLAY CL: low plasticity, pale grey - red, trace ironstone gravel, w>PL, very stiff, residual																								

Note: Unless otherwise stated, discontinuities are bedding, planar, rough, iron coated to 1mm thick, dipping 0-2°

RIG: Rig 12 (Hanjin)

DRILLER: BG Drilling

LOGGED: NB

CASING: HQ to 8m

TYPE OF BORING: Solid flight auger (TC-bit) to 9.1m; NMLC-coring to 20.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 13m (screen 7-13m; gravel 6-20m; bentonite seal 0.2-6m; gatic cover); *BD4/200919 is replicate of 1.5-1.6m sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 26.0 AHD
EASTING: 333522.1
NORTHING: 6248231.8
DIP/AZIMUTH: 90°/-

BORE No: BH3
PROJECT No: 86852.00
DATE: 20/9/2018
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing				
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
16		LAMINITE: brown - grey, 80% siltstone and 20% sandstone with hard clay bands, very low strength, highly weathered, fractured, Ashfield Shale																C	100	0	PL(A) = 0.4
10.55		10.33m: thrust fault																			
11		LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, medium strength, slightly weathered to fresh, fractured, Ashfield Shale																C	100	77	PL(A) = 0.5
12	12.0	LAMINITE: dark grey - pale grey, 80% siltstone and 20% sandstone laminations, high strength, fresh, slightly fractured, Ashfield Shale																			PL(A) = 2.3
13																					
14																					PL(A) = 2.9
15																		C	100	100	PL(A) = 2.5
16																					PL(A) = 2.8
16.3		SILTSTONE: dark grey, 95% siltstone and 5% sandstone thin laminations, high strength, fresh, slightly fractured to unbroken, Ashfield Shale																			PL(A) = 2.7
17																					PL(A) = 2.1
18																		C	100	100	PL(A) = 1
19																					PL(A) = 1.2
20.0																					

Bore discontinued at 20.0m

RIG: Rig 12 (Hanjin) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 8m

TYPE OF BORING: Solid flight auger (TC-bit) to 9.1m; NMLC-coring to 20.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 13m (screen 7-13m; gravel 6-20m; bentonite seal 0.2-6m; gatic cover); *BD4/200919 is replicate of 1.5-1.6m sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	SP	Standard penetration test
E	Environmental sample	W	Water level	S	Shear vane (kPa)

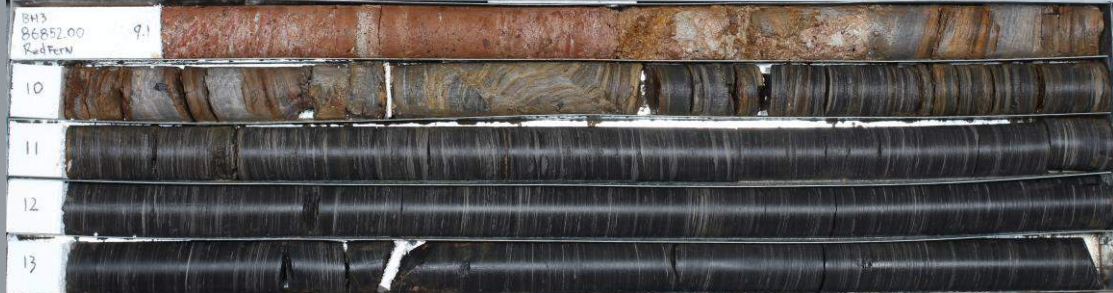
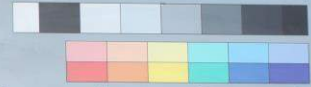
BORE: 3

PROJECT: REDFERN

SEPTEMBER 2019



Project No: 86852.00
BH ID: BH3
Depth: 9.1-14
Core Box No.: Box 1 of 3



9.1-14.0m

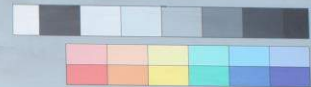
BORE: 3

PROJECT: REDFERN

SEPTEMBER 2019



Project No: 86852.00
BH ID: BH3
Depth: 14-19
Core Box No.: 2 of 3



14.0-19.0m

BORE: 3 PROJECT: REDFERN SEPTEMBER 2019



19.0-20.0m

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 25.0 AHD
EASTING: 333516.9
NORTHING: 6248216.5
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 86852.00
DATE: 23/9/2016
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)				Discontinuities		Sampling & In Situ Testing					
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium		High	Very High	Ex High	0.01	0.05	0.10	0.50	1.00	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
25	0.1	BRICK PAVERS																								
	0.6	FILL/Gravelly SAND: fine to medium sand and fine gravel, dark grey, trace glass fragments, moist, appears moderately to well compacted																					A/E			
24	1	FILL/SAND: fine, pale grey, moist, appears moderately compacted																					A/E			
	1.4	Sandy CLAY CL: low plasticity, orange brown, fine sand, w>PL, appears firm, possibly alluvial																					A/E			
23	2	2.0 Silty CLAY CL: low plasticity, brown - red, trace fine sand, w>PL, appears stiff, residual																								
22	3																						A			
21	4	4.0 Silty CLAY cl: low plasticity, pale grey - red, trace ironstone gravel, w>PL, appears stiff to very stiff, residual																					A			
20	5																						A			
19	6																									
18	7																									
	7.3	Bore discontinued at 7.3m - limit of investigation																					A			
17	8																									
16	9																									

RIG: Rig 5 (Trailer Mounted)

DRILLER: BG Drilling

LOGGED: NB

CASING: Uncased

TYPE OF BORING: Hand auger to 1.5m; Solid flight auger (TC-bit) to 7.3m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 23.5 AHD
EASTING: 333522.2
NORTHING: 6248198.8
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 86852.00
DATE: 23/9/2016
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %	RQD %	Test Results & Comments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0.15	CONCRETE SLAB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

RIG: Rig 5 (Trailer Mounted)

DRILLER: BG Drilling

LOGGED: NB

CASING: Uncased

TYPE OF BORING: Diacore to 0.15m; Solid flight auger (TC-bit) to 6.2m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 26.0 AHD
EASTING: 333530.3
NORTHING: 6248221.2
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 86852.00
DATE: 17 - 19/9/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering						Graphic Log	Rock Strength						Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW	FS	FR		Ex Low	Very Low	Low	Medium	High	Very High			Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %	RQD %
26	0.12	CONCRETE SLAB																					
		FILL/Clayey SAND: fine to medium, grey and dark brown, low plasticity fines, trace sandstone gravel, moist																	E				
25	0.72	FILL/Sandy CLAY: low plasticity, brown, fine sand, trace tile and PVC fragments, w>PL																	E				
	1.3	FILL/Sandy CLAY: low plasticity, orange-brown, fine sand, trace sandstone gravel, w>PL, appears moderately compacted, possibly alluvial																	E				
24	2.0	Bore discontinued at 2.0m - limit of investigation																					
23	3																						
22	4																						
21	5																						
20	6																						
19	7																						
18	8																						
17	9																						

RIG: Hand tools

DRILLER: CLN

LOGGED: CLN

CASING: Uncased

TYPE OF BORING: Hand auger

WATER OBSERVATIONS: See Remarks below

REMARKS: Borehole completed over 2 days due to wet weather, borehole filled with rain water, precluded observation of groundwater

SAMPLING & IN SITU TESTING LEGEND


A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 26.5 AHD
EASTING: 333542
NORTHING: 6248218.7
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 86852.00
DATE: 17/9/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing				
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
		VOID BELOW FLOOR																				
26	0.45	FILL/SAND: fine to medium, dark brown, with clay, timber fragments, concrete gravels and terracota, trace charcoal and brick fragments, moist Bore discontinued at 0.9m Refusal possibly on concrete slab																E*				
1	0.9																					
25																						
2																						
24																						
3																						
23																						
4																						
22																						
5																						
21																						
6																						
20																						
7																						
19																						
8																						
18																						
9																						
17																						

RIG: Hand tools

DRILLER: CLN

LOGGED: CLN

CASING: Uncased

TYPE OF BORING: Hand auger

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD2/2170919

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 101
PROJECT No: 86266.03
DATE: 20 - 21/9/2018
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
22	0.16	CONCRETE (SLAB)																A/E			PID < 1
	0.3	FILLING: grey-brown, fine to medium sand filling with some brick fragments, damp																A/E			PID < 1
	21	SAND: pale brown, fine to medium sand, damp 0.8m: clayey																A/E			PID < 1
	1.2	SANDY CLAY: red-brown, sandy clay, Mc~PL																A/E			PID < 1
	20																	A/E			PID < 1
	2.5	CLAY: red-brown mottled grey, clay, Mc<PL																A			
	3																				
	3.6	SHALY CLAY: grey-brown, shaly clay																A			
	4																				
	5																				
	5.53	LAMINITE: very low to low strength, highly to moderately weathered, fractured, brown and grey laminite with some medium to high strength ironstone bands																A			
	5.95																	C	100	0	
	6																	C	87	0	
	6.78	LAMINITE: low to medium strength, slightly weathered, fractured, dark grey laminite, (60% siltstone, 40% sandstone), horizontal and lenticular bedding																C	89	37	PL(A) = 0.29
	7																				
	8																	C	100	84	PL(A) = 0.61
	8.25	LAMINITE: high strength, fresh, slightly fractured, dark grey laminite (80% siltstone, 20% sandstone), bedding dipping 0-5°																			
	9																	C	100	100	PL(A) = 2.06
					</																

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** HQ to 2.7m
TYPE OF BORING: 200mm diacore to 0.16m; solid flight auger (TC-bit) to 5.53m; NMLC-coring to 10.83m
WATER OBSERVATIONS: Groundwater observed at 4.66 m depth two hours after installation and development of monitoring well
REMARKS: groundwater monitoring well installed to 10.47 m (screen 1.2-10.47m; gravel 0.6-10.47m; bentonite seal 0.2-0.6m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)



BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 101
PROJECT No: 86266.03
DATE: 20 - 21/9/2018
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
12		LAMINITE: high strength, fresh, slightly fractured, dark grey laminite (80% siltstone, 20% sandstone), bedding dipping 0-5° (continued)																			

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** HQ to 2.7m
TYPE OF BORING: 200mm diacore to 0.16m; solid flight auger (TC-bit) to 5.53m; NMLC-coring to 10.83m
WATER OBSERVATIONS: Groundwater observed at 4.66 m depth two hours after installation and development of monitoring well
REMARKS: groundwater monitoring well installed to 10.47 m (screen 1.2-10.47m; gravel 0.6-10.47m; bentonite seal 0.2-0.6m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

BORE: 101

PROJECT: 86266.03

SEPTEMBER 2018



Project No: 86266.03
BH ID: BH101
Depth: 5.53 - 10.0m
Core Box No.: 1



5.53 - 10.00 m

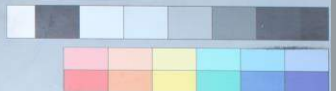
BORE: 101

PROJECT: 86266.03

SEPTEMBER 2018



Project No: 86266.03
BH ID: BH101
Depth: 10.0 - 10.83
Core Box No.: 2



10.00 - 10.83m

BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 102
PROJECT No: 86266.03
DATE: 21/9/2018
SHEET 1 OF 1

[illegible]

RIG: Rig 1 (CE150)

DRILLER: BG Drilling

LOGGED: ARM

CASING: Uncased

TYPE OF BORING: 200mm diacore to 0.12m; solid flight auger (TC-bit) to 6.0m

WATER OBSERVATIONS: No groundwater observed in monitoring well one hour after installation

REMARKS: *BD1/20180921 is replicate of 1.4-1.5m sample; groundwater monitoring well installed to 5.8m (screen 1.2-5.8m; gravel 0.85-5.8m; bentonite seal 0.15-0.85m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	▷	Water seep
E	Environmental sample	≡	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test ls(50) (MPa)
		PL(D)	Point load diametral test ls(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)



BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 103
PROJECT No: 86266.03
DATE: 19 - 20/9/2018
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)				Discontinuities		Sampling & In Situ Testing					
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium		High	Very High	Ex High	0.01	0.05	0.10	0.50	1.00	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
21	0.15	CONCRETE (SLAB): 8mm reinforcement at 0.08m																								PID < 1
21	0.4	FILLING: brown, fine to medium sand filling with a trace of tile fragments, damp																								PID < 1
21	1.1	SAND: orange-brown, fine to medium sand, damp																								PID < 1
20	2	SANDY CLAY: orange-brown, sandy clay, fine to medium grained sand, damp to moist																								PID < 1
19	3																									PID < 1
18	4	CLAY: red-brown mottled grey, clay with a trace of fine to medium grained sand, Mc~PL																								PID < 1
17	5	5.0m: becoming shaly																								PID < 1
16	5.2	SHALY CLAY: hard, grey mottled red-brown, clay with 20% ironstone bands (extremely weathered laminite)																								PID < 1
15	6																									pp = 300
14	7																									pp = 250
13	8	CORE LOSS																								pp = 200
12	8.4	LAMINITE: extremely low to very low strength, extremely to highly weathered, fractured, grey-brown, laminite, 50% extremely weathered seams, bedding dipping 30-45°																								
11	9.39																									
10	9.84	LAMINITE																								PL(A) = 0.19

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** HQ to 3.7m
TYPE OF BORING: 200mm diacore to 0.15m; solid flight auger (TC-bit) to 5.2m; NMLC-coring to 12.93m
WATER OBSERVATIONS: Groundwater observed at 4.90 m depth five hours after development of monitoring well
REMARKS: groundwater monitoring well installed to 12.93m (screen 1.4-12.93m; gravel 1.15-12.95m; bentonite seal 0.2-1.15m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND			
A Auger sample	G Gas sample	PID Photo ionisation detector (ppm)	
B Bulk sample	P Piston sample	PL(A) Point load axial test Is(50) (MPa)	
BLK Block sample	U Tube sample (x mm dia.)	PL(D) Point load diametral test Is(50) (MPa)	
C Core drilling	W Water sample	pp Pocket penetrometer (kPa)	
D Disturbed sample	> Water seep	S Standard penetration test	
E Environmental sample	≡ Water level	V Shear vane (kPa)	

BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 103
PROJECT No: 86266.03
DATE: 19 - 20/9/2018
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering						Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing				
			EW	HW	MW	SW	FS	FR		Ex Low	Very Low	Low	Medium	High			Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
12	10.0	LAMINITE: low strength, slightly weathered, fractured, dark grey laminite (70% siltstone, 30% sandstone), horizontally bedded															9.8m: B, ro, co, 2mm 9.81m: Cs, 20mm 10.02-10.14m: J70°, ro, vn	C	83	43	PL(A) = 0.16 PL(A) = 0.26 PL(A) = 1.07	
	10.63																	10.28m: Ds, 10mm 10.30-10.34m: B(x2), ro 10.44m: Cs, 5mm 10.46m: CORE LOSS: 170mm	C	88		33
	11		LAMINITE: medium strength, slightly weathered, fractured, dark grey laminite (70% siltstone, 30% sandstone), horizontally bedded															10.63-10.78m: fg 10.86m: B, vn 10.93-10.97m: B(x2) 11.07-11.27m: B(x2), ro 11.28m: J45°, st, ro, stn				
	11.32																11.32m: Ds, 10mm 11.37m: Ds, 2mm 11.50-11.83m: B(x6), sm, 1-2mm 11.93-11.98m: Sz, 50mm 12.01m: B, vn	C	100	92	PL(A) = 2.78	
	12	LAMINITE: high strength, fresh, slightly fractured, dark grey laminite (80% siltstone, 20% sandstone), horizontally bedded																				
	12.93	Bore discontinued at 12.93m - limit of investigation																				
	13																					
	14																					
	15																					
	16																					
	17																					
	18																					
	19																					

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** HQ to 3.7m
TYPE OF BORING: 200mm diacore to 0.15m; solid flight auger (TC-bit) to 5.2m; NMLC-coring to 12.93m
WATER OBSERVATIONS: Groundwater observed at 4.90 m depth five hours after development of monitoring well
REMARKS: groundwater monitoring well installed to 12.93m (screen 1.4-12.93m; gravel 1.15-12.95m; bentonite seal 0.2-1.15m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

BORE: 103

PROJECT: 86266.03

SEPTEMBER 2018



Project No: 86266.03
BH ID: BH103
Depth: 5.2 - 10.0m
Core Box No.: 1



5.20 - 10.00 m

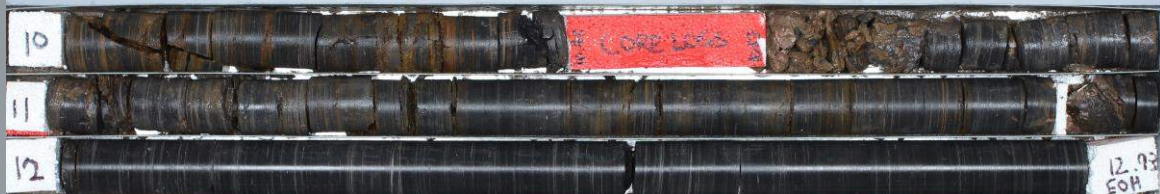
BORE: 103

PROJECT: 86266.03

SEPTEMBER 2018



Project No: 86266.03
BH ID: BH103
Depth: 10.0 - 12.93
Core Box No.: 1





10.00 - 12.93m

BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 104
PROJECT No: 86266.03
DATE: 20/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing			Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample			Results & Comments		
22	0.12	CONCRETE (SLAB): 8mm reinforcement at 0.06m		A/E	0.15			PID < 1			
		FILLING: brown, fine to medium sand filling with a trace of clay and fine sandstone gravel, damp		A/E	0.2 0.4 0.5				PID < 1		
21	0.7	SAND: medium dense, pale brown, medium sand, damp		A/E	0.7 0.8				PID < 1		
21	0.9	CLAYEY SAND: medium dense, orange-brown, clayey medium sand, damp		A/E	0.9 1.0				PID < 1		
				A/E	1.4 1.5			PID < 1			
					1.9				PID < 1		
20	2.0	Bore discontinued at 2.0m - limit of investigation		A/E	2.0						

RIG: Hand Tools

DRILLER: ARM

LOGGED: ARM

CASING: Uncased

TYPE OF BORING: 150mm diacore to 0.12m; 60mm hand auger to 2.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☒ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)



BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 105
PROJECT No: 86266.03
DATE: 19/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)
				Type	Depth	Sample	Results & Comments		
22	0.16	CONCRETE (SLAB): 8mm reinforcement at 0.12m							
		FILLING: orange-brown, clayey fine to medium sand filling with a trace of fine sandstone gravel, damp		A/E	0.2		PID < 1		
				A/E	0.3		PID < 1		
				A/E	0.4		PID < 1		
				A/E	0.5		PID < 1		
				A/E	0.6		PID < 1		
				A/E	0.7		PID < 1		
				A/E	0.8		PID < 1		
				A/E	0.9		PID < 1		
				A/E*	1.4		PID < 1		
				A/E*	1.5		PID < 1		
	1.9	Bore discontinued at 1.9m - limit of investigation							

RIG: Hand Tools

DRILLER: ARM

LOGGED: ARM

CASING: Uncased

TYPE OF BORING: 150mm diacore to 0.16m; 60mm hand auger to 1.9m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD1/20180919 is replicate of 1.4-1.5m sample

☒ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 106
PROJECT No: 86266.03
DATE: 19/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
22	0.17	CONCRETE (SLAB): 8mm reinforcement at 0.11m										
		FILLING: grey-brown, fine to medium sand filling with some fine gravel, brick fragments (up to 100mm) to 0.3m depth, damp		A/E	0.2		PID < 1					
		0.60m: mottled orange, possibly natural		A/E	0.3		PID < 1					
				A/E	0.4							
				A/E	0.5							
1	1.3	SAND: orange-brown, fine to medium sand with a trace of clay, damp		A/E	0.9		PID < 1					
	1.7	SANDY CLAY: red-brown, sandy clay, fine to medium sand, damp		A/E	1.4		PID < 1					
	2.0	Bore discontinued at 2.0m - limit of investigation		A/E	1.5		PID < 1					
					1.9							
					2.0							
2												
3												
4												
5												
6												
7												
8												
9												

RIG: Hand Tools

DRILLER: ARM

LOGGED: ARM

CASING: Uncased

TYPE OF BORING: 150mm diacore to 0.17m; 60mm hand auger to 2.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☒ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: GSA Australia Pty Ltd
PROJECT: Proposed Student Accommodation
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 23.5 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 0086266.00
DATE: 29/1/2018
SHEET 1 OF 1

[illegible]

RIG: Dando Terrier **DRILLER:** BG Drilling **LOGGED:** LJH **CASING:** HQ to 6.0m

TYPE OF BORING: Diacore to 0.25m; SFA to 0.95m; Diacore to 1.05m; SFA to 7.03m; NMLC to 8.85m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
	Core drilling	W	Water sample
C	Disturbed sample	W	Water seep
D	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

