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Construction Soil and Water Management Plan

UNSW Health Translation Hub

Prepared for: Hansen Yuncken

Document no: B-ACO-CEC-RPT-0001

Revision no: Revision 02





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Revisions

Revision	Description	Date	Prepared by	Approved by
00	Draft Issue	08.02.2023	SC	SN
01	90% CWC 1 Draft	03.03.2023	SC	SN
02	90% CWC 1	27.03.2023	SC	SN

Review Panel

Division/ office	Name
Civil	Stephen Naughton

Unless otherwise advised, the parties who have undertaken the Review and Endorsement confirm that the information contained in this document adequately describes the conditions of the site located at UNSW HTH, 49 Botany Street, Randwick NSW 2052

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1 Introduction

ACOR has been engaged by Hansen Yuncken to prepare a Construction Soil and Water Management Plan (CSWMP) for the UNSW Health Translation Hub (HTH) at 49 Botany Street, Randwick NSW 2052.

This CSWMP forms part of the Construction Environmental Management Plan (CEMP) to satisfy the SSDA Conditions of Consent, outlined in Section 1.2.

1.1 Client

Hansen Yuncken

1.2 Purpose and Scope of Report

This CSWMP addresses stormwater & sediment/ erosion control related items (bolded below) in Condition B15 and all of Condition B20 under 'Part B Prior to Commencement of Construction' in the State Significant Development Application (SSDA) Conditions of Consent, which states the following:

Condition B15

Prior to the commencement of construction, the Applicant must submit a Construction Environmental Management Plan (CEMP) to the Certifier and provide a copy to the Planning Secretary. The CEMP must include, but not be limited to, the following:

- (a) Details of:
- (i) hours of work; NSW Government 13 UNSW Health Translation Hub

Department of Planning, Industry and Environment (SSD 10822510)

- (ii) 24-hour contact details of site manager;
- (iii) management of dust and odour to protect the amenity of the neighbourhood;
- (iv) stormwater control and discharge;
- (v) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;
- (vi) groundwater management plan including measures to prevent groundwater contamination;
- (vii) external lighting in compliance with AS 4282-2019 Control of the obtrusive effects of outdoor lighting; and (viii) community consultation and complaints handling;
- (b) an unexpected finds protocol for contamination, asbestos or other unexpected finds and associated communications procedure;
- (c) an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure; and
- (d) waste classification (for materials to be removed) and validation (for materials to remain) be undertaken to confirm the contamination status in these areas of the site.

Reference to Douglas Partners Geotechnical Report, Reference No. 99852.00 and Hansen Yuncken Emergency Response Plan (ERP), Reference No. PLN-CORP-HSE-0003, has been made to address Item (vi) of Condition B15 above.



Condition B20

The Applicant must prepare a Construction Soil and Water Management Plan (CSWMP) and the plan must address, but not be limited to the following:

- (a) be prepared by a suitably qualified expert, in consultation with Council;
- (b) describe all erosion and sediment controls to be implemented during construction;
- (c) provide a plan of how all construction works will be managed in a wet-weather events (i.e. storage of equipment, stabilisation of the Site);
- (d) detail all off-Site flows from the Site; and
- (e) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to 1 in 1-year ARI, 1 in 5-year ARI and 1 in 100-year ARI).

1.3 Project Description

Expansion of existing hospital facilities at Randwick Hospitals Campus (RHC) with the partnership between NSW Government and UNSW Sydney to provide additional health education, training and research with acute healthcare services. The UNSW HTH is proposed to include:

- A 15-storey building accommodating research and health education use (incl. one basement level),
- Pedestrian link bridge between UNSW Kensington Campus to RHC via Wallace Wurth Building,
- Education, training and research rooms,
- Clinical schools,
- · Ambulatory care clinics,
- Support facilities including retail premises,
- More than 2,500 square metres of landscaping and public domain works for publicly accessible open space for staff, students, patients and the community.

1.4 Approving Authority

NSW Department of Planning, Industry and Environment (NSW DPIE)

1.5 Preparation of this Plan

This plan was prepared by Shana Cai and reviewed by Stephen Naughton. Details of their qualifications are provided below:

Shana Cai

BE(Civil)BSc, MIEAust

Stephen Naughton

CPEng NER RPEQ MIEAust NSW Design Practitioner NSW Registered Engineer



1.6 Available Data

The following available information was utilised in the preparation of this report.

- Randwick City Council (RCC) DCP, 2013
- Randwick City Council (RCC) Private Stormwater Code, 2013
- Landcom Managing Urban Stormwater Soils and Construction 2004 ('Blue Book')
- Australian Rainfall and Runoff (AR&R), 2019
- NSW Government spatial information exchange (SIX) topographic maps
- Geotechnical Report by Douglas Partners dated February 2021 (Reference Project 99852.00)



2 Site

2.1 Location

The Site is located on the corner of High Street and Botany Street, Randwick, within the Randwick City Council (RCC) Local Government Area (LGA).

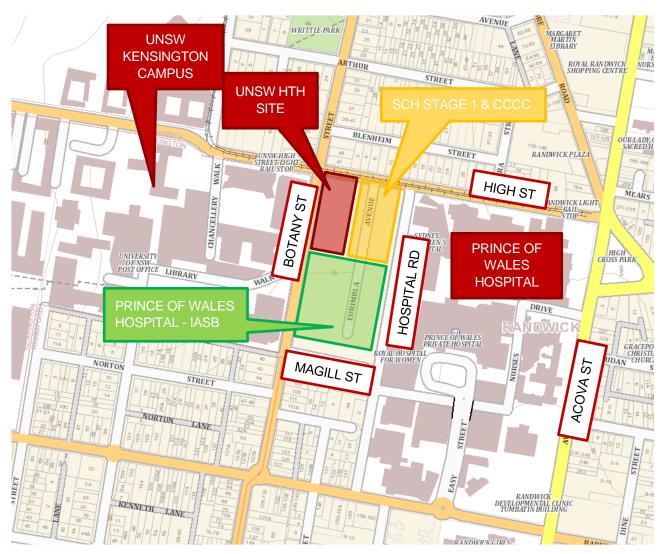


Figure 1 – Site Location (Source: Sixmaps)

2.2 Property Description

Lot A1, DP1282403



2.3 Topography

The Site generally falls from North-West to South-East and lies within the Birds Gully and Bunnerong Road Catchment area.

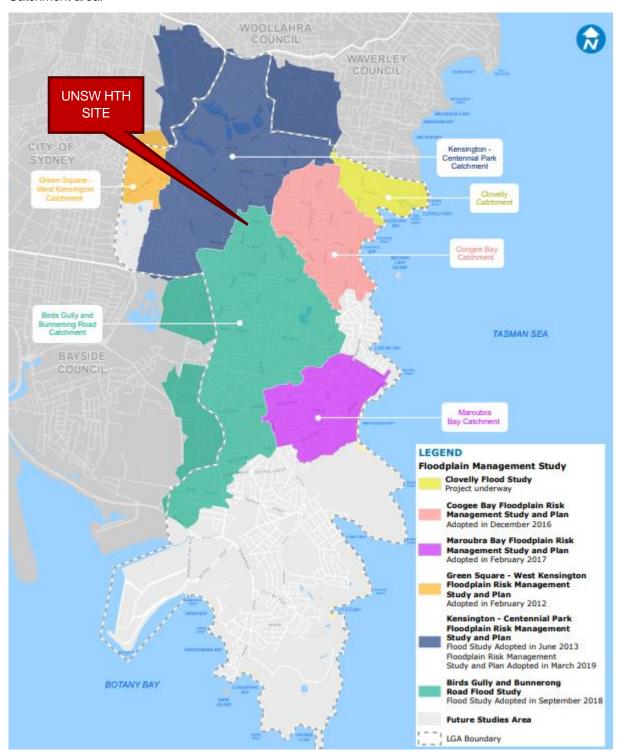


Figure 2 - Randwick City Council Flood Study Areas (Source: RCC, 2019)



2.4 Existing Land Use and Vegetation

The existing land use is R2 Low Density Residential and R3 Medium Density Residential with minimal vegetation, see Figure 3 below.



Figure 3 - Land Use Map (Source: NSW ePlanning Spatial Viewer)



3 Construction Soil and Water Management

Landcom Managing Urban Stormwater – Soils and Construction ('Blue Book') contains erosion, sediment and waste control measures are required to mitigate the impacts of land disturbance activities on soils, landforms and receiving water, including:

- Reduce pollution to downstream areas and receiving waters;
- Reduce land degradation;
- Raise an awareness of ecologically sustainable development (ESD) principles and their application to the development.

Chapter 2 of the Blue Book states that a Soil and Water Management Plan (SWMP) should be prepared for all development works where more than 2,500sqm of land is disturbed.

Section 9.3 of the Blue Book states that all SWMPs should include relevant calculations of capacities for any sediment basins and other structures. These calculations should be:

- Based on an assessment of site-specific area
- Account for the pollution potential of the site
- Consider the sensitivity of receiving waters and other ESD matters

3.1 Flood Impact Assessment

The Site is located within the flood zone where RCC DCP requirements for the Site development's habitable spaces (Critical Use Infrastructure) is to be above the Probable Maximum Flood (PMF) with an additional 500mm freeboard.

The PMF level on High Street is RL55.738¹, as such, the habitable spaces of HTH are to be at minimum RL56.238².

As part of the SCH Stage 1 & CCCC construction works (staged prior to the HTH Site's proposed works), a temporary flood wall has been constructed along the Northern boundary to prevent external catchment flows from the North (High Street) and protects the Site from flooding and overland flow for events up to and including the PMF.

The temporary flood wall along the Northern edge of the Site (with top of wall higher than RL56.238) provides flood protection up to and including the PMF event. As such, the entire site is flood free during the PMF event as shown in the modelling results in Figure 4, for the developed option (adjacent site, protected by Northern flood wall).

¹ Provided by adjacent Sydney Children's hospital (SCH) Stage 1 and Comprehensive Children's Cancer Centre (CCCC) project team – based on flood model developed for Integrated Acute Services Building (IASB)
² RL55.738 + 500mm freeboard = RL56.238



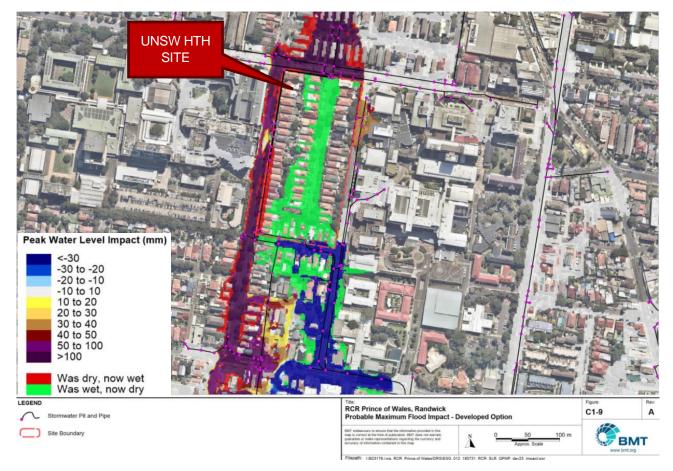


Figure 4 – Peak Water Level Impacts during PMF Event – Developed Option (Source: BMT, 2018)



3.2 Soil and Water Management

A Soil and Water Management Plan (SWMP) has been prepared in accordance with the Blue Book and included in Appendix 6A.1. The plan details the following control measures during construction to minimise the risk of sediment laden water leaving the site.

- Sediment diverting measures to minimise sediment in Council's stormwater drainage networks (i.e., sandbags and/or geo-textile filter fabric protecting existing and proposed drainage pits);
- Overland flow;
- Indicative temporary stockpile locations;
- Sediment control fencing location & extents;
- Covering and revegetating disturbed areas (as soon as practicable & as required to prevent sediment laden runoff from leaving the site); and
- Provision of temporary sediment basins (provided by excavated basement & underground On-Site Detention [OSD) tank, during construction)

3.3 Site Constraints and Characteristics

Site constraints were calculated using the Revised Universal Soil Loss Equation (RUSLE) to size sediment basins, see Appendix 6B.1.

Constraint/ Opportunity	Value
Rainfall erosivity (R-factor)	3,110
Soil erodibility (K-factor)	0.013 (from Appendix C – North Head Soil Landscape, USCS Class: SC)
Slope gradients	< 10% (average 4%)
Potential erosion hazard	Low (from Figure 4.6 in Blue Book)
Rainfall Zone	1
Calculated soil loss	41 $t/ha/yr = 32 \text{ m}^3/ha/yr$
Soil Loss Class	1
Soil texture group	Type C
Precent dispersible (subsoil)	Assumed > 10%
Runoff coefficient	0.76
Disturbed site area	9,000m²

Based on the calculated R-factor of 3,110, slope gradients less than 10% falls below the A-line in Figure 4.6 of the Blue Book is classified as low erosion hazard.



It is noted that the 75th percentile has been adopted for the design rainfall depth as earthworks are anticipated to take place over a period of less than 6 months. Protection for battered areas is to be implemented by the contractor if portions of the site are intended to be unvegetated for an extended amount of time (i.e., > 6 months).

3.3.1 Calculations

Catchment Name	Area (Ha)	Soil Loss (m³/ha/yr)	Soil Loss Class	Average Yearly Soil Loss ³ (m ³ /yr)
Site area	0.9	32	1	28.8
			Total	28.8

According to the Blue Book, a sediment basin isn't required for average yearly soil losses of less than 150 cubic metres per year. However, despite there being no requirement for the provision of a sediment basin for the site, the excavated lower basement and underground OSD will be utilised as temporary sediment basins during construction works for soil and water management.

3.4 Off-Site Flow Management

Potential off-site flows from the site will be contained by temporary sediment basins (excavated basement). The flood wall along the Northern property boundary (located approximately 2.2m from boundary line) prevents external flows from entering site for flood events up to and including the PMF event.

It is anticipated for flows (based on a time of concentration of circa 15 minutes) up to the 1 in 1-year ARI (peak flow circa 64 L/s), 1 in 5-year ARI (peak flow circa 195 L/s) and 1 in 100-year ARI (peak flow circa 414 L/s) critical storm events be contained within the temporary sediment basin (contaminated water), where construction site grading will direct disturbed area flows (i.e., site area minus sediment basin area) to the temporary sediment basins.

It is noted the above estimated peak flows for the respective storm events are for stage 1 works only (disturbed area includes the basement excavation area and external). Disturbed area will be significantly reduced and limited to external areas after the basement has been constructed and the podium will be constructed subsequently above, in stage 2 works.

The provision of a temporary sediment basin (approximately 11,050m³ of fully excavated lower basement volume and 300m³ of excavated underground OSD) despite RUSLE calculations demonstrating that the development does not warrant the introduction, will ensure construction soil and water will be adequately managed on site.

Clean runoff from completed/ stabilised areas is to be directed downstream of sediment measures.

3.5 General

During the construction phase of the development, a Soil and Water Management Plan will be implemented to minimise water quality impacts. A detailed Soil and Water Management Plan will be prepared at the detailed design stage and will be employed throughout the site. The control measures shall include silt fences, cut-off

³ Soil catchment area (ha) x soil loss ($m^3/ha/yr$) = 0.9 x 32 = 28.8



drains for polluted stormwater and diversion channels for clean stormwater run-off, gully pit sediment barriers, field inlet sediment traps and temporary bioretention filter protection.

Details of the required construction phase control measures will be provided on the detailed engineering drawings and shall be in accordance with the required standards. However, the contractor shall be responsible for the provision of the construction phase water quality objectives which shall be enforced by the preparation and implementation of a Soil and Water Management Plan.

The following information is provided to identify controls and procedures, and who is responsible for them, and should be incorporated into the Soil and Water Management Plan.

3.5.1 Pre-Construction

- Establish two (2) stabilised entry/exit points for each stage of construction. These points should also include a vehicle shakedown device to mitigate the transportation of dust and dirt.
- Sediment fences are to be placed along the low side of the site to slow flows, reduce scour and capture some sediment runoff.
- Sediment fences are to be constructed at the base of fill embankments.
- Divert up-slope water around the work site and appropriately stabilise any drainage channels.
- Areas for plant and construction material storage are to be designated along with associated diversion drains and spillage holding ponds.
- Diversion banks are to be created at the upstream boundary of construction activities to ensure upstream runoff is diverted around any areas to be exposed. Catch drains are to be created at the downstream boundary of construction activities.
- Construction of temporary sediment basins where required.
- Site personnel are to be educated to the sediment and erosion control measures implemented on site.

3.5.2 During Construction

- Progressive stabilization of filled areas and fill batters.
- Construction activities are to be confined to the necessary construction areas.
- The provision of a construction entry/exit to prevent the tracking of debris from tyres of vehicles onto public roads and to limit the movement of construction equipment.
- The topsoil stockpile location will be nominated to coincide with areas previously disturbed. A sediment fence is to be constructed around the bottom of the stockpile to trap sediment. A diversion drain is to be installed upstream of the stockpile if required.
- Roof downpipes should be installed as soon as practicable after the roof is constructed.
- Transport loads that are subject to loss through wind or spillage shall be covered or sealed to prevent entry of pollutants to the stormwater system.
- Regular inspection and maintenance of slit fences, sediment basins and other erosion control measures. Following rainfall events greater than 50mm inspection of erosion control measures and removal of collected material should be undertaken. Replacement of any damaged equipment should be performed immediately.



3.5.3 Post Construction

- The Contractor/ Developer will be responsible for the maintenance of erosion and sediment control devices from the possession of the site until stabilisation has occurred to the satisfaction of the superintendent and Principal.
- The Erosion and Sediment Control Management Plans should be provided to all people involved with the site, including sub-contractors, private certifiers, body corporates and regulators.



4 Groundwater Management

Based on the Geotechnical Report by Douglas Partners dated February 2021 (Reference Project 99852.00) and additional borehole logs undertaken in March 2023 (locations shown in Figure 5), groundwater levels on the site have been identified.

Detected groundwater levels in the borehole logs on the HTH site are summarised below (and identified by a blue circle in Figure 5 below):

- BH105 (dated February 2019) detected groundwater at RL47.70 located in Southern HTH basement,
- BH1002 (dated March 2023) detected groundwater at RL49.50 located in Northern HTH basement,
- BH1003 (dated March 2023) detected groundwater at RL49.00 located in Northern HTH basement,
- BH1008 (dated March 2023) detected groundwater at RL49.20 located in Northern HTH basement,
- BH1009 (dated March 2023) detected groundwater at RL49.30 located in Northern HTH basement.

All other borehole logs (BH7, BH103-104, BH607-608, BH16-17, BH1001, BH1004-1007) at the HTH site recorded did not detect groundwater.

Previous borehole logs contained within the appendices of the Geotechnical report dated February 2021 detected groundwater levels. However, these boreholes are not relevant to the project as they lie outside of the HTH site and therefore not assessed for groundwater management.



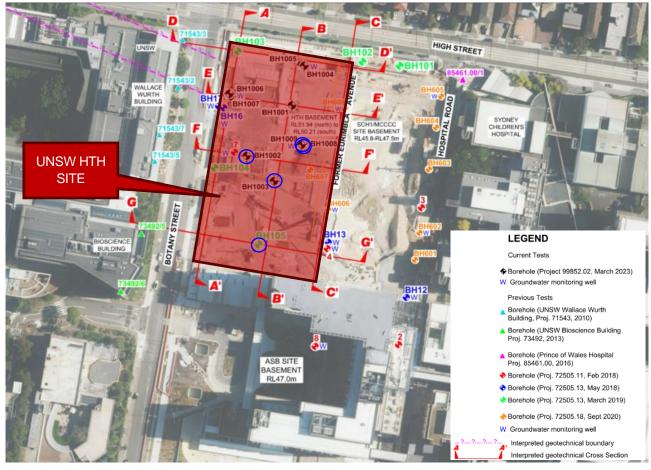


Figure 5 - Locations of boreholes (Source: Douglas Partners, 2023)

The Southern (lower) basement for HTH is proposed at RL50.21 (BEL47.71) and the Northern (upper) basement at RL51.94 (BEL51.59), which lie above the highest detected level of groundwater (RL49.50 at BH1002). As such, it is not anticipated there will be contamination to groundwater due to groundwater interception.



4.1 Groundwater Management Methodology

Potential spillage on site (i.e., fuel spills, chemical spills) are to be identified in the construction site's risk register & management plan to mitigate groundwater contamination via seepage in sandy soils. Section 3.5 Major Fuel Spill and Section 3.6 Chemical Spill of Hansen Yuncken's Emergency Response Plan (ERP) details the methodology to respond to spills that may occur on site.

4.1.1 Spill Prevention

All construction personnel are to undertake essential induction and training before accessing the construction site. Prior to handling chemicals and major fuels, additional training and induction is to be undertaken to ensure safe handling of chemicals and fuels to prevent potential spillage.

In the unlikely event of spillage, assessment and response is to be actioned as per Hansen Yuncken's ERP procedures – refer to Section 4.1.1 and 4.1.1.1 for major fuel and chemical spillage management/ response procedures extracted from Hansen Yuncken's ERP.



4.1.1.1 Major Fuel Spill

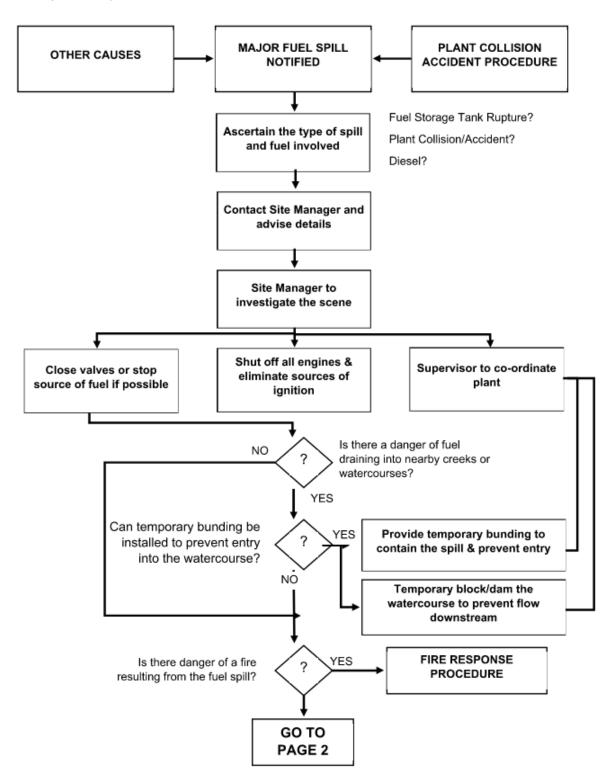


Figure 6 - Major Fuel Spill Response Part 1 Flow Chart (Source: Hansen Yuncken, 2022)



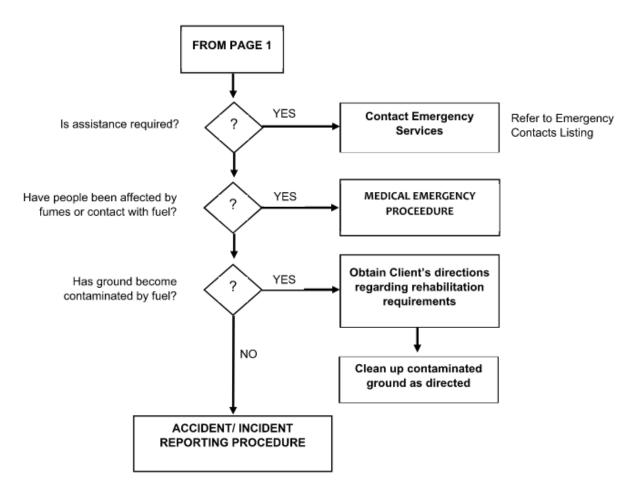


Figure 7 - Major Fuel Response Part 2 Flow Chart (Source: Hansen Yuncken, 2022)



4.1.1.2 Chemical Spills

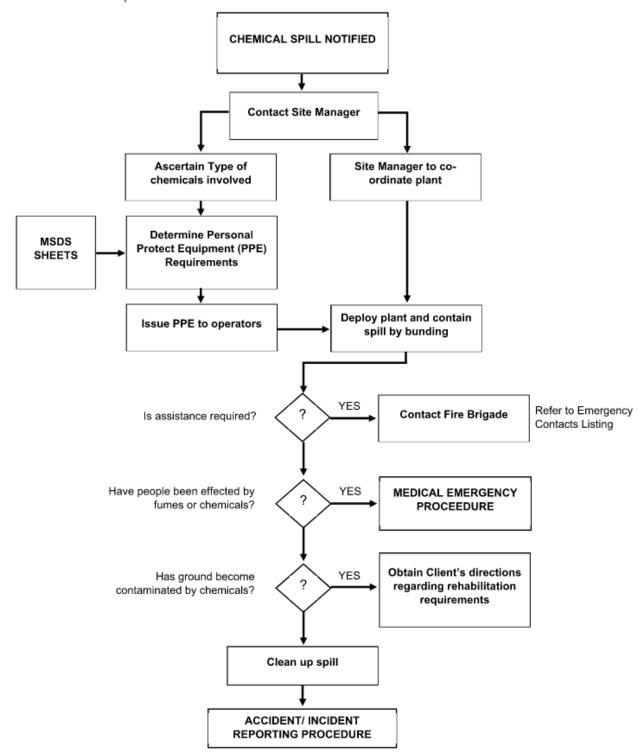


Figure 8 - Chemical Spills Response Flow Chart (Source: Hansen Yuncken, 2022)



5 Conclusion

This CSWMP addresses Condition 20 by describing all erosion and sediment controls to be implemented during construction, and details of how construction works will be managed in wet-weather events through measures of equipment storage, site stabilisation, etc.).

Item (iv) of Condition B15 has been addressed in this SWMSP where all flows are anticipated to be contained within the site. The flood wall along the North for flood protection up to the PMF event in conjunction with sediment fencing will ensure flows from upstream areas are diverted around the construction site. Construction site grading will direct disturbed area flows to sediment control measures (temporary sediment basins at the excavated basement and underground OSD) illustrated on the SWMP attached in Appendix 6A.1.

The provision of temporary sediment basins despite RUSLE calculations demonstrating that the development does not warrant the introduction, will ensure construction soil and water will be adequately managed on site for small and large sized events including, but not limited to 1 in 1-year ARI, 1 in 5-year ARI and 1 in 100-year ARI.

Item (v) of Condition B15 has also been addressed in the SWMP (refer drawing no B-ACO-CEC-0600) via the provision of stabilised vehicular entry/ exit locations with vehicle shakedown systems (i.e., vehicle shake down devices at localised construction vehicle access/ egress points).

Item (vi) of Condition B15 has been addressed in Section 4 with reference to the Geotechnical Report borehole logs prepared by Douglas Partners dated February 2021. Water detected in the Southern borehole log (BH105) to be below the lower basement level of RL50.21 (Bulk Earthworks Level BEL47.71) on the HTH site and therefore it is not anticipated that excavation works will result in groundwater contamination.

Essential construction personnel training and induction to mitigate potential spillage and assessment/ response methodology per Hansen Yuncken's ERP is to be implemented, as sandy soils allow seepage and may lead to groundwater contamination.

Yours faithfully,

Stephen Naughton CPEng NER RPEQ

For,

ACOR Consultants Pty Ltd



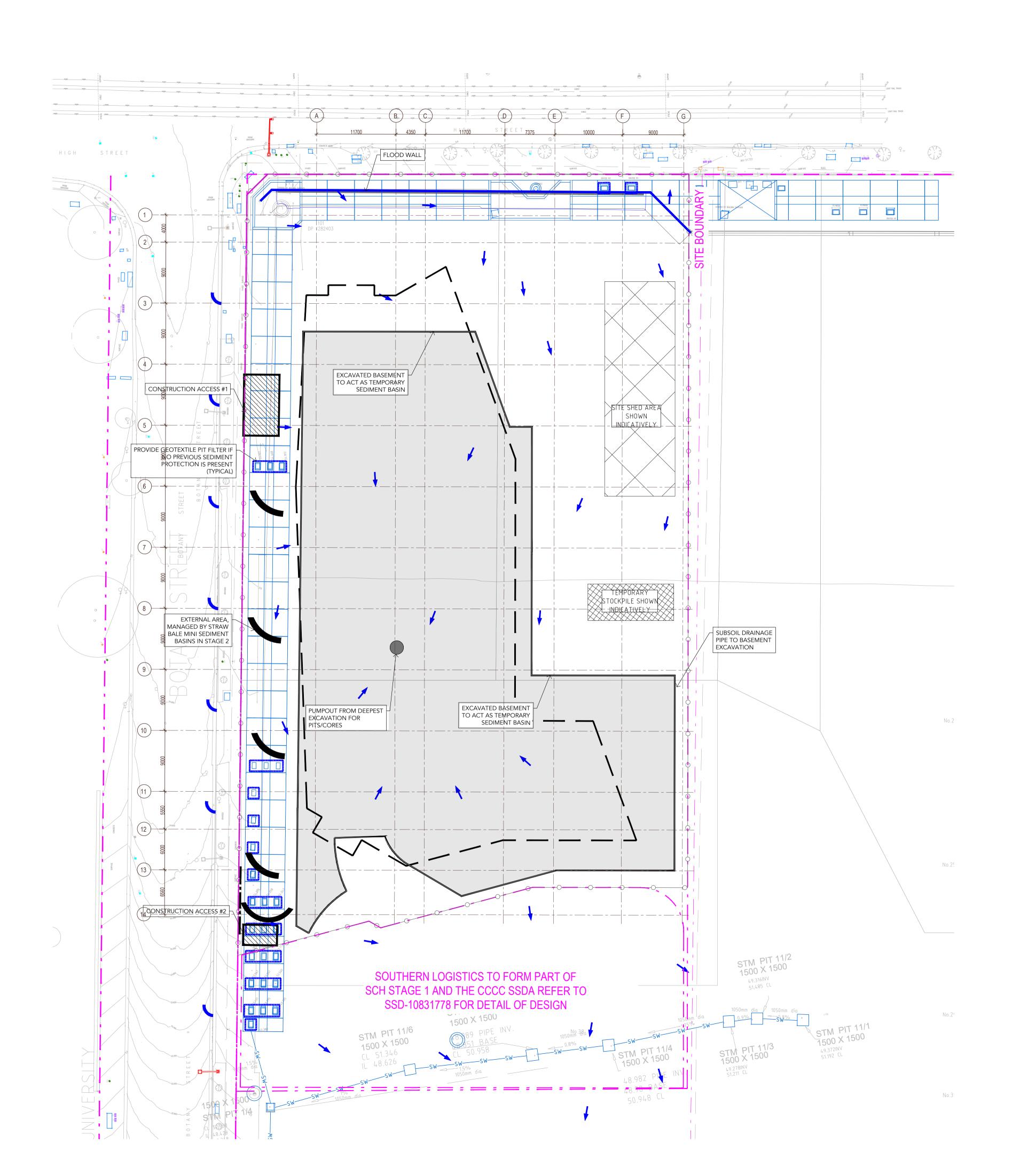
6 References

- UNSW Health Translation Hub Development Application Report (Warren Smith & Partners, 2021)
- Randwick Campus Redevelopment (RCR) ASB Project Flood Summary Flood Report (BMT, 2018)
- RCR Prince of Wales, Randwick Flood and Stormwater Modelling Response letter (BMT, 2019)
 Reference mpg: L.B23176.011.Council Query.docx



Appendix A Drawings

A.1 Soil and Water Management Plan & Details (Drawing No. B-ACO-CEC-0600 & B-ACO-CEC-0601)



LEGEND:

____ CADASTRAL BOUNDARY EX SURFACE LEVEL EX SURFACE CONTOUR

EXISTING FLOOD WALL

NOM. HOARDING/ SITE FENCE LINE WITH GATES FOR ACCESS AS REQUIRED



TEMPORARY SHAKER RAMP ON ENTRY/EXIT



BASEMENT EXCAVATION AREA

PODIUM LEVEL EXTENTS (ABOVE)



SITE SHED AREA SHOWN INDICATIVELY



TEMPORARY STOCKPILE AREA SHOWN INDICATIVELY



GEOTEXTILE PIT FILTER 2

OVERLAND FLOW



SANDBAG INLET SEDIMENT TRAP (AT APPROX. 15-20 METRE SPACING)



STRAW BALE MINI SEDIMENT BASIN (STAGE 2)

SOIL & WATER MANAGEMENT NOTES:

- 1. REFER TO SPECIFICATIONS NOTES FOR SEDIMENT AND SOIL EROSION CONTROL GENERAL REQUIREMENTS.
- 2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
- 3. ALL SEDIMENT AND SOIL EROSION CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE 'BLUE BOOK'. CONTRACTOR TO ENSURE THESE MEASURES ARE IN PLACE AND MAINTAINED AT ALL TIMES DURING
- CONSTRUCTION WORKS. 4. CONTRACTOR TO PROVIDE 'WIRE MESH AND GRAVEL SEDIMENT FILTER' TO ALL PAVED / ROAD AREAS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE
- WITH THE 'BLUE BOOK'. 5. REFER TO CONSTRUCTION DRAWINGS FOR FURTHER INFORMATION ON SITE
- ESTABLISHMENTS. 6. IT IS EXPECTED TO HAVE SITE FENCE/HOARDING ON SITE BOUNDARIES.

STAGE 1 - EXCAVATION AND SITE SHEDS TO EXTERNAL STAGE 2 - PODIUM OVER BASEMENT BUILT, DISTURBED AREA LIMITED TO EXTERNAL AREAS

Do not scale drawings. Verify all dimensions on site

issue amendment 0 ISSUED FOR INFORMATION 1 ISSUED FOR TENDER 2 ISSUED FOR SUBMISSION 3 ISSUED FOR SUBMISSION 4 ISSUED FOR SUBMISSION 5 90% CWC 1 DRAFT 6 90% CWC 1 DRAFT 7 90% CWC 1 DRAFT 8 90% CWC 1 DRAFT







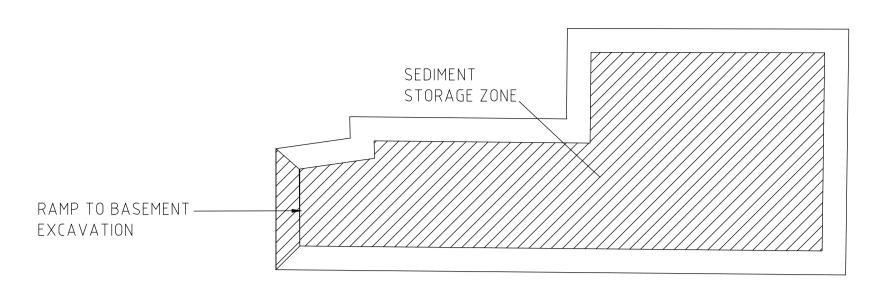
UNSW HEALTH TRANSITION HUB

SOIL AND WATER MANAGEMENT PLAN J. Eaton B-ACO-CEC-0600

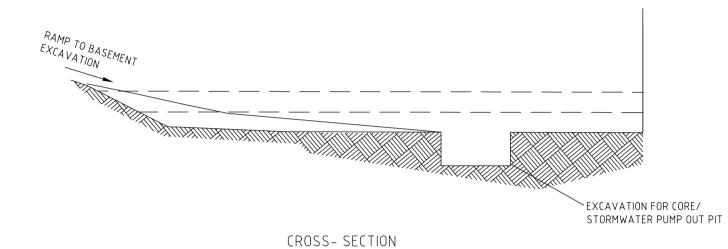
S. Cai

NSW212828

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PLAN VIEW

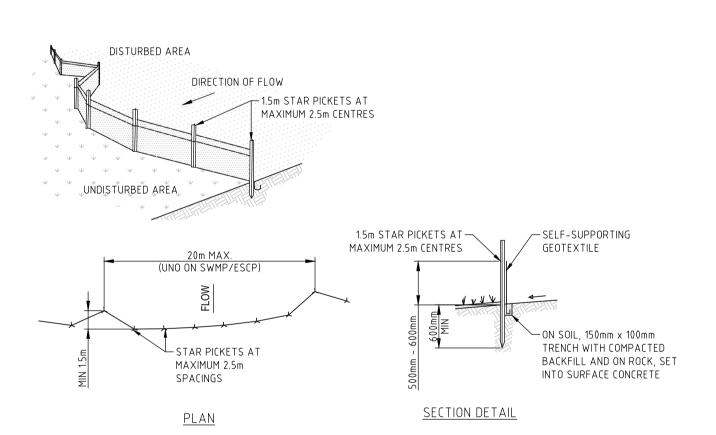


SEDIMENT BASIN - EXCAVATION FOR BASEMENT

NOT TO SCALE

SEDIMENT BASIN NOTES

- 1. THE EXCAVATION BASEMENT TO ACT AS TEMPORARY SEDIMENT BASIN.
- 2. WORKS UP UNTIL BASEMENT SLAB HAS BEEN POURED 3. CONTRACTOR TO PROVIDE SAFE ACCESS TO AND FROM EXCAVATED BASEMENT
- 4. PORTABLE PUMP AND LAY FLAT HOSE TO BE ALLOWED FOR TO PUMP DETAINED WATER TO OSD OR OTHER OUTLET AREA WHEN WATER QUALITY IS ACCEPTABLE
- 5. FOLLOWING CONSTRUCTION OF BASEMENT AND EXTERNAL SLABS, LIMITED DISTURBED AREAS WILL BE MANAGED BY STRAW BALE MINI SEDIMENT BASINS, AS REQUIRED



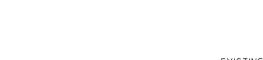
CONSTRUCTION NOTES

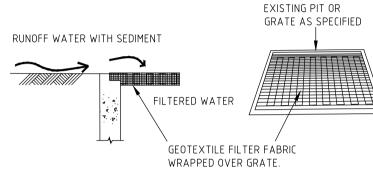
- 1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL
- TO THE CONTOURS OF THE SITE. 2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND, 2.5 METRES APART
- (MAX). ENSURE STAR PICKETS ARE FITTED WITH SAFETY CAPS. 3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE
- FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED. 4. BACKFILL TRENCH OVER BASE OF FABRIC. 5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH
- WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
- 6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.

SEDIMENT CONTROL FENCE

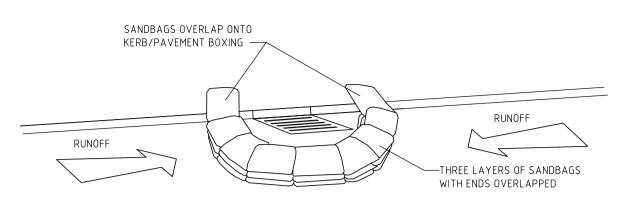
CONSTRUCTION SITE -CATTLE GRID 3.0M NOM WIDTH SET 300MM ABOVE GROUND OR TIMBER SLEEPER GEOFABRIC FABRIC,— BIDUM U34 OR SIMILAR UNBOUND PAVEMENT MATERIAL (GRAVEL) RUNOFF TO BE DIRECTED TO SEDIMENT TRAP

TEMPORARY CONSTRUCTION VEHICLE ENTRY/EXIT SEDIMENT TRAP NOT TO SCALE

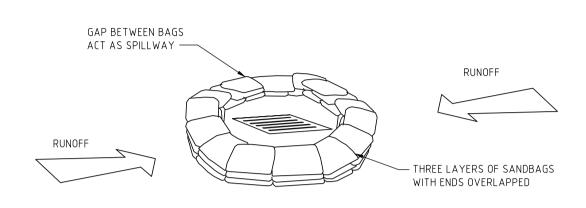




GEOTEXTILE PIT FILTER 2 NOT TO SCALE

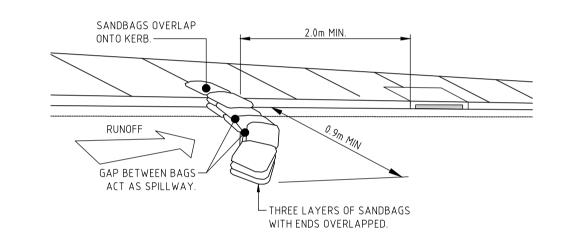


SANDBAG SEDIMENT TRAP - AT KERB SAG PIT

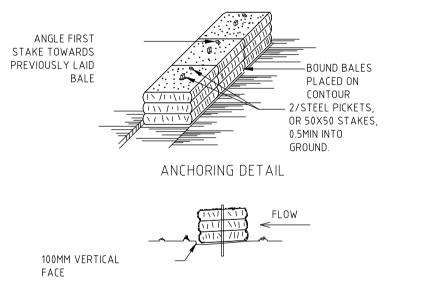


SANDBAG SEDIMENT TRAP - AT OTHER THAN KERB SAG PIT

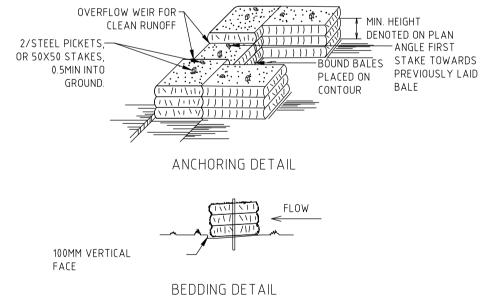
SANDBAG SEDIMENT TRAP DETAILS



SANDBAG KERB INLET SEDIMENT TRAP



BEDDING DETAIL



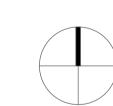
N.T.S.

STRAW BALE MINI SEDIMENT CONTROL

NOT TO SCALE

Do not scale drawings. Verify all dimensions on site

issue	amendment	da		
0	ISSUED FOR INFORMATION	28.11.2022		
1	ISSUED FOR SUBMISSION	01.12.2022		
2	90% CWC 1 DRAFT	15.12.2022		
3	90% CWC 1 DRAFT	21.12.2022		
4	90% CWC 1 DRAFT	03.03.2023		
5	90% CWC 1 DRAFT	09.03.2023		
6	90% CWC 1 DRAFT	22.03.2023		
7	90% CWC 1 DRAFT	27.03.2023		





ABN 90 131 245 684

Health

Infrastructure

UNSW HEALTH TRANSITION HUB

NSW

SOIL AND ATER MANAGEMENT **DETAILS**

AS SHOWN @B1 J. Eaton B-ACO-CEC-0601 Checked S. Cai Project no NSW212828

27/03/2023 3:36:14 PM



Appendix B Calculations

B.1 RUSLE Calculations

SWMP Commentary, Detailed Calculations

Note: These "Detailed Calculation" spreadsheets relate only to high erosion hazard lands as identified in figure 4.6 or where the designer chooses to use the RUSLE to size sediment basins. The "Standard Calculation" spreadsheets should be used on low erosion hazard lands as identified by figure 4.6 and where the designer chooses not to run the RUSLE in calculations.

1. Site Data Sheet

Site Name: UNSW Health Translation Hub (HTH)

Site Location: 49 Botany Street, Randwick NSW 2031

Precinct:

Description of Site:

Site area			Si	ite	Remarks		
Site area	1	2	3	4	5	6	Remarks
Total catchment area (ha)	0.9						
Disturbed catchment area (ha)	0.9						

Soil analysis

% sand (faction 0.02 to 2.00 mm	90			Soil texture should be assessed through
% silt (fraction 0.002 to 0.02 mm)	5			mechanical dispersion only. Dispersing
% clay (fraction finer than 0.002 mm)	5			agents (e.g. Calgon) should not be used
Dispersion percentage	10.0			E.g. enter 10 for dispersion of 10%
% of whole soil dispersible	0.75			See Section 6.3.3(e)
Soil Texture Group	С			See Section 6.3.3(c), (d) and (e)

Rainfall data

Design rainfall depth (days)	5			See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	75			See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	25			See Section 6.3.4 (h)
Rainfall intensity: 2-year, 6-hour storm	12			See IFD chart for the site

RUSLE Factors

Rainfall erosivity (R -factor)	3110						Automatic calculation from above data
Soil erodibility (K-factor)	0.013						
Slope length (m)	60						1
Slope gradient (%)	4						RUSLE data can be obtained from
Length/gradient (LS-factor)	0.78						Appendixes A, B and C
Erosion control practice (P-factor)	1.3						1
Ground cover (C-factor)	1	1	1	1	1	1	

Calculations

Soil loss (t/ha/yr)	41			
Soil Loss Class	1			See Section 4.4.2(b)
Soil loss (m³/ha/yr)	32			
Sediment basin storage volume, m ³	5			See Sections 6.3.4(i) and 6.3.5 (e)

2. Storm Flow Calculations

Peak flow is given by the Rational Formula:

$$Qy = 0.00278 \times C_{10} \times F_Y \times I_{v.tc} \times A$$

where:

ο is peak flow rate (m³/sec) of average recurrence interval (ARI) of "Y" years

C₁₀ is the runoff coefficient (dimensionless) for ARI of 10 years. Rural runoff coefficients are given in Volume 2, figure 5 of Pilgrim (1998), while urban runoff coefficients are given in Volume 1, Book VIII, figure 1.13 of Pilgrim (1998) and construction runoff coefficients are given in Appendix F

F_y is a frequency factor for "Y" years. Rural values are given in Volume 1, Book IV, Table 1.1 of Pilgrim (1998) while urban coefficients are given in Volume 1, Book VIII, Table 1.6 of Pilgrim (1998)

A is the catchment area in hectares (ha)

l_{y, tc} is the average rainfall intensity (mm/hr) for an ARI of "Y" years and a design duration of "tc" (minutes or hours)

Time of concentration (t_c) = 0.76 x (A/100)^{0.38} hrs (Volume 1, Book IV of Pilgrim, 1998)

Note: For urban catchments the time of concentration should be determined by more precise calculations or reduced by a factor of 50 per cent.

Peak flow calculations, 1

Site	Α	tc	Rainfall intensity, I, mm/hr							
Site	(ha)	(mins)	1 _{yr,tc}	5 _{yr,tc}	10 _{yr,tc}	20 _{yr,tc}	50 _{yr,tc}	100 _{yr,tc}	C ₁₀	
1	0.9	8	87	132	152	174	202	224	0.76	
2										
3										
4										
5										
6										

Peak flow calculations, 2

	Frequency factor (F _y)		Peak flows									
ARI (yrs)		1 (m³/s)	2 (m³/s)	3 (m³/s)	4 (m³/s)	5 (m³/s)	6 (m3/s)	Comment				
1 yr,tc	0.8	0.132										
5 yr,tc	0.95	0.238										
10 yr,tc	1	0.289										
20 yr,tc	1.05	0.347										
50 yr,tc	1.15	0.442										
100 yr,tc	1.2	0.511										

3. Volume of Sediment Basins: Type C Soils

Basin volume = settling zone volume + sediment storage volume

Settling Zone Volume

The settling zone volume for *Type C* soils is calculated to provide capacity to allow the design particle (e.g. 0.02 mm in diameter) to settle in the peak flow expected from the design storm (e.g. 0.25-year ARI). The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle. Peak flow/discharge for the 0.25-year, ARI storm is given by the Rational Formula:

 $Q_{tc,0.25} = 0.5 \times [0.00278 \times C10 \times Fy \times I 1yr, tc \times A] (m3/sec)$

where:

Q_{tc.0.25} = flow rate (m³/sec) for the 0.25 ARI storm event

C₁₀ = runoff coefficient (dimensionless for ARI of 10 years)

F_y = frequency factor for 1 year ARI storm

 $I_{1 \text{ yr,tc}}$ = average rainfall intensity (mm/hr) for the 1-year ARI storm

A = area of catchment in hectares (ha)

Basin surface area (A) = area factor $x Q_{tc, 0.25} m2$

Particle settling velocities under ideal conditions (Section 6.3.5(e))

Particle Size	Area Factor
0.100	170
0.050	635
0.020	4100

Volume of settling zone = basin surface area x depth (Section 6.3.5(e)(ii))

Sediment Storage Zone Volume

In the detailed calculation on Soil Loss Classes 1 to 4 lands, the sediment storage zone can be taken as 100 percent of the settling zone capacity. Alternately designers can design the zone to store the 2-month soil loss as calculated by the RUSLE (Section 6.3.5(e)(iv)). However, on Soil Loss Classes 5, 6 and 7 lands, the zone must contain the 2-month soil loss as calculated by the RUSLE (Section 6.3.5(e)(v)).

Place an "	'X" in the box below to show the sediment storage zone design parameters used here
	4000/ of autiling managing

100% of settling zone capacity, 2 months soil loss calculated by RUSLE

Total Basin Volume

	Q tc, 0.25	Area	Basin surface	Depth of settling	Settling zone	Sediment storage	Total basin	Basin shape				
Site	(m ³ /s)	factor	area (m²)	zone (m)	volume (m³)	volume (m³)	volume (m³)	L:W Ratio	Length (m)	Width (m)		
1	0.066	4100	271	0.6	163	5	168					
2		4100										
3		4100										
4		4100										
5		4100										
6		4100										

4. Volume of Sediment Basins, Type D and Type F Soils

Basin volume = settling zone volume + sediment storage zone volume

Settling Zone Volume

The settling zone volume for *Type F* and *Type D* soils is calculated to provide capacity to contain all runoff expected from up to the y-percentile rainfall event. The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle and can be determined by the following equation:

$$V = 10 \times C_v \times A \times R_{x-day, y-\%ile} (m^3)$$

where:

10 = a unit conversion factor

C_v = the volumetric runoff coefficient defined as that portion of rainfall that runs off as stormwater over the x-day period

R_{x-day, y-%ile} = is the x-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. (See Sections 6.3.4(d), (e), (f), (g) and (h)).

A = total catchment area (ha)

Sediment Storage Zone Volume

In the detailed calculation on Soil Loss Classes 1 to 4 lands, the sediment storage zone can be taken as 50 percent of the settling zone capacity. Alternately designers can design the zone to store the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(ii)). However, on Soil Loss Classes 5, 6 and 7 lands, the zone must contain the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(iii)).

Place an "	<u>'X" in the b</u>	ox below to	show the	sediment	storage	zone de	sign para	ameters	used h	ere:
		50% of settl	ing zone	capacity,	-					
		2 months so	oil Toss ca	llculated b	y RUSL	E				

Total Basin Volume

Site	C _v	R _{x-day, y-%ile}	Total catchment area (ha)	Settling zone volume (m³)	Sediment storage volume (m³)	Total basin volume (m³)
1	0.69	25	0.9	155.25	5	160.25
2	0.69					
3	0.69					
4	0.69					
5	0.69					
6	0.69					



Appendix C Geotechnical Investigation - Borehole Logs

CLIENT: Hansen Yuncken Pty Ltd **UNSW Health Translation Hub** PROJECT: High and Botany Streets, Randwick LOCATION:

SURFACE LEVEL: 52.2 AHD **EASTING**: 337032 **NORTHING**: 6245667 DIP/AZIMUTH: 90°/--

BORE No: 1004 **PROJECT No: 99852.02**

DATE: 8/3/2023 SHEET 1 OF 2

	Danth	Description	nic J		San		& In Situ Testing	ъ.	Well	
귐	Depth (m)	of Strate	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Constructio	n
+		Strata FILL/Gravelly SAND: fine to medium, pale grey, medium	XX	A	0.0	Sa	00		Details Gatic cover —	
- 52	0.3	gravel, angular, dry			0.2			-		
ŧ		SAND SP: fine, dark brown, trace silt, moist, aeolian		A	0.4 0.5		0.0-1.0m: Bulk Sample			
Ė	0.7	SAND SP: fine to medium, pale grey and mottled brown,			0.9				Backfill 0.0-1.35m -	
_	1	moist, medium dense, aeolian		_A_	1.0		5,7,12	-	1	
- 5				S	1.45		N = 19			
ļ	1.5	SANDSTONE: medium grained, dark brown, apparently low to medium strength, Hawkesbury Sandstone							Blank pipe — 0.2-3.0m	
Ė	1.75	SANDSTONE: medium to coarse grained, brown then	1		1.75		PL(A) = 0.7	<u> </u>	Bentonite – 2 1.35-2.35m	
- 1	2	pale grey, trace carbonaceous laminations and clay seams, medium and medium to high strength, slightly			1.07		1 20 0 0.7	F.	2 1.00 2.00	
Ē		weathered then fresh, slightly fractured and unbroken, Hawkesbury Sandstone		С						\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
ŧ		Hawkesbury Gariusione			2.62		PL(A) = 0.7			
Ę,	3				3.05			-:	3	
49	3.28		\approx	•			51(4), 0.7			
ŧ					3.36		PL(A) = 0.7			0 - 0
F								[
ţ.	4							ļ -	4	
48									Gravel 2.35-6.0m —	30=30
F				С				[Machine slotted — PVC screen	
Ė					4.7		PL(A) = 0.7		3.0-6.0m	
!	5							-	5	
4								[
ŧ					5.5		PL(A) = 0.4			
ŧ									₆ End cap —	0=0
46	6				6.0		PL(A) = 0.9	F	6	
Ė	6.45		:::::::::::::::::::::::::::::::::::::		0.23		FL(A) = 0.9	[Bentonite 6.0-6.7m	
ŧ								-		
Į.	7							<u> </u>	7	10000 10000
45					7.25		PL(A) = 1.3			
ŀ				С						
Ē										
ŧ,	8							-	8	2000
44								[1000 1000 1000 1000 1000 1000 1000 100
ŧ					8.55		PL(A) = 0.9			
ŧ										0.00
ŀ	9				9.0			F	9	0.00
43										
f				С	9.45		PL(A) = 1.3	[
ŧ	10.0									100.0

RIG: Comacchio GEO 305 **DRILLER:** Ground Test LOGGED: SI CASING: HW to 1.75m, HQ to 1.75m

TYPE OF BORING: Solid Flight Auger (TC-bit) to 1.5m, Rotary (water) to 1.75m, NMLC Coring to 14.97m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 6.0m (Gravel Backfill 6.7m-14.97m, Bentonite 6.0m-6.7m, Screen 3.0m-6.0m, PVC 0.2m-3.0m, Gravel 2.35m-6.0m, Bentonite 1.35m-2.35m, Backfill 0.0 to 1.35m, gatic cover at surface)

A Auger sample B Bulk sample BLK Block sample

Core drilling
Disturbed sample
Environmental sample



CLIENT: Hansen Yuncken Pty Ltd **UNSW Health Translation Hub** PROJECT:

LOCATION: High and Botany Streets, Randwick

SURFACE LEVEL: 52.2 AHD **EASTING**: 337032

NORTHING: 6245667 **DIP/AZIMUTH:** 90°/-- **BORE No:** 1004

PROJECT No: 99852.02

DATE: 8/3/2023 SHEET 2 OF 2

	1		1		/AZII				T		
	Danth	Description	Graphic Log		Sampling & In Situ Testing			Water	Well		
묍	Depth (m)	of	rapl Loc	Туре	Depth	Sample	Results & Comments		Construction		
	()	Strata	Ō	T	Det	San	Comments	_	Details		
42		SANDSTONE: medium to coarse grained, brown then pale grey, trace carbonaceous laminations and clay seams, medium and medium to high strength, slightly weathered then fresh, slightly fractured and unbroken, Hawkesbury Sandstone (continued)			10.25		PL(A) = 1.1		100 000 000 000 000 000 000 000 000 000		
41	-11			С	11.1		PL(A) = 0.9		Gravel Backfill		
40	-12				11.95 12.25		PL(A) = 0.9		12 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		
	-13				13.0		PL(A) = 0.9		(0,000)		
39				С	.3.0		0, 7				
38	-14				14.0		PL(A) = 1.2		14		
37	- ₁₅ 14.97 -	Bore discontinued at 14.97m Target Depth Reached			-14.97-				- 15		
36	-16								16		
	-17								-17		
35											
34	-18								- 18 - 18 		
33	-19								19		
	· · ·										

RIG: Comacchio GEO 305 **DRILLER:** Ground Test LOGGED: SI CASING: HW to 1.75m, HQ to 1.75m

TYPE OF BORING: Solid Flight Auger (TC-bit) to 1.5m, Rotary (water) to 1.75m, NMLC Coring to 14.97m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 6.0m (Gravel Backfill 6.7m-14.97m, Bentonite 6.0m-6.7m, Screen 3.0m-6.0m, PVC 0.2m-3.0m, Gravel 2.35m-6.0m, Bentonite 1.35m-2.35m, Backfill 0.0 to 1.35m, gatic cover at surface)

SAMPLING & IN SITU TESTING LEGEND Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample

Core drilling
Disturbed sample
Environmental sample

LEGEND
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)



CLIENT: Hansen Yuncken Pty Ltd PROJECT: **UNSW Health Translation Hub**

LOCATION: High and Botany Streets, Randwick

SURFACE LEVEL: 52.2 AHD **EASTING**: 337030

NORTHING: 6245667 **DIP/AZIMUTH:** 90°/--

BORE No: 1005

PROJECT No: 99852.02

DATE: 9/3/2023 SHEET 1 OF 1

			Description	U		San	npling a	& In Situ Testing		Well
귐	De _l (n	pth	of	Graphic Log	g g				Water	Construction
	(11	"	Strata	يق	Type	Depth	Sample	Results & Comments	>	Details
52	 - -	0.3	FILL/Gravelly SAND: medium to coarse, pale grey, medium to coarse gravel (igneous), angular, dry		Α	0.0	0,			Gatic cover Bentonite 0.1-0.5m
} }			SAND SP: fine, dark brown, trace silt, moist, aeolian		A	0.4 0.5				F
51	-1 -1 -1	0.6	SAND SP: fine to medium, pale grey and brown, moist, aeolian		_A_	0.9				Blank pipe 0.1-1.1m 0.00 0.00 0.00 0.00 0.00 0.00 0.00
	- - -2	1.6	SANDSTONE: medium grained, brown, apparently low to medium strength, Hawkesbury Sandstone			2.0				Machine slotted PVC screen 1.1-2.1m PC
20		2.1	Bore discontinued at 2.1m		_A_	2.1				- End cap
	-3		Target Depth Reached							-3
										4
48	- - - -									
47	-5									-5 -5
46	-6 -6									-6
45	-7 -7									7
44	-8 -8									- -8
43	- - 9 -									-9 9
	- - -									

LOGGED: SI **CASING:** Uncased RIG: Comacchio GEO 305 **DRILLER:** Ground Test

TYPE OF BORING: Solid Flight Auger (TC-it) to 2.1m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 2.1m (Screen 1.1m-2.1m, PVC 0.1m-1.1m, Gravel 0.5m-2.1m, Bentonite

	0.1m-0.	om, g	atic cover at surrac	e)	
	SAM	IPLING	& IN SITU TESTING	LEGE	ND
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	Piston sample		Point load axial test Is(50) (MPa)
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	Point load diametral test ls(50) (MPa)
С	Core drilling	WÎ	Water sample	pp ·	Pocket penetrometer (kPa)
D	Disturbed sample	⊳	Water seep	S	Standard penetration test
E	Environmental sample	¥	Water level	V	Shear vane (kPa)



CLIENT: Hansen Yuncken Pty Ltd **UNSW Health Translation Hub** PROJECT: High and Botany Streets, Randwick LOCATION:

SURFACE LEVEL: 54.6 AHD **EASTING**: 336989 **NORTHING:** 6245651 DIP/AZIMUTH: 90°/--

BORE No: 1006 PROJECT No: 99852.02 **DATE:** 10/3/2023 SHEET 1 OF 2

	.		Description	jc _		Sam		& In Situ Testing		Well	
R	Depth (m)		of	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Constructio	n
Ц			Strata	0	<u> </u>	 	Sar	Comments		Details Gatic cover —	
ŀ	. 0	FILL/Gravelly SAN medium to coarse	ID: medium to coarse, pale grey, gravel (igneous), dry	\longrightarrow	A	0.0				- Gatic cover	
			o medium, brown, trace igneous gravel,		A	0.4 0.5				-	
5		moist								-	
	-1 1	0 FILL/DIDDED SAN	NDSTONE and SAND: fine to medium,	\bowtie	_A_	0.9 1.0				- -1	
-		pale grey and brow	vn, ripped sandstone gravel and	\otimes	s			2,6,6 N = 12		-	
53		boulders, moist, va	anably compacted			1.45				Backfill 0.2-3.0m —	├- ∅ ∅
- "				\bowtie						-	
	-2									-2	
Ė										Blank pipe — 0.2-4.5m	
52					 	2.5		2,1,2		-	
[\bowtie	S	0.05		N = 3		-	
<u> </u>	-3					2.95				-3 [
51				\bowtie	}					Bentonite 3.0-4.0m —	
						4.0		20/50		-	
	-4 4 ·	SANDSTONE: me	edium to coarse grained, pale grey, n strength, Hawkesbury Sandstone		S	4.0 4.05		refusal		-4	\$0.00 \$0.00
ŧ :	. 4.4	_				4.45				-	
20		and red-brown, 5-	edium grained, pale grey, grey-brown 10% clay seams, medium and low to			4.7		PL(A) = 0.9		-	
[]	-5	medium strength, fresh, slightly fract	moderately to slightly weathered then ured, Hawkesbury Sandstone		С					-5	
										-	
					<u> </u>	5.5				-	
94						5.75		PL(A) = 1.1		Gravel 4.0-7.5m —	
	-6									-6 Machine slotted -	
										PVC screen 4.5-7.5m	
_∞						6.45		PL(A) = 0.6		-	
- 1										-	
[-7				С	7.0		PL(A) = 0.3		7	
47										End cap —	
[::::::						-	
	-8					8.05		PL(A) = 0.7		-8 Bentonite 7.5-8.5m	
	· 8.4	2			;					-	
46				::::::		8.5				-	10,00
-				::::::				DI (A) O 7		-	
[-9					9.0		PL(A) = 0.7		-9 -	
<u> </u>					C						
45										-	
	. 10	0								-	1000

RIG: Comacchio GEO 305 **DRILLER:** Ground Test LOGGED: SI CASING: HW to 4.45m

TYPE OF BORING: Solid Flight Auger (TC-bit) to 4.0m, Rotary (water) to 4.45m, NMLC Coring to 17.45m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 7.5m (Gravel Backfill 8.5m-17.45m, Bentonite 7.5m-8.5m, Screen 4.5m-7.5m, PVC 0.2m-4.5m, Gravel 4.0m-7.5m, Bentonite 3.0m-4.0m, Backfill 0.2 to 3.0m, gatic cover at surface)

A Auger sample B Bulk sample BLK Block sample

Core drilling
Disturbed sample
Environmental sample

SAMPLING & IN SITU TESTING LEGEND

G Gas sample
P Piston sample (xmm dia.)
W Water sample
W Water seep
W Water level

W Water seep
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)
PL(D) Point load diametral test Is(50) (MPa)
PCocket penetrometer (kPa)
S Standard penetration test
V Shear vane (kPa)



CLIENT: Hansen Yuncken Pty Ltd
PROJECT: UNSW Health Translation Hub
LOCATION: High and Botany Streets, Randwick

SURFACE LEVEL: 54.6 AHD EASTING: 336989 NORTHING: 6245651 DIP/AZIMUTH: 90°/--

BORE No: 1006 PROJECT No: 99852.02 DATE: 10/3/2023 SHEET 2 OF 2

		Description	ji.		Sam		& In Situ Testing	_	Well	
R	Depth (m)	of Strata	Graphic Log	Type	Depth	Sample	Results & Comments	Water	Construction Details	1
44		SANDSTONE: medium grained, pale grey, grey-brown and red-brown, 5-10% clay seams, medium and low to medium strength, moderately to slightly weathered then fresh, slightly fractured, Hawkesbury Sandstone (continued)		С	10.35		PL(A) = 0.5		-	50000000000000000000000000000000000000
	-11 11.0 -	SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured and unbroken, Hawkesbury Sandstone			11.0		PL(A) = 1.2		-11	
43	- - - 12				12.0		PL(A) = 1.4		-12 -12	
42	- - - 13			С	13.0		PL(A) = 1.2		-13 Gravel Backfill - 8.5-17.45m	
41	- - - - 14 - -				14.0		PL(A) = 1.7		-14 14	00000000000000000000000000000000000000
40	- - - - 15 -				15.1		PL(A) = 1.1		-15 15	00000000000000000000000000000000000000
39	- - - - - - - -			С	16.0		PL(A) = 1.2		-16 -16	
38	- - - - - - - - - - - - - - - - - - -				17.0 -17.45-		PL(A) = 1.5		-17	00000000000000000000000000000000000000
37	- - - - 18	Bore discontinued at 17.45m Target Depth Reached							- - - - - - - - - - - - - - - - - - -	
36	- - - - - 19								- - - - - - - - - - - - - - - - - - -	
35	- - - -								-	

RIG: Comacchio GEO 305 DRILLER: Ground Test LOGGED: SI CASING: HW to 4.45m

TYPE OF BORING: Solid Flight Auger (TC-bit) to 4.0m, Rotary (water) to 4.45m, NMLC Coring to 17.45m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 7.5m (Gravel Backfill 8.5m-17.45m, Bentonite 7.5m-8.5m, Screen 4.5m-7.5m, PVC 0.2m-4.5m, Gravel 4.0m-7.5m, Bentonite 3.0m-4.0m, Backfill 0.2 to 3.0m, gatic cover at surface)

SAMPLING & IN SITU TESTING LEGEND

A Auger sample
B Bulk sample
B Bulk Slock sample
C C Core drilling
D Disturbed sample
E Environmental sample

SAMPLING & IN S11 U I ESTING
G Gas sample
P Piston sample
V Water sample
Water sample
Water seep
Water level



CLIENT: Hansen Yuncken Pty Ltd
PROJECT: UNSW Health Translation Hub
LOCATION: High and Botany Streets, Randwick

SURFACE LEVEL: 54.6 AHD EASTING: 336989 NORTHING: 6245650 DIP/AZIMUTH: 90°/--

BORE No: 1007 PROJECT No: 99852.02 DATE: 16/3/2023 SHEET 1 OF 1

		Description	.je		Sam		& In Situ Testing		Well
물 (epth (m)	of	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Construction
		Strata		Ę.	۵	Sal	Comments		Details Gatic cover
	0.3	FILL/Gravelly SAND: medium to coarse, pale grey, igneous gravel, fine to medium, angular sand, dry	\bowtie	А	0.2				
54		FILL/RIPPED SANDSTONE and SAND: fine to medium sand, pale grey-brown, ripped sandstone gravel and boulders, moist		А	0.5				Bentonite 0.2-1.0m
- 1				_A_	1.0				1 0.1-1.6m
F F				s					
-23					1.45				
-2	2.0	FILL/SAND: fine to medium, brown, trace ripped sandstone gravel, moist		А	2.0				
		Salidstone gravel, moist			2.5				
25-				s					Gravel 1.0-4.6m
-3				_ _A _	2.95 3.0				-3 Machine slotted
									PVC screen 0 0 0 0 0 0 0 0 0
51	3.5	SAND SP: fine, grey-brown, trace gravel, moist, aeolian							
- 4	4.0								
	4.0	SANDSTONE: medium grained, brown, apparently very low and low to medium strength, Hawkesbury Sandstone							
									End cap
	4.7	Bore discontinued at 4.7m	<u> ::::::</u>						
-5		Target Depth Reached							-5
-49									
- 6									-6
<u>_</u> ∞[-
1									
-7									-7
47									
-8									-8
9									[
F 4 F									
-9									-9
Ŧ Ŧ									
45									

RIG: Comacchio GEO 305 DRILLER: Ground Test LOGGED: SI CASING: Uncased

TYPE OF BORING: Solid Flight Auger (TC-bit) to 4.7m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 4.6m (Screen 1.6m-4.6m, PVC 0.1m-1.6m, Gravel 1.0m-4.6m, Bentonite

	0.2m-1.0m, gatic cover at surface)												
	SAMPLING & IN SITU TESTING LEGEND												
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)								
В	Bulk sample	Р	Piston sample		Point load axial test Is(50) (MPa)								
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	Point load diametral test ls(50) (MPa)								
С	Core drilling	WÎ	Water sample	pp	Pocket penetrometer (kPa)								
D	Disturbed sample	⊳	Water seep	S	Standard penetration test								
E	Environmental sample	¥	Water level	V	Shear vane (kPa)								



CLIENT: Hansen Yuncken Pty Ltd **UNSW Health Translation Hub** PROJECT: High and Botany Streets, Randwick LOCATION:

SURFACE LEVEL: 52.0 AHD **EASTING**: 337031 **NORTHING**: 6245622 **DIP/AZIMUTH**: 90°/--

BORE No: 1008 **PROJECT No: 99852.02 DATE:** 15/3/2023 SHEET 1 OF 2

	_		Description	.je		Sam		& In Situ Testing	_	Well
R		pth m)	of Strata	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Construction Details
-	-	0.3	FILL/Gravelly SAND: fine to medium, grey-brown, trace igneous and ripped sandstone gravel, moist, apparently loose		А	0.2	0)			
-	- - -	0.8	FILL/SAND: fine to medium, grey-brown, moist, apparently loose		А	0.5				
-51	-1		SAND SP: fine, pale grey then light brown, moist, loose to medium dense, aeolian		_A_ S	1.0		4,5,4 N = 9		
-	-					1.45		14 – 3		
202	-2				А	2.0				-2 Blank pipe 0.7m stickup to 4.0m
-	-	2.6	Below 2.5m: becoming wet		S	2.5		2,8/150 refusal		stickup to 4.0m
49	- -3	2.85	SANDSTONE: medium grained, pale grey-brown, apparently very low strength, Hawkesbury Sandstone SANDSTONE: medium grained, pale grey and brown,			2.8 2.85 2.9		PL(A) = 0.2	 	
	-		indistinct bedding, low strength, highly to moderately weathered, slightly fractured, Hawkesbury Sandstone			3.65		PL(A) = 0.2		
48	-4 4				С					
	-					4.6		PL(A) = 0.2		
47	-5 - -	5.0	SANDSTONE: medium grained, pale grey, thickly bedded and massive, medium to high strength, fresh, slightly fractured and unbroken, Hawkesbury Sandstone			5.05				-5
-	-		nactured and unbroken, nawkesbury Sandstone			5.6		PL(A) = 1.3		Machine slotted Section 1
46	-6									
	-				С	6.8		PL(A) = 0.9		
45	- 7 -					7.05		DI (A) = 4.4		To End cap
	-					7.35		PL(A) = 1.1		
-44	- 8 -					8.0				- -8 -
-	-					8.65		PL(A) = 0.8		
43	-9 -				С	9.2		PL(A) = 1		-9 -9
-	-	9.6	SANDSTONE: (Refer to next page)							
-	-		C. T. D. C. T. (Note: to note page)							-

RIG: Comacchio GEO 205 **DRILLER:** Ground Test LOGGED: SI CASING: HW to 2.85m

TYPE OF BORING: Solid Flight Auger (TC-bit) to 2.5m, Rotary Water to 2.85m, NMLC Coring to 15.63m

WATER OBSERVATIONS: Free groundwater observed at 2.8m whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 7.0m (Screen 4.0m-7.0m, PVC stick up 0.7m above ground level and 0.0m-4.0m, Gravel 3.5m-7.0m, Bentonite 2.5m-3.5m, Backfill to Ground Level)

SAMPLING & IN SITU TESTING LEGEND Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample



CLIENT: Hansen Yuncken Pty Ltd **UNSW Health Translation Hub** PROJECT: LOCATION:

EASTING: 337031 High and Botany Streets, Randwick **NORTHING**: 6245622

DATE: 15/3/2023 DIP/AZIMUTH: 90°/--SHEET 2 OF 2

BORE No: 1008

PROJECT No: 99852.02

SURFACE LEVEL: 52.0 AHD

		Description	.ij		Sam		& In Situ Testing	L.	Well		
2 RL	Depth (m)	of Strata	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Construction Details		
-		SANDSTONE: medium grained, pale grey and grey, thinly bedded and cross bedded, 5% clay seams, medium strength, fresh, slightly fractured and unbroken, Hawkesbury Sandstone (continued)		С	10.25		PL(A) = 0.9				
41	-11				11.0		PL(A) = 1		11		
40 4	12			С	12.15		PL(A) = 0.8		-12 -12		
39	-13				13.15		PL(A) = 1		-13 -13 		
38	14				14.0				- -14 - -		
37	- - 15 -			С	14.6 _15.58_		PL(A) = 0.9 PL(A) = 1.7		-15 -15		
36	15.63	Bore discontinued at 15.63m Target Depth Reached			15.63				-16 16		
35	-17								-17		
34	- -18								-18		
33	- -19 - - -								- 19 19 		
-	-								-		

RIG: Comacchio GEO 205 **DRILLER:** Ground Test LOGGED: SI CASING: HW to 2.85m

TYPE OF BORING: Solid Flight Auger (TC-bit) to 2.5m, Rotary Water to 2.85m, NMLC Coring to 15.63m

WATER OBSERVATIONS: Free groundwater observed at 2.8m whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 7.0m (Screen 4.0m-7.0m, PVC stick up 0.7m above ground level and 0.0m-4.0m, Gravel 3.5m-7.0m, Bentonite 2.5m-3.5m, Backfill to Ground Level)

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample



CLIENT: Hansen Yuncken Pty Ltd
PROJECT: UNSW Health Translation Hub
LOCATION: High and Botany Streets, Randwick

SURFACE LEVEL: 52.1 AHD EASTING: 337031 NORTHING: 6245623 DIP/AZIMUTH: 90°/--

BORE No: 1009 **PROJECT No:** 99852.02

DATE: 15/3/2023 **SHEET** 1 OF 1

Г	Don	,th	Description	hic		Sam		& In Situ Testing	<u></u>	Well
R	Dep (m)	of Strata	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Construction Details
-25		0.0	FILL/Gravelly SAND: fine to coarse, grey-brown, ripped sandstone gravel and boulders, moist		Α	0.2	0)			
F		0.3	FILL/SAND: fine to medium, pale grey and brown, trace ripped sandstone gravel, moist		Α	0.5		0.0-1.0m: Bulk Sample		Bentonite 0.0-0.8m Blank pipe 1.2m stickup to 1.3m
Ē	-1	1.0			Α	1.0				
-52			SAND SP: fine to medium, pale grey then pale brown, moist to wet, aeolian							
ŀ	-									
-83	-2				Α	2.0				2 Gravel 0.8-3.3m
Ē										Machine slotted SOCO
ŧ		2.8	SANDSTONE: fine to medium grained, pale brown,						Ī	
-64	-3	3.3	apparently very low to low strength, Hawkesbury Sandstone	:::::::	Α	3.0				- 3
ŀ		0.0	Bore discontinued at 3.3m Target Depth Reached							
-84	-4									4
-	-									
-	[
-4	-5									5
ŀ										
ŀ	-6									-6
46										
ŀ	-									
- 45	-7									7
ŀ										
ŀ										
4	-8									-8
ŀ	Ė									
43	[-9									-9
- L4	[
<u> </u>	Ė									
Ŀ	<u> </u>									t l

RIG: Comacchio GEO 305 DRILLER: Ground Test LOGGED: SI CASING: Uncased

TYPE OF BORING: Solid Flight Auger (TC-bit) to 3.3m **WATER OBSERVATIONS:** Free groundwater observed at 2.8m

REMARKS: Location coordinates are in MGA94 Zone 56. Standpipe installed to 3.3m (Screen 1.3m-3.3m, PVC stick up 1.2m above ground surface level and 0.0m-1.3m, Gravel 0.8m-3.3m, Bentonite 0.0m-0.8m)

	and order from craver order growing permanent order.												
	SAMPLING & IN SITU TESTING LEGEND												
Α	Auger sample	G	Gas sample		Photo ionisation detector (ppm)								
В	Bulk sample	Р	Piston sample) 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)								
С	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)								
D	Disturbed sample	⊳	Water seep	S	Standard penetration test								
Е	Environmental sample	Ŧ	Water level	V	Shear vane (kPa)								



Appendix C

Previous Borehole Logs

CLIENT: LendLease Building Pty Ltd
PROJECT: Randwick Campus Redevelopment

LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.4 AHD

EASTING: 337086 **NORTHING**: 6245667 **DIP/AZIMUTH**: 90°/--

BORE No: 101

PROJECT No: 72505.13

DATE: 25/2/2019 **SHEET** 1 OF 2

Ţ		Description	Degree of Weathering	Rock ≥ Strength	5	Fracture	Discontinuities				n Situ Testing
귚	Depth (m)	of Strata	Weathering	Graphic Craphic Craphic Craphic Control Contro	Wate	Spacing (m) 90.	B - Bedding J - Joint S - Shear F - Fault	Туре	Core Rec. %	RQD %	Test Results & Comments
53 54	- 0.6	FILLING: grey, fine to medium sand and gravel filling, damp (roadbase) FILLING: yellow-grey, fine to medium sand with sandstone cobbles and coarse sandstone gravel filing, moist SAND: loose, brown, fine to medium sand, moist SANDSTONE: extremely low to very						A			2,2,1 N = 3
52	- 2 - 2.12 	low strength, extremely to highly weathered, red-brown, medium to coarse grained sandstone SANDSTONE: medium strength, moderately weathered, red-brown, medium to coarse grained sandstone with some very low					2.15&2.17m: B 0°-15°, cu, ro, cly vnr '2.35m: B 0°, pl, ro, cly 10mm '2.41m: B 10°, un, ro, cly co	С	100	82	PL(A) = 0.6
IC .	-3 - - - - - - - -	strength bands					3.25m: B 0°, pl, ro, fg 10mm				PL(A) = 0.7
	4.27 - 4.27 5	SANDSTONE: medium and high strength, fresh, fractured and slightly fractured, pale grey, medium to coarse grained sandstone with some extremely low strength clay bands					4.26m: B 0°, pl, ro, cly vn 4.87-4.89m: Cs 5.10-5.11m: Cs 5.36m: B 0°, pl, ro, cln	С	100	99	PL(A) = 0.4 PL(A) = 0.8
2							5.93-5.96m: Cs				PL(A) = 1.1
7	-8						7.57m: B 5°, pl, ro, cln 7.76m: B 10°, pl, ro, cln 7.84m: J 30°, pl, ro, cly 7.86-7.89m: Cs	С	100	96	PL(A) = 1 PL(A) = 0.7
2	9.24				 - - - - - - -		9.14-9.16m: J 30°, pl, ro, cbs co 9.16-9.21m: fg 9.21m: CORE LOSS: 30mm	С	99	96	PL(A) = 1.4

RIG: Hanjin D8 DRILLER: BG Drilling LOGGED: SLB CASING: HW to 2.05m

TYPE OF BORING: Solid flight auger to 2.05m, NMLC-coring to 15.39m **WATER OBSERVATIONS:** No free groundwater observed whilst augering **REMARKS:**

SAMPLING & IN SITU TESTING LEGEND

A Auger sample
B Bulk sample
B Bulk Slock sample
C C Core drilling
D Disturbed sample
E Environmental sample

SAMPLING & IN S11 D LESTING
G Gas sample
P Piston sample
V Water sample (x mm dia.)
W Water sample
Water seep
Water level



LendLease Building Pty Ltd **CLIENT:** PROJECT: Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.4 AHD

EASTING: 337086 **NORTHING**: 6245667 **DIP/AZIMUTH:** 90°/-- **BORE No:** 101 **PROJECT No:** 72505.13

DATE: 25/2/2019 SHEET 2 OF 2

		Description	Degree of Weathering	Rock Strength	Fracture	Discontinuities				n Situ Testing
R	Depth (m)	of Strata	Degree of Weathering :	Graphic Computer Nater High Ex	Spacing (m)	B - Bedding J - Joint S - Shear F - Fault	Type	Core Rec. %	₹QD %	Test Results &
43 44	-11	SANDSTONE: medium and high strength, fresh, fractured and slightly fractured, pale grey, medium to coarse grained sandstone with some extremely low strength clay bands (continued)	EW HW HW SW	A D D D D D D D D D	0.00	11.32-11.37m: J 60°, pl, ro, fg	С	99	96	PL(A) = 0.8 PL(A) = 1.4
42	-12									PL(A) = 1.4 PL(A) = 1.2
	- 13 						С	100	96	PL(A) = 0.4
40	- - - 15					14.82m: B 0°, pl, ro, cly 10mm	С	100	100	PL(A) = 0.9 PL(A) = 0.7
38 39	- 15.39 - - - - - 16	Bore discontinued at 15.39m Target depth reached								
37	-17									
36 -	- 18 - 18 									
35	-									

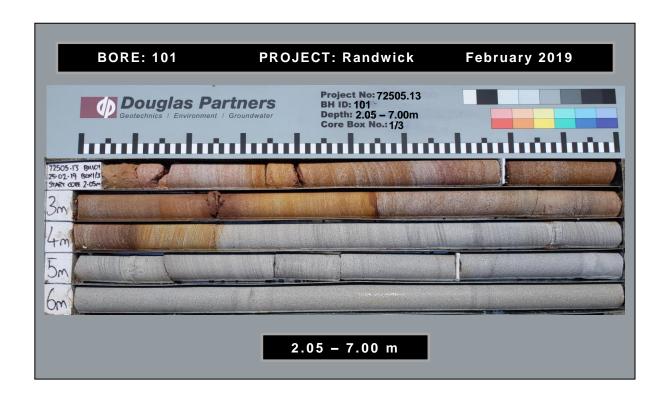
LOGGED: SLB RIG: Hanjin D8 **DRILLER:** BG Drilling CASING: HW to 2.05m

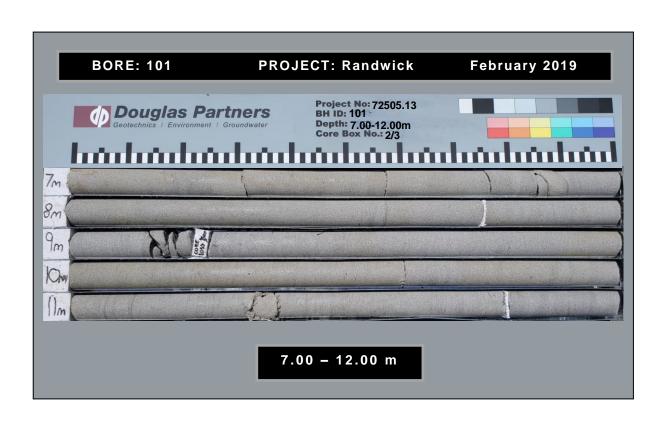
TYPE OF BORING: Solid flight auger to 2.05m, NMLC-coring to 15.39m WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample









CLIENT: LendLease Building Pty Ltd **PROJECT:** Randwick Campus Redevelopment LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

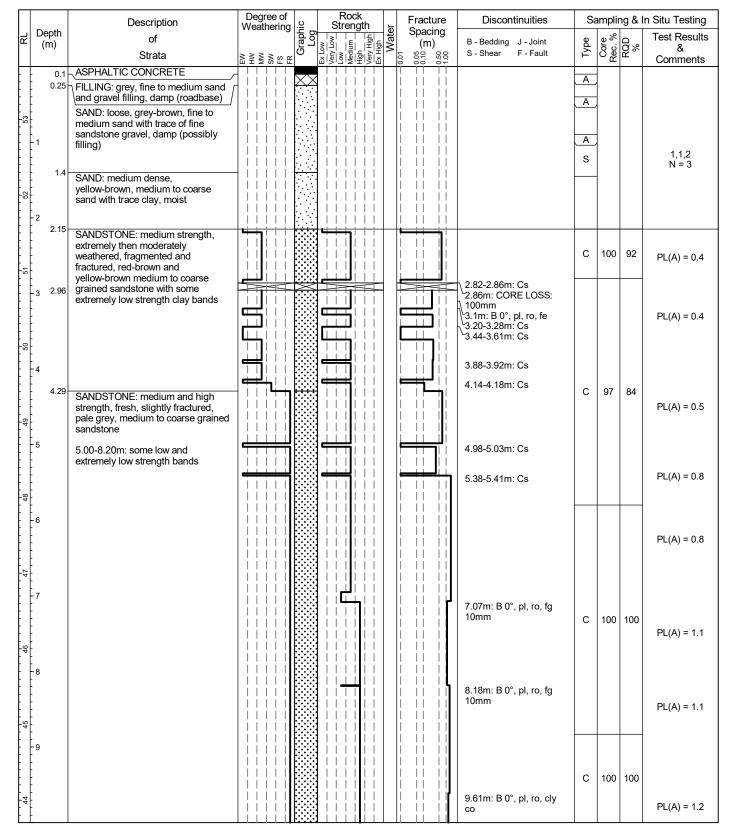
SURFACE LEVEL: 53.7 AHD 337065 **EASTING:**

NORTHING: 6245669 DIP/AZIMUTH: 90°/--

BORE No: 102

PROJECT No: 72505.13 **DATE:** 26/2/2019

SHEET 1 OF 2



RIG: Hanjin D8 **DRILLER: BG Drilling** LOGGED: SLB CASING: HW to 2.15m

TYPE OF BORING: Solid flight auger to 2.15m, NMLC-coring to 15.30m WATER OBSERVATIONS: No free groundwater observed whilst augering **REMARKS:**

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water sample A Auger sample B Bulk sample BLK Block sample Core drilling Disturbed sample Environmental sample Water seep Water level



CLIENT: LendLease Building Pty Ltd Randwick Campus Redevelopment **PROJECT:** LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 53.7 AHD EASTING: 337065

NORTHING: 6245669 **DIP/AZIMUTH:** 90°/--

BORE No: 102

PROJECT No: 72505.13 **DATE:** 26/2/2019 SHEET 2 OF 2

П	_	Description	Degree of Weathering	2	Rock Strength	Fracture	Discontinuities	Sa	amplii	ng & I	n Situ Testing
묍	Depth (m)	of	Weathering	Log E	Strength Medium High Kery	Spacing (m)	B - Bedding J - Joint	Туре	Core Rec. %	ا مح	Test Results &
	()	Strata	WH W W E F	ן פ	Kery Low High Kery Low Very Low	0.05	S - Shear F - Fault	_∑	ပ္သမ္တ	RC %	Comments
42 43	-11	SANDSTONE: medium and high strength, fresh, slightly fractured, pale grey, medium to coarse grained sandstone (continued)					10.89m: B 5°, pl, ro, cly co	С	100	100	PL(A) = 1.1 PL(A) = 1.3
41	-12						12.63m: B 0°, pl, ro, cln 13.16m: B 0°, pl, ro, fg				PL(A) = 0.7
40	- 14	13.90-14.10m: indistinct siltstone laminations					13.81m: J 30°, pl, ro, cln 13.92m: B 0°, pl, ro, cbs	С	100	100	PL(A) = 1.1
39	14.85	14.85-15.30m: fine to medium					14.49m: B 5°, pl, ro, cly 5mm 14.79m: B 0°, pl, ro, cly				PL(A) = 0.9
38	- 15 15.3 -	grained sandstone with approximately 5% carbonaceous laminations / Bore discontinued at 15.3m Target depth reached		::::			14.84m: B 0°, pl, ro, cly 8mm	С	100	63	
	-16										
37	- 17										
36	- 18										
35	-19										
34						 					

LOGGED: SLB RIG: Hanjin D8 **DRILLER:** BG Drilling CASING: HW to 2.15m

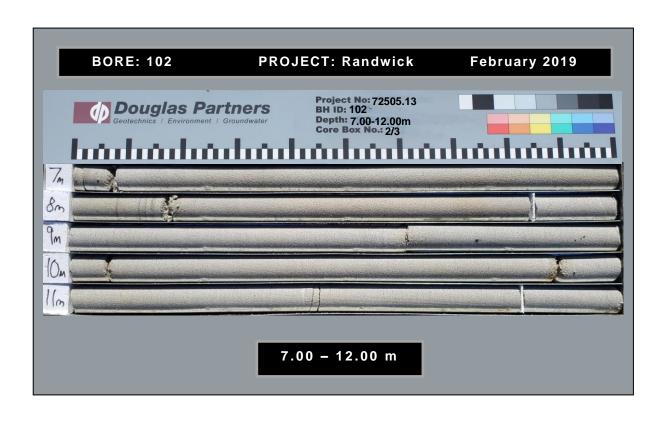
TYPE OF BORING: Solid flight auger to 2.15m, NMLC-coring to 15.30m WATER OBSERVATIONS: No free groundwater observed whilst augering **REMARKS:**

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample









CLIENT: LendLease Building Pty Ltd **PROJECT:** Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.5 AHD **EASTING**: 336994

NORTHING: 6245675 **DIP/AZIMUTH**: 90°/--

BORE No: 103

SHEET 1 OF 2

PROJECT No: 72505.13 **DATE:** 26/2/2019

		Description	Degree of Weathering	<u>.0</u>	Rock Strength	Fracture	Discontinuities	Sa	amplin	ıg & I	n Situ Testing
묎	Depth (m)	of	Degree of Weathering	raph	Strength Needium Needi	Spacing (m)	B - Bedding J - Joint	Туре	Core Rec. %	مد %	Test Results &
	` ,	Strata	EW H W H EW	ω	K High Kery	0.05	S - Shear F - Fault	1	S S	<u>چ</u> پ	Comments
53	0.3	FILLING: pale grey, fine to medium sand filling with trace sandstone gravel and building rubble (terracotta, concrete, glass), humid SAND: medium dense, red-brown mottled dark grey, medium to coarse sand, moist						A A S			3,8,9 N = 17
52	-2 - - - - 2.6	2.30m: orange-brown						S	_		25/100 refusal
Ė	2.7	SANDSTONE: extremely low strength, extremely weathered,	ווווו								. 5.3041
51	-3 - - - - -	yellow-brown, medium to coarse grained sandstone SANDSTONE: low strength, extremely to highly weathered, medium to coarse grained sandstone with extremely low and very low strength bands	.								PL(A) = 0.3
20	-4 - - - 4.38	SANDSTONE: medium strength, moderately weathered, fractured and slightly fractured, red-brown, medium to coarse grained sandstone SANDSTONE: medium and high					4.79m: B 0°, pl, ro, cly	С	100	93	PL(A) = 0.5
49	-5 5 	strength, fresh, fractured and slightly fractured, pale grey, medium to coarse grained sandstone with some extremely and very low strength bands					vn 5.32-5.41m: J 70°, pl, ro, cln				PL(A) = 1.3
48	-6 - - - - - -						6.17-6.24m: Cs 6.37-6.49m: J 70°, pl, ro, cln				PL(A) = 1.1
47	-7 - - - -						6.96m: J 50°, pl, ro, fg 7.26-7.36m: J 45°-90°, cu, ro, cln 7.52-7.72m: B(x4) 5°-15°, pl, ro, fe	С	100	93	PL(A) = 2.3
46	- 8 - - - - -	8.39-9.10m: low strength									PL(A) = 0.2
45	10.0						9.15m: B 0°, pl, ro, cln 9.47-9.50m: Cs	С	100	99	PL(A) = 0.8

CASING: HW to 2.6 RIG: Hanjin D8 **DRILLER:** BG Drilling LOGGED: SLB

TYPE OF BORING: Solid flight auger to 2.6m, NMLC-coring to 15.32m WATER OBSERVATIONS: No free groundwater observed whilst augering **REMARKS:**

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample



LendLease Building Pty Ltd **CLIENT:** PROJECT: Randwick Campus Redevelopment LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.5 AHD EASTING: 336994 **NORTHING**: 6245675

PROJECT No: 72505.13 **DATE:** 26/2/2019 SHEET 2 OF 2

BORE No: 103

DIP/AZIMUTH: 90°/--

Г		Description	Degree of Weathering	o	Rock Strength	Fracture	Discontinuities	Sa	ampli	ng & l	n Situ Testing
牊	Depth (m)	of	vveautering	aphi	Strength Plant High High High High High High High High	Spacing (m)	B - Bedding J - Joint	g	e %		Test Results
	(111)	Strata	MW HW SW SW FS FS FS	ত _	Ex Low Very Low Medium High Very High Ex High Ex High Wate	0.05	S - Shear F - Fault	Type	ပို့ မွ	RQD %	& Comments
43 44	- - -11	SANDSTONE: medium and high strength, fresh, slightly fractured, pale grey, medium to coarse grained sandstone with some extremely and very low strength bands						С	100		PL(A) = 0.8 PL(A) = 0.7
42	-12						>>				PL(A) = 1.2
41	-14						13.75m: B 0°, pl, ro, cly vn	С	100	99	PL(A) = 1 PL(A) = 1.2
- 40	- - - 15 - 15.32							С	100	100	FL(A) - 1.2
38	-16	Bore discontinued at 15.32m Target depth reached									
37	- 17 - 17 										
- 8	-19										
35	-										

LOGGED: SLB CASING: HW to 2.6 RIG: Hanjin D8 **DRILLER:** BG Drilling

TYPE OF BORING: Solid flight auger to 2.6m, NMLC-coring to 15.32m WATER OBSERVATIONS: No free groundwater observed whilst augering **REMARKS:**

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample









LendLease Building Pty Ltd **CLIENT:** PROJECT: Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.4 AHD

EASTING: 336981 **NORTHING**: 6245609 **DIP/AZIMUTH:** 90°/-- **BORE No:** 104

PROJECT No: 72505.13 **DATE:** 27/2/2019

SHEET 1 OF 2

	D #b	Description	Degree of Weathering	اور _	Rock Strength	Fracture Spacing	Discontinuities				n Situ Testing
R	Depth (m)	of	Weathering	3rapt Log	Strength Nedium	(m)	B - Bedding J - Joint S - Shear F - Fault	Туре	ore %C.	RQD %	Test Results &
F		Strata FILLING: pale grey, fine to medium	W W W W W W W W W W W W W W W W W W W		E Verligier Control Co	0.00	3 - Sileai 1 - Fault		0 %	<u> </u>	Comments
-	r I	sand filling with building rubble (terracotta pipe, glass), damp		\times				A	}		
-22	0.5	SAND: brown, fine to medium sand,						Α	1		
ŀ	-	damp (possibly filling) SAND: medium dense, yellow-brown				 					
E	-1	mottled white, medium to coarse						Α	1		257
53	<u> </u>	sand, moist						S			2,5,7 N = 12
+"	-										
F						 					
Ė	-2					 					
52	-										
F	[s			5,8,9
Ė	-3					 					N = 17
ŧ						 					
-5	-	3.40m: becoming yellow						Α			
F											10/120
Ė	-4 -4 4.12		11111			i ii ii		S			refusal Hammer
-8	ļ	SANDSTONE: low to medium strength, highly, moderately and							1		bouncing
+"	-	slightly weathered, fractured and slightly fractured, red-brown and									PL(A) = 0.3
F		pale grey, medium to coarse grained sandstone with some extremely to	│			▎ <u>▕</u> ▍	4.88m: B 0°, pl, ro, cly	С	100	91	
ŧ	-5	very low strength bands					5.10-5.15m: B(x3) 0°, pl,				
-64	ŧ l						ro, cly				PL(A) = 0.6
ŀ	-										FL(A) - 0.0
F	-6					 					
ŀ	[
-84	-										PL(A) = 0.7
ŧ											
ŧ	7					 					
- 44	ŧ l					 		С	100	100	
-											PL(A) = 0.8
ŀ	[i ii ii l					
ŧ	-8 8.12	8.12-9.10m: fine to medium grained					8.12m: B 10°, pl, ro, cly				
-94	<u> </u>					 	5mm 8.42m: B 5°, pl, ro, cly				PL(A) = 0.3
F	-	8.43-9.10m: high strength					6.42111. B 5 , pi, 10, ciy				
ŧ	-9										
ŧ	9.1	SANDSTONE: medium and high					9.1m: B 0°, pl, ro, fg 5mm				
45		strength, fresh, fractured and slightly fractured, pale grey, medium to					9.44m: B 5°-10°, st, ro,	С	100	98	DI (A) 4.0
ŧ	[coarse grained sandstone				 	cly 8mm				PL(A) = 1.2
Ł	t l		لننييا			للنانب					

LOGGED: SLB CASING: HW to 4.12m RIG: Hanjin D8 **DRILLER:** BG Drilling

TYPE OF BORING: Solid flight auger to 4.12m, NMLC-coring to 15.81m WATER OBSERVATIONS: No free groundwater observed whilst augering **REMARKS:**

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample



CLIENT: LendLease Building Pty Ltd Randwick Campus Redevelopment PROJECT: LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.4 AHD

EASTING: 336981 **NORTHING**: 6245609 **DIP/AZIMUTH**: 90°/--

BORE No: 104

PROJECT No: 72505.13 **DATE:** 27/2/2019 SHEET 2 OF 2

		Description	Degree of Weathering	ic	Rock Strength	Fracture	Discontinuities				n Situ Testing
R	Depth (m)	of		iraph Log	Strength Low Nedium High Nedium Nediu	Spacing (m)	B - Bedding J - Joint	Type	Core Rec. %	ص %	Test Results &
	` ′		EW HW SW FS FS	9	EX LOW High Very Very Very Low	0.05	S - Shear F - Fault	Ļ	άğ	R.	Comments
43	-11	SANDSTONE: medium and high strength, fresh, fractured and slightly fractured, pale grey, medium to coarse grained sandstone (continued) 10.92m: siltstone laminations and clasts					10.93-10.96m: B(x2) 0°-20°, cu, ro, cbs 11.02m: J 90°, pl, ro, cly	С	100	98	PL(A) = 1.2 PL(A) = 0.8
42	-12	12.00-12.35m: indistinct siltstone laminations					12.2m: B 5°, pl, ro, cly 5mm 12.34m: B 10°, pl, ro, fg 12.71-12.74m: Cs				PL(A) = 1.1
41	-13	40.04 4F.04 mindistrict a library					13.24-13.30m: J 70°, pl, ro, cln	С	100	99	PL(A) = 0.9
40	-14	13.81-15.81m: indistinct siltstone laminations					13.81-13.85m: J 45°, pl, ro, cly 3mm 13.85m: B 5°, pl, ro, cly vn				PL(A) = 1.3
39	- 15 - 15 							С	100	100	PL(A) = 0.9
-	- 16	Bore discontinued at 15.81m Target depth reached									
38	-	Talgot dopul roadiloa									
	- - 17										
37											
36	- - 18 - -										
35	- - - - - - - - - - - - - - - - - - -										

LOGGED: SLB CASING: HW to 4.12m RIG: Hanjin D8 **DRILLER:** BG Drilling

TYPE OF BORING: Solid flight auger to 4.12m, NMLC-coring to 15.81m WATER OBSERVATIONS: No free groundwater observed whilst augering **REMARKS:**

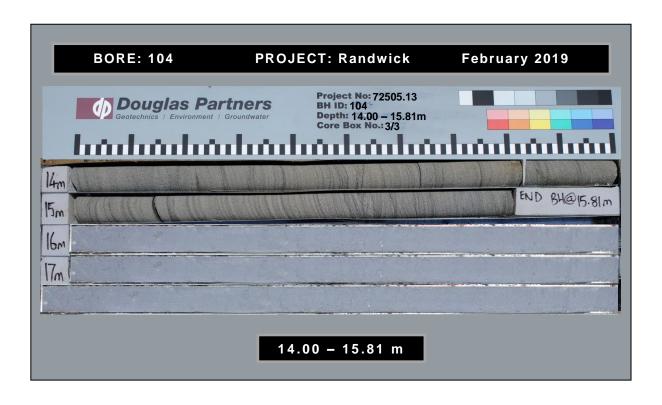
SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample









LendLease Building Pty Ltd **CLIENT:** PROJECT: Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 51.6 AHD

EASTING: 337006 **NORTHING**: 6245565 **DIP/AZIMUTH:** 90°/-- **BORE No:** 105

PROJECT No: 72505.13 **DATE:** 27 - 28/2/2019

SHEET 1 OF 2

	5 "	Description	Degree of Weathering	Rock Strength	<u></u>	Fracture	Discontinuities				n Situ Testing
R	Depth (m)	of	Weathering	Grap Lysical Constitution of the Log Pt. Constitution of t	Water	Spacing (m)	B - Bedding J - Joint	Туре	Core Rec. %	g %	Test Results &
		Strata	MH W S R R	Gra Ex Low Very Low Medium High Very High Ex High		0.05	S - Shear F - Fault	F.	ပစ္	ية ،	Comments
51	0.3	FILLING: grey-brown, fine to medium sand filling with some building rubble (concrete, terracotta fragments), humid SAND: medium dense,						A			
-	-1	yellow-brown, fine to medium sand, damp						Α			0.5.0
20	-2 2.0	SAND: loose, yellow-brown mottled						S	-		3,5,6 N = 11
	-	brown, medium to coarse sand with some clay, trace of decomposed wood and ironstone gravel, moist							1		
49	- - -3							S	-		2,2,2 N = 4
48	- - 3.5	SAND: loose, dark brown, fine to medium sand with some silt, wet			•						15/100
-	- 4 - 4.1	3.9m: becoming saturated	11111		19	i ii ii		S			refusal Hammer
47	-5	SANDSTONE: low to medium strength, slightly weathered and fresh, fractured and slightly fractured, medium to coarse grained, red-brown and pale grey sandstone with some extremely low strength bands			27-02-		4.19-4.51m: B(x4) 5°-10°, pl, ro, cly, fe 4.93m: J 30°, pl, ro, cly	С	100	74	bouncing PL(A) = 0.2
46	- - - - - - - - -						5.52-5.56m: Cs 5.76m: B 0°, pl, ro, cly vn				PL(A) = 0.7
45	- - - - -						ղ 6.82m: B 0°-5°, un, ro,				PL(A) = 0.4
44		SANDSTONE: medium and high strength, fresh, slightly fractured, pale grey, medium to coarse grained sandstone with some very low strength bands					fe 6.88m: B 0°-10°, st, ro, cly 5mm 7.35m: B 0°, pl, ro, cly vn	С	100	97	PL(A) = 0.7
43	- 8 - - - -										PL(A) = 0.9
Ė						 					
42	-9 - - - - - -							С	100	93	PL(A) = 1.2

LOGGED: SLB CASING: HW to 4.1m RIG: Hanjin D8 **DRILLER:** BG Drilling

TYPE OF BORING: Solid flight auger to 4.1m, NMLC-coring to 15.50m WATER OBSERVATIONS: Free groundwater observed at 3.9m whilst augering **REMARKS:**

SAMPLING & IN SITU TESTING LEGEND	SAMPLING	& IN SITU	TESTING I	LEGEND
-----------------------------------	----------	-----------	-----------	--------

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample



CLIENT: LendLease Building Pty Ltd

PROJECT: Randwick Campus Redevelopment

LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 51.6 AHD

EASTING: 337006 **NORTHING:** 6245565 **DIP/AZIMUTH:** 90°/--

BORE No: 105 **PROJECT No:** 72505.13 **DATE:** 27 - 28/2/2019

SHEET 2 OF 2

		Description	Degree of Weathering	ic	Rock Strength	Fracture	Discontinuities	Sa	ampli	ng & I	n Situ Testing
귐	Depth (m)	of		srapt Log	Strength Nedium High Werdium New High Werth	Spacing (m)	B - Bedding J - Joint	Type	ore %:	RQD %	Test Results &
		Strata	EW H EW REW	O .	EX Low High Very Very EX H	0.00	S - Shear F - Fault	F	QÃ	8 3	Comments
40	-11	SANDSTONE: medium and high strength, fresh, slightly fractured, pale grey, medium to coarse grained sandstone with some very low strength bands (continued)					10.02m: J 30°-40°, cu, ro, cln 11.11-11.12m: B 0°, pl, ro, fg	С	100		PL(A) = 1 PL(A) = 0.8
36	-12							С	100	99	PL(A) = 1
38	-14	13.32-14.68m: indistinct and distinct carbonaceous laminations					13.66-13.68m: Cs				PL(A) = 0.6
37	-15							С	100	95	PL(A) = 0.8
		√15.40-15.50m: carbonaceous flecks									PL(A) = 0.8
35	-16	Bore discontinued at 15.5m Target depth reached									
33	-18										
32											

RIG: Hanjin D8 DRILLER: BG Drilling LOGGED: SLB CASING: HW to 4.1m

TYPE OF BORING: Solid flight auger to 4.1m, NMLC-coring to 15.50m **WATER OBSERVATIONS:** Free groundwater observed at 3.9m whilst augering **REMARKS:**

SAMPLING	& IN :	SITU TEST	ING LEC	END

A Auger sample
B Bulk sample
B Bulk Slock sample
C C Core drilling
D Disturbed sample
E Environmental sample

SAMPLING & IN S11 D LESTING
G Gas sample
P Piston sample
V Water sample (x mm dia.)
W Water sample
Water seep
Water level









Health Infrastructure CLIENT:

PROJECT: Site Infrastructure Investigation LOCATION:

Prince of Wales Hospital, Randwick

SURFACE LEVEL: 56.3 AHD^

BORE No: 1 **PROJECT No:** 85461.00 **EASTING:** 337123.2

NORTHING: 6245657.1 **DATE:** 26/5/2016 **DIP/AZIMUTH:** 90°/--SHEET 1 OF 1

		Description	Degree of Weathering	je.	Rock Strength	Fracture Spacing	Discontinuities	Sa			n Situ Testing
	epth m)	of		Graphic Log		(m)	B - Bedding J - Joint	Type	ore c. %	RQD %	Test Results &
		Strata	E SW H W	0	Very Very Very Ex High	0.00	S - Shear F - Fault	F	S S	ي ا	Comments
- 29	0.31	CONCRETE SLAB FILLING - apparently moderately compacted, orange-brown and grey,		\(\frac{\lambda}{\lambda}\)			Note: Unless otherwise	E			
-1	1.05	gravelly clayey sand filling with a trace of sandstone cobbles, damp SANDSTONE - extremely low and					stated, rock is fractured along rough planar bedding dipping 0°- 10°	E			
. 52	1.5	very low strength, orange-brown and purple, medium to coarse grained sandstone with some iron-cemented						E			
-2		bands SANDSTONE - extremely low and very low strength, extremely then highly weathered, slightly fractured,					√ 2.06m: B0°, cly, 10mm	С	100	76	PL(A) = 0.04
54	2.58	red-brown, orange-brown and grey medium to coarse grained sandstone with some iron-cemented	┤ <mark>╒┿┛</mark> ┆┆┆┆ ┤ <mark>┡┿╖</mark> ┆╎╎				2.12m: B0°, cly, 30mm 2.26m: B0°, cly, 30mm				PL(A) = 0.08
-3		bands - very fine grained sandstone/siltstone below 2.3m					2.67 & 2.78m: B0°, cly vn, fe stn				PL(A) = 0.09
EG -	3.38	SANDSTONE - very low strength, moderately weathered, slightly fractured, pink-grey and pale grey fine to medium grained sandstone with up to 15% siltstone laminations SANDSTONE - medium and high					3.28m: B0°, cly, 20mm 3.3-3.36m: J90°, pl, ro, cly vn 3.37m: B0°, cly, 20mm 3.7m: B5°, cly vn	С	100	96	PL(A) = 0.08 PL(A) = 0.6
52		strength, slightly then moderately weathered, slightly fractured, pale grey, grey and purple-brown, medium to coarse grained sandstone with some extremely low strength, extremely weathered					4.31m: Ds, 150mm 4.57 & 4.74m: B5°, cly vn				PL(A) = 1.2
5		bands and some iron-cemented bands					5.11 & 5.37m: B5°, cly yn 5.14 & 5.44m: B0°, cly, 10mm 5.45-5.52m: J45°, ir, ro 5.68m: B5°, cln				PL(A) = 0.4
6	5.91	SANDSTONE - medium strength, fresh, slightly fractured, pale grey, medium to coarse grained sandstone with some extremely low strength bands					6.11m: B0°, cly, 15mm 6.26m: B0°, cly vn	С	100	89	PL(A) = 0.6
8 4							7.18m: B0°, cly vn				PL(A) = 0.7
ŧ							7.89 & 7.91m: B5°, cly vn				
- 8	7.97	Bore discontinued at 7.97m - target depth reached									
9											

CASING: HW to 1.5m RIG: Bobcat DRILLER: GM LOGGED: MP

TYPE OF BORING: Diacore to 0.31m; NDD to 1.05m; Solid flight auger to 1.55m; NMLC-Coring to 7.97m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: NDD = Non destructive suction drilling. ^Surface level provided by LTS Lockley Pty Ltd

	SAMPLING	& IN SITU	TESTING	LEGE	ND
ger sample	G	Gas sample		PID	

A Auger sample
B Bulk sample
BLK Block sample
C Core drilling
D Disturbed sample
E Environmental sample Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level







CLIENT: **Bovis Lend Lease**

PROJECT: Wallace Wurth Redevelopment LOCATION: Cnr High & Botany St, UNSW, Kensington SURFACE LEVEL: 55.8 AHD BORE No: 2

PROJECT No: 71543 **EASTING: DATE:** 01 Feb 10 **NORTHING:** DIP/AZIMUTH: 60°/0 SHEET 1 OF 2

П		Description	Degree of Weathering	<u>.0</u>	Rock Strength	Fracture	Discontinuities				n Situ Testing
쉳	Depth (m)	of	, roda, omig	raph	Strength	Spacing (m)	B - Bedding J - Joint	Туре	ore 3. %	RQD %	Test Results &
Ш	` ,	,	EW HW MW SW FS	9	Medium High Ex High Ex High High Medium West High Medium	0.05 0.50 1.00	S - Shear D - Drill Break	Ļ	ပည္	ጿ ຶ	Comments
-88	0.	silty sand filling with some rootlets (topsoil)		\bigotimes				A A			
		FILLING - dark grey brown, fine to medium grained, sand filling with a trace of gravel, humid		\bigotimes				A/E A			
	1 1.	FILLING - light grey, fine to medium grained, sand filling with a trace of concrete fragments		\bigotimes				Α/E			
	1.i 2	SAND - orange and light grey, fine to medium grained sand, moist		\times				A/E			
58											
	3					1 [1 					
59	3.	SAND - orange brown, medium grained sand, moist					Note: Unless otherwise stated, rock is fractured	А			
ļ [4					 	along rough planar bedding dipping 0°- 10°				
[4.	SANDSTONE - extremely low and very low strength, extremely to				 	or joints				
09	4.6	highly weathered, light grey then light grey brown, medium to coarse grained sandstone with extremely low strength, igneous rock inclusions		X			4.65m: CORE LOSS: 100mm 4.75-4.85m: dyke	С	92	0	PL(A) = 0.7MPa
9,	6				╏┆╃╃╸ ┇╬╸┆┆┆┆		6,33-7.25m: dyke				
62	6.5	to very high strength, highly and slightly weathered, highly fractured to fractured, grey and brown,					6.53-7.25m: highly fractured to fractured sandstone (dyke) in subvertical joints	С	100	0	
	7.	sandstone with extremely low strength, igneous rock inclusions (cooked sandstone)		X			7.2m: CORE LOSS: 480mm 7.68-7.78m: fragmented	С	62	0	PL(A) = 1.9MPa
63	· 8 8.	4				!	in 0.02m intervals 7.88-8.13m: J, % subvertical, rough 8.05-8.08m: clay band 8.13m: J75°, rough				PL(A) = 4.9MPa
	∙9	extremely low and very low strength, extremely and highly weathered, grey and orange brown, medium to coarse grained sandstone with frequent igneous rock intrusions. Some high strength					8.28-8.31m: clay band 8.28-8.31m: clay band 8.31m: J, subvertical, ironstained 8.4m: CORE LOSS: 1050mm	С	34	0	
		fractured bands		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			9.45-9.65m: fragmented to 0.02m intervals				PL(A) = 1.3MPa

LOGGED: SI CASING: HW to 2.6m RiG: Bobcat DRILLER: Steve S

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 4.65m; NMLC-Coring to 14.4m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Standpipe installed to 14.4m

SAMPLING & IN SITU TESTING LEGEND

Auger sample
Disturbed sample
Bulk sample
Tube sample (x mm dia.)
Water sample
Core drilling

Post ING LEGEND
Pocket penetrometer (kPa)
PiD Photo ionisation detector
Standard penetration test
Point load strength is(50) MPa
V Shear Vane (kPa)
D Water seep
Water level





CLIENT:

Bovis Lend Lease

PROJECT: Wallace Wurth Redevelopment

LOCATION: Cnr High & Botany St, UNSW, Kensington

EASTING:

SURFACE LEVEL: 55.8 AHD BORE No: 2

NORTHING: DIP/AZIMUTH: 60°/0

PROJECT No: 71543 **DATE:** 01 Feb 10

SHEET 2 OF 2

П		Description	Degree of Weathering	Rock Strength ਨ	Fracture	Discontinuities	Sa	mpli	ng &	In Situ Testing
귙	Depth (m)	of	Weathering	Craphic Craphic Craphic Control Contro	Spacing (m)	B - Bedding J - Joint	Туре	ore c. %	RQD %	Test Results &
Ц	40.0	Strata	WH WW SH HW		0.0	S - Shear D - Drill Break	[T	ပြည့်	Σ.,	Comments
65	10.0 10.9	IGNEOUS ROCK & SANDSTONE - extremely low and very low strength, extremely and highly weathered, grey and orange brown, medium to coarse grained sandstone with frequent igneous rock intrusions. Some high strength				10m: CORE LOSS: 450mm 10.45-10.6m: fragmented to 0.01m intervals 10.9m: CORE LOSS:	С	50	o	
99		fractured bands (continued)				1100mm	С	19	; o	
	12 12.0	SANDSTONE - alternate bands of very low and medium to high	1 1 1			12.0-12.25m: fragmented				PL(A) = 1.7MPa
68	-13 13,56	strength, highly and moderately to slightly weathered, fragmented to slightly fractured, light grey and brown, coarse grained sandstone with bands of igneous rock intrusions				12.3m: J80°, healed 12.37m: J20°, ironstained 12.43m: J15°, ironstained 12.47-12.6m: very low strength band 12.64m: J70°, healed 14.8m: J65°, ironstained 12.92m: B0°, very low strength band 13.13m: J80°, healed 13.29m: J65°, ironstained very low	С	88	0	-
	14.35				<u> </u>	strength band				
69	-14.4 ⁴	Bore discontinued at 14.4m				13.4m: J30°, ironstained very low strength band 13.48-13.56m: fragmented in 0.02mm intervals 13.56m: CORE LOSS: 200mm 13.76m: J60°, ironstained 13.76-13.92m: fragmented	1			
20,	-16 -					14m: J85° 14.15m: J70°, ironstained, clay band 14.25m: J50°, ironstained 14.3-14.4m: fragmented 14.35m: CORE LOSS:		-		
71	-17					[50mm]				
2	-18									
	-19						****			

RIG: Bobcat

DRILLER: Steve S

LOGGED: SI

CASING: HW to 2.6m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 4.65m; NMLC-Coring to 14.4m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Standpipe installed to 14.4m

SAMPI
Auger sample
Disturbed sample
Bulk sample
Tube sample (x mm dia.)
Water sample
Core drilling

SAMPLING & IN SITU TESTING LEGEND

pp Pocket penetrometer (kPa)

pp Photo ionisation detector

S Standard penetration test

pp Point load strength 1s(50) MPa

V Shear Vane (kPa)

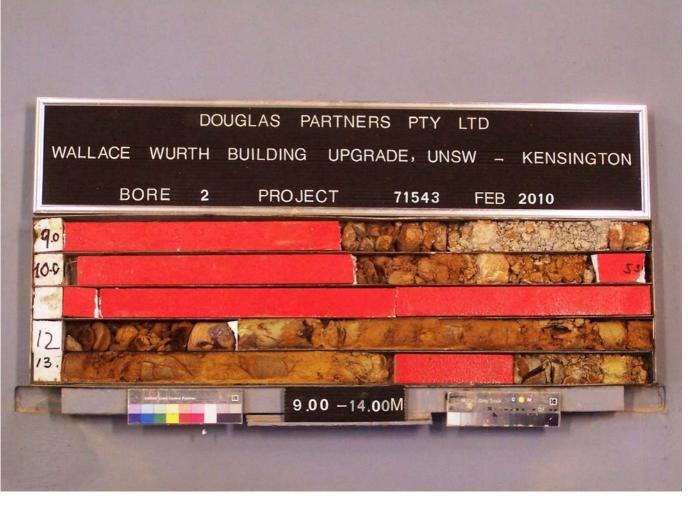
D Water seep Water seep

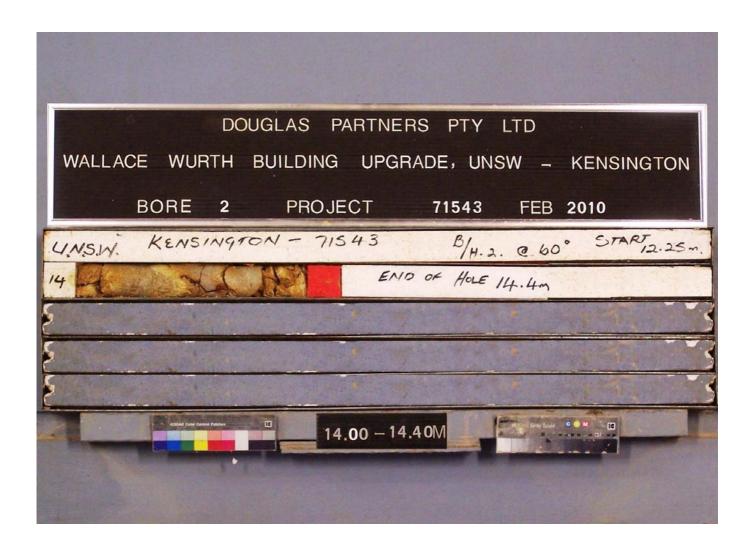
Water level











CLIENT: **Bovis Lend Lease**

PROJECT: Wallace Wurth Redevelopment LOCATION: Cnr High & Botany St, UNSW, Kensington SURFACE LEVEL: 56.2 AHD BORE No: 3

EASTING: PROJECT No: 71543 **NORTHING: DATE:** 3-8 Feb 2010 DIP/AZIMUTH: 90°/--SHEET 1 OF 2

П			Description	De	gre	e of	Graphic	T	Si	Ro	ck	h	L	F	raci	ture		Discontinuities	Sa	mplii	ıg & I	n Situ Testing
문	Dej (m	pth าง	of	''	,	O	[등	<u>"</u>	I S	Ţ	Ī	Kery H F F F F F F F F F F F F F F F F F F F	Water	8	pac m)	oing 1)		B - Bedding J - Joint	pe	о %	og.	Test Results
Ш	(.,	"	Strata	2 ≥	3	§ 22 €	֓֞֞֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	<u>عَ ا</u>	15	<u>=</u> } }	탈	I NEW	' S	E		86.		S - Shear D - Drill Break	Туре	လူ	RoD %	& Comments
	-		FILLING - dark brown, sand filling		П		\bigvee	₫ <u></u>	Í	1	1	Í	П	Ţ	ŢŢ	-11	 		_A_,			-
18						11	\otimes	1		1	H				 				Α			
<u> </u>	-			ļ	!!	11	\bowtie	⇃	1 [1				l								
}		0.7	SAND - medium dense, light		Н	ii		1	Н	i	ii			ì	H	11	ļ	Į				
<u> </u>	-1		brown, fine to medium grained sand	!				1		Į				!		11						
바				i	H	ii		1	Н	i	i i	ii	ļ	i	ii	ii			S			4,6,9 N = 15
	-					11		\cdot	11	-				1								
£ £				l į	ij	ij		1	ij	į	ij			į.	ij	ij						
	-2			1	 1				 	1				1								
-25	-		- yellow below 2.2m	l į	ij	ij			ij	į	ij	ij		į	ij	ij			S			3,6,11 N = 17
			- yellow below 2.211		 	1	1.:	:	 		Н	 					ļ		Α			N - 17
				l	ij	ij	::		ij	į	ij	ij		į	Ħ	11		Note: Unless otherwise	^			
[]	-3				 		:::			l I		i 				 	8	stated, rock is fractured along rough planar				
8	- 3 -	3.2		ļ	ij	11		-		į		ļ		1	ij	11	t	bedding dipping at 0°- 10° or joints				
"	•	٠.٢	IGNEOUS ROCK (DYKE) - extremely low to very low strength,		1		X	1		l					1 [i	11 11		to or joints				
Ė	-		extremely to highly weathered, light grey to red brown, igneous rock	\vdash		++	X	1	H	+				1	11	11	+					
[(dyke)			11	K	1	!	1		 		į		ij						
	-4 -						X	1	1 1	I		 										
123				П	ii	Ιi	X		įi	ì	i	ij		i	ij				С	90	0	
	_						×]]¦	[1	[] []		1								
 		4.86		Ш	<u>i i</u>	<u>i i</u>	Ŷ	1	<u> Li</u>	<u>i</u>	<u>i</u>	<u>i i</u>		Ĺ	<u>j.</u>	<u>Jii</u>						
	-5	1.00		+	컴	4	├	1	F	기	<u> </u>		- 6	1	盐	₩		4.86m; CORE LOSS: 140mm				
-5	-	- 1		Н	įį	ijį	K	1	li	į	į	įį	05-03-10	į	ij	إإ						
<u> </u>						11	×	1	H	1		1 i 1 i	0	li		-11	-					
[]		5.8		Ц	İ	11	X	1	L	1	ļ	1		ı	П	Į į	_					
	- -6	٠.٠		X	1 1	1	1	\mathbb{N}	XI	i	l	l <i>Y</i>		N	H	11/		5.8m: CORE LOSS: 1200mm	С	40	0	
-8				'	1 /	X_{1}	$ \rangle / $	/	1		1/	1		ļ! `	Ĭ.					1		
	-			l i	Κi	(H	ΙX		ij	\ \	(ii		i	ij	(ii						
	-				וא	X_{\parallel}	۱/۱	\setminus	IJ		1	XI.		 	ΥL	X1						
[]	_,	7.0		Λ	<u>i i</u>	<u>(i </u>	\bigvee	\bigvee	<u>/ i</u>	i	i	<u>۱ ۱</u>		į/	ii	<u> </u>	\setminus					
-8	ļ '	7.0	ROTARY DRILLING	1		 		T	 			1 T 1 I						7.0-9.5m: rotary drilling in extremely weathered				
	-			1 :	ij	ijį		1	įį	i	į	ij		į	ij	11	1	dyke				
				H	 	1			1	 	¦	 		ľ		11						
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	-			H										ľ								
	Ė	Į		1							1	11				11						
	-9					11			ii			 		ľ		11			\vdash	+		
47	<u>}</u>	i					1	-	1 1		1			ľ			- 1					
Ė	Ì.	9.5	IGNEOUS ROCK - description next	11	ij		X	\dashv	أأأ	ij	į			į.	11	ı H						-
[]	}		page	16	4	1 ¦ ¦	I,	1	Щ	버	l	1 		l¦ I	H	.		9,7-9,95m: fragmented	С	83	0	PL(A) = 0.8MPa
	<u> </u>				Ë	.	V	\	Į,	H	lμ	Lİ		li	Ιi			into 0.05mm intervals			<u> </u>	

LOGGED: SI CASING: HW to 3.6m RIG: Bobcat DRILLER: Steve S

TYPE OF BORING: Solid flight auger to 3.6m; NMLC-Coring to 7.0m; Rotary to 9.5m; NMLC-Coring to 13.0m; Rotary to 14.5m; NMLC-Coring to 15.15m WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater well installed to 18.0m. Water measured in well at 4.9m on 5/3/10

SAMPLING & IN SITU TESTING LEGEND

- Auger sample
 Disturbed sample
 Bulk sample
 Tube sample (x mm dia.)
 Water sample
 Core drilling
- TESTING LEGEND
 p Pocket penetrometer (kPa)
 PID Photo ionisation detector
 Standard penetration test
 PL Point load strength 1s(50) MPa
 V Shear Vane (kPa)
 Water seep
 Water level





CLIENT: **Bovis Lend Lease**

PROJECT: Wallace Wurth Redevelopment LOCATION: Cnr High & Botany St, UNSW, Kensington SURFACE LEVEL: 56.2 AHD BORE No: 3

EASTING: PROJECT No: 71543 **DATE:** 3-8 Feb 2010 SHEET 2 OF 2

NORTHING: DIP/AZIMUTH: 90°/--

П		Description	Degree of Weathering	Rock Strength 5	Fracture	Discontinuities				In Situ Testing
ఠ	Depth (m)	of Strata	Degree of Weathering	Craptic Log High Log	Spacing (m) 98.	B - Bedding J - Joint S - Shear D - Drill Break	Type	Core Rec. %	RQD %	Test Results &
46	10.0	IGNEOUS ROCK (DYKE) - extremely low to very low and medium strength, extremely to highly weathered, fractured, light grey brown to red brown, igneous rock with medium strength sandstone bands	EW NAME OF THE WAY NAME OF THE			10m: CORE LOSS: 100mm 10.6m: J70°, clay band		42		Comments
45	11.77			× I		11.2-11.6m: fragmented in 0.02mm intervals	С	69	0	PL(A) = 0.6MPa
44	-12					12.6-12.8m: fragmented				PL(A) = 0.5MPa
43	-13 ^{12.95} 13.0	ROTARY DRILLING				in 0.02 to 0.05mm intervals 12.8-12.95m: clay band 12.95m: CORE LOSS: 50mm 13.0-14.15m: rotary drilling to weathered rock	R			
42	-14 14.15 14.73	IGNEOUS ROCK (DYKE) -		× × × × × × × × × × × × × × × × × × ×		14.23m: J10°, 30mm clay 14.23-14.43m: (x4) B0°- 5°, ironstained 14.59m: B0°, 20mm clay 14.74-14.8m: extremely	c	100	0	PL(A) = 2.1MPa
40 41	15.15 - 16	extremely low to very low strength, extremely weathered, light grey brown, igneous rock (dyke) ROTARY DRILLING				low strength dyke 14.78-15.15m; extremely low strength dyke	R		Constitution of the Consti	
39	-17 17.2	IGNEOUS ROCK (DYKE) - high to				չ 17.2m: J, subvertical,				
38	-18 18.3	very high strength, fresh stained, fractured to slightly fractured, light greenish grey and brown, igneous rock (dyke). Some medium strength bands Bore discontinued at 18.3m		× × × × × × × × × × × × × × × × × × ×		healed, ironstained 17.3m: J70°, healed, ironstained 17.4-17.6m: J, subvertical, partially healed, fragmented into 0.05mm intervals 17.74m: J85°, partially	С	100	63	PL(A) = 9.2MPa PL(A) = 3MPa PL(A) = 0.7MPa
37	-19 -19					healed 17.85m: J70° 18.07m: J65°, rough 18.21-18.3m: J75°, clay smear & fragmented into 0.03mm intervals		muin me evidor il		;
	•	, , , , , , , , , , , , , , , , , , , ,								

RIG: Bobcat DRILLER: Steve S LOGGED: SI CASING: HW to 3.6m

TYPE OF BORING: Solid flight auger to 3.6m; NMLC-Coring to 7.0m; Rotary to 9.5m; NMLC-Coring to 13.0m; Rotary to 14.5m; NMLC-Coring to 15.15m WATER OBSERVATIONS: No free groundwater observed whilst augering

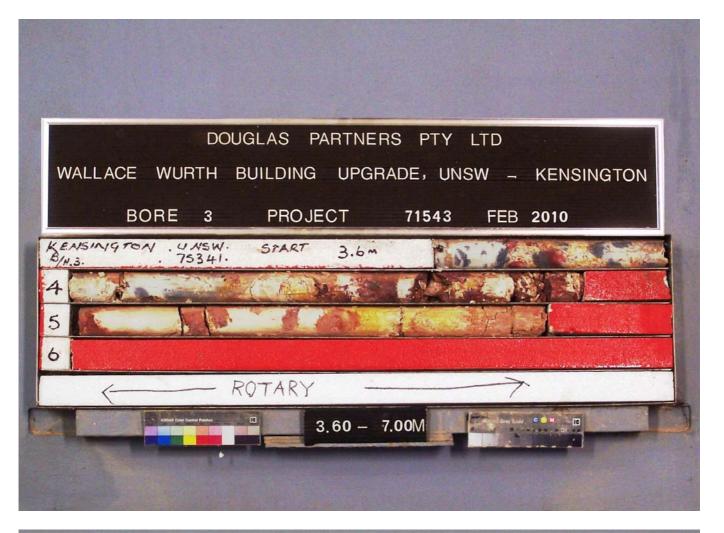
REMARKS: Groundwater well installed to 18.0m. Water measured in well at 4.9m on 5/3/10

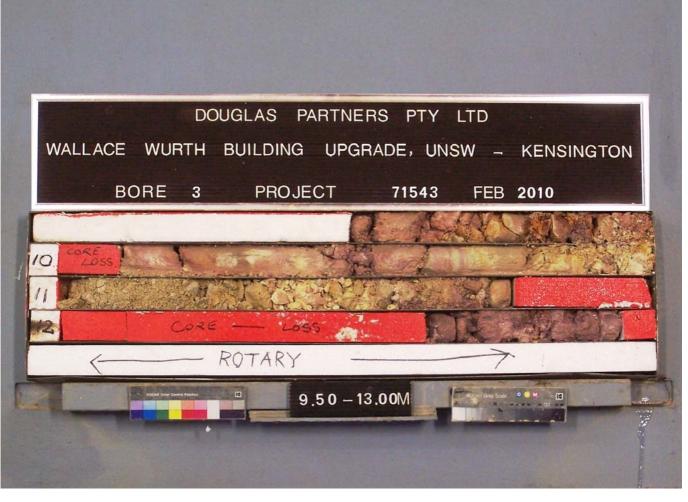
SAMPLING & IN SITU TESTING LEGEND

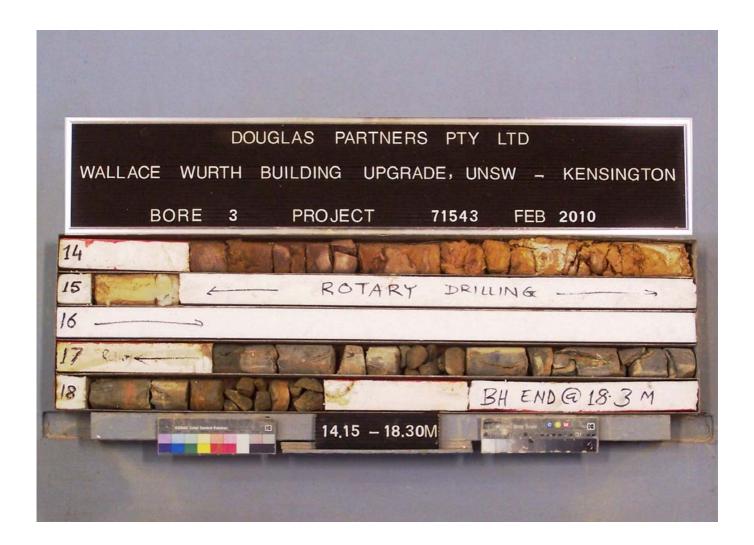
- Auger sample Disturbed sample
- Bulk sample
 Tube sample (x mm dia.)
 Water sample Core drilling
- Plo Pocket penetrometer (kPa)
 Photo ionisation detector
 Standard penetration test
 PL Point load strength is (50) MPa
 V Shear Vane (kPa)
 Water seep
 Water level











CLIENT: Bovis Lend Lease

PROJECT: Wallace Wurth Redevelopment LC

SURFACE LEVEL: 55.9 AHD BORE No: 5

EASTING: PROJECT No: 71543 **DATE:** 01 Feb 10 SHEET 1 OF 1

OCATION:	Cnr High & Botany St,	UNSW, Kensington	NORTHING:	
			DIP/AZIMUTH:	90°/

	Do		Description	Degree	e of ering ⊖			ock engt	h	7.	Fracture Spacing	Disco	ntinuities				n Situ Testing
묎	(n	pth n)	of Strata	Degree Weathe	Srapi	X X X X X X X X X X	Stre	Aedium iigh	ery High	Water	(m)	B - Bedding S - Shear	J - Joint D - Drill Break	Туре	Core Rec. %	gg%	Test Results & Comments
55	-1	0.2	FILLING - dark grey brown, fine grained, silty sand filling (topsoil) with some organic matter and a trace of concrete cobble and crushed sandstone fragments FILLING - brown, fine to medium grained, sand filling with some silt and gravel and a trace of stag and ceramic tile fragments, humid FILLING - light brown, medium grained, sand filling with some crushed sandstone											A A A A/E A/E S			3,8,8 N = 16
54	-2	2.0	SAND - medium dense, orange and light grey, fine to medium grained sand, moist						1					A/E A			6,10,12
53	-3													3	None and the second		N = 22
52	-4													s	-		9,10,13 N = 23
51	-5	5.3	SANDSTONE - very low strength, orange brown, medium grained sandstone					! ! ! ! !				stated, roo	ess otherwise k is fractured th planar pping at 0°-	s			20,20/25mm refusal
90	-6	5.8	SANDSTONE - medium then high strength, slightly then moderately weathered, slightly fractured, light grey brown then red brown, medium to coarse grained sandstone										, ironstained				PL(A) = 0.5MPa PL(A) = 0.4MPa
49	7											clay 6.65m: B0 sandy clay	/ 8m: (x2) B0°-	С	100	99	PL(A) = 1.1MPa
48	-8																PL(A) = 1.1MPa
47	9	8.8	Bore discontinued at 8.8m				;					5 5 2 2					
-84	<u> </u>			<u>Liii</u>	<u>i i L</u>		لنا		ĹĹ					1			

RIG: Bobcat

DRILLER: Steve S

LOGGED: St

CASING: HW to 5.8m

TYPE OF BORING: Solid flight auger to 5.5m; Rotary to 5.8m; NMLC-Coring to 8.8m WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

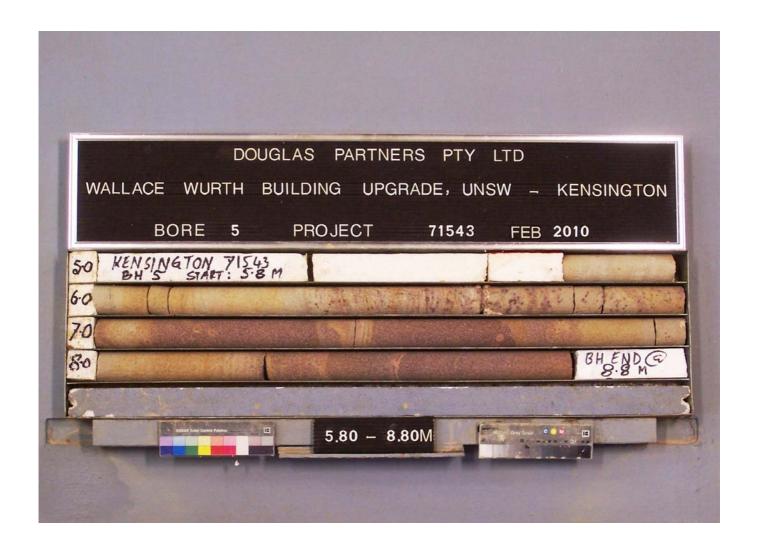
SAMPLING & IN SITU TESTING LEGEND

Auger sample
Disturbed sample
Bulk sample
Tube sample (x mm dia.)
Water sample
Core drilling

pp Pocket penetrometer (kPa)
Photo tonisation detector
Standard penetration test
PL Point load strength 1s(50) MPa
V Shear Vane (kPa)
V Water seep
Water level







CLIENT: Bovis Lend Lease

PROJECT: Wallace Wurth Redevelopment LOCATION: Cnr High & Botany St, UNSW, Kensington

SURFACE LEVEL: 55.8 AHD BORE No: 7

EASTING: PROJECT No: 71543
NORTHING: DATE: 29 Jan 10
DIP/AZIMUTH: 90°/-- SHEET 1 OF 1

		Description	Degree of Weathering	<u></u>	Rock	Fracture	Discontinuities	Sa	mnlir	na & I	In Situ Testing
묍	Depth	of	Weathering	H B	Strength 5	Spacing					
	(m)	Strata	EW MW SW FS	G L	Strength High Covery High Water Water 0.01	85 85 (m)	B - Bedding J - Joint S - Shear D - Drill Break	Туре	Core	RQD %	& Comments
54 55	0.1 0.4 1 1.5	FILLING - brown, fine grained, silty sand filling (topsoil) with some gravel and rootlets FILLING - brown sand and crushed sandstone filling, humid FILLING - light to dark brown, fine to medium grained sand filling, with a trace of gravel, humid to moist 1.3-1.45m: concrete fragments FILLING - light brown, fine to medium grained sand with some sandstone gravel (possible natural)						A/E A/E A/E A/E			
23	3 3.0-	SAND - medium dense, orange brown, medium grained sand, moist						S A A			4,5,5 N = 10
51 52	4 4.9- 5	SANDSTONE - very low strength,					Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping at 0°- 10° or joints	s	i save		11,15,20/10mm refusal
49 50	5.2- 5.68- 6	light grey brown, medium grained sandstone SANDSTONE - medium strength, moderately weathered, fractured to slightly fractured, red brown, medium grained sandstone SANDSTONE - medium then high strength, slightly weathered and fresh, unbroken, light grey and red brown, medium to coarse grained, massive sandstone					5.42m: B5°, clay veneer 5.58m: B10°, 10mm sandy clay 5.63m: B5°, 50mm clay 5.68-8.35m: massive sandstone	С	100	97	PL(A) = 0.6MPa PL(A) = 0.8MPa
47 48	8 8.35 9	Bore discontinued at 8.35m									PL(A) = 0.9MPa PL(A) = 1.4MPa
46											

RIG: Bobcat DRILLER: Steve S LOGGED: SI CASING: HW to 5.0m

TYPE OF BORING: Solid flight auger to 5.2m; NMLC-Coring to 8.35m WATER OBSERVATIONS: No free groundwater observed whilst augering REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A Auger sample
D Disturbed sample
B Bulk sample
U, Tube sample (x mm dia.)
W Water sample
C Core drilling

D I LESTING LEGENU
pp Pocket penetrometer (kPa)
PID Photo ionisation detector
S Standard penetration test
PL Point load strength Is(50) MPa
V Shear Vane (kPa)
D Water seep Water level







CLIENT: The University of New South Wales

PROJECT: **Proposed Building Upgrade** LOCATION: UNSW, Botany Road, Kensington SURFACE LEVEL: 55.1 AHD^

EASTING: PROJECT No: 73492 **NORTHING: DATE:** 7/6/2013 SHEET 1 OF 1

BORE No: 5

DIP/AZIMUTH: 90%--

	Depth (m)	of		.≌ Strength 5	Chaoina					n Situ Testing
G -			Weathering	Graphic Log Ex Low Low Very Low Medium High Kx High Ex High Water	Spacing (m)	B - Bedding J - Joint	Type	ore c. %	RQD %	Test Results &
6		Strata	M M M M M M M M M M M M M M M M M M M	Gra Ex Low Very Low Medium High Very High Ex High	0.05 0.10 1.00	S - Shear F - Fault	۲	O &	ě.	Comments
Ė	0.1	CONCRETE FILLING - yellow brown, sand and crushed sandstone filling, humid FILLING - poorly compacted, brown,					A/E E			
- 1		fine to medium grained sand filling with some sandstone gravel and a trace of organic matter, humid					E			
		- with some brick fragments at 1.5m					E S			5,3,2 N = 5
ล-2	2						E			
76 - 3	3						E			2,2,4
	3.4	SAND - loose becoming medium dense, yellow brown, fine to medium grained sand, humid	-					_		N = 6
5-4	ļ						E			
6-5	5						S	_		5,10,15 N = 25
-6	3					Unless otherwise stated rock is fractured along				
5	6.2 6.47	SANDSTONE - extremely low then very low strength, light grey, fine to]	(1.0) (1.1)		rough planar bedding dipping at 0°-10°	S			10,35/150mm refusal
- 7	,	medium grained sandstone SANDSTONE - high strength, slightly then moderately weathered, slightly fractured and unbroken, light grey and light purple brown, medium				7.11m: B0, fe, cly co				PL(A) = 1.1
-		to coarse grained sandstone				1mm				PL(A) = 1.3
÷ - 8	3					8.35m: B20, cly vn	С	100	100	
9)									PL(A) = 1.7
4		9.05m to 9.58m: fresh			i ii i i I II I I I II I I					PL(A) = 1.8
ŧ	9.58	Bore discontinued at 9.58m								

DRILLER: Tightsite CASING: HQ to 6.3m RIG: Terrier LOGGED: SI/AG

TYPE OF BORING: Diatube to 0.1m, hand auger to 1.5m, solid flight auger to 6.47m, NMLC-Coring to 9.58m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: \(^Surface\) level interpolated from Dwg No K-FME-2013.0002, Rev A, 31.5.13.

	SAM	IPLING	6 & IN SITU TESTING	LEGE	ND
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	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 ls(50) (MPa)
С	Core drilling	WÎ	Water sample	pp`	Pocket penetrometer (kPa)
Ď	Disturbed sample	⊳	Water seep	S	Standard penetration test
E	Environmental sample	¥	Water level	V	Shear vane (kPa)





CLIENT: The University of New South Wales Proposed Building Upgrade PROJECT:

UNSW, Botany Road, Kensington LOCATION:

SURFACE LEVEL: 52.8 AHD^

EASTING: PROJECT No: 73492

NORTHING: DATE: 6/6/2013 **DIP/AZIMUTH:** 90%--SHEET 1 OF 1

BORE No: 6

			Description	Degree of Weathering	. <u>o</u>	Rock Strength		Fracture	Discontinuities	Sa	amplii	ng & I	n Situ Testing
꿉		Depth (m)	of	Trouming	Graphic	Ex Low Very Low Low Medium High Very High Ex High	Water	Spacing (m)	B - Bedding J - Joint	Туре	ore %	RQD %	Test Results &
		` ′	Strata	EW HW EW SW SW SW FR	Ŋ	Ex Lo Very Wedit Very Ex His	^		S - Shear F - Fault	Ту	Second	RC %	Comments
-	-	0.08	BRICK PAVING	.	\times					D/E*			
ŀ	ŀ	0.5	FILLING - brown and yellow brown, fine to medium grained sand filling		\bowtie					В			
-	Ē	0.5	with a trace of gravel and rootlets, humid							D/E	}		
- 52	ŀ		SAND - apparently loose, yellow										
E	F.	1 1.0	brown, fine to medium grained sand, humid							D/E	1		
ŀ	ŀ		SAND - loose to medium dense					 		E			
ŀ	Ē		becoming medium dense, yellow brown, fine to medium grained sand,							s	1		3,3,7
-5-	H	_	humid										N = 10
F	Ę	2						 		_			
ŀ	Ė									A			
-	F												
-22	ŀ	3						 					
-	Ē,	3								s			4,8,14
Ė	Ė												N = 22
<u> </u>	ŀ												
-8	ŀ	4					Ţ						
ŀ	-	•	- wet below 4.0m										
ŀ	Ē						06-06-13						
-84	ŧ	4.0								s			4,6,20 N = 26
4	H	4.8 4.9	SANDSTONE - extremely low strength, light grey and orange		****								PL(A) = 1.1
ŧ	Ė		brown, fine to medium grained sandstone										
ŀ	ŀ		SANDSTONE - high strength,										
-4	Ē		moderately then slightly weathered, slightly fractured and unbroken, light										PL(A) = 1.6
•	H	6	purple yellow brown and light grey, medium to coarse grained										
E	Ē		sandstone										
ŀ	ŀ									С	100	100	PL(A) = 1.4
- 4 ₋	E												()
-	ŀ	7		▎┆┆ <mark>┖</mark> ┾╗┆┆									
-	-												PL(A) = 1.4
ŧ	Ė												(
-8	F							╎╎╏	7.68m: B10, cly vn				
ŧ	Ė	8 8.0	Bore discontinued at 8.0m										
ŀ	ŀ												
ŧ	Ė							 					
-4	ŧ												
ŧ	Ė,	9											
ŀ	ŀ							 					
ŧ	Ē												
-84	ŧ												
Ĺ	1												

DRILLER: Tightsite LOGGED: SI/AG CASING: HQ to 4.9m **RIG:** Terrier

TYPE OF BORING: Vacuum excavation to 1.4m, solid flight auger to 4.9m, NMLC-Coring to 8.0m

WATER OBSERVATIONS: Free groundwater observed at 4.0m whilst augering

REMARKS: *Environmental sample duplicate BD2/050613, ^surface level interpolated from Dwg No K-FME-2013.0002, Rev A, 31.5.13.

SAMPLING & IN SITU TESTING LEGEND A Auger sample
B Bulk sample
BLK Block sample
C Core drilling
D Disturbed sample LEGEND
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)
Standard penetration test
V Shear vane (kPa) Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level Environmental sample





CLIENT: LendLease Building Pty Ltd

PROJECT: Randwick Campus Redevelopment **LOCATION:** Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 55.2 AHD

EASTING: 337086 **NORTHING:** 6245508.3 **DIP/AZIMUTH:** 90°/-- BORE No: 2

PROJECT No: 72505.11 **DATE:** 18 - 20/9/2017

SHEET 1 OF 2

.	Description	Degree of Weathering	al,≌_ Strength ೄ	Fracture	Discontinuities	Sa	ampli	ng & I	n Situ Testing
Depth (m)	Of	Degree of Weathering	Graphic Graphic Graphic Medium	Spacing (m)	B - Bedding J - Joint	Type	ore %	RQD %	Test Results &
	Strata	FS SW HW	Grap Low Low Medium High Very High Very High Way Way	0.05 0.10 1.00	S - Shear F - Fault	5	S &	Z "	Comments
0.0	[(p. 7			Α			
0.	to medium grained igneous gravel					A*			
- - 1	FILLING - grey-brown, fine to medium sand filling with trace fine gravel and glass fragments, damp					_A_			
-	SAND - medium dense, yellow-brown, medium grained sand, damp					A			
-2	- with some dark brown silty sand bands to 2.0m					s	-		4,7,7 N = 14
-							-		N = 14
-3 -3									
-									
-4 -1					Note: Unless otherwise	s	-		6,11,13 N = 24
_					stated, rock is fractured along rough planar bedding dipping 0°- 20°				
-5 5. -5 5.									
J.	light yellow-brown, medium grained sandstone				5.18m: B0°- 5°, ro, un, fe stn				PL(A) = 0.4
-	SANDSTONE - medium strength, slightly weathered, slightly fractured then unbroken, light yellow-brown				5.27m: B5°, ro, pl, cln				PL(A) = 0.6
-6 	medium grained sandstone. Typically indistinctly bedded with some distinct ironstained beds					С	100	92	PL(A) = 0.7
-8					»>				PL(A) = 0.6
-9						С	100	100	PL(A) = 0.9
-	9.47-9.7m: ironstained cross bedding at 70°- 45°				9.47m: B5°, he, fe stn				PL(A) = 0.9

RIG: DT100 DRILLER: SS LOGGED: ARM/RMM CASING: HW to 2.5

TYPE OF BORING: Diatube to 0.05m; Non-destructive drilling to 1.9m; Solid flight auger (TC-bit) to 2.0m; Rotary to 5.1m; NMLC-Coring to 19.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD1/20170918 taken at 0.3m to 0.4m

SAMPLING & IN SITU TESTING LEGEND

A Auger sample
B Bulk sample
B Bulk Slock sample
C C Core drilling
D Disturbed sample
E Environmental sample

SAMPLING & IN S11 D LESTING
G Gas sample
P Piston sample
V Water sample (x mm dia.)
W Water sample
Water seep
Water level

LEGEND
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)



CLIENT: LendLease Building Pty Ltd Randwick Campus Redevelopment PROJECT: LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 55.2 AHD **EASTING**: 337086

PROJECT No: 72505.11 **DATE:** 18 - 20/9/2017 **NORTHING**: 6245508.3 **DIP/AZIMUTH:** 90°/--SHEET 2 OF 2

BORE No: 2

	Donth	Description	Degree of Weathering	je -	Rock Strength อั	Fracture Spacing	Discontinuities	Sa	ampli	ng & I	n Situ Testino
!	Depth (m)	of	Weathering	raph Log	Low High Mat	(m)	B - Bedding J - Joint	Type	ore %:	RQD %	Test Result &
		Strata	EW HW EW		Ex Low Med High Very Very Ex H	0.05	S - Shear F - Fault	F	QÃ	œ ¸	Comment
	10.66 ·	SANDSTONE (continued) SANDSTONE - medium strength, fresh, slightly fractured, light grey medium and fine grained sandstone. Typically indistinctly bedded					10.63m: Ds, 30mm				PL(A) = 0.7
	11.68 11.88 12	SILTSTONE - low strength, slightly weathered, dark grey siltstone with approximately 30% sandstone beds SANDSTONE - high strength, fresh, unbroken, light grey to grey, medium and coarse grained sandstone. Typically indistinctly bedded and massive					11.46m: B5°, ro, pl, cly vn 11.69m: Ds, 10mm 11.87m: Ds, 10mm	С	100	97	PL(A) = 0.1 PL(A) = 1.2
	13						13.48m: Ds, 30mm 13.68m: Ds, 20mm				PL(A) = 0.
	15						15.09-15.28m: B (x4) 10°, pl, cly, 5mm	С	100	94	PL(A) = 1.2
	16	15.34-15.8m: some distinct siltstone beds					15.72m: B10°, pl, he 15.76m: Ds, 20mm				PL(A) = 1.2
	17										PL(A) = 1.3
	18						17.63m: Ds, 10mm	С	100	99	PL(A) = 1.
	19 19.0 ·	Bore discontinued at 19.0m - target depth reached									PL(A) = 1.2
Ė											

RIG: DT100 DRILLER: SS LOGGED: ARM/RMM CASING: HW to 2.5

TYPE OF BORING: Diatube to 0.05m; Non-destructive drilling to 1.9m; Solid flight auger (TC-bit) to 2.0m; Rotary to 5.1m; NMLC-Coring to 19.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD1/20170918 taken at 0.3m to 0.4m

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample

LEGEND
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)









CLIENT: LendLease Building Pty Ltd **PROJECT:** Randwick Campus Redevelopment

LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.6 AHD

EASTING: 337098.7 **NORTHING**: 6245586 **DIP/AZIMUTH:** 90°/--

BORE No: 3

PROJECT No: 72505.11 DATE: 21-9-2017 SHEET 1 OF 2

Depth	Description	Degree of Weathering	Rock Strength	Fracture Spacing	Discontinuities		· · · ·		n Situ Testing
(m)	of Strata	Weathering	Graphic Log Log Wedum High High Water Water High Water 1000 Water	(m)	B - Bedding J - Joint S - Shear F - Fault	Туре	Core Rec. %	RQD %	Test Results &
0.03	ASPHALTIC CONCRETE - typically <10mm diameter ROADBASE - dark grey, sandy		0			A/E			Comments
	gravel, igneous, angular, up to 30mm diameter, damp				Note: Unless otherwise stated, rock is fractured	A/E			
1 1.0	FILLING - light brown to brown, fine to medium grained sand filling with traces of fine gravel, damp				along rough planar bedding dipping 0°- 20°	A/E	-		
1.5 1.6	earthenware fragments from 0.7m SAND - apparently medium dense,	-							
-2	yellow-brown medium grained sand, damp SANDSTONE - very low strength,				1.87m: B0°, ro, un, fe stn 2.06-2.09m: B10°, ro,				PL(A) = 0.32
-3	light yellow-brown, medium grained sandstone SANDSTONE - medium strength, slightly weathered, slightly fractured, light grey, medium grained				un, cly, 5mm '2.14m: B5°, ro, un, cly & organic material, 5mm '2.22m: Ds, 10mm '2.56-2.58m: B (x2) 5°, ro, un, fe stn	С	100	81	PL(A) = 0.48
3.67	sandstone with some ironstaining. Typically indistinctly bedded				2.68m: B5°, ro, un, cly, 5mm 3.16m: B5°, pl, partially he, fe stn 3.52m: J30°, un, ti				
4 4.0	SANDSTONE - low and very low strength, moderately then slightly weathered, light grey and grey, fine and medium grained sandstone				3.68m: B5°, ro, un, fe stn 13.68m: Ds, 30mm				PL(A) = 0.12 PL(A) = 0.14
-5	SANDSTONE - low strength, slightly weathered, slightly fractured, light grey, medium grained sandstone. Typically indistinctly bedded				13.72m: J60°- 70°, ro, un, cln 3.85m: Ds, 10mm 3.9m: J60°- 70°, ro, un, cln 3.93m: Ds, 70mm 14.1m: Ds, 10mm				,
5.31	SANDSTONE - high strength, slightly weathered then fresh, slightly fractured, light grey medium and coarse grained sandstone. Typically indistinctly bedded				4.22-4.5m: B (x6) un, ti, fe stn, cly, 5-10mm 5.09m: Ds, 10mm 5.3m: Cs, 10mm 5.71m: B10°, ro, pl, fe stn	С	100	85	PL(A) = 0.26 PL(A) = 1.42
-7	6.42m:-6.52m: very low strength band - distinctly bedded from 6.54m				6.41m: Cs, 10mm 6.52m: Cs, 20mm				PL(A) = 0.08 PL(A) = 1.88
	75				7.14-7.53m: B (x9) 10°, ro, pl, cln or cbs stn	С	100	24	PL(A) = 1.33
7.7	- medium strength from 7.5m SANDSTONE - medium then medium to high strength, fresh, slightly fractured to unbroken, light grey to grey, medium grained				7.78m: B5°, ro, un, cln 7.93m: Ds, 20mm				PL(A) = 0.62
9	sandstone with some carbonaceous flecks. Typically massive				8.55m: B0°, ro, un, cly, 5mm	С	100	99	PL(A) = 0.52
-					9.32m: B0°, ro, un, cly, 5mm				PL(A) = 1.1

RIG: DT100 DRILLER: SS LOGGED: RMM CASING: HW to 1.6m

TYPE OF BORING: Solid flight auger (TC-bit) to 0.03m; Non-destructive drilling to 1.5m; Solid flight auger (TC-bit) to 1.6m; NMLC-Coring to 16.0m WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

	SAMP	LING	& IN SITU TESTING	LEGE	ND
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppr
В	Bulk sample	Р	Piston sample	PL(A)	Point load axial test Is(50) (M
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D)	Point load diametral test ls(50
С	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	\triangleright	Water seep	S	Standard penetration test
E	Environmental sample	Ā	Water level	V	Shear vane (kPa)

pm) MPa) 50) (MPa) Pocket penetrometer (kPa) Standard penetration test Shear vane (kPa)



CLIENT: LendLease Building Pty Ltd
PROJECT: Randwick Campus Redevelopment

LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.6 AHD **EASTING:** 337098.7

NORTHING: 6245586 DIP/AZIMUTH: 90°/-- BORE No: 3

PROJECT No: 72505.11 **DATE:** 21-9-2017 **SHEET** 2 OF 2

		Description	Degree of Weathering	. <u>o</u>	Rock Strength ់ក្	Fracture	Discontinuities	Sa	amplii	ng & I	n Situ Testing
귐	Depth (m)	of	Weathering	raph	Strength Medium Medium Very High Very High Kery High Very High Ex High	Spacing (m)	B - Bedding J - Joint	Type	Core Rec. %	g,	Test Results &
	` ,	Strata	EW HW EW SW	9	Very Very Very Very	0.05	S - Shear F - Fault	Ļ	Seg	8,	Comments
42 43 44	-11	SANDSTONE - medium then medium to high strength, fresh, slightly fractured to unbroken, light grey to grey, medium grained sandstone with some carbonaceous flecks. Typically massive (continued) 10.36-10.5m: low strength band					10.45m: B0°, ro, un, cln 12.18-12.2m: B (x2) 0°- 10°, pl, ro, cln	С	100	99	PL(A) = 0.17 PL(A) = 0.82 PL(A) = 0.89 PL(A) = 1.16
	- 13										PL(A) = 1.2
- 4	- - - - - 14										
40	14.82	SANDSTONE - medium to high					14.78m: Ds, 40mm	С	100	96	PL(A) = 1.09
39	-15	strength, fresh, slightly fractured, light grey medium grained sandstone with some medium strength bands. Typically distinctly bedded					ղ 15.67m: J30°- 40°, ro,				PL(A) = 1.21
	- 16 16.0 ·	Bore discontinued at 16.0m - target depth reached					un, cln 15.75-15.9m: B (x2) 10°, ro, pl, cln				PL(A) = 0.76
38	-17										
37	- 18										
35	-19										

RIG: DT100 DRILLER: SS LOGGED: RMM CASING: HW to 1.6m

TYPE OF BORING: Solid flight auger (TC-bit) to 0.03m; Non-destructive drilling to 1.5m; Solid flight auger (TC-bit) to 1.6m; NMLC-Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

	SAME	PLING	& IN SITU TESTING	3 LEGE	ND
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	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 ls(50) (MPa)
С	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	\triangleright	Water seep	S	Standard penetration test
Ε	Environmental sample	Ī	Water level	V	Shear vane (kPa)









CLIENT: LendLease Building Pty Ltd **PROJECT:** Randwick Campus Redevelopment

Hospital Road and High, Magill and Botany LOCATION:

Streets, Randwick

SURFACE LEVEL: 51.9 AHD

EASTING: 337044.9 **NORTHING**: 6245563 **DIP/AZIMUTH:** 90°/--

BORE No: 4

PROJECT No: 72505.11 **DATE:** 19 - 21/9/2017

SHEET 1 OF 2

		Description	Degree of Weathering	<u>.0</u>	Rock Strength	Fracture	Discontinuities	Sa	amplii	ng & I	n Situ Testing
씸	Depth (m)	of	Weathering	raph	Ex Low Very Low Low Medium Medium High Very High Ex High Ex High	Spacing (m)	B - Bedding J - Joint	Туре	% cle	RQD %	Test Results &
		Strata	EW HW EW	O	Ex Low Medical First Low Very Very Very Very Very Very Very Very	0.00	S - Shear F - Fault	Þ	2 %	χ»,	Comments
	0.04) 0.07/ 0.2/	ASPHALTIC CONCRETE (typically 10mm diameter) ASPHALTIC CONCRETE (typically 20mm diameter)	-					A			
51	0.8 · - 1	ROADBASE - dark grey, angular, igneous gravel typically 40-80mm diameter, slight hydrocarbon odour		\bigotimes				A			
		FILLING - orange-brown, medium grained sand filling with some sandstone gravel and a trace of clay (ripped sandstone)						Α	-		
20	-2	SAND - pale yellow-brown, fine to medium grained sand, damp			.			_A_			
	2.6	2.2m: brown SAND - medium dense to dense,						s	-		8,14,17 N = 31
49	-3	orange, fine to medium sand with some clay, damp					Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 20°		-		N = 31
48	3.5 · 3.65 ·	SANDSTONE - extremely low to very low strength sandstone SANDSTONE - low strength, slightly					3.75m: B0°, pl, ro, cln				PL(A) = 0.22
	-4 4.15	weathered, fractured to slightly fractured, pale brown, medium to coarse grained sandstone SANDSTONE - medium strength,	 				4.12-4.14m: Ds, 20mm, cly	С	100	98	-()
47	- 5	slightly weathered then fresh, slightly fractured and fractured, medium to coarse grained sandstone					1 5 04 v P0% of v				PL(A) = 0.76
46		- limonite staining to 4.40m 5.5m: distinct irregular bedding dipping 15°- 20°					5.21m: B0°, pl, ro, co, sandy clay, 5mm 5.23m: Ds, 15mm, cly 5.71m: B20°, pl, vn, co, 5mm sandy cly				PL(A) = 0.71
	-6	6.4m: indistinct irregular bedding dipping 0°- 20°					5.92m: B20°, pl, ro, stn, cly 5.96m: B20°, pl, ro, vn, cly 6.14m: B20°, pl, ro, vn,				()
45	- 6.91 - 7	SANDSTONE - medium strength, fresh, slightly fractured and unbroken, pale grey, medium to coarse grained sandstone, massive,					cly	С	100	99	PL(A) = 0.71
44	-8	trace carbonaceous flecks					7.63m: Ds, 15mm sandy clay				PL(A) = 0.66
43	- 9						>>	С	100	95	PL(A) = 0.95
42											PL(A) = 0.73

RIG: Bobcat DRILLER: GM LOGGED: ARM CASING: HW to 3.65m

TYPE OF BORING: Diatube to 0.08m; NDD to 1.7m; Solid flight auger (TC-bit) to 3.65m; NMLC-Coring to 17.31m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 4.0 m, screen to 7.0 m, gatic cover at surface, asphalt to 0.2 m, sand & cement to 3.0 m, bentonite to 3.8 m, sand to 7.0 m, bentonite to 8.0 m, NDD = Non-destructive drilling

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample

LECEND
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)



CLIENT: LendLease Building Pty Ltd Randwick Campus Redevelopment PROJECT: LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 51.9 AHD

EASTING: 337044.9 **NORTHING**: 6245563 **DIP/AZIMUTH:** 90°/--

BORE No: 4

PROJECT No: 72505.11 **DATE:** 19 - 21/9/2017

SHEET 2 OF 2

귇	Depth (m)	Description			Fracture	Discontinuities				n Situ Testing
-		of	Weathering Section 1	Strength Needium High Ex High	Spacing (m)	B - Bedding J - Joint	Туре	ore c. %	RQD %	Test Results &
ŀ		Strata	MW HW SW HW EW	EX L Medi High Kery Very	0.05	S - Shear F - Fault	Ę.	0 g	æ -	Comments
41	- - - - - -11	SANDSTONE - medium strength, fresh, slightly fractured and unbroken, pale grey, medium to coarse grained sandstone, massive, trace carbonaceous flecks (continued)				10.91-10.94m: Ds, 30mm, cly 11.03-11.06m: Ds, 30mm cly	С	100		PL(A) = 0.61
40	- - -12 12.0	SANDSTONE - medium to high strength, fresh, slightly fractured to unbroken, pale grey, medium to coarse grained sandstone, indistinct				12.42m: Ds, 10mm,				PL(A) = 0.69
39	- - - -13 - -	bedding typically dipping 10°- 20°				sandy cly 13.29-13.31m: 20mm	С	100	98	PL(A) = 1.1
38	- - - 14					sandy cly 13.51-13.54m: Ds, 30mm, sandy cly				PL(A) = 0.91
37	- 14.6 - 15 - 15 - 15	SANDSTONE - high then medium strength, fresh, unbroken, pale grey, fine to medium grained sandstone, occasional carbonaceous laminations and flecks				14.59-14.64m: Ds, 50mm, sandy cly 14.83m: B0°- 5°, un, sm, vn, cbs				PL(A) = 1.33
36	- - - 16 - -						С	100	94	PL(A) = 0.59
32	- 17 - 17 - 17.31	16.78-16.97m: siltstone clasts and laminations, slightly fractured Bore discontinued at 17.31m				16.85m: B10°, un, sm, co, cly, 5-10mm 16.94-16.97m: Ds, 30mm, sandy cly				PL(A) = 0.76
34	- 18 - 18	- target depth reached								
33	- - 19 - - - - -									

RIG: Bobcat DRILLER: GM LOGGED: ARM CASING: HW to 3.65m

TYPE OF BORING: Diatube to 0.08m; NDD to 1.7m; Solid flight auger (TC-bit) to 3.65m; NMLC-Coring to 17.31m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 4.0 m, screen to 7.0 m, gatic cover at surface, asphalt to 0.2 m, sand & cement to 3.0 m, bentonite to 3.8 m, sand to 7.0 m, bentonite to 8.0 m, NDD = Non-destructive drilling

SAMPLING & IN SITU TESTING LEGEND A Auger sample B Bulk sample BLK Block sample

Core drilling
Disturbed sample
Environmental sample

LECEND
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) Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level









CLIENT: LendLease Building Pty Ltd **PROJECT:** Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.6 AHD **EASTING:** 336990.5

PROJECT No: 72505.11 **NORTHING:** 6245617.7 **DATE:** 6-10-2017 DIP/AZIMUTH: 90°/--SHEET 1 OF 3

BORE No: 7

		Description	Degree of Weathering	. <u>o</u>	Rock Strength	Fracture	Discontinuities	Sa	ampli	ng & I	n Situ Testing
R	Depth (m)	of	Weathering	raph	Strength Nedium	Spacing (m)	B - Bedding J - Joint	Туре	ore S.	RQD %	Test Results &
		Strata	E ES M H EW	O	Kery Very Ex H	0.10	S - Shear F - Fault	F	QÃ	<u>ቖ</u> 。	Comments
	- 0.2	FILLING - brown, fine to medium grained sand filling with traces of rootlets, humid SAND - loose to medium dense becoming medium dense, yellow-brown mottled orange-brown fine to medium grained sand, damp						A/E A/E S	,		4,5,5 N = 10
53	-2										
52	-3						Note: Unless otherwise	S	_		7,10,10 N = 20
51	- - - - - 3.9	3.5m: becoming orange-brown with traces of clay SANDSTONE - low to medium					stated, rock is fractured along rough planar bedding dipping 0°- 20°		-		10/50mm refusal
	4.1	strength, orange-brown and grey medium to coarse grained						S			bouncing PL(A) = 0.31
48 50	- 5 5.09 - 5.14/	sandstone SANDSTONE - low to medium strength, slightly weathered, slightly fractured, orange-brown and light grey, medium to coarse grained sandstone. Bedding typically indistinct and ironstained SANDSTONE - medium strength, slightly weathered, slightly fractured to unbroken, orange-brown and light grey, medium to coarse grained sandstone 5.14-5.7m: cross bedding at approximately 40°, bedding typically indistinct					4.32m: Cs, 10mm 4.77m: Cs, 5mm 4.91m: Cs, 20mm 4.95m: Cs, 15mm 5.09m: CORE LOSS: 50mm	С	98	97	PL(A) = 0.35 PL(A) = 0.19 PL(A) = 0.72 PL(A) = 0.75 PL(A) = 0.81
46 47	7 - - - - - - - - - - - - - - - - - - -	7.77-7.94m: extremely low to very low strength ironstained seam SANDSTONE - low to medium strength, slightly weathered, slightly fractured, light grey, medium grained sandstone. Bedding typically indistinct					7.77m: Ds, 170mm 8.26m: B0°- 10°, un, cly, 5mm 8.62m: B0°- 10°, ro, un, cly vn	С	100	92	PL(A) = 0.25 PL(A) = 0.26
45	- 9 - - - - - - - -	SANDSTONE - see next page					9.42m: Cs, 60mm				PL(A) = 0.17 PL(A) = 0.48

RIG: DT100 DRILLER: RKE LOGGED: RMM CASING: HW to 4.0m; HQ to 4.1m

TYPE OF BORING: Solid flight auger (TC-bit) to 4.0m; Rotary to 4.1m; NMLC-Coring to 20.47m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed (screen 4.0-20.47m; gravel 5.0-20.47m; bentonite 3.5-5.0m; backfill surface to 3.5m with concrete set gatic cover). Groundwater well purged >3 well volumes following installation

Dundwater monitoring vvc...
ic cover). Groundwater well purged >5 vvc...

SAMPLING & IN SITU TESTING LEGEND

G Gas sample
P Piston sample
U, Tube sample (x mm dia.)
W Water sample
Water seep
Water seep
Vater seep
V Standard penetration test
V Shear vane (kPa) A Auger sample
B Bulk sample
BLK Block sample
C Core drilling
D Disturb Core drilling
Disturbed sample
Environmental sample



CLIENT: LendLease Building Pty Ltd Randwick Campus Redevelopment PROJECT: LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 54.6 AHD EASTING: 336990.5

NORTHING: 6245617.7 **DIP/AZIMUTH:** 90°/--

BORE No: 7

PROJECT No: 72505.11 **DATE:** 6-10-2017 SHEET 2 OF 3

		Description	Degree of Weathering	Rock ⊝ Strength	Fracture	Discontinuities				n Situ Testing
집	Depth (m)	of Strata	Weathering A A A A S S S S S S S S S S S S S S S	Graphic Log Ex Low Medium Medi	Spacing (m) 00:001	B - Bedding J - Joint S - Shear F - Fault	Type	Core Rec. %	RQD %	Test Results & Comments
44	-11 11.12	SANDSTONE - medium strength, slightly weathered to fresh, slightly fractured to unbroken, light grey medium to coarse grained sandstone. Massive with some siltstone flecking to indistinctly bedded with approximately 5% siltstone bands (continued)				10.46m: J15°- 20°, ro, un, cln	С	100		PL(A) = 0.84 PL(A) = 0.62
43	-12	SANDSTONE - high strength slightly weathered to fresh, slightly fractured to unbroken, light grey medium to coarse grained sandstone with some low and very high strength bands. Massive with some siltstone flecking, to indistinctly bedded with				11.11m: Ds, 10mm	С	100	99	PL(A) = 3.2 PL(A) = 1.37
42	-13	approximately 10% siltstone bands				12.44m: Ds, 20mm				PL(A) = 3.56
- 4		13.33-13.6m: fine grained band				13.3-13.31m: B (x2) 0°, ro, un, cbs vn 13.61m: Ds, 30mm				PL(A) = 1.9 PL(A) = 0.12
40	- 14 - - - -					14.58m: B20°, pl, he	С	100	98	PL(A) = 1.86
39	-15					14.50III. b20 , pi, lie				PL(A) = 1.13
	- 16 					16.32m: J45°, ro, un, cln 16.32-16.34m: B (x2) 5°-				PL(A) = 0.74
38	-17	16.95-18.05m: fine grained band with some carbonaceous				10°, ro, un, cbs vn				PL(A) = 1.26 PL(A) = 0.16
37	-18	laminations				17.39m: B0°- 5°, ro, un, cbs vn 17.59m: B0°- 5°, ro, pl, cbs vn 17.9m: B0°- 5°, ro, pl,	С	100	97	PL(A) = 1.22
36						18.39-18.45m: J30°-60°,un, he, cbs, 1mm				PL(A) = 1.46
35	-19					19.19m: B5°, ro, pl, cln	С	100	100	PL(A) = 1.39
						19.77m: B0°- 5°, ro, un, cbs vn				

RIG: DT100 DRILLER: RKE LOGGED: RMM CASING: HW to 4.0m; HQ to 4.1m

TYPE OF BORING: Solid flight auger (TC-bit) to 4.0m; Rotary to 4.1m; NMLC-Coring to 20.47m

WATER OBSERVATIONS: No free groundwater observed whilst augering

Dundwater monitoring vol...

itic cover). Groundwater well purged >5 vvc...

SAMPLING & IN SITU TESTING LEGEND

G Gas sample
P Piston sample
U, Tube sample (x mm dia.)
W Water sample
V Water seep
S Standard penetration test Is(50) (MPa)
Pp Pocket penetrometer (kPa)
S Standard penetration test
V Shear vane (kPa) REMARKS: Groundwater monitoring well installed (screen 4.0-20.47m; gravel 5.0-20.47m; bentonite 3.5-5.0m; backfill surface to 3.5m with concrete set gatic cover). Groundwater well purged >3 well volumes following installation

A Auger sample B Bulk sample BLK Block sample

Core drilling
Disturbed sample
Environmental sample











CLIENT: LendLease Building Pty Ltd

Randwick Campus Redevelopment PROJECT: Hospital Road and High, Magill and Botany LOCATION:

Streets, Randwick

SURFACE LEVEL: 54.6 AHD

EASTING: 336990.5 **NORTHING:** 6245617.7 **DIP/AZIMUTH:** 90°/--

BORE No: 7

PROJECT No: 72505.11 **DATE:** 6-10-2017 SHEET 3 OF 3

Γ		Description	L	Deg	ree	of	Graphic			I St	Roo	ck ngth		L	F	rac	ture		Discontinuities	Sa	amplii	ng & I	n Situ Testing
Ζ	Depth	of	١,,	Ca	uic	ıııg	apli	8		> T	, C	190	e e	Water	5	Spad m	cing		B - Bedding J - Joint	ā	% e	RQD %	Test Results &
	(m)	Strata	>	≥ ≥	: ≥	<u>د</u> لا	ر ق	_	Ex Low	very Low	ediur	igi	Very High		0.01	0.05	1)		S - Shear F - Fault	Type	ဇွ် ဝ	g %	& Comments
\vdash	_	SANDSTONE (continued)	Ш	Ι≥	S S				<u>ш';</u>	<u> </u>		Ŧ	> 11	1	0	00	9.5	+					Comments
ŧ	-	(1111)										<u> </u>					┦╎		20.24m: B5°, ro, pl, cln	С	100	100	
ŀ	20.47	Bore discontinued at 20.47m	H	+	\perp	H	*:•:•	<u>∷</u> 1	+	+	4	1	+	-	H	-		\downarrow	20.42m: J20°, ro, un, cln				PL(A) = 0.88
34	-	- target depth reached	j	į		İ			İ	İ	İ	ij	İ		li	Ϊİ	i i						
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RIG: DT100 DRILLER: RKE LOGGED: RMM CASING: HW to 4.0m; HQ to 4.1m

TYPE OF BORING: Solid flight auger (TC-bit) to 4.0m; Rotary to 4.1m; NMLC-Coring to 20.47m

WATER OBSERVATIONS: No free groundwater observed whilst augering

Dundwater monitoring vol...

itic cover). Groundwater well purged >5 vvc...

SAMPLING & IN SITU TESTING LEGEND

G Gas sample
P Piston sample
U, Tube sample (x mm dia.)
W Water sample
V Water seep
S Standard penetration test Is(50) (MPa)
Pp Pocket penetrometer (kPa)
S Standard penetration test
V Shear vane (kPa) REMARKS: Groundwater monitoring well installed (screen 4.0-20.47m; gravel 5.0-20.47m; bentonite 3.5-5.0m; backfill surface to 3.5m with concrete set gatic cover). Groundwater well purged >3 well volumes following installation

A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample



CLIENT: LendLease Building Pty Ltd **PROJECT:** Randwick Campus Redevelopment

LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 50.5 AHD

EASTING: 337038.1 **NORTHING:** 6245507 **DIP/AZIMUTH:** 90°/--

BORE No: 8

PROJECT No: 72505.11 **DATE:** 23 - 24/1/2018 **SHEET** 1 OF 2

T		Description	Degree of Weathering	ည	Rock Strength	Fracture	Discontinuities				n Situ Testing
본	Depth (m)	of		Graphic Log	H. J. J. J. J. J. J. J. J. J. J. J. J. J.	Spacing (m)	B - Bedding J - Joint	Type	Sre %	RQD %	Test Results &
		Strata	EW MW SW FS FS	O	Ex Low Very Low Low Medium High Very High Ex High Wa	0.05 0.10 1.00	S - Shear F - Fault	Ę	2 8	Α°	Comments
90	0.1 - 0.25 - 0.6 -	ASPHALTIC CONCRETE (typically <10mm diameter) ROADBASE - dark grey, angular, ligneous gravel typically 40-80mm diameter FILLING - pale grey and brown sandstone gravel and cobbles up to 100mm diameter (ripped sandstone) SAND - pale brown, medium grained sand with a trace of fine) \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				_A _A*			
-		gravel, damp						A	}		
\$4	2.6- 2.77-	SANDSTONE - extremely low strength, orange-brown sandstone SANDSTONE - low to medium strength, slightly weathered, fractured to slightly fractured, orange and grey, medium to coarse grained sandstone	-				Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 20° 3.71m: B15°, vn, cly	S	100	100	7,10/10mm refusal PL(A) = 0.26
-	-4										PL(A) = 0.43
45 46	- 5 5.45 -	SANDSTONE - high then medium strength, fresh, slightly fractured to unbroken, pale grey, medium to					4.15m: B10°, vn, cly 4.38m: B20°, co, cly, 2mm 4.61m: B20°, co, sandy cly, 1mm 4.64m: B15°, co, cly, 2mm 4.72m: B0°, sm, co, cly, 3mm	С	100	95	PL(A) = 0.6
#-	-6	coarse grained sandstone with a trace of carbonaceous flecks 6.4-6.9m: red-brown iron staining					6.49m: B0-5°, cu, co, 5, cly, 10mm				PL(A) = 1.12
54	-7						6.69-6.76m: J50°, un, ro, vn, fe				PL(A) = 0.69
	-8	8.1-8.55m: low strength band					>>	С	100	100	PL(A) = 0.65 PL(A) = 0.25
	-9										PL(A) = 0.6
											PL(A) = 1.0

RIG: Bobcat DRILLER: GM LOGGED: ARM CASING: HW to 2.5m; HQ to 2.7m

TYPE OF BORING: Diatube to 0.10m; Non-destructive drilling to 1.7m; Solid flight auger (TC-bit) to 2.77m; NMLC-Coring to 17.39m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 2.0 m, screen to 3.0 m, gatic cover at surface, asphalt to 0.2 m, sand & cement to 0.8 m, bentonite to 1.5 m, sand to 3.0 m, bentonite to 3.5 m, *BD1/20180123 replicate taken at 0.4m to 0.5m

SAMPLING & IN SITU TESTING LEGEND

A Auger sample G 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.)

C Core drilling W Water sample PL(D) Point load diametral test Is(50) (MPa)

D Disturbed sample P Water seep S S Standard penetration test

E Environmental sample W Water level V Shear vane (kPa)











CLIENT: LendLease Building Pty Ltd PROJECT: Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 50.5 AHD EASTING: 337038.1

NORTHING: 6245507 **DIP/AZIMUTH:** 90°/-- **BORE No:** 8

PROJECT No: 72505.11 **DATE:** 23 - 24/1/2018 SHEET 2 OF 2

		Description	Degree of Weathering	Rock 의 Strength 등	Fracture	Discontinuities				n Situ Testing
귐	Depth (m)	of Strata	Weathering ≥ ≥ ≥ ∞ ∞	Graphic Log Ex Low Very High Water Ex High Water Park	Spacing (m)	B - Bedding J - Joint S - Shear F - Fault	Туре	Core	RQD %	Test Results &
40	- - - - - - - - - - - - - - - - - - -	10.2-10.41m: with 25% siltstone clasts up to 20mm diameter, fragmented (possibly drilling \induced) LAMINITE - low strength, fresh, slightly fractured, dark grey siltstone interlaminated and interbedded with	EW HWW MWW SW SW SW FF FF	EX LOW VEY LOW	0.00	10.14-10.41m: fg, 270mm 10.41m: B0°, sm, co, cly, 5mm 10.73m: J35°, sm, co, cly, 1mm	C	100		Comments PL(A) = 0.18
38	11.45	40% pale grey, fine grained sandstone SANDSTONE - high strength, fresh, slightly fractured to unbroken, pale grey, medium to coarse grained sandstone, massive				11.04m: J30°x2, sm, vn, cly 11.38-11.45m: J30-45°x3, sm, vn, cly 11.57m: B0°, vn, cly 11.78m: B0°, vn, cly	С	100	88	PL(A) = 2.23
-88	- - - - - - 13	12.84-13.03m: with 50% ∖ carbonaceous laminations				12.79m: Ds, 20mm, \sandy cly 12.96m: Ds, 20mm,				PL(A) = 1.54
37	- - - - - - - -14	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				13.21m: B10°, vn, cly 13.97m: Ds, 15mm, cly				PL(A) = 1.19
38	- - - - - - - - - - - -	14.8m: massive				14.38m: B20°, vn, cly	С	100	99	PL(A) = 1.27
32	-									PL(A) = 1.36
-8	- 16 	16.44m: irregular bedding dipping 10-20°				16.44m: B0-10°, cu, co, sandy cly, 10mm	С	100	99	
33	- 17 - - - - - 17.39 -	Bore discontinued at 17.39m - target depth reached				17.29m: B20°, vn, cly				PL(A) = 1.57
32	- 18 - 1.									
	- - - -19 -									
31	- - -									

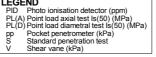
RIG: Bobcat DRILLER: GM LOGGED: ARM CASING: HW to 2.5m; HQ to 2.7m

TYPE OF BORING: Diatube to 0.10m; Non-destructive drilling to 1.7m; Solid flight auger (TC-bit) to 2.77m; NMLC-Coring to 17.39m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 2.0 m, screen to 3.0 m, gatic cover at surface, asphalt to 0.2 m, sand & cement to 0.8 m, bentonite to 1.5 m, sand to 3.0 m, bentonite to 3.5 m, *BD1/20180123 replicate taken at 0.4m to 0.5m

SAMPLING & IN SITU TESTING LEGEND Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample





CLIENT: LendLease Building Pty Ltd **PROJECT:** Randwick Campus Redevelopment

LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 55.7 AHD

EASTING: 337090 **NORTHING**: 6245535 **DIP/AZIMUTH**: 90°/--

BORE No: 12

PROJECT No: 72505.13

DATE: 30-4-2018 **SHEET** 1 OF 2

		Description	Degree of Weathering A ₹ ₹ % £ £	i i	Rock Strength	Fracture	Discontinuities	Sá	amplii	ng & I	n Situ Testing
귐	Depth (m)	of		raph	Strength Nedium Nedium High Ex High Ex High Water 10.01	Spacing (m)	B - Bedding J - Joint	Туре	ore	RQD %	Test Results &
	()	Strata	EW HW EW SW SW SW FS ER	O	Ex Low Very Low Medium High Very Hig Ex High	0.05 0.10 0.50 1.00	S - Shear F - Fault	Ţ	2 8	R _~	Comments
	0.09	ASPHALTIC CONCRETE ROADBASE: dark grey, sandy fine) · (D			
<u> </u>	0.6	to coarse grain igneous gravel, damp									
22	1	FILLING: brown, medium to coarse sand filling, with some silt, damp						D			
	1.2	0.8-1.2m: with some roots. SAND: medium dense, yellow		\times							
		brown, medium sand with trace of silt, damp									
54	2							s			2,7,9 N = 16
53					.						
	3										
								s			5,10,13 N = 23
52											
	4										
								_	-		6,11,13
51	5							S	-		N = 24
20											
	6										11/110
	6.1	SANDSTONE: high strength,						S			refusal
49	.7	slightly weathered becoming fresh, slightly fractured to unbroken, pale grey, medium to coarse grained sandstone, some iron staining									PL(A) = 2.42
: [
							7.44m: B5°, pl, ro, cly ∖ 5mm	С	100	100	PL(A) = 2.29
48	8						7.6m: Ds, 50mm				
- [•			:::::: ::::::							
47	8.8	SANDSTONE: high strength, fresh,	1								PL(A) = 1.24
: [:	9	unbroken, pale grey, medium grained sandstone									
								С	100	100	
-46											PL(A) = 1.9

RIG: Han Jin 8D DRILLER: BG Drilling LOGGED: JAP CASING: HW to 5.5 m

TYPE OF BORING: Diatube to 0.09 m, NDD to 1.5 m, Solid flight auger (TC-bit) to 4.0 m, Rotary to 6.1 m, HQ-Coring to 14.15 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 3.8 m, screen to 6.8 m, gatic cover at surface, concrete to 0.2 m, sand & cement to 2.0 m, bentonite to 3.0 m, sand to 6.8 m, bentonite to 7.8 m, sand to 14.15 m

SAMPLING & IN SITU TESTING LEGEND

A Auger sample G Gas sample PID Photo ionisation detector (ppm)
B B Bulk sample U Tubes sample (x mm dia.)
C Core drilling W Water sample PL(D) Point load diametral test is(50) (MPa) PL(D) Point load diametral test is(50) (MPa) pD Disturbed sample Water seep S Standard penetration test E Environmental sample Water level V Shear vane (kPa)



CLIENT: LendLease Building Pty Ltd

PROJECT: Randwick Campus Redevelopment LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 55.7 AHD

EASTING: 337090 **NORTHING**: 6245535 **DIP/AZIMUTH:** 90°/-- **BORE No:** 12

PROJECT No: 72505.13 **DATE:** 30-4-2018

SHEET 2 OF 2

		Description	Degree of Weathering A ₹ ₹ % Ø Æ	Ö	Rock Strength	Fracture	Discontinuities	Sa	ampli	ng & l	In Situ Testing
귐	Depth (m)	of		rapt	Ex Low Very Low Medium Medium Very High Very High Ex High	Spacing (m)	B - Bedding J - Joint	Туре	ore %	RQD «	Test Results &
		Strata	E SW HW	Ö	Ex Low Medi High Very Very Ex H	0.05	S - Shear F - Fault	Ту	S &	χ°,	Comments
45	- - - - - -11	SANDSTONE: high strength, fresh, unbroken, pale grey, medium grained sandstone (continued)						С	100		PL(A) = 2.54
44	- - - -										PL(A) = 0.93
-	- - 12 -							С	100	100	PL(A) = 1.33
-	-							С	100	100	
43	- - - -13										
-	- - -							С	100	100	
42	- - -	13.57m: becoming slightly fractured					13.57m: B5° pl, ro, cly				PL(A) = 1.2
	- - - 14						vn				PL(A) = 1.04
	14.15	Bore discontinued at 14.15m		:::::							. =(, ,
	- -	Target depth reached									
41	-										
-	- 15										
-	-										
40	- -										
	- - 16										
	- -										
-	- - -										
39	- - -										
-	- 17 - -										
	- - -										
38	- - -										
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37	- - - 19										
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36	- - -										
	-										

RIG: Han Jin 8D **DRILLER:** BG Drilling LOGGED: JAP CASING: HW to 5.5 m TYPE OF BORING: Diatube to 0.09 m, NDD to 1.5 m, Solid flight auger (TC-bit) to 4.0 m, Rotary to 6.1 m, HQ-Coring to 14.15 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 3.8 m, screen to 6.8 m, gatic cover at surface, concrete to 0.2 m, sand & cement to 2.0 m, bentonite to 3.0 m, sand to 6.8 m, bentonite to 7.8 m, sand to 14.15 m

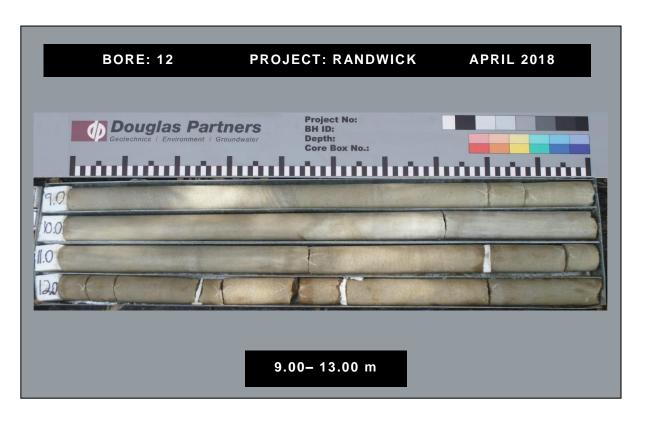
SAMPLING & IN SITU TESTING LEGEND A Auger sample B Bulk sample BLK Block sample

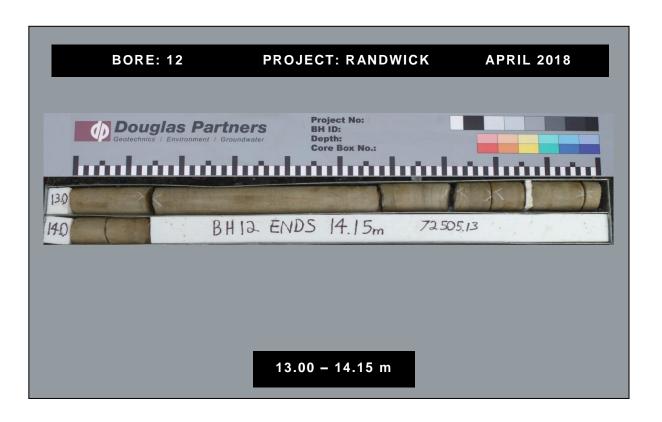
Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level Core drilling
Disturbed sample
Environmental sample

LECEND
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)









CLIENT: LendLease Building Pty Ltd

PROJECT: Randwick Campus Redevelopment

LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 52.0 AHD

EASTING: 337045 **NORTHING**: 6245565

DIP/AZIMUTH: 90°/--

BORE No: 13

PROJECT No: 72505.13

DATE: 3-5-2018 **SHEET** 1 OF 1

			Description	Degree of Weathering	<u>.0</u>	Rock Strength	_	Fracture	Discontinuities	Sa	ampli	ng & I	n Situ Testing
귐	De _l		of	Weathering	raph	Ex Low Very Low Low Medium High Very High Ex High	Water	Spacing (m)	B - Bedding J - Joint	Type	% Se	RQD %	Test Results &
25			Strata	EW H W REW	Ö	Ex Lov Very Medi High Very	0.0	0.05 0.10 0.50 1.00	S - Shear F - Fault	Ļ	S &	8.	Comments
- "-		0.05 0.11	ASPHALT: (typically <10 mm diameter)		<i>ا</i> . ز		l						
		0.4	ASPHALT: (typically <20 mm diameter)										
51			ROADBASE: dark grey, angular igneous gravels (30-80 mm)		\boxtimes								
2	- I -		FILLING: grey-brown, ripped sandstone filling, (40-80mm)				i i						
			FILLING: orange brown, medium sandy gravel filling with some coarse sandstone gravel, damp										
200	-2		SAND: medium dense, pale yellow, medium sand, damp				li li			S			2,6,9 N = 15
		2.5											
-		2.5	SAND: medium dense to dense, brown orange, fine to medium sand with some silt, damp				ļ			D			
49	- 3		man come cing damp							S	1		14,8/80
		3.2	SANDSTONE: extremely low to very low strength, orange brown sandstone	 									refusal
48	-4	3.8	Bore discontinued at 3.8m		:::::		I						
` - -			Limit of investigation				ļ						
47	_												
4	- 5												
46	- 6						l						
` - -													
[[
45	- 7												
							i						
44	- 8						i						
43	- 9												
[ļ						
[[ļi I						
 													

RIG: Han Jin 8D DRILLER: BG Drilling LOGGED: JAP CASING: Uncased

TYPE OF BORING: Diatube to 0.15 m, Non-destructive drilling to 1.6 m, solid flight auge (TC-bit) to 3.8 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 1.3 m, screen to 3.8 m, gatic cover at surface, asphalt to 0.2 m, sand & cement to 0.4 m, bentonite to 1.0 m, sand to 3.8 m

SAMPLING & IN SITU TESTING LEGEND

A Auger sample G G Gas sample PlD Photo ionisation detector (ppm)

B Bulk sample P Piston sample PL(A) Point load axial test Is(50) (MPa)

BLK Block sample U T Tube sample (x mm dia.)

C Core drilling W Water sample PL(D) Point load diametral test Is(50) (MPa)

D Disturbed sample P Water seep S S Standard penetration test

E Environmental sample W Water level V Shear vane (kPa)



LendLease Building Pty Ltd CLIENT:

PROJECT: Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 55.2 AHD

EASTING: 336986 **NORTHING**: 6245643

DIP/AZIMUTH: 90°/--

BORE No: 16

PROJECT No: 72505.13

DATE: 8-5-2018 SHEET 1 OF 1

		Description	Degree of Weathering		Rock Strength ច	Fracture	Discontinuities	S	amplii	ng & I	n Situ Testing
చ	Depth	of	Weathering	jidg b	Ex Low Very Low Medium High Very High Ex High Ex High Out	Spacing	B - Bedding J - Joint				Test Results
_	(m)	Strata	> > > >	Sis _	Mighin High	(m)	S - Shear F - Fault	Туре	S S	RQD %	&
-		CONCDETE OLAD	M H M H EW	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Q S S E S Q	0.00		Ļ.	<u>~</u>		Comments
- 22	0.12	FILLING: brown, fine to medium sand filling with some silt and trace of igneous gravel, humid									
	-1	SAND: yellow, fine to medium sand, damp									
-12	- 1										
53	-2 2.0	SAND: medium dense, yellow, fine to medium sand, damp	- 					s			4,9,11 N = 20
52	-3 3.2	SAND: medium dense, brown, fine									
		to medium sand with trace of clay, damp						S	1		7,9,20 N = 29
: [-4								-		
	4.1	SANDSTONE: very low strength, orange-brown and light grey, medium to coarse grained sandstone						S			6/30, Bouncing
:	4.7	Bore discontinued at 4.7m		• * • * • * •							
:	- 5	Limit of investigation									
20											
	-6										
4											
	- 7										
-84											
	- 8										
47											
46	-9										
_			Liiii								

DRILLER: BG Drilling LOGGED: JAP CASING: HW to 4.0 m RIG: Han Jin 8D TYPE OF BORING: Diatube to 0.12 m, Non-destructive drilling to 1.8 m, solid flight auger (TC-bit) to 2.0 m, Rotary to 4.7 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 2.1 m, screen to 4.7 m, gatic cover at surface, concrete to 0.2 m, sand & cement to 1.2 m, bentonite to 2.0 m, sand to

	SAM	PLING	& IN SITU TESTING	LEGE	ND
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	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 ls(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	⊳	Water seep	S	Standard penetration test
E	Environmental sample	Ī	Water level	V	Shear vane (kPa)



CLIENT: LendLease Building Pty Ltd

PROJECT: Randwick Campus Redevelopment **LOCATION:** Hospital Road and High, Magill and

N: Hospital Road and High, Magill and Botany Streets, Randwick

SURFACE LEVEL: 55.2 AHD

EASTING: 336983 **NORTHING**: 6245644

DIP/AZIMUTH: 90°/--

BORE No: 17

PROJECT No: 72505.13

DATE: 8-5-2018 **SHEET** 1 OF 2

	Depth (m)	Description	Degree of Weathering	Rock Strength 5	Fracture	Discontinuities	Sampling & In Situ Testing			
		of	Weathering	Ex Low Low Medium High Very High Ex High Ex High Water Water Water	Spacing (m)	B - Bedding J - Joint	96	e %.	RQD %	Test Results
	(''')	Strata	EW HW SW SW SW		0.05	S - Shear F - Fault	Type	ပြည်	RO %	& Comments
-	0.11	CONCRETE SLAB			0 00 0-			_		Commont
- 1	0.6	FILLING: brown, fine to medium sand filling with some silt and trace of igneous and sandstone gravel, humid SAND: yellow-brown, fine to medium sand, damp								
- 2	2 2.0-	SAND: medium dense yellow-brown fine to medium sand, damp					S			4,6,9 N = 15
- 3	3.3	SAND: medium dense, brown, fine to medium sand with trace of clay, damp					S			9,10,14 N = 24
- 4 -										
- - - - 5	4.4	SANDSTONE: very low to low strength, orange-brown and light grey, medium to coarse grained sandstone			 					
	5.08	SANDSTONE: medium strength, slightly weathered, slightly fractured, light grey and red-brown, medium to coarse grained sandstone				5m: CORE LOSS: 80mm 5.13m: J25° pl, ro, cln	С	90	83	PL(A) = 0.6
- 6 - 6 	,					6.05m: J20° pl, ro, fe, stn				PL(A) = 0.
- 8	3					7.54-7.57m: B5-10°, he, cu, ro, fe, stn x2 7.92-8.05m: B0-10°, pl, ro, fe, stn x3 8m: J30°, pl, ro 8.31m: Ds, 110mm	С	100	100	PL(A) = 1.
- 9)									PL(A) = 0.
	9.5	SANDSTONE (see over page)				9.32-9.50 m: B0-10°, un, ro fe, stn x5 9.36m: Cs, 20mm	С	100	90	PL(A) = 0.

RIG: Han Jin 8D DRILLER: BG Drilling LOGGED: JAP CASING: HW to 4.5 m

TYPE OF BORING: Diatube to 0.11 m, Non-destructive drilling to 1.8 m, Auger to 2.0 m, Rotary to 5.0 m, NMLC Coring to 14.80 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Well installed, blank to 5.1 m, screen to 9.6 m, gatic cover at surface, concrete to 0.2 m, sand & cement to 1.5 m, sand to 4.0 m, bentonite to 5.0 m, sand to 10.0 m, bentonite to 11.0 m, sand to 15.0 m

SAMPLING & IN SITU TESTING LEGEND

A Auger sample G Gas sample PlD Photo ionisation detector (ppm)

B Bulk sample P Piston sample PL(A) Point load diametral test Is(50) (MPa)

C Core drilling W Water sample PL(A) Point load diametral test Is(50) (MPa)

C Core drilling W Water sample PL(A) Point load diametral test Is(50) (MPa)

D Disturbed sample P Water seep S S Standard penetration test

E Environmental sample W Water level V Shear vane (kPa)



CLIENT: LendLease Building Pty Ltd

Randwick Campus Redevelopment PROJECT: LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 55.2 AHD

EASTING: 336983 **NORTHING**: 6245644

DIP/AZIMUTH: 90°/--

BORE No: 17

PROJECT No: 72505.13

DATE: 8-5-2018 SHEET 2 OF 2

П		Description	Degree of Weathering	. <u>e</u>	Rock Strength	Fracture	Discontinuities				n Situ Testing
ద	Depth (m)	of		raph	Ex Low Very Low Low Medium High Very High Ex High Ex High O.01	Spacing (m)	B - Bedding J - Joint	Туре	se .	RQD %	Test Results &
	(***)	Strata	WH W W H W SK SK SK SK SK SK SK SK SK SK SK SK SK	Ō	Ex Lo Low Medic High Very F Ex High	0.05 0.10 0.50 1.00	S - Shear F - Fault	Ţ	ပြင်မှို	η. Σ.	Comments
44 45	·11	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, light grey, fine to medium grained sandstone with some low strength bands, cross bedding at 10-15° (continued)					10.69m: Ds, 10mm	С	100		PL(A) = 0.8 PL(A) = 0.12
						ii i					PL(A) = 0.39
F F	12						11.99-12.09m: J60°, pl,				FL(A) - 0.38
43	12.24	SANDSTONE: medium and high strength, fresh, unbroken, light grey, medium grained sandstone					ro, cln 12.41m: J20°, pl, ro, cln				PL(A) = 1.38
ŀ	13										
-4								С	100	100	
											PL(A) = 0.69
Ė											
F F	14										
-4											
[]											
	14.8	Bore discontinued at 14.8m									PL(A) = 1.16
F F	15	Target depth reached									
-4											
E											
 											
‡‡	16										
-86											
						ii ii l					
ĖĖ											
[]	17										
- -8											
ĒĒ											
						ii ii					
	40										
37	18										
"											
[[
ŀŀ	19					ii ii					
-98											

RIG: Han Jin 8D **DRILLER:** BG Drilling LOGGED: JAP CASING: HW to 4.5 m TYPE OF BORING: Diatube to 0.11 m, Non-destructive drilling to 1.8 m, Auger to 2.0 m, Rotary to 5.0 m, NMLC Coring to 14.80 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

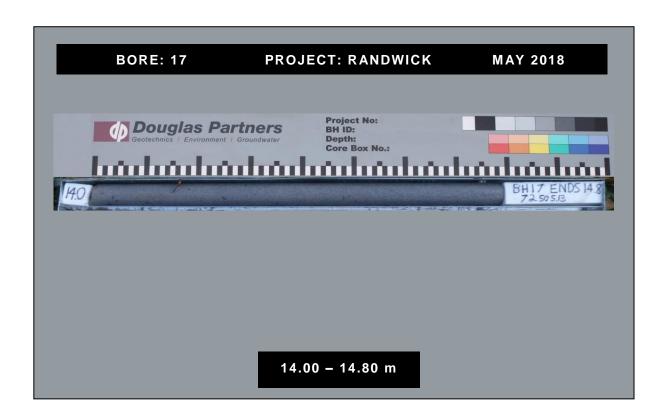
REMARKS: Well installed, blank to 5.1 m, screen to 9.6 m, gatic cover at surface, concrete to 0.2 m, sand & cement to 1.5 m, sand to 4.0 m, bentonite to 5.0 m, sand to 10.0 m, bentonite to 11.0 m, sand to 15.0 m

SAMPLING & IN SITU TESTING LEGEND LEGEND
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) Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample









CLIENT: Lendlease Building Pty Ltd SCH Stage 1 / CCCC Project PROJECT:

High Street and Hospital Road, Randwick LOCATION:

SURFACE LEVEL: 55.7 AHD **EASTING**: 337095

NORTHING: 6245556.4 **DIP/AZIMUTH:** 90°/--

BORE No: BH601 **PROJECT No:** 72505.18 **DATE**: 19 & 27/08/2020

SHEET 1 OF 2

- 0	.09 ~	ASPHALTIC CONCRETE FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium sand, moist FILL/Gravelly SAND: medium, brown, fine igneous subangular and		athering	irapi Log	Strength Low Low Low High Low	Spacing (m) 0001	B - Bedding J - Joint S - Shear F - Fault	Туре	Core Rec. %	RQD %	Test Results & Comments
- 0	0.3	ASPHALTIC CONCRETE FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium sand, moist FILL/Gravelly SAND: medium, brown, fine igneous subangular and	MX H	M		Ex Low Medi	0.050	S - Shear F - Fault	F	ŭ ğ	X °	
- 0	0.3	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium sand, moist FILL/Gravelly SAND: medium, brown, fine igneous subangular and			j. ζ Σ							
- 1	- '	sub-angular, fine igneous gravel, grey, medium sand, moist FILL/Gravelly SAND: medium, brown, fine igneous subangular and			XX				E			
1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0.6	grey, medium sand, moist FILL/Gravelly SAND: medium, brown, fine igneous subangular and				1						
-1		brown, fine igneous subangular and	Lii		\times	1			E	1		
54			1 : :						E/D	-		
5 1		subrounded, fine sandstone gravel, moist										
\$ - 1		SAND SP: fine to medium, pale				1						
አ - 1		grey, moist, loose, aeolian	l i i									
L	1.8	SAND SP: fine to medium,				<u>1</u>						
-2		yellow-brown, trace silt, moist,	l i i									4.5.0
ļ		medium dense, aeolian				1			S			4,5,6 N = 11
-										1		
- 23												
-3		Below 3.0m: dark red-brown,				1		Unless noted otherwise,				
ţ		apparently dense	l i i					rock is fractured along rough, planar bedding				
ŧ						1		planes dipping at 0-20°	D	-		
- 25		D. 1. 10				<u> </u>				1		
4 4.0	.05	Below 4.0m: wet			-			4.05	S			18/50 refusal
4.	.11/	SANDSTONE: medium to coarse grained, pale grey and yellow brown,						4.05m: CORE LOSS: 60mm		1		PL(A) = 0.04
ļ		with 10% decomposed seams, very low then low and medium strength,	l i i									PL(A) = 0.4
51		highly and slightly weathered, slightly fractured, Hawkesbury				┊╎╎╣╏						
-5		Sandstone										PL(A) = 0.28
E			<u> </u>									
-					:::::	╏┖┾┓╎╎╎╎╎╎	╘═ ┈ ┼┪╸╎╎╶	5.29m: Ds 140mm 5.5m: Ds 10mm	С	98	77	
20			l iLi					5.68m: Ds 90mm			'	
-6 6	6.0	CANDOTONE			:::::							PL(A) = 0.85
Ė		SANDSTONE: medium to coarse grained, pale grey, cross bedded at										,
-		10-20°, medium strength, slightly weathered then fresh, slightly										
49		fractured, Hawkesbury Sandstone						6.65m: Ds 10mm, fe, st				
-7			l i i									PL(A) = 0.72
ţ						i i i i l i i i i						()
ļ ,	7.5				:::::							
84 - ,	7.3	SANDSTONE: medium grained, pale grey, medium to high strength,						7.59m: B10°, pl, ro, cly				
-8		fresh, unbroken, Hawkesbury Sandstone						1mm				PL(A) = 0.88
F°		Saliusione	l i i									FL(A) = 0.00
ţ									_			
47						 [- - - - - - - - - - - - -	8.6m: Ds 20mm	С	100	99	
ţ												DI (A) 4.0
-9							 					PL(A) = 1.2
<u> </u>												
ا و												
46												

RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH/TM CASING: HW to 4.0m, HQ to 4.0m TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.5m, Solid flight auger to 4.0m, NMLC Coring to 16.02m WATER OBSERVATIONS: Water seepage at 3.95m, 20% water loss below 8.0m

REMARKS: Bulk samples taken 0.5-1.5m, 1.5-2.0m & 2.0-3.8m

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample

LEGENU
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)



CLIENT: Lendlease Building Pty Ltd SCH Stage 1 / CCCC Project **PROJECT:** LOCATION:

High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.7 AHD **EASTING**: 337095 **NORTHING:** 6245556.4

DIP/AZIMUTH: 90°/--

BORE No: BH601 **PROJECT No:** 72505.18 **DATE**: 19 & 27/08/2020

SHEET 2 OF 2

		Description	Degree of Weathering	. <u>o</u>	Rock Strength	Fracture	Discontinuities	Sa	ampli	ng & l	n Situ Testing
R	Depth (m)	of		raph	Ex Low Very Low Low High High Ex High Water	Spacing (m)	B - Bedding J - Joint	Type	ore c.%	RQD %	Test Results &
			X X X X X X X X X X X X X X X X X X X		K K K K K K K K K K K K K K K K K K K	0.00	S - Shear F - Fault	F	ΩÃ	ĕ̈́	Comments
43 44	-11	SANDSTONE: medium grained, pale grey, medium to high strength, fresh, unbroken, Hawkesbury Sandstone (continued)					10.68m: B0°, pl, ro, cly vn & J80-90°, un, ro, cln 10.76m: B0°, pl, ro, cly co	С	100		PL(A) = 0.96 PL(A) = 1.3
	- 13 -		[i ii ii					PL(A) = 0.97
42	- - - - -14	Between 14.2-15.85m: cross bedded at 5-15°					14.35m: B5°, pl, ro, cly				PL(A) = 1
40 41 41 41 41 41 41 41 41 41 41 41 41 41	- 15 						15.17m: B (x2) 5°, pl, ro, cly vn	С	100	97	PL(A) = 0.98
	- - 16 16.02					 					PL(A) = 0.68
38, , , , , , , , , , , , , , , , , , ,	-17	Bore discontinued at 16.02m Target depth reached									
36 37	- - 19 - - - - - - - - - - -										

CASING: HW to 4.0m, HQ to 4.0m RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH/TM TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.5m, Solid flight auger to 4.0m, NMLC Coring to 16.02m WATER OBSERVATIONS: Water seepage at 3.95m, 20% water loss below 8.0m

REMARKS: Bulk samples taken 0.5-1.5m, 1.5-2.0m & 2.0-3.8m

SAMPLING & IN SITU TESTING LEGEND Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level LEGENU
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) A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample









CLIENT: Lendlease Building Pty Ltd SCH Stage 1 / CCCC Project **PROJECT:** LOCATION:

High Street and Hospital Road, Randwick

SURFACE LEVEL: 55 AHD **EASTING:** 337097.5 **NORTHING:** 6245571.8 **DIP/AZIMUTH:** 90°/--

BORE No: BH602 PROJECT No: 72505.18 **DATE**: 19 & 24/08/2020

SHEET 1 OF 1

		Description	Degree of Weathering	. <u>o</u>	Rock Strength	Fracture	Discontinuities	Sa	ampli	ng &	In Situ Testing
묍	Depth (m)	of		Graphic Log	Strength Fx Low Low	Spacing (m)	B - Bedding J - Joint	Туре	sre %:	RQD %	Test Results &
	` '	Strata	X H M K K	Ö	Ex Lo Very Low High Low	0.01	S - Shear F - Fault	≥	2 %	R.	Comments
- 35	0.09	ASPHALTIC CONCRETE		7 . Ġ							
	0.28	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist						E/D			
54	0.7	FILL/SAND: fine to medium, dark brown, with silt, moist		××	1			E/D			
- '	. '	SAND SP: fine to medium, pale grey, moist, aeolian				 					
53	-2 - 2.2										4,3,5
	2.6	SAND SP: fine to medium, orange-brown, apparently cemented, iron indurated, ("coffee rock"), aeolian				i ii ii I II II I II II		S			N = 8
52	-3 · 3.2	SAND SP: fine to medium, yellow-brown, moist, aeolian Below 3.1m: becoming wet						D S			5,25/125 refusal
	3.35	SANDSTONE: medium grained, pale yellow-brown, apparently very low to low strength, Hawkesbury		:		 					
51	-4 -4	Sandstone Bore discontinued at 3.35m Target depth reached									
	· · ·										
50	-5 -5										
	· ·										
49	-6 -6										
	· ·										
48	-7 -7										
	· ·										
47	- 8 - 8 										
	· · ·										
46	- 9 - 9 										
	· · ·										

LOGGED: KR/JJH RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group **CASING:** None TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.5m, Solid flight auger to 3.35m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Bulk sample taken at 0.7-1.5m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121809 installed in well

SAMPLING & IN SITU TESTING LEGEND LECEND
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) Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
Light Street and Legalital Board Page

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 54.2 AHD EASTING: 337102.9

NORTHING: 6245608 DIP/AZIMUTH: 90°/-- **BORE No:** BH603 **PROJECT No:** 72505.18 **DATE:** 19 & 26/08/2020

SHEET 1 OF 2

	Б. 11	Description	Degree of Weathering	je _	Rock Strength	Fracture Spacing	Discontinuities			·	n Situ Testing
묍	Depth (m)	of		Graphic Log		(m)	B - Bedding J - Joint	Туре	ore c. %	RQD %	Test Results &
	0.04	Strata	X N N N N N N N N N N N N N N N N N N N	O	Kery Very Very Ex H	0.05	S - Shear F - Fault	Ę.	ပည္	α -	Comments
-\hat{2}	0.04	ASPHALTIC CONCRETE FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist]					E/D			
23	0.8	FILL/Gravelly SAND: medium, brown, subangular, fine igneous and subrounded, fine sandstone gravel, moist	-					E/D	-		
	1.3	FILL/Silty SAND: fine to medium, dark brown, non-plastic fines, with subangular, fine sandstone gravel, moist	- 	/// //// ::::			Unless noted otherwise, rock is fractured along rough, planar bedding planes dipping at 0-20°	E/D D			
52	-2	Clayey SAND SC: fine to medium, orange-brown, low plasticity, moist, residual									PL(A) = 0.28
	-3	below 1.5m: pale orange-brown SANDSTONE: medium to coarse grained, orange-brown and pale grey, low and medium strength with extremely low strength bands, highly					2.56m: B0°, pl, ro, cly vn 2.73m: Ds 10mm	С	96	76	PL(A) = 0.62 PL(A) = 0.33
5		weathered, slightly fractured, Hawkesbury Sandstone					3.3m: Cs 60mm				
20	3.91 -4 4.2	SANDSTONE: medium to coarse		> <			3.8m: CORE LOSS: _110mm 3.94m: B0°, pl, sm, cly 1mm				PL(A) = 0.26
49	-5	grained, pale grey with some yellow-brown, cross bedded at 20°, medium then high strength, slightly weathered,					4.61m: B0°, pl, sm, cly 1mm 5.28m: B (x3) 10°, pl, ro,	С	100	88	PL(A) = 0.55
48	-6						cly vn		100	00	PL(A) = 1.8
							6.31m: Ds 50mm 6.56m: J40°, pl, ro, cln 6.64m: Ds 10mm				
47	7.04 7.25	SANDSTONE: medium grained, pale grey, medium then high		X			6.92m: CORE LOSS: 120mm				PL(A) = 1
46	-8	strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone					7.75m: Ds 10mm				PL(A) = 0.92
							8.46m: B0°, un, cly co	С	97	97	
45	-9										PL(A) = 0.46

RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH/TM CASING: HW to 1.8m, HQ to 1.8m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.7m, Solid flight auger to 1.8m, NMLC Coring to 16.00m

WATER OBSERVATIONS: Water seepage at 1.8m

REMARKS: Bulk sample taken 0.45-0.8m

	SA	MPLING	& IN SITU TESTING	LEGE	ND
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	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 ls(50) (MPa)
С	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	⊳	Water seep	S	Standard penetration test
	Environmental cample		Water level	1/	Shoor yong (kDa)



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project

Link Street and Hamital Board Board

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 54.2 AHD **EASTING:** 337102.9

NORTHING: 6245608 DIP/AZIMUTH: 90°/-- **BORE No:** BH603 **PROJECT No:** 72505.18 **DATE:** 19 & 26/08/2020

SHEET 2 OF 2

		Description	Degree of Weathering ≥ ≥ ≥ ≥ ∞ ∞ ∞	<u>.0</u>	Rock Strength	Fracture	Discontinuities	Si	ampli	ng & I	n Situ Testing
RL	Depth (m)	of		Graph Log	Very Low Low Low Low High Wedium Ex High Ex High Water	Spacing (m)	B - Bedding J - Joint S - Shear F - Fault	Туре	ore c. %	RQD %	Test Results &
	40.00	Strata SANDSTONE: medium grained,	W H W W R H X	· ·····	EX Legislation	0.05	10.02m: CORE LOSS:	-	0 %	Œ.	Comments
43	- 10.09	pale grey, medium then high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone (continued)					70mm	С	98	98	PL(A) = 0.92 PL(A) = 0.84 PL(A) = 0.48
41	-13						13.55m: J30°, pl, ro, cln				PL(A) = 0.81
40	- 14 - 14 						14.2m: B0°, pl, ro, cly vn	С	100	99	PL(A) = 1.2
39	- 15 - 15 15						14.65m: J30°, pl, ro, cly vn 14.68m: B0°, pl, ro, cly vn				PL(A) = 1.1
	- -16 16.0	Bore discontinued at 16.0m		:::::		 					PL(A) = 1.1
37 38	-17	Target depth reached									
36	- 18 - 18 18										
32, ,	-19 -19 										

RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH/TM CASING: HW to 1.8m, HQ to 1.8m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.7m, Solid flight auger to 1.8m, NMLC Coring to 16.00m

WATER OBSERVATIONS: Water seepage at 1.8m

REMARKS: Bulk sample taken 0.45-0.8m

SAMPLING & IN SITU TESTING LEGEND

A Auger sample
B Bulk sample
BLK Block sample
C Core drilling
D Disturbed sample
E Environmental sample

ING & IN SITUTESTING
G Gas sample
P Piston sample (x mm dia.)
U Tube sample (x mm dia.)
W Water sample
Water seep
Water level

LEGEND
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)









CLIENT: Lendlease Building Pty Ltd SCH Stage 1 / CCCC Project PROJECT:

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 54.9 AHD **EASTING**: 337107 **NORTHING**: 6245631.8

DIP/AZIMUTH: 90°/--

BORE No: BH604 PROJECT No: 72505.18 **DATE:** 19 & 24/08/2020

SHEET 1 OF 1

		Description	Degree of Weathering	<u>.</u> 0	Rock Strength	_	Fracture	Discontinuities				n Situ Testing
R	Depth (m)	of		Graphic Log	Ex Low Very Low Medium High Very High Ex High	Water	Spacing (m)	B - Bedding J - Joint	Туре	».	RQD %	Test Results &
	(,	Strata	XX H W XX SX SX SX SX SX SX SX SX SX SX SX SX	Ō	Ex Lo Very I High Ex High) 	' '	S - Shear F - Fault	≥	ပြည်	R _%	α Comments
	0.075 - 0.24 - 0.4 -	ASPHALTIC CONCRETE FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist) . C					E	-		
54	-1 :	FILL/Gravelly SAND: medium, brown, subangular, fine igneous gravel, moist FILL/SAND: fine to medium, brown,							E	-		
53	1.6 1.6 1.9	trace subrounded, fine to coarse sandstone gravel, moist Between 1.0-1.2m: large brick fragment, dark brown silty sand, with charcoal							E/D D			
	- - - - -	Clayey SAND SC: fine to medium, orange-brown, low plasticity, moist, residual							S	_		3,2,3 N = 5
52	-3	orange-brown, with clay, moist, loose, residual Below 2.7m: wet Below 2.95m: with pale grey sand,							D S	-		10,11,17 N = 28
49 50 51	- 3.45 3.45 - 3.	SANDSTONE: medium grained, pale grey, very low to low strength, Hawkesbury Sandstone Bore discontinued at 3.45m Target depth reached										
47 48	-7											
45 46	-9											

RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH CASING: None TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.9m, Solid flight auger to 3.45m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Bulk samples taken 0.4-1.6m & 1.7-1.9m

	SAMPLING & IN SIT	U TESTING LE	GEND
Auger sample	G Gas sample	e P	ID Pho

A Auger sample
B Bulk sample
BLK Block sample
C Core drilling
D Disturbed sample
E Environmental sample Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level

LEGENU
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)



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.3 AHD **EASTING:** 337109.8 **NORTHING:** 6245649.5

DIP/AZIMUTH: 90°/--

BORE No: BH605 **PROJECT No:** 72505.18 **DATE:** 19 & 25/08/2020

SHEET 1 OF 2

П		Description	Degree of Weathering	. <u>o</u>	Rock Strength	Fracture	Discontinuities	Sa	amplii	ng & I	n Situ Testing
귒	Depth (m)	of		Graphic Log	Strength Medium High String Hi	Spacing (m)	B - Bedding J - Joint	Туре	ore : %	RQD %	Test Results &
	` '	Strata	XX H M XX S H	ڻ ا	Ex Lov Low High Kery Low Very Low Very Low Low Low Low Low Low Low Low Low Low	0.05 0.10 0.50 1.00	S - Shear F - Fault	_\Z	ပ္သန္တ	R _v	Comments
П	0.11	ASPHALTIC CONCRETE		7.6				E/D			
22		FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist						E*/D			
	·1	FILL/Gravelly SAND: medium, brown, subangular, fine igneous gravel, moist						E/D			
-22		Between 0.4-0.55m: large brick fragment						E			
	1.5	FILL/SAND: fine to medium, brown, trace subrounded, fine to coarse sandstone gravel, silt, and glass fragment, moist									
23		SAND SP: fine to medium, pale grey, moist, aeolian		\././				s			1,3,2 N = 5
 		Clayey SAND SC: fine to medium, orange-brown, low plasticity, moist, loose, residual	·				Unless noted otherwise, rock is fractured along rough, planar bedding	D			
‡‡	3 19	Below 2.2m: with ironstone bands Sandy CLAY CI: low to medium		<u>[./.</u>			planes dipping at 0-20°	S			7,25/30 refusal
25	3.10	plasticity, pale grey, w~PL, residual (Extremely weathered sandstone)									PL(A) = 0.23
		SANDSTONE: medium to coarse grained, pale grey and red-brown, low to high strength, moderately and					3.7m: Cs 50mm				
21	·4	highly weathered, slightly fractured to unbroken, Hawkesbury Sandstone					4m: J60°, pl, ro, fe st				PL(A) = 0.94
		Salidstolie						С	98	96	
	5 4.94			 			4.9m: CORE LOSS: 40mm				PL(A) = 1.3
202											
	5.75	SANDSTONE: medium grained,					5.66m: Ds 30mm				
49	-6	pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone									PL(A) = 0.76
						 	6.48m: Ds 60mm				
	.7										PL(A) = 0.84
48								С	100	98	
							7.57m: B0°, pl, ro, cly vn				
47	-8		 								PL(A) = 0.84
` - -											
<u> </u>	9 9.0	SANDSTONE: medium grained,									PL(A) = 1.3
46		pale grey, high strength, fresh, slightly fractured to unbroken,						С	100	100	
		Hawkesbury Sandstone					>>				
				1:::::							

RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH/TM CASING: HQ to 3.1m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.8m, Solid flight auger to 3.18m, NMLC Coring to 16.28m

WATER OBSERVATIONS: Water seepage at 3.1m

REMARKS: *Field replicate sampleBD1/20200819, Bulk samples taken 0.4-1.0m & 1.5-1.8m, Groundwater well installed, refer to Well Log for construction details. Data logger 2119606 installed in well

	construction details, Data logger 2119606 installed in well										
	SAM	IPLING	& IN SITU TESTING	LEGE	ND						
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)						
В	Bulk sample	Р	Piston sample		Point load axial test Is(50) (MPa)						
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	Point load diametral test ls(50) (MPa)						
С	Core drilling	WÎ	Water sample	pp `	Pocket penetrometer (kPa)						
D	Disturbed sample	⊳	Water seep	S	Standard penetration test						
E	Environmental sample	Ī	Water level	V	Shear vane (kPa)						



Lendlease Building Pty Ltd CLIENT: PROJECT: SCH Stage 1 / CCCC Project

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.3 AHD **EASTING:** 337109.8 **NORTHING:** 6245649.5

DIP/AZIMUTH: 90°/--

BORE No: BH605 **PROJECT No:** 72505.18 **DATE:** 19 & 25/08/2020

SHEET 2 OF 2

		Description	Degree of Weathering ≥ ≥ ≥ ∞ ∞ ∞	<u>0</u>	Rock Strength	Fracture	Discontinuities	Sa	ampli	ng & l	n Situ Testing
씸	Depth (m)	of		raph	Strength Nedium Low Very Low Medium High High Kery High Cx Hig	Spacing (m)	B - Bedding J - Joint	Туре	S.e	RQD 6	Test Results &
	, ,		X M M X X X X X X X X X X X X X X X X X	9	Ex Low Very Low High Very High Ex High Wan	0.05	S - Shear F - Fault	Тy	S &	R.	Comments
44 45	-11	SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone (continued) Between 10.7-12.17: cross bedded at 0-10°						С	100		PL(A) = 1.3 PL(A) = 1.6
43	-12						12.15m: B0°, pl, ro, cln				PL(A) = 2
42	-13							С	100	97	PL(A) = 1.4
41	-14	Between 13.9-15.4m: cross bedded at 0-10°					13.97m: B5°, pl, cly 1mm 14.25m: B10°, pl, cly vn 14.33m: B10°, pl, cly vn				PL(A) = 1.4
40	-15						15.38m: Ds 10mm	С	100	99	PL(A) = 2
	- 16			:::::							PL(A) = 2.2
68	16.28 -	Bore discontinued at 16.28m Target depth reached					16.11m: Ds 10mm				
38	- - - - - - -18										
37	-19										
- 98 											

RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH/TM CASING: HQ to 3.1m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.8m, Solid flight auger to 3.18m, NMLC Coring to 16.28m

WATER OBSERVATIONS: Water seepage at 3.1m

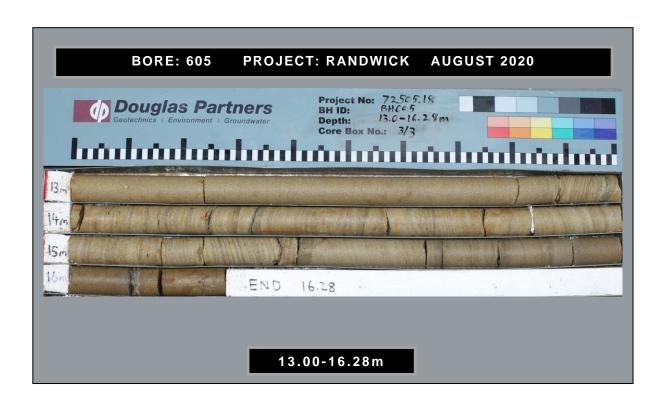
REMARKS: *Field replicate sampleBD1/20200819, Bulk samples taken 0.4-1.0m & 1.5-1.8m, Groundwater well installed, refer to Well Log for

	construction details, Data logger 21 19606 installed in well											
	SAMPLING & IN SITU TESTING LEGEND											
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)							
В	Bulk sample	Р	Piston sample		Point load axial test Is(50) (MPa)							
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	Point load diametral test ls(50) (MPa)							
С	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)							









CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LIGHT Street and Legatical Read Review Research Report Report Report Review Report Re

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.1 AHD **EASTING**: 337045.4 **NORTHING**: 6245584.9 **DIP/AZIMUTH**: 90°/--

BORE No: BH606 **PROJECT No:** 72505.18 **DATE:** 28 - 31/8/2020 **SHEET** 1 OF 2

		Description	Degree of Weathering	.ie	Rock Strength	Fracture	Discontinuities	Sa			n Situ Testing
귐	Depth (m)	of		Graphic Log	Nate In In Indian	Spacing (m)	B - Bedding J - Joint	Type	ore 3.%	RQD %	Test Results &
		Strata	XX H XX EX EX EX	9	Ex High	0.05 0.10 0.50 1.00	S - Shear F - Fault	Ĺ	S &	8	Comments
52	0.06 - 0.2 - 0.6 -	ASPHALTIC CONCRETE FILL/ROADBASE: GRAVEL, coarse, dark grey, igneous, subangular-subrounded, dry, roadbase	-). (X				D E/D*	- - - -		
51	1 1.4	FILL/ GRAVEL: medium, yellow-brown, sandstone, with clay, sand, crushed sandstone, dry FILL/ SAND: fine to medium, pale						E/D S			3,4,4 N = 8
20	2	grey, dry SAND SP: fine to medium, brown, dry, loose, aeolian Below 1.8m: moist						E/D	-		
49	3 3.1-	Below 2.5m: medium dense					Unless noted otherwise, rock is fractured along	S			5,7,9 N = 16
		SANDSTONE: medium to coarse grained, yellow-brown, very low to low strength, Hawkesbury Sandstone					rough, planar bedding planes dipping at 0-20°				PL(A) = 0.14
48	4	SANDSTONE: medium to coarse grained, pale grey with some pale orange staining, low then medium strength, slightly weathered, slightly fractured, Hawkesbury Sandstone									PL(A) = 0.23
47	5						5.24m: Ds 10mm	С	100	99	PL(A) = 0.61
46	6 6.25 -	SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken,									PL(A) = 0.68
45	7	Hawkesbury Sandstone					7.37m: Ds 20mm	С	100	98	PL(A) = 0.46
44	8										PL(A) = 0.76
43	9						8.68m: Ds 40mm 8.91m: Ds 20mm				PL(A) = 0.68
1								С	100	96	

RIG: Bobcat DRILLER: JE LOGGED: TM CASING: HW to 3.2m, HQ to 3.6m

TYPE OF BORING: Diacore to 0.06m, Solid flight auger to 3.2m, Rotary to 3.6m, NMLC Coring to 16.19m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD03/20200828, Bulk samples taken 0.6-1.0m & 1.5-3.0m, Groundwater well installed, refer to Well Log for

	construction details, Data logger 2121808 Installed in Well											
	SAMPLING & IN SITU TESTING LEGEND											
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)							
В	Bulk sample	Р	Piston sample		Point load axial test Is(50) (MPa)							
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	Point load diametral test ls(50) (MPa)							
С	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)							



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
Light Street and Heapital Boad Base

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.1 AHD **EASTING:** 337045.4 **NORTHING:** 6245584.9 **DIP/AZIMUTH:** 90°/--

BORE No: BH606 PROJECT No: 72505.18 DATE: 28 - 31/8/2020 SHEET 2 OF 2

		Description	Degree of Weathering	<u>0</u>	Rock Strength	Fracture	Discontinuities	Sa	ampli	ng & I	n Situ Testing
귐	Depth (m)	of	Wednesday	Graphic Log	Strength Cow Needium High Wedium Needi	Spacing (m)	B - Bedding J - Joint	Туре	ore c. %	RQD %	Test Results &
		Strata	X H W W R H X	Θ	EX LOW High Very Very Very EX H	0.00	S - Shear F - Fault	F	Q §	X .	Comments
41 42	-111	SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone (continued)					11.09m: Ds 110mm 11.43m: Ds 60mm	С	100		PL(A) = 0.52 PL(A) = 0.45
	- - 12					1 11 11					PL(A) = 0.88
39 40	- 13							С	100	98	PL(A) = 1
38	-14						14.35m: B0°, pl, ro, cly vn 14.53m: Ds 40mm				PL(A) = 0.72
36 37	-15						15.95m: Ds 50mm	С	100	98	PL(A) = 0.64 PL(A) = 0.08
	- 16.19 - -	Bore discontinued at 16.19m Target depth reached					\16.17m: Ds 20mm				
35	-17	raige: uepurreaciieu									
34	- 18 										
	-										

RIG: Bobcat DRILLER: JE LOGGED: TM CASING: HW to 3.2m, HQ to 3.6m

TYPE OF BORING: Diacore to 0.06m, Solid flight auger to 3.2m, Rotary to 3.6m, NMLC Coring to 16.19m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD03/20200828, Bulk samples taken 0.6-1.0m & 1.5-3.0m, Groundwater well installed, refer to Well Log for

	construction details, Data logger 2121806 installed in well												
	SAMPLING & IN SITU TESTING LEGEND												
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)								
В	Bulk sample	Р	Piston sample		Point load axial test Is(50) (MPa)								
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	Point load diametral test ls(50) (MPa)								
С	Core drilling	WÎ	Water sample	pp `	Pocket penetrometer (kPa)								
D	Disturbed sample	⊳	Water seep	S	Standard penetration test								
E	Environmental sample	Ī	Water level	V	Shear vane (kPa)								









CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.6 AHD **EASTING**: 337035.3

NORTHING: 6245607.6 **DIP/AZIMUTH:** 90°/--

BORE No: BH607 **PROJECT No:** 72505.18

DATE: 31/8/2020 **SHEET** 1 OF 2

		Description	Degree of Weathering .≘	Rock Strength	Fracture	Discontinuities	Sa			n Situ Testing
묍	Depth (m)	of	Weathering On Display	Nate In Icia	Spacing (m)	B - Bedding J - Joint	Type	ore c. %	RQD %	Test Results &
	0.00	Strata	X X X X X X X X X X X X X X X X X X X	EX Low Medi High Very Very Very Very Very Very Very Very	0.00	S - Shear F - Fault	F	O &	œ °	Comments
•	0.06	ASPHALTIC CONCRETE FILL/ROADBASE: GRAVEL, coarse,]				E/D			
52	-	dark grey, igneous, subangular-subrounded, dry,			 		E/D			
	-1	roadbase FILL/SAND: fine to medium, pale grey, trace brick and tile fragments,					E/D			
	- - - 1.4	dry, loose		` <u>.</u>			s			7,8,6 N = 14
51	-	\square\yellow-brown, moist, loose, aeolian \square\SAND SC: fine to medium, dark								
	-2	brown, with clay, loose, moist, aeolian					E/D*			
50							s	-		1,3,3
	- - 3				 	Unless noted otherwise,				N = 6
	- - -					rock is fractured along rough, planar bedding planes dipping at 0-20°				
49	- - - 3.89									
	- 3.89 -4 3.92 -	grained, pale grey and pale orange, low strength, slightly weathered,				3.89m: CORE LOSS: 30mm 4.21m: B5°, pl, ro, cln				PL(A) = 0.14
48	-	slightly fractured, Hawkesbury Sandstone				4.58m: B0°, pl, ro, cly vn				
	- - 4.9 -5	SANDSTONE: medium grained, pale grey, low strength, fresh,		:			С	98	98	PL(A) = 0.29
	-	unbroken, Hawkesbury Sandstone								
47										
	-6 -					C 07 CODE LOCO:				PL(A) = 0.22
46	6.35	SANDSTONE: medium grained, pale grey, medium strength with high strength bands, fresh,				6.27m: CORE LOSS: 80mm				
	- - - 7	unbroken, Hawkesbury Sandstone					С	98	98	PL(A) = 0.66
	-				 	7.41m: Ds 10mm		30	30	
45	-									
	- 8									PL(A) = 0.84
44	-									
	- - - - 9				 					PL(A) = 0.76
	- - -						С	100	98	
43	-									
	-			<u>: </u>						

RIG: Bobcat DRILLER: JE LOGGED: TM CASING: HQ to 3.89m

TYPE OF BORING: Solid flight auger to 3.8m, Rotary to 3.89m, NMLC Coring to 17.59m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD04/20200831, Bulk samples taken 0.6-1.4m, 1.5-3.8m

SAMPLING & IN SITU TESTING LEGEND A Auger sample G G ass 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.) C Core drilling W Water sample P Pocket penetrometer (kPa) D Disturbed sample D Water seep S Standard penetron test E Environmental sample Water level V Shear vane (kPa)



CLIENT: Lendlease Building Pty Ltd SCH Stage 1 / CCCC Project **PROJECT:**

High Street and Hospital Road, Randwick LOCATION:

SURFACE LEVEL: 52.6 AHD EASTING: 337035.3 **NORTHING:** 6245607.6

DIP/AZIMUTH: 90°/--

BORE No: BH607 PROJECT No: 72505.18 **DATE:** 31/8/2020

SHEET 2 OF 2

		Description	Degree of Weathering	ic	Rock Strength	Fracture	Discontinuities	Sa	amplii	ng & I	n Situ Testing
R	Depth (m)	of	Wednesday	iraph Log	Strength Nedium High String High Ex High Water Water Water Water Water Water New York High Ex High String New York	Spacing (m)	B - Bedding J - Joint	Туре	Core Rec. %	مد %	Test Results &
	` ′	Strata	X M M W M H	Ö	Very Very Very Very	0.00	S - Shear F - Fault	Ļ	ပိမ္ထိ	χ°`	Comments
42	-11	SANDSTONE: medium grained, pale grey, medium strength with high strength bands, fresh, unbroken, Hawkesbury Sandstone (continued)					10.3m: B5°, pl, ro, cln 10.49m: Ds 40 mm 11.15m: B0°, pl, ro, cly, vn	С	100	98	PL(A) = 0.81 PL(A) = 0.87
41	11.64			X			11.58m: CORE LOSS: 60mm				PL(A) = 1.3
39 40	-13							С	98	95	PL(A) = 0.5
38	-14						13.9m: Ds 110mm 14.46m: Ds 50mm				PL(A) = 1.7
	- 15 -										PL(A) = 0.3
36 37	-16 -16						16.33m: Ds 10mm	С	100	100	PL(A) = 0.94
	-17	Between 16.85-17.57: with siltstone clasts									PL(A) = 1.1
35	- 17.59 - - - - - 18 - -	Bore discontinued at 17.59m Target depth reached					_17.5m: B0°, pl, ro, cly vn _				
33 34 34	- - - - - - - - - - - - - - - - - - -										

RIG: Bobcat DRILLER: JE LOGGED: TM CASING: HQ to 3.89m

TYPE OF BORING: Solid flight auger to 3.8m, Rotary to 3.89m, NMLC Coring to 17.59m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD04/20200831, Bulk samples taken 0.6-1.4m, 1.5-3.8m

SAMPLING & IN SITU TESTING LEGEND LECEND 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) Gas sample Piston sample Tube sample (x mm dia.) Water sample Water seep Water level A Auger sample B Bulk sample BLK Block sample Core drilling Disturbed sample Environmental sample









Lendlease Building Pty Ltd CLIENT: SCH Stage 1 / CCCC Project **PROJECT:**

High Street and Hospital Road, Randwick LOCATION:

SURFACE LEVEL: 52.9 AHD **EASTING:** 337054.9 **NORTHING:** 6245642.4

DIP/AZIMUTH: 90°/--

BORE No: BH608 PROJECT No: 72505.18 **DATE:** 27 - 28/8/2020 SHEET 1 OF 2

		_							Pools	ı		_			
	D"		Description	W	egr eatl	ree of herin	<u>اڄ</u> ا و	_	Rock Strength ់ត្រ	Fracture	Discontinuities				n Situ Testing
R	Depth (m)	1	of			hering	rap	Log		Spacing (m)	B - Bedding J - Joint	Туре	Core Rec. %	و چ	Test Results &
	()		Strata	≥≥	. ≥	SW	قا۾		Ex Low Low Medium High High Ex High	` '	S - Shear F - Fault	≥	ပြည်	ης «	α Comments
F	_ 0.0		ASPHALTIC CONCRETE	Ĥ			'n.	Ţ)		11 11		E/D			
F	- 0	0.2	FILL/ROADBASE: GRAVEL, coarse,			 	۵·۲	7.7				E/D	1		
F	- 0).5	dark grey, igneous, subangular-subrounded, dry	l i	i	iii		$\frac{1}{2}$		ii ii		E/D			
E			FILL/ GRAVEL: medium,				\otimes	$\langle \rangle$							
52	- -1		yellow-brown, sandstone, with clay,		i		\times	\geq				E/D*			
ŀ	- '		sand, crushed sandstone, dry FILL/SAND: fine to medium, brown,				$\langle \rangle$	$\langle \rangle$				s			1,1,1
-	-		trace silt, and fine subangular				\times	\times							N = 2
F	- 1	.5	igneous gravel, dry	į	į	ijij		::							
_			SAND SP: fine to medium, yellow-brown, with clay, moist, loose,								Unless noted otherwise,	E/D			
5	-2		aeolian	l į	į	i i i				ii ii	rock is fractured along	L/D	-		
ŀ	-										rough, planar bedding planes dipping at 0-20°				
ŀ	- 2	2.5	CANIDCTONIC, madis up to access	l i	i	iii				ii ii		S			25/90
F	-		SANDSTONE: medium to coarse grained, pale yellow and red, very	<u> </u>			1::					<u> </u>	1		refusal
20	- -3		low then low strength, highly weathered, slightly fractured,				::				2.92m: B5°, un, ro				PL(A) = 0.07
<u> </u>	-		Hawkesbury Sandstone								3.06m: J10-90°, st, ro,				
-	-										cln 3.23m: Ds 5mm				
F	-				1		::				^L 3.26m: Ds 40mm				
[_6				li	i		::			- 	3.68m: Ds 80mm				
-	-4 -				1		::								PL(A) = 0.08
ŀ	-				i	 	::				4.12m: B5°, pl, ro, st	С	97	72	
ŀ	-			Ì	1		::								
Ē				¥	 		- ::	 			4.72m: CORE LOSS:				
48	_ 4.8 -5 5.0			-	İ			::: ::::			\ 110mm				
ļ.	- 5.0	2	SANDSTONE: medium grained, pale grey, low then medium to high								^L 4.83m: Ds 20mm				
-	-		strength, fresh, slightly fractured to	ļ	i	i i i				ii ii					PL(A) = 0.19
ŀ			unbroken, Hawkesbury Sandstone												
-				li	i	iii									
<u> </u>	-6														PL(A) = 0.91
ŀ	-				i										
Ė	-														
[:::			6.63m: Ds 60mm				
-8	- -7														PL(A) = 1
F	-					 									() .
F							╠	:::			7.31m: CORE LOSS:	С	99	99	
[20mm 7.33m: Ds 10mm				
45	-			į		Ιİİ									
†	-8 -							:::							PL(A) = 0.81
ŀ	Ī			į		ļij									
E	_														
ļ	-			Lį	İ	Шİ		::: :::		<u> </u>			L		
44	- -9									11 11	8.85m: CORE LOSS: 30mm				PL(A) = 0.97
ŀ	Ė			į į	į	ijij					OSHIIII				
[:::				С	99	99	
<u> </u>	-			i	į	ijij									
43	ļ							:::							
ن		_				للللل	44	•••				1			L

LOGGED: TM CASING: HW to 2.6m, HQ to 2.75m RIG: Bobcat DRILLER: JE

TYPE OF BORING: Diacore to 0.05m, Solid flight auger to 2.5m, Rotary to 2.75m, NMLC Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sample BD02/20200827, Bulk samples taken 0.5-1.5m & 1.5-2.5m, Groundwater well installed, refer to Well Log for

	construction details, Data logger 2119607 installed in well											
	SAMPLING & IN SITU TESTING LEGEND											
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)							
В	Bulk sample	Р	Piston sample		Point load axial test Is(50) (MPa)							
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	Point load diametral test ls(50) (MPa)							
С	Core drilling	WÎ	Water sample	pp `	Pocket penetrometer (kPa)							
D	Disturbed sample	⊳	Water seep	S	Standard penetration test							
E	Environmental sample	¥	Water level	V	Shear vane (kPa)							



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Heapital Board Park

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.9 AHD EASTING: 337054.9 NORTHING: 6245642.4 DIP/AZIMUTH: 90°/--

BORE No: BH608 PROJECT No: 72505.18 DATE: 27 - 28/8/2020 SHEET 2 OF 2

		Description	Degree of Weathering	ပ	Rock Strength	Fracture	Discontinuities	Sa	ampliı	ng & I	n Situ Testing
씸	Depth (m)	of	Wednesday	iraph Log	Strength Needium Needi	Spacing (m)	B - Bedding J - Joint	Туре	Core Rec. %	SD %	Test Results &
	` ′		X M M X S R H X S R R R S R R R R R R R R R R R R R R	9	Ex H	0.00	S - Shear F - Fault	r	S &	χ°`	Comments
42	-11	SANDSTONE: medium grained, pale grey, low then medium to high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone (continued)					11.12m: B0°, pl, ro, cln	С	99	99	PL(A) = 1 PL(A) = 1.1
41	- 11.89 -12 - - - - -			X			11.83m: CORE LOSS: 60mm 12.14m: B0°, pl, ro, cln				PL(A) = 1.2
40	-13						12.89m: B0°, pl, ro, cly vn 13.48m: B0°, pl, ro, cly vn	С	98	98	PL(A) = 0.83
39	-14										PL(A) = 0.75
38	- -15 - -						15.13m: Ds 30mm 15.45m: Ds 10mm	С	100	98	PL(A) = 1.1 PL(A) = 0.15
37	- 16 - 16 - 16 22					 	15.98m: B0-10°, un, sm				PL(A) = 1.2
	16.33 - - - -	Bore discontinued at 16.33m Target depth reached									
98	-17										
35	- 18 										
33 34	-19 -19 										

RIG: Bobcat DRILLER: JE LOGGED: TM CASING: HW to 2.6m, HQ to 2.75m

TYPE OF BORING: Diacore to 0.05m, Solid flight auger to 2.5m, Rotary to 2.75m, NMLC Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sample BD02/20200827, Bulk samples taken 0.5-1.5m & 1.5-2.5m, Groundwater well installed, refer to Well Log for construction details. Data logger 2119607 installed in well

	construction details, Data logger 2119607 installed in well											
	SAMPLING & IN SITU TESTING LEGEND											
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)							
В	Bulk sample	Р	Piston sample		Point load axial test Is(50) (MPa)							
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D)	Point load diametral test ls(50) (MPa)							
С	Core drilling	WÎ	Water sample	pp `	Pocket penetrometer (kPa)							
D	Disturbed sample	⊳	Water seep	S	Standard penetration test							
E	Environmental sample	Ī	Water level	V	Shear vane (kPa)							









Appendix C (Continued) Previous Groundwater Well Logs

CLIENT: LendLease Building Pty Ltd
PROJECT: Randwick Campus Redevelopment
LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 51.9 AHD EASTING: 337044.9 NORTHING: 6245563 DIP/AZIMUTH: 90°/--

BORE No: 4 (72505.11) **PROJECT No:** 72505.13 **DATE:** 19 - 21/9/2017 **SHEET** 1 OF 1

Sampling & In Situ Testing Graphic Log Well Description Depth 屋 of Construction Depth (m) Type San Strata Details 0.07 Gatic Cover ASPHALTIC CONCRETE (typically <10mm diameter) 0.07 0.15 0.5 0.2 ASPHALTIC CONCRETE (typically <20mm diameter) 0.8 Α ROADBASE - dark grey, angular, igneous gravel typically 0.9 1.0 1.4 40-80mm diameter, slight hydrocarbon odour Backfill FILLING - orange-brown, medium grained sand filling with 1.6 1.9 ---------some sandstone gravel and a trace of clay (ripped -2 2.0 25 8,14,17 N = 31 SAND - pale yellow-brown, fine to medium grained sand, S 49 damp 2.95 - 3 -3 †2.2m: brown Bentonite 3.5 3.65 SAND - medium dense to dense, orange, fine to medium 3 65 PL(A) = 0.223.9 sand with some clay, damp SANDSTONE - extremely low to very low strength С sandstone PL(A) = 0.765 4.95 - 5 SANDSTONE - low strength, slightly weathered, fractured to slightly fractured, pale brown, medium to coarse Gravel grained sandstone Screen 4-7m 9 1 46 5.93 PL(A) = 0.71SANDSTONE - medium strength, slightly weathered then -6 fresh, slightly fractured and fractured, medium to coarse grained sandstone C - limonite staining to 4.40m 6.91 6.95 PL(A) = 0.715.5m: distinct irregular bedding dipping 15°- 20° Bentonite 6.4m: indistinct irregular bedding dipping 0°- 20° 7.95 PL(A) = 0.66- 8 -8 SANDSTONE - medium strength, fresh, slightly fractured and unbroken, pale grey, medium to coarse grained 8.38 sandstone, massive, trace carbonaceous flecks 43 8.95 PL(A) = 0.95- 9 - 9 С 9 95 PL(A) = 0.7310 10.88 PL(A) = 0.61- 11 11 11.39 12 12.0 11.95 PL(A) = 0.69- 12 SANDSTONE - medium to high strength, fresh, slightly fractured to unbroken, pale grey, medium to coarse grained sandstone, indistinct bedding typically dipping Backfill ිදි 13 С 12.95 PL(A) = 1.1- 8 13.95 PL(A) = 0.91- 14 14 14 37 SANDSTONE - high then medium strength, fresh, 14.95 PL(A) = 1.3315 unbroken, pale grey, fine to medium grained sandstone, - 15 occasional carbonaceous laminations and flecks С -8 - 16 15.93 PL(A) = 0.5916 16.78-16.97m: siltstone clasts and laminations, slightly PL(A) = 0.7617 17.04 fractured 17.31 17.31 Bore discontinued at 17.31m -8 18 - target depth reached 18

RIG: Bobcat DRILLER: GM LOGGED: ARM CASING: HW to 3.65m

TYPE OF BORING: Diatube to 0.08m; NDD to 1.7m; Solid flight auger (TC-bit) to 3.65m; NMLC-Coring to 17.31m

WATER OBSERVATIONS: No free groundwater observed whilst augering

		SAMPLING	& IN SITU TESTING	G LEGE	ND
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	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 ls(50) (MPa)
С	Core drilling	WÎ	Water sample	pp	Pocket penetrometer (kPa)



CLIENT: LendLease Building Pty Ltd **PROJECT:** Randwick Campus Redevelopment LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 50.5 AHD **EASTING:** 337038.1 **NORTHING**: 6245507 **DIP/AZIMUTH:** 90°/--

BORE No: 8 (72505.11) **PROJECT No:** 72505.13 **DATE:** 23 - 24/1/2018

SHEET 1 OF 1

Depth	Description	hic		San		& In Situ Testing		Well	
(m)	of	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Construc	
0.1	Strata	U	F.	۵	Sa	Comments		Details - Gatic Cover	S ाम ा
0.25	ASPHALTIC CONCRETE (typically <10mm diameter) ROADBASE - dark grey, angular, igneous gravel typically			0.4				Backfill	1
-1	40-80mm diameter		_A*_	0.5				-1	
	FILLING - pale grey and brown sandstone gravel and cobbles up to 100mm diameter (ripped sandstone)			0.7				Bentonite	-
-2	SAND - pale brown, medium grained sand with a trace of fine gravel, damp		_A_	1.7				- -2 - Gravel	
2.6	¬ SANDSTONE - extremely low strength, orange-brown			2.5 2.66		7,10/10mm refusal		Screen 2-3m	
2.77 ²	sandstone		С	2.77 2.95		PL(A) = 0.26		-3 Bentonite	
	SANDSTONE - low to medium strength, slightly weathered, fractured to slightly fractured, orange and grey,		C	3.88		PL(A) = 0.43		Bentonite	100
- 4	medium to coarse grained sandstone			3.91		PL(A) - 0.43		-4 -	000
-5				4.95		PL(A) = 0.6		- - -5	000
5.45			С			,			000
-6	SANDSTONE - high then medium strength, fresh, slightly fractured to unbroken, pale grey, medium to coarse grained sandstone with a trace of carbonaceous flecks			5.95		PL(A) = 1.12		6	000
	6.4-6.9m: red-brown iron staining								000
-7	G			6.89 6.95		PL(A) = 0.69		-7	000
								-	000
-8				7.95		PL(A) = 0.63		-8	000
	8.1-8.55m: low strength band		С	8.41		PL(A) = 0.22			000
-9				8.95		PL(A) = 0.63		9	000
									0,0
-10	10.2-10.41m: with 25% siltstone clasts up to 20mm			9.93 9.95		PL(A) = 1.03		-10	500
10.41	diameter, fragmented (possibly drilling induced)			0.00				Backfill	100
-11 11.45	LAMINITE - low strength, fresh, slightly fractured, dark grey siltstone interlaminated and interbedded with 40% pale grey, fine grained sandstone		С	10.95		PL(A) = 0.18		- -11	0,000
12	SANDSTONE - high strength, fresh, slightly fractured to unbroken, pale grey, medium to coarse grained			11.95		PL(A) = 2.23		-12	000
	sandstone, massive								500
13	↑ 12.84-13.03m: with 50% carbonaceous laminations			12.75 12.92		PL(A) = 1.54		- -13	5000
	13.03-13.21: fine to medium grained 13.21m: medium to coarse grained, irregular bedding								1000
-14	dipping 10-20°			13.85		PL(A) = 1.19		14	000
			С						00°C
15	14.8m: massive			14.95		PL(A) = 1.27		-15 -	000
									500 500
-16				15.89 15.95		PL(A) = 1.36		16	000
	16.44m: irregular bedding dipping 10-20°		С						1000 1000
- 17	5 5 ·· ·			16.95		PL(A) = 1.57		- - 17	1000
17.39	Bore discontinued at 17.39m	1:::::::		17.39-					F.7C
-18	- target depth reached							-18	

RIG: Bobcat DRILLER: GM LOGGED: ARM CASING: HW to 2.5m; HQ to 2.7m TYPE OF BORING: Diatube to 0.10m; Non-destructive drilling to 1.7m; Solid flight auger (TC-bit) to 2.77m; NMLC-Coring to 17.39m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

Gas sample
Piston sample
Tube sample (x mm dia.)
Water sample
Water seep
Water level A Auger sample B Bulk sample BLK Block sample Core drilling
Disturbed sample
Environmental sample

LEGEND
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)



CLIENT: LendLease Building Pty Ltd PROJECT: Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 55.7 AHD **EASTING**: 337090 **NORTHING**: 6245535 **DIP/AZIMUTH:** 90°/--

BORE No: 12 **PROJECT No:** 72505.13

DATE: 30-4-2018 SHEET 1 OF 1

Depth	Description	Graphic Log		Sam		& In Situ Testing	_ _	Well
(m)	of	Log	Туре	Depth	Sample	Results & Comments	Water	Construction
	Strata	9	≧	De	San	Comments		Details
0.09	ASPHALTIC CONCRETE	DO.	D	0.1 0.2				Gatic Cover
0.6	ROADBASE: dark grey, sandy fine to coarse grain \igneous gravel, damp			0.2				1 Backfill
-1	FILLING: brown, medium to coarse sand filling, with some	\bowtie	_D_	0.9			1 :	-1 Backfill
1.2	silt, damp	/ ` ` ` ` `						
	₹0.8-1.2 m: with some roots.		_	1.6		2,7,9		
2	SAND: medium dense, yellow brown, medium sand, damp		S	2.05		N = 16		-2
				2.00				
								Bentonite
-3				3.0				-3
			S			5,10,13 N = 23		-3
				3.45				
-4								-4
								[S
			S	4.5		6,11,13		
-5			3	4.95		N = 24		Gravel
								Screen 3.8-6.8m
-6				6.0		11/110		: -6
6.1	SANDSTONE: high strength, slightly weathered	*******	S	6.1 6.11		refusal		
	becoming fresh, slightly fractured, pale grey, medium to coarse grained sandstone, some iron stained bedding			0.11				50
7	000000 9.00000 000000000000000000000000			7.0		PL(A) = 2.42		7
						, ,		Bentonite
			С			PL(A) = 2.29		
-8							1 1	-8 [K C
•								600
								000
8.8	SANDSTONE: high strength, fresh, unbroken, pale grey,	******		8.79 8.8		PL(A) = 1.24		-9
	medium grained sandstone							
	9.40-9.45 m: bedding typically 10-20°							00
-10				9.81		PL(A) = 1.9		-10
			С					600
				10.72		PL(A) = 2.54		
- 11				10.72		1 = (1) = 2.07		-11 Backfill
						BLOD CO	[000
				11.48		PL(A) = 0.93		
-12			С	11.81 12.06		PL(A) = 1.33		-12
			С	12.27		1 = (7) = 1.00	[0°
				12.55				
-13								-13
			С				[
	↑ 13.57-14.15 m: becoming slightly fractured			13.71		PL(A) = 1.2		် (၈)
- 14	13.66-13.76 m: bedding typically 5 - 10°			14.0		PL(A) = 1.24		-14
- 14 14.15 -	Bore discontinued at 14.15m	<u> </u>		14.15		` ,		
	Target depth reached							

DRILLER: BG Drilling LOGGED: JAP CASING: HW to 5.5 m RIG: Han Jin 8D TYPE OF BORING: Diatube to 0.09 m, NDD to 1.5 m, Solid flight auger (TC-bit) to 4.0 m, Rotary to 6.1 m, HQ Coring to 14.15 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

	SA	MPLING	& IN SITU TESTING	G LEGI	END
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	Piston sample	PL(A) Point load axial test Is(50) (MPa)
BLK	Block sample	U _x	Tube sample (x mm dia.)	PL(D) Point load diametral test ls(50) (MPa)
С	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	\triangleright	Water seep	S	Standard penetration test
	Environmental cample	¥	Mater level	1/	Shoor yong (kDa)



CLIENT: LendLease Building Pty Ltd PROJECT: Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 52.0 AHD **EASTING**: 337045

NORTHING: 6245565 **DIP/AZIMUTH:** 90°/-- **BORE No:** 13

PROJECT No: 72505.13 **DATE:** 3-5-2018

SHEET 1 OF 1

П			Description			Sam	nplina 8	& In Situ Testing		\\\!!
RL	Dep	oth	Description of	Graphic Log	0				Water	Well Construction
۳	(m	ו)	Strata	Gra	Type	Depth	Sample	Results & Comments	Š	Details
25		0.05	ASPHALTIC CONCRETE: (typically <10 mm diameter)			_	S			
		0.11	ASPHALTIC CONCRETE: (typically <20 mm diameter)	. o. ·						Rackfill Rackfill
} -			ROADBASE: dark grey, angular igneous gravels,	0.0						Gatic Cover
		0.4	(typically 30-80 mm diameter)							
		0.6	FILLING: grey-brown, ripped sandstone filling, (typically 40-80mm diameter)							- Bentonite
		0.9	FILLING: orange brown, medium sandy gravel filling with some coarse sandstone gravel, damp							
-52	-1		SAND: medium dense, pale yellow, medium sand, damp							
}			, , , , , , , , , , , , , , , , , , ,							
						1.8				-
20	- 2				S			2,6,9 N = 15		-2
						2.25				
ŀ						2.23				Gravel
-		2.5	CAND: modium dense to dense brown erongs fine to							Screen 1 3-3 8m
			SAND: medium dense to dense, brown orange, fine to medium sand with some silt, damp							
-						2.8				
49	- 3				D	3.0				-3
-					s			14,8/80 refusal		
		3.2	SANDSTONE: extremely low to very low strength, orange			3.2				
-			brown sandstone							
} }										
		3.8	Bore discontinued at 3.8m							- -
-84	-4		Limit of investigation							-4
}										-
} }										-
										-
										<u> </u>
47	- 5									-5 -
}	-									
										[
}										-
										[
}	-									-
	-									

DRILLER: BG Drilling LOGGED: JAP **CASING:** Uncased RIG: Han Jin 8D

TYPE OF BORING: Diatube to 0.15 m, Non-destructive drilling to 1.6 m, solid flight auge (TC-bit) to 3.8 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

	SAI	VIPLING	& IN SITU TESTING	G LEGE	ND
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
	Bulk sample		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 ls(50) (MPa
	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
	Disturbed sample		Water seep	S	Standard penetration test
E	Environmental sample	¥	Water level	V	Shear vane (kPa)



CLIENT: LendLease Building Pty Ltd PROJECT: Randwick Campus Redevelopment LOCATION:

Hospital Road and High, Magill and Botany

SURFACE LEVEL: 55.2 AHD **EASTING**: 336986 **NORTHING**: 6245643

PROJECT No: 72505.13 **DATE:** 8-5-2018

BORE No: 16

Streets, Randwick DIP/AZIMUTH: 90°/--SHEET 1 OF 1

	_		Description	ы́ _		San		& In Situ Testing	<u></u>	Well	
귐	De	epth m)	of	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Construction	
			Strata		1	۵	Sar	Comments		Details	1.4
-	-	0.12	CONCRETE SLAB	4 A						Gatic Cover	4.4
- 55			FILLING: brown, fine to medium sand filling with some silt and trace of igneous gravel, humid							Backfill -1	
ŀ		0.55									
ŀ	-	0.00	SAND: yellow, fine to medium sand, damp							Backfill	
ŀ											
ŀ	- 1									-1	
-54											
ŀ	ŀ										
ŀ	-									Bentonite	
ŀ	-										
ŀ	- -2	2.0				2.0				-2	
[_	-	2.0	SAND: medium dense, yellow, fine to medium sand, damp			2.0		4044		-2 •0	
-83					S			4,9,11 N = 20		• O	
-	-					2.45				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	7000
ŀ										000	
ŀ	_									000	
-	- 3									-3	
52	-	3.2	SAND: medium dense, brown, fine to medium sand with							000 0000	
ŀ	-		trace of clay, damp							Gravel Screen 2.1-4.7m	
ŀ	-					3.5				90 90 90	- 0
ŀ	-				S			7,9,20 N = 29			
-	-					3.95					= 00 - 00 - 00
ŀ	-4 -	4.1	CANIDOTONIC		S	4.1		6/30, Bouncing		-4	
-51			SANDSTONE: very low strength, orange-brown and light grey, medium to coarse grained sandstone			4.15					
ŀ	-									200 200 200	
-	-										
ŀ	-	4.7	Bore discontinued at 4.7m Limit of investigation								
ŧ	- - 5		Little of Hivosuguloti							-5	
- 02	-										
-	-										
-	-										
ŀ	-										
ŀ	-										

DRILLER: BG Drilling LOGGED: JAP CASING: HW to 4.0 m RIG: Han Jin 8D TYPE OF BORING: Diatube to 0.12 m, Non-destructive drilling to 1.8 m, solid flight auger (TC-bit) to 2.0 m, Rotary to 4.7 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

	SAN	IPLING	& IN SITU TESTIN	G LE	GEND
Α	Auger sample	G	Gas sample	PII	Photo ionisation detector (ppm)
	Bulk sample		Piston sample		(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)
	Core drilling		Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	\triangleright	Water seep	S	Standard penetration test
	Environmental comple		Motor loval	1/	Chaar yang (kDa)



CLIENT: LendLease Building Pty Ltd PROJECT: Randwick Campus Redevelopment

LOCATION: Hospital Road and High, Magill and Botany

Streets, Randwick

SURFACE LEVEL: 55.2 AHD **EASTING**: 336983

NORTHING: 6245644 DIP/AZIMUTH: 90°/--

BORE No: 17

PROJECT No: 72505.13

DATE:	8-	5-2018	
SHEET	1	OF 1	

Depth	Description	hic				k In Situ Testing	_ _	Well
(m)	of Strata	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Construction Details
0.11	CONCRETE SLAB	\		_	S			Gatic Cover
0.6	FILLING: brown, fine to medium sand filling with some silt and trave of igneous and sandstone gravel, humid							
1	SAND: yellow-brown, fine to medium sand, damp							2 Backfill
-2 2.0	SAND: medium dense yellow-brown fine to medium sand, damp		S	2.0		4,6,9 N = 15		Backfill
-3				20				-3
3.3	SAND: medium dense, brown, fine to medium sand with trace of clay, damp		S	3.5		9,10,14 N = 24		
4.4	SANDSTONE: very low to low strength, orange-brown and			0.00				Bentonite
5 5.08	light grey, medium to coarse grained sandstone SANDSTONE: medium strength, slightly weathered, slightly fractured, light grey and red-brown, medium to		С	5.0				5
- 6	coarse grained sandstone, bedding typically 0-10°			5.79 5.8		PL(A) = 0.6		
-7				6.71		PL(A) = 0.8		
-8			С	7.86		PL(A) = 1.1		Gravel
				8.8		DL(A) = 0.5		
- 9 9.5 -	CANDOTONIC readium strongth from alighblu from und			8.88 9.34		PL(A) = 0.5 PL(A) = 0.5		-9 0 0 0 0 0 0 0 0 0
- 10	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, light grey sandstone with some low strength bands, bedding typically 10-15° with some cross bedding		С	10.0		PL(A) = 0.8		-10
-11	SANDSTONE (see over page)			11.0		PL(A) = 0.12		Bentonite
- 12 12.24 -				11.85 11.95		PL(A) = 0.39		- 12
-13	SANDSTONE: medium and high strength, fresh, unbroken, light grey and grey sandstone			12.37		PL(A) = 1.38		Backfill
10	13.4-13.8: Bedding typically 5-10°		С	13.44		PL(A) = 0.69		
-14								- 14
14.8 -15	Bore discontinued at 14.8m Target depth reached	[::::::::		_14.76- 14.8		PL(A) = 1.16		-15

DRILLER: BG Drilling LOGGED: JAP CASING: HW to 4.5 m RIG: Han Jin 8D TYPE OF BORING: Diatube to 0.11 m, Non-destructive drilling to 1.8 m, Auger to 2.0 m, Rotary to 5.0 m, NMLC Coring to 14.80 m

WATER OBSERVATIONS: No free groundwater observed whilst augering

	SAN	IPLING	& IN SITU TESTIN	G LEC	SEND
Α	Auger sample	G	Gas sample	PIE	Photo ionisation detector (ppm)
	Bulk sample	Р	Piston sample		(A) Point load axial test Is(50) (MPa)
BLK	Block sample	U,	Tube sample (x mm dia.)) PL	D) Point load diametral test ls(50) (MPa)
С	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	\triangleright	Water seep	S	Standard penetration test
	Environmental cample	¥	Mater level	1/	Shoor yong (kDa)



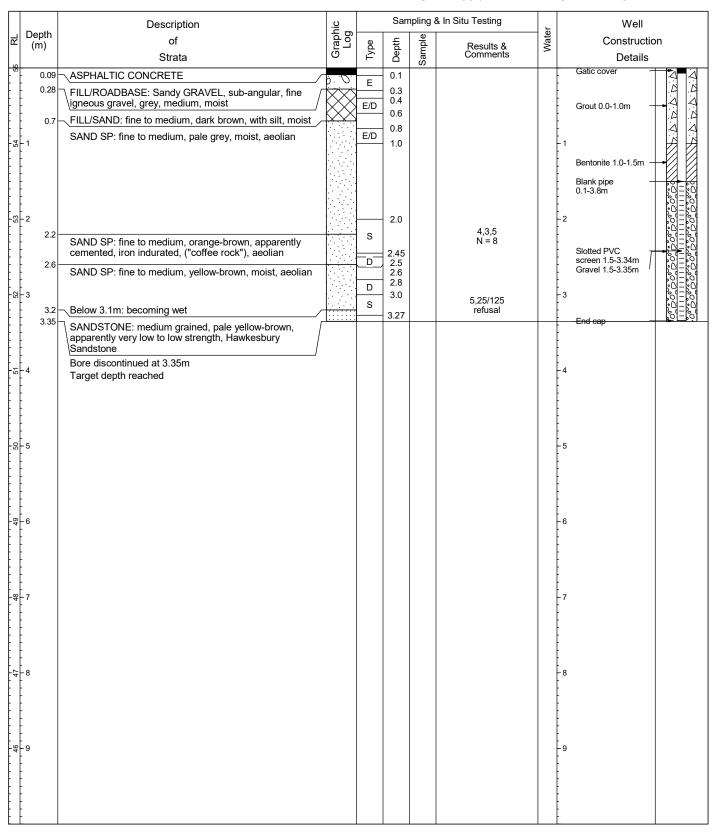
CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55 AHD **EASTING:** 337097.5 **NORTHING:** 6245571.8 **DIP/AZIMUTH:** 90°/--

BORE No: BH602 **PROJECT No:** 72505.18 **DATE:** 19 & 24/08/2020

SHEET 1 OF 1



RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH CASING: None TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.5m, Solid flight auger to 3.35m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Bulk sample taken at 0.7-1.5m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121809 installed in

	WEII				
	SAME	PLINC	3 & IN SITU TESTING	LEGI	END
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	Piston sample	PL(A) Point load axial test Is(50) (MPa)
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	ý Point load diametral test Ís(50) (MPa)
С	Core drilling	WÎ	Water sample	pp `	Pocket penetrometer (kPa)
D	Disturbed sample	⊳	Water seep	s	Standard penetration test
E	Environmental sample	Ī	Water level	V	Shear vane (kPa)



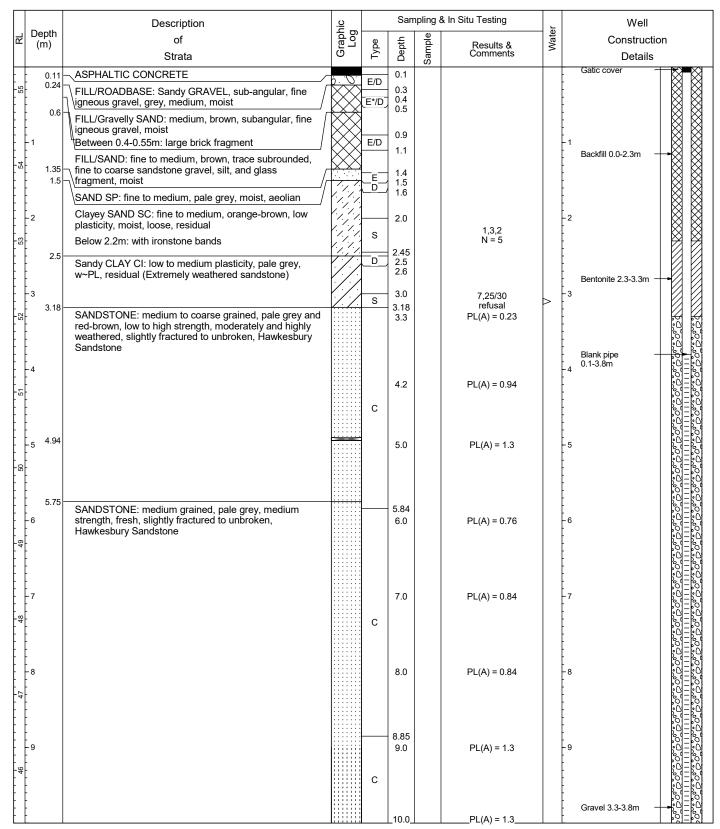
CLIENT: Lendlease Building Pty Ltd **PROJECT:** SCH Stage 1 / CCCC Project LOCATION:

High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.3 AHD EASTING: 337109.8 **NORTHING:** 6245649.5 DIP/AZIMUTH: 90°/--

BORE No: BH605 PROJECT No: 72505.18 **DATE**: 19 & 25/08/2020

SHEET 1 OF 2



RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH/TM CASING: HQ to 3.1m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.8m, Solid flight auger to 3.18m, NMLC Coring to 16.28m

WATER OBSERVATIONS: Water seepage at 3.1m

REMARKS: *Field replicate sampleBD1/20200819, Bulk samples taken 0.4-1.0m & 1.5-1.8m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119606 installed in well

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



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.3 AHD **EASTING**: 337109.8 **NORTHING**: 6245649.5

DIP/AZIMUTH: 90°/--

BORE No: BH605 **PROJECT No:** 72505.18 **DATE:** 19 & 25/08/2020

SHEET 2 OF 2

	Double	Description	je P		San		& In Situ Testing		Well	
R	Depth (m)	of Strata	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Constructio Details	n
44 45	-11	SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone (continued) SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone (continued) Between 10.7-12.17: cross bedded at 0-10°		С	11.0	S	PL(A) = 1.6		Slotted PVC screen 3.8-16.27m	
43	-12				11.81		PL(A) = 2		- 12	
42	-13			С	13.0		PL(A) = 1.4		-13	
41	- 14 14	Between 13.9-15.4m: cross bedded at 0-10°			14.0		PL(A) = 1.4		- 14 - 14	
40	- 15 15			С	14.83 15.0		PL(A) = 2		-15	
39	- 16 - 16.28	Bore discontinued at 16.28m			16.0 -16.28-		PL(A) = 2.2		- 16 End cap	
-	- - -	Target depth reached								
38	- 17 - - - - -								- 17 - 1	
37	- - 18 - - -								- 18 - 18	
36	- - - - - - - -								19	
-	-								-	

RIG: Vac Truck, Hand Tools & Bobcat DRILLER: VAC Group LOGGED: KR/JJH/TM CASING: HQ to 3.1m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.8m, Solid flight auger to 3.18m, NMLC Coring to 16.28m

WATER OBSERVATIONS: Water seepage at 3.1m

REMARKS: *Field replicate sampleBD1/20200819, Bulk samples taken 0.4-1.0m & 1.5-1.8m, Groundwater well installed, refer to Well Log for construction details. Data logger 2119606 installed in well

	construction details, Data logger 2119606 installed in Well											
	SAMPLING & IN SITU TESTING LEGEND											
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)							
В	Bulk sample	Р	Piston sample	PL(A) Point load axial test Is(50) (MPa)							
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(C) Point load diametral test (\$(50) (MPa)							
C	Core drilling	WÎ	Water sample	pp `	Pocket penetrometer (kPa)							
D	Disturbed sample	⊳	Water seep	S	Standard penetration test							
E	Environmental sample	¥	Water level	V	Shear vane (kPa)							



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.1 AHD **EASTING:** 337045.4 **NORTHING:** 6245584.9 **DIP/AZIMUTH:** 90°/--

BORE No: BH606 **PROJECT No:** 72505.18 **DATE:** 28 - 31/8/2020 **SHEET** 1 OF 2

	D-	41-	Description	Jic R		San		k In Situ Testing		Well
씸	(r	pth n)	of Strata	Graphic Log	Type	Depth	Sample	Results & Comments	Water	Construction Details
52		0.06 - 0.2 -	ASPHALTIC CONCRETE /	ġ <i>Q</i> .	L _D	0.1	S		+	Gatic cover Grout 0.0-1.0m
			FILL/ROADBASE: GRAVEL, coarse, dark grey, igneous, subangular-subrounded, dry, roadbase		E/D*	0.2			-	Bentonite 0.15-0.35m Blank pipe
		0.6	FILL/ GRAVEL: medium, yellow-brown, sandstone, with clay, sand, crushed sandstone, dry		E/D	0.8				Blank pipe
51	- 1 ·		FILL/ SAND: fine to medium, pale grey, dry		S	1.0		3,4,4 N = 8		1 6 6 6 6 6 6 6 6 6
		1.4	SAND SP: fine to medium, brown, dry, loose, aeolian			1.45		N - 0		
20	- - -2		Below 1.8m: moist		_E/D_	1.9				Slotted PVC screen 0.5-3.0m 2 Gravel 0.5-3.0m
			Below 2.5m: medium dense			2.5				
			Delow 2.3m. medium dense		S	2.95		5,7,9 N = 16		
49	-3	3.1	SANDSTONE: medium to coarse grained,			2.93				3 End cap
		3.6	yellow-brown, very low to low strength, Hawkesbury Sandstone			3.6		PL(A) = 0.14	-	Bentonite 3.0-4.0m
48	- 4		SANDSTONE: medium to coarse grained, pale grey with some pale orange staining, low then medium strength, slightly weathered, slightly fractured, Hawkesbury Sandstone			4.0		PL(A) = 0.23		4
			namessary canacone							
					С					
47	-5					5.1		PL(A) = 0.61		5
	-6					5.8 6.0		PL(A) = 0.68		6
9		6.25	SANDSTONE: medium grained, pale grey, medium					. ,		
			strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone							
45	-7					7.0		PL(A) = 0.46	-	7
					С					
44	-8					8.0		PL(A) = 0.76		8
	- 9					8.8 9.0		PL(A) = 0.68		9
43					С			.,		
						10.0_		PL(A) = 0.52		

RIG: Bobcat DRILLER: JE LOGGED: TM CASING: HW to 3.2m, HQ to 3.6m

TYPE OF BORING: Diacore to 0.06m, Solid flight auger to 3.2m, Rotary to 3.6m, NMLC Coring to 16.19m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD03/20200828, Bulk samples taken 0.6-1.0m & 1.5-3.0m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121808 installed in well

	concluded in well												
	SAMPLING & IN SITU TESTING LEGEND												
A	Auger sample	G	Gas sample		Photo ionisation detector (ppm)								
B		Р	Piston sample	PL(A	Point load axial test Is(50) (MPa)								
В	LK Block sample	U,	Tube sample (x mm dia.)	PL(C) Point load diametral test Is(50) (MPa)								
l c	Core drilling	WÎ	Water sample	pp ·	Pocket penetrometer (kPa)								
D	Disturbed sample	⊳	Water seep	S	Standard penetration test								
E	Environmental sample	Ī	Water level	V	Shear vane (kPa)								



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.1 AHD **EASTING:** 337045.4 **NORTHING:** 6245584.9 **DIP/AZIMUTH:** 90°/--

BORE No: BH606 **PROJECT No:** 72505.18 **DATE:** 28 - 31/8/2020 **SHEET** 2 OF 2

			Description	.je		Sampling & In Situ Testing				Well	
귒	ין <u>י</u>	Depth (m)	of Strata	Graphic Log	Туре	Depth	Sample	Results & Comments	Water	Construction Details	n
42			SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone (continued)		С		Ö			Backfill 4.0-16.19m	•
41		11				11.0		PL(A) = 0.45		-11	
40		12				12.0		PL(A) = 0.88		-12	
		13			С	13.0		PL(A) = 1		-13	
		14				14.0		PL(A) = 0.72		-14	
37		15			С	15.0		PL(A) = 0.64		- 15 	
- 98	3-	16 16.19	Bore discontinued at 16.19m Target depth reached			16.05 -16.19-		PL(A) = 0.08		-16	
35	3	17								-17	
34	Ė	18								-18	
33		19								-19	
Ł	ŀ									<u> </u>	

RIG: Bobcat DRILLER: JE LOGGED: TM CASING: HW to 3.2m, HQ to 3.6m

TYPE OF BORING: Diacore to 0.06m, Solid flight auger to 3.2m, Rotary to 3.6m, NMLC Coring to 16.19m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD03/20200828, Bulk samples taken 0.6-1.0m & 1.5-3.0m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121808 installed in well

_	,,,											
Г	SAMPLING & IN SITU TESTING LEGEND											
1.	Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)						
L	В	Bulk sample	Р	Piston sample	PL(A	Point load axial test Is(50) (MPa)						
П	BLK	Block sample	U,	Tube sample (x mm dia.)	PL(C	D) Point load diametral test Is(50) (MPa)						
П	С	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)						
L	D	Disturbed sample	\triangleright	Water seep	S	Standard penetration test						
	E	Environmental sample	Ţ	Water level	V	Shear vane (kPa)						



SURFACE LEVEL: 52.9 AHD

CLIENT: Lendlease Building Pty Ltd SCH Stage 1 / CCCC Project PROJECT:

EASTING: 337054.9 LOCATION: High Street and Hospital Road, Randwick **NORTHING:** 6245642.4 **DIP/AZIMUTH:** 90°/--

BORE No: BH608 PROJECT No: 72505.18 **DATE**: 27 - 28/8/2020 SHEET 1 OF 2

		Description	.je	Sampling & In Situ Testing a to be a comments Sampling & In Situ Testing Results & Comments				_	Well Construction	
귐	Depth (m)	of	Graphic Log					Water		
	0.05	Strata \[\asphaltic concrete /			0.1	Sa	Comments		Details Gatic cover 7 → → 2 2 2	
	0.2	FILL/ROADBASE: GRAVEL, coarse, dark grey,	9.70	E/D E/D	0.1 0.2 0.4 0.5				O+0040 / XX XX	
52	- - - 1	FILL/ GRAVEL: medium, yellow-brown, sandstone, with clay, sand, crushed sandstone, dry FILL/SAND: fine to medium, brown, trace silt, and fine		E/D*	0.8				Backfill 0.1-1.75m	
	- - - - 1.5	subangular igneous gravel, dry		s	1.45		1,1,1 N = 2			
51	-2	SAND SP: fine to medium, yellow-brown, with clay, moist, loose, aeolian		E/D	1.8				Backfill 0.1-1.75m	
	2.5	SANDSTONE: medium to coarse grained, pale yellow and red, very low then low strength, highly weathered,		s	2.5 2.59 2.75		25/90 refusal PL(A) = 0.07		Bentonite 0.15-0.35m	
20	-3	slightly fractured, Hawkesbury Sandstone			2.8		1 L(n) - 0.01		-3 Blank pipe	
49	-4			С	4.0		PL(A) = 0.08			
48	4.83 -5 5.02	SANDSTONE: medium grained, pale grey, low then medium to high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone			5.3		PL(A) = 0.19			
47	- - - - -				5.76 6.0		PL(A) = 0.91			
46	- - - - 7			C	7.0		PL(A) = 1			
45	- - - - - - 8				8.0		PL(A) = 0.81			
44	- - - - 9				8.85 9.0		PL(A) = 0.97			
43	-			С	10.0_		PL(A) = 1		Gravel 0.5-3.0m	

CASING: HW to 2.6m, HQ to 2.75m RIG: Bobcat DRILLER: JE LOGGED: TM

TYPE OF BORING: Diacore to 0.05m, Solid flight auger to 2.5m, Rotary to 2.75m, NMLC Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sample BD02/20200827, Bulk samples taken 0.5-1.5m & 1.5-2.5m, Groundwater well installed, refer to Well Log for

	construction details, Data logger 2119607 installed in well											
	SAMPLING & IN SITU TESTING LEGEND											
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)							
В	Bulk sample	Р	Piston sample	PL(A) Point load axial test Is(50) (MPa)							
BLK	K Block sample	U,	Tube sample (x mm dia.)	PL(D) Point load diametral test (\$(50) (MPa)							
С	Core drilling	WÎ	Water sample	pp `	Pocket penetrometer (kPa)							
P	Disturbed sample	⊳	Water seep	s	Standard penetration test							
E	Environmental sample	Ī	Water level	V	Shear vane (kPa)							



CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project

LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.9 AHD **EASTING:** 337054.9 **NORTHING:** 6245642.4 **DIP/AZIMUTH:** 90°/--

BORE No: BH608 **PROJECT No:** 72505.18 **DATE:** 27 - 28/8/2020 **SHEET** 2 OF 2

	. .	Description	ië _		San		& In Situ Testing	<u>_</u>	Well	
귙	Depth (m)	of Strata	Graphic Log	Type	Depth	Sample	Results & Comments	Water	Constructio Details	on
		SANDSTONE: medium grained, pale grey, low then medium to high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone <i>(continued)</i>				03				
42	- - -11 - - -			С	11.1		PL(A) = 1.1		- 11 - 11 	
41	- - - 11.89 -12 - -				11.83 12.0		PL(A) = 1.2		- 12 - 12	
40	- - - -13 - -			С	13.0		PL(A) = 0.83		- - - - 13	
39	- - - 14 - -				14.0		PL(A) = 0.75		- - - 14 - -	
38	- - - - 15 - -			С	14.65 15.0 15.2		PL(A) = 1.1 PL(A) = 0.15		- - - 15 - -	
37	- - 16 - - - - 16.33	Bore discontinued at 16.33m			16.0 -16.33		PL(A) = 1.2		- 16 - End cap	
36	- - - - 17 -	Target depth reached							- - - - - - - - - - - - - - - - - - -	
35	- - - - 18 -								- - - -18	
34									- 19 19	
33	-								-	

RIG: Bobcat DRILLER: JE LOGGED: TM CASING: HW to 2.6m, HQ to 2.75m

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	construction details, Data logger 21 19607 installed in well											
	SAMPLING & IN SITU TESTING LEGEND											
Α	Auger sample	G	Gas sample		Photo ionisation detector (ppm)							
В	Bulk sample	Р	Piston sample) Point load axial test Is(50) (MPa)							
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D) Point load diametral test (s(50) (MPa)							
С	Core drilling	WÎ	Water sample	pp `	Pocket penetrometer (kPa)							
D	Disturbed sample	⊳	Water seep	S	Standard penetration test							
E	Environmental sample	¥	Water level	V	Shear vane (kPa)							

