
Report on Geotechnical Investigation

MPark Talavera Road Data Centre

**Part of 1-5 Khartoum Road, Macquarie
Park**

**Prepared for Stockland Development Pty
Ltd**

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

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Report on Geotechnical Investigation

MPark Talavera Road Data Centre

Part of 1-5 Khartoum Road, Macquarie Park

1. Introduction

This report prepared by Douglas Partners Pty Ltd (Douglas) presents the results of a geotechnical investigation undertaken for a proposed building re-development identified as MPark Talavera Road Data Centre, which is part of 1-5 Khartoum Road, Macquarie Park (the site). The investigation was commissioned by email instructing to proceed dated 9 October 2024 from Maud Garnier of Stockland Development Pty Ltd and was undertaken in accordance with Douglas' proposal 99657.08.P.001.Rev1 dated 1 October 2024.

It is understood that the proposed re-development of the site includes demolition of an existing carpark facility and construction of a new six storey data centre building. The site location is shown on Drawing 1, Appendix A.

The aim of the investigation was to assess the subsurface soil and groundwater conditions across the site in order to provide:

- Subsurface conditions encountered at the borehole locations;
- Descriptive ground model including groundwater;
- Excavation conditions and vibrations;
- Dilapidation survey requirements;
- Excavation support;
- Groundwater conditions;
- Foundation options suitable for expected loads; and
- Subgrade design parameters for pavement and floor slab design by others.

The geotechnical investigation was carried out concurrently with a Detailed Site (Contamination) Investigation (DSI, reported separately) and included the drilling of five cored boreholes, installation of three standpipes in selected boreholes, follow-up measurement of groundwater levels and laboratory testing of selected samples. It is noted that a total of 23 test locations were included in the current geotechnical and site contamination investigations. The details of the geotechnical field work are presented in this report, together with comments and recommendations on the items listed above. Douglas is also undertaking groundwater monitoring on site for a three month period which will be followed by the preparation of a separate Dewatering Management Plan which will include further details on the hydrogeological conditions encountered on site and applicable groundwater management.

This report must be read in conjunction with all appendices including the notes provided in the Appendices and should not be separated.

2. SEARS compliance

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 17 October 2023 issued for the SSDA (SSD-63235720). Specifically, this report has been prepared to respond to the SEARS requirements for ground and groundwater conditions as listed in Table 1.

Table 1: Summary of SEARS compliance for ground and groundwater conditions

Project Stage Design (D) Construction (C) Operation (O)	Geotechnical Risk	Mitigation Measure	Relevant Section of Report
D/C	Excavation support and stability.	Design parameters for batters slopes, retaining walls and ground anchors based on site-specific investigation / laboratory testing of ground conditions. Geotechnical inspections of batter slopes and ground anchor installation.	Section 11.4
C	Ground vibrations induced by plant and rock excavation.	Use rock saws prior to rock hammering, undertake vibration trials and on-going vibration monitoring.	Sections 11.3.1 and 11.3.3
D/C	Poor foundations for footings, excessive settlement of footings.	Design parameters for footing design based on site-specific investigation / laboratory testing of ground conditions. Geotechnical inspections of foundations.	11.6
D/C	Poor subgrade for slabs and pavements on-grade.	Design parameters for subgrade and pavements based on site-specific investigation / laboratory testing of ground conditions. Subgrade preparation, earthworks inspection and testing. Installation of drainage.	Sections 11.2 and 11.9
D/C/O	Groundwater levels, seepage inflow to basement excavation, groundwater management.	Groundwater level monitoring for minimum 3 months, groundwater inflow assessment, preparation of Dewatering Management Plan, basement drainage system.	Section 11.5

Project Stage Design (D) Construction (C) Operation (O)	Geotechnical Risk	Mitigation Measure	Relevant Section of Report
D/C	Impact on adjacent structures.	Groundwater Impact Assessment, vibration trials and possibly on-going vibration monitoring induced by construction plant, Dilapidation Surveys, analyse lateral movements of retaining walls, stormwater management.	Sections 11.3.3, 11.3.4 and 11.10.
D	Acid sulfate soils and salinity	Assessed as low risk in geotechnical report	Section 4.0

3. Site description

The site is located at 1-5 Khartoum Road, Macquarie Park, within the City of Ryde Local Government Area (LGA), approximately 12 km north-west of the Sydney CBD and proximate to the commercial centres of Chatswood and Norwest. The area subject of the data centre development is 10,015sqm (legally described as Part Lot 2 DP 1043041). Specifically, the data centre development relates to the eastern portion of Lot 2 DP 1043041 (zoned E3 Productivity Support) as shown in Figure 1.

The key features of the site are summarised in Table 2.

Table 2: Development Site Description

Feature	Description
Street Address	1-5 Khartoum Road, Macquarie Park
Legal Description	Part Lot 2 DP 1043041
Land Configuration	The site has an area of 10,015 sqm and towards Talavera Road (RL 48 m)
Land Ownership	The land is owned by Johnson & Johnson Medical Pty Ltd.
Existing Development	The site is currently occupied by a two-storey car park structure with associated roads, walkways and planted native and exotic vegetation.
Local Context	The site is surrounded by a range of office / warehouse building forms, which are predominantly low to medium rise with large areas of at-grade parking, consistent with Macquarie Park's traditional campus-style function and character.

Feature	Description
Regional Context	The site is located within Macquarie Park, which with approximately 894,000 sqm of commercial floor space and approximately 140,000 sqm of retail floor space, is the fourth largest employment centre in Greater Sydney by number of employees and the largest non-CBD office market in Australia. It is viewed as an innovative research, education, medical and technology employment centre. Macquarie Park is home to Macquarie University, Macquarie University Hospital, Macquarie University Incubator and more than 180 large international corporations (including Optus, Foxtel, Sonic Healthcare, Oracle, Schneider Electric and Astra Zeneca), together with over 200 small businesses. The area is well advanced in its transition from a campus-style industrial and business park into a denser, mixed-use urban centre with improved connectivity. This transition has been occurring for decades, led by events such as Macquarie University's expansion and the opening of the M2 motorway, together with more recent factors such as investment in rail/metro services and the NSW Government's 'Priority Precinct' program.
Site Access	The site has a primary frontage to Talavera Road, with vehicular access provided via Road 22 (Murrell Street).
Site Topography	The site slopes downward towards the north, with levels falling from about RL+54 m (AHD) at the south-western boundary of the site down to about RL+48 m at Talavera Road. A 2 m high batter slope at about 1V:2H is located along the Talavera Road frontage.

The site is mostly occupied by a double storey concrete carparking structure, with gated access from Talavera Road and an asphalt at-grade access road along the north west boundary. The south western end of the site comprises an at-grade carpark and minor landscaping. Site photographs are provided in Appendix B.

The site is about 180 m north east of the Sydney Metro rail tunnel that runs parallel to and beneath Waterloo Road.

The site is generally surrounded by a range of office and warehouse building forms, which are predominantly low to medium rise with large areas of at-grade parking. Historical aerial photographs from the 1940s and 1950s show a creek that ran in a northerly direction adjacent to the property to the south-east but may have intersected the north-eastern corner of the site near Talavera Road. This creek connected a number of small farm dams and flowed to the north into Lane Cove River. It is likely that this creek was directed into a culvert or a stormwater pipe and was possibly realigned in the 1970s or 1980s as the area was redeveloped from market gardens to commercial and industrial land uses.

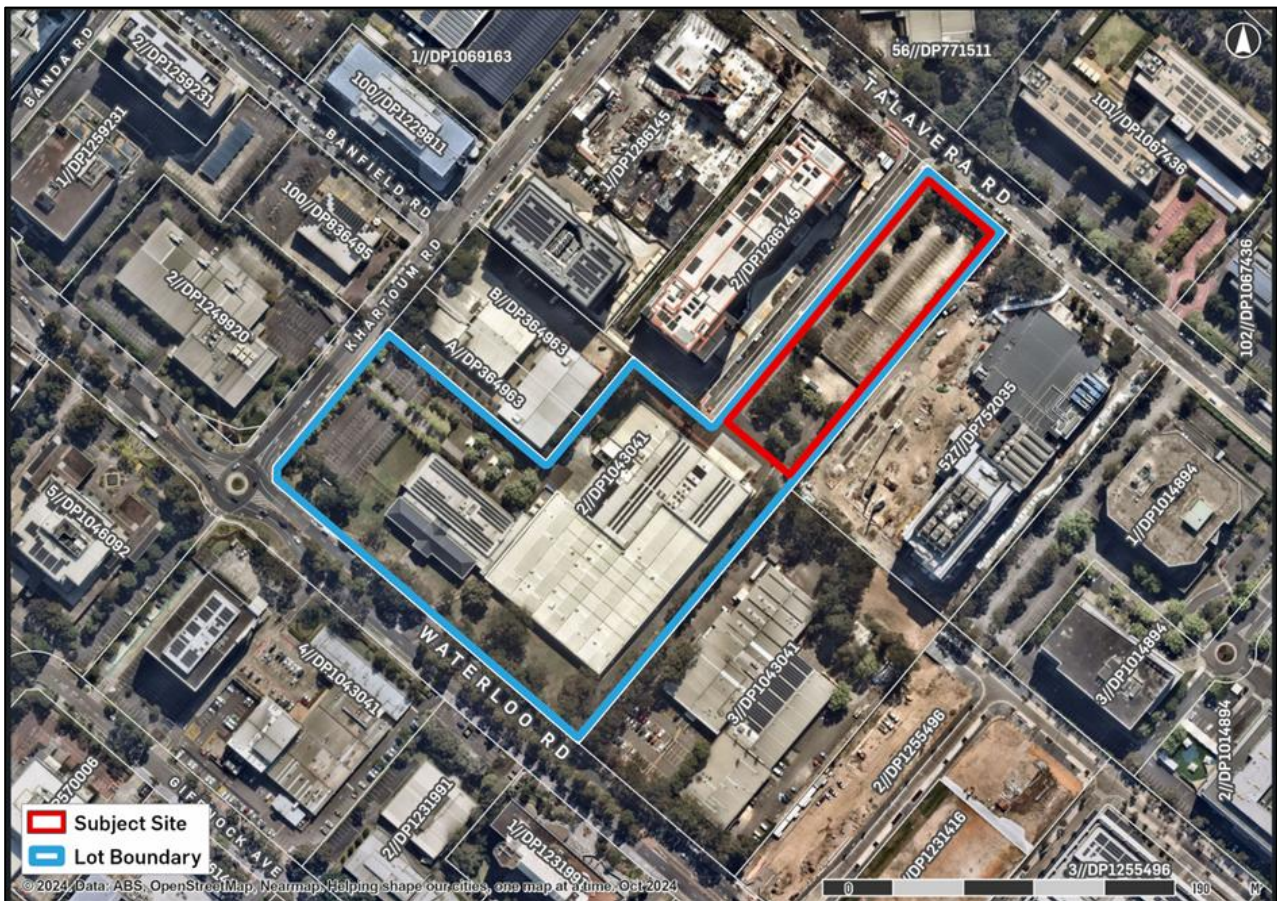


Figure 1: Site location plan (source: Urbis GIS, 2024).

4. Published information

4.1 Geology

The Sydney 1:100 000 Geological Series Sheet indicates that the site is underlain by the Ashfield Shale formation, with a boundary to the Hawkesbury Sandstone formation approximately at Talavera Road. Ashfield Shale typically consists of black to dark grey shale and laminite (interbedded shale, siltstone and fine-grained sandstone) and typically weathers to form clays of medium to high plasticity.

Ashfield Shale is underlain by Hawkesbury Sandstone which typically consists of medium to coarse grained quartz sandstone with minor shale and laminite lenses. The Mittagong Formation is a transitional unit often found between the Ashfield Shale and Hawkesbury Sandstone and typically includes laminite and fine-grained sandstone of variable strength, ranging in thickness from about 2 m to 10 m. An extract from the geological map is shown in Figure 2 overleaf. It is noted that geological boundaries are approximate and are often encountered as transitional zones rather than abrupt changes between two geological units.

The geological mapping was generally consistent with the results of previous investigations, which encountered shale, siltstone and laminite overlying sandstone.

The Homebush Bay Fault Line is known to run in an approximate north-north-east direction along Lane Cove Road to the east of the site as shown on Figure 2, along with a potential secondary fault line as shown. Rocks surrounding the fault zone may be more fractured and could include zones of variable and weaker rock.

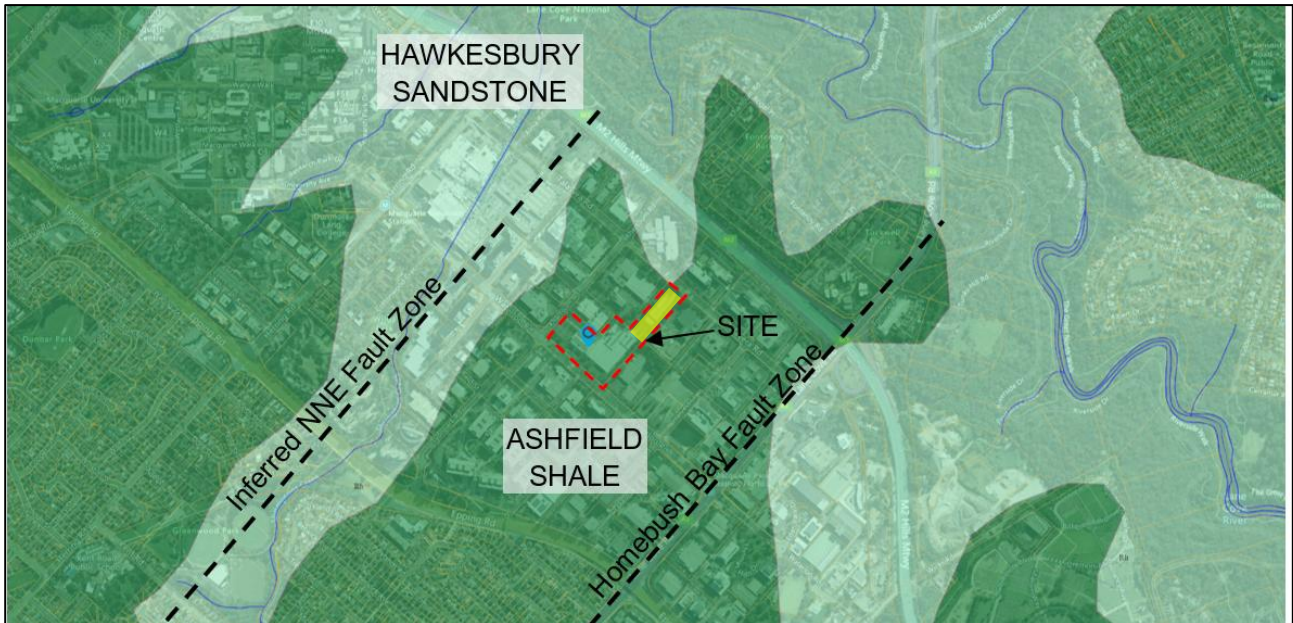


Figure 2: Regional geology relative to the site, (development site highlighted in yellow)

4.2 Soil landscape

Reference to the Sydney 1:100 000 Soil Landscape Series map indicates that the site is underlain by a landscape group known as the Glenorie unit, described with an undulating topography on Wianamatta Group shales, with local relief of 50 m to 80 m, slopes of 5% to 20%, and deep residual, highly plastic soils of moderate reactivity.

4.3 Acid sulfate soils

Reference to the 1:25 000 Acid Sulfate Soils (ASS) Risk map indicates the site is in an area of no known occurrence of ASS.

4.4 Acid sulfate soils

Published Acid Sulfate Soils (ASS) mapping (NSW Department of Environment and Climate Change based on published 1 : 25 000 Acid Sulfate Soil Risk Mapping, 1994-1998) indicates the site is in an area of no known occurrence of ASS.

4.5 Hydrogeology

There are nine registered groundwater wells within 500 m of the site, with the closest one being about 200 m to the south-east. No groundwater details are recorded on the well installation records. These registered wells were all installed for exploration and monitoring purposes.

5. Previous investigations

Douglas (and others) have previously undertaken geotechnical investigations on or adjacent to the development site, as summarised in Table 3. These investigations were undertaken to support previous site development proposals and provide additional contextual information to develop the ground model at the site. Relevant boreholes for the site are noted in Table 3 and are also included in Appendix E for reference, and shown on Drawing 1 in Appendix A. A cross-section through data centre site and the wider site is also included in Appendix E for geological context.

Table 3: Summary of previous geotechnical investigations

Previous Report	Details
“Report on Geotechnical Investigation – Proposed Redevelopment, 1-5 Khartoum Road, Macquarie Park”, for Stockland, Project Number 99657.02, dated 27 May 2022.	The investigation included the drilling of four rock cored boreholes (BH201 to BH204) using a track mounted drilling rig. The boreholes were drilled to bedrock to depths of between 9.2 m and 36.6 m. Three groundwater wells (BH201, BH203 and BH204) were installed. Borehole BH204 is within the site.
“Report on Due Diligence Geotechnical Investigation, 1 – 5 Khartoum Road, Macquarie Park”, for Stockland, Project No. 99657.00, dated May 2020.	The investigation included the drilling of eight boreholes (BH01 to BH08), installation of three groundwater monitoring wells, groundwater monitoring, in situ permeability testing and laboratory testing of selected samples. The boreholes were initially drilled to depths of 0.8 – 4.6 m with solid flight augers. Seven boreholes were then cased and extended to a depth of about 13 m into the underlying rock using NMLC diamond core drilling techniques to obtain continuous core samples of the bedrock. Borehole BH08 is within the site.
“Report on Geotechnical Investigation, Proposed Carpark, 1 – 5 Khartoum Road, Macquarie Park”, Project 72353.00 dated May 2011.	The field work involved three boreholes (BH101 to BH103) initially drilled to practical refusal at depths of 2.5 – 4.1 m with solid flight augers. Two boreholes (BH101 and BH103) were then cased and extended to depths of 7.2 – 7.9 m into the underlying rock using NMLC diamond core drilling techniques. Borehole logs from another consultant’s report were referenced within this report (Ref: Proposed Development - North Ryde, Civil and Civic Pty Ltd, by Coffey, dated November 1991). Boreholes BH101 and BH103 are within the site.
“Report on Geotechnical Investigations, Project Tandem, 1 – 5 Khartoum Road, North Ryde”, Project No. 24560 dated July 1997.	The geotechnical investigation was carried out for extensions to the original building. It included the drilling of three boreholes (BH101 to BH103) to average depths of 9 m and eight shallow boreholes (BH104 to BH111) to depths of between 0.25 m to 1.9 m mainly for pavement design purposes. No boreholes within the site.

Previous Report	Details
"Report on Geotechnical Investigation, Proposed Development Johnson and Johnson Site", Project No. 23535, dated July 1995.	The geotechnical investigation included six boreholes (BH1 to BH6) to depths of between 6.0 m and 9.2 m. The boreholes were drilled with solid flight augers to refusal, then continued with diamond coring in the underlying bedrock. Groundwater monitoring wells were installed in three of the boreholes. Boreholes BH5 and BH6 are within / near the site.
Borehole logs by Coffey Pty Ltd, dated November 1991, report details unknown.	The investigation comprised three cored boreholes (BH1 to BH3) to depths between 8.1 m to 9.85 m. The boreholes were drilled with solid flight augers to refusal, then continued with diamond coring in the underlying bedrock. Boreholes BH1 to BH3 are within the site.

6. Field work methods

The geotechnical field work for the current investigation was undertaken between 28 October and 1 November 2024 at the locations shown on Drawing 1 in Appendix A. A summary of the geotechnical field work is presented as follows:

- Scanning for underground services at each of the boreholes locations using an accredited services locator;
- Diacore drilling of concrete floor slabs and asphalt pavements prior to borehole drilling;
- Drilling of four boreholes (Boreholes BH301, BH313, BH317 and BH319) to depths ranging between 15.0 m and 15.2 m using a crawler mounted Comacchio GEO405 drilling rig fitted with 110 mm diameter continuous solid flight augers and rotary (wash-boring) through soils then NMLC diamond coring through rock;
- Drilling one borehole (BH308) with a low clearance 'XC' track mounted drilling rig within the existing car park to a final depth of 14.82 m, similarly, fitted with 110 mm diameter continuous solid flight augers and rotary (wash-boring) through soils then NMLC diamond coring through rock;
- Standard Penetration Tests (SPT) were carried out at about 1 m depth intervals during drilling to assess soil strength and to obtain samples for subsequent laboratory testing and identification purposes;
- Sampling of soils for engineering and environmental testing purposes;
- Installation of three standpipes in BH301, BH308 and BH319, refer to borehole 'well logs' in Appendix C for standpipe construction details. Wells were developed (i.e., purged) on 4 and 8 November 2024 prior to environmental sampling and hydraulic conductivity testing. Installation of data loggers was completed on the day of purging each standpipe;
- Boreholes were logged by Douglas' experienced geotechnical engineer based on visual and tactile observations of the soil cuttings and rock core in accordance with AS1726:2017; and
- Boreholes were backfilled with drill spoil and topped with pre-mix concrete. The wells were capped with a steel gatic cover.

Coordinates and surface levels for all locations were determined using a differential Global Positioning System (dGPS) receiver, which has an approximate accuracy of 0.1 m (subject to satellite coverage of the area). Coordinates have been measured in GDA94/MGA Zone 56 format (Geocentric Datum of Australia 1994 base with Map Grid of Australia projection) and levels are relative to AHD. Table 4 summarises the geotechnical borehole information.

Table 4: Summary of borehole information

Borehole	Easting (m)	Northing (m)	Surface RL to AHD (m)	Termination Depth bgl (m)	Termination Strata
BH301	326574	6260687	48.7	15.20	Sandstone
BH308	326575	6260647	50.1	14.82	Sandstone
BH313	326515	6260616	52.8	15.14	Sandstone
BH317	326513	6260577	54.0	15.00	Sandstone
BH319	326479	6260572	54.2	15.10	Sandstone

Notes: bgl – below ground level

7. Field work results

7.1 Stratigraphy

The subsurface conditions encountered in the geotechnical boreholes (and concurrent environmental boreholes) are presented on the engineering logs in Appendix C, along with standard notes defining the descriptive terms and the classification methods used. The general subsurface profile encountered at the borehole locations may be summarised as follows:

- Slab / Pavement:** asphalt and concrete pavements at the ground surface in all boreholes with thicknesses of between 30 mm and 300 mm, generally underlain by a 100 mm to 250 mm thick layer of granular basecourse;
- Fill:** at all locations below the slab / pavements to depths ranging between 0.5 m and 3.8 m. The fill generally comprised cohesive materials including clay, silty clay and silty sandy clay with variable amounts of igneous, siltstone or sandstone gravel. Anthropogenic materials including concrete, charcoal and glass were also encountered;
- Alluvial Soil:** below the fill only in environmental borehole BH303 at a depth of 6 m comprising silty clay about 1.5 m thick;
- Residual Clay:** below the fill (and alluvial soil in BH303) in all boreholes to depths of between 2.6 m and 5.6 m, comprising medium to high plasticity clay, silty clay or shaly clay, typically very stiff to hard with ironstone gravels and bands;
- Ashfield Shale:** extremely weathered shale inferred to belong to the Ashfield Shale geological unit was encountered at the 'top of rock' at 2 m depth in borehole BH319, extending to about 4 m depth;

Mittagong Formation:

with the exception of BH319, the 'top of rock' across the site was interpreted to comprise the Mittagong Formation of very low to medium strength sandstone and laminite, varying from extremely to slightly weathered with numerous extremely weathered seams and some medium to high strength iron indurated layers. The thickness of the Mittagong Formation varied from about 1.3 m to 4.3 m;

Hawkesbury Sandstone:

the Mittagong Formation was underlain by generally fresh and slightly weathered, medium and high strength Hawkesbury Sandstone, with laminite and siltstone interbeds. Hawkesbury Sandstone extended to the base of all cored boreholes.

7.2 Groundwater

Groundwater levels recorded in standpipes during relevant previous investigations within the site are summarised in Table 5. Table 6 summarises water level measurements taken for the current investigation standpipes, noting that standpipes were installed in two environmental boreholes.

Table 5: Historical groundwater level measurements in standpipes

Borehole	Surface Level (m AHD)	Date Measured	Water Depth (m)	Water Level (m AHD)
BH5 - 1995	54.4	27 November 1995	3.5	50.9
BH6 - 1995	53.1	27 November 1995	4.7	48.4
BH8 - 2020	54.0	2 May 2020	6.5	47.5
		1 March 2022	7.4	46.6
		9 March 2022	6.2	47.8
		17 May 2022	8.0	46.0
BH204 - 2022	54.3	1 March 2022	2.0	52.3
		9 March 2022	2.7	51.6
		17 May 2022	5.2	49.1

Table 6: Current groundwater level measurements in standpipes

Borehole	Surface Level (m AHD)	Date Measured	Water Depth (m)	Water Level (m AHD)
BH8 – 2020	54.0	8 November 2024	6.8	47.2
BH204 - 2022	54.3	8 November 2024	3.1	51.2
BH301	48.7	4 November 2024	3.2	45.5
		18 November 2024	3.2	45.5
BH303*	50.3	4 November 2024	4.8	45.5
BH304*	49.3	4 November 2024	3.4	45.9
BH308	50.1	4 November 2024	4.0	46.1

Borehole	Surface Level (m AHD)	Date Measured	Water Depth (m)	Water Level (m AHD)
		18 November 2024	4.1	46.0
BH319	54.2	4 November 2024	5.7	48.5
		18 November 2024	5.8	48.4

Note * - environmental standpipe

7.3 Hydraulic conductivity testing

7.3.1 Previous testing

Rising head tests were carried out during the previous investigations. These tests were carried out by purging the well then measuring the rise in water level at regular time intervals using a data logger. A summary of the hydraulic conductivity test results is presented in Table 7. Well installation details are included on the borehole logs in Appendix E.

Table 7: Summary of historical rising head tests

Borehole	Date	Screen Depth (bgl)	Material Type over Screen	Hydraulic conductivity k (m/sec)
BH06 - 2020	4 May 2020	2.5 m to 13.3 m	Siltstone and Sandstone	4.6×10^{-8}
BH08 - 2020	4 May 2020	4 m to 13 m	Sandstone	5.3×10^{-8}
BH08 - 2020	9 March 2022	4 m to 13 m	Sandstone	2.8×10^{-7}

7.3.2 Current testing

Rising and falling head (slug) hydraulic conductivity tests were carried out in the new monitoring wells on 18 November 2024. The tests were undertaken by using a pump to lower the groundwater level in the wells and monitoring the subsequent recovery (rising head test) using a data logger.

Hydraulic conductivity tests were analysed using Hvorslev (1951) solution for slug testing interpretation. Results are presented in Table 8 and the detailed results of the tests are attached in Appendix F.

Table 8: Summary of current rising head tests

Borehole	Date	Screen Depth (bgl)	Material Type over Screen	Hydraulic conductivity k (m/sec)
BH301	18 November 2024	5 m to 11 m	Sandstone and Laminite	1.3×10^{-7}
BH308	18 November 2024	5 m to 11 m	Sandstone and Laminite	1.5×10^{-7}
BH319	18 November 2024	5 m to 11 m	Sandstone and Laminite	1.5×10^{-7}

8. Laboratory testing

8.1 Geotechnical soil testing

Testing was undertaken on four selected soil samples collected from the boreholes and was carried out at the Douglas Partners NATA accredited laboratory in Sydney. The results of the laboratory testing are provided in detail in the test report sheets in Appendix D and are summarised in Table 9.

Table 9: Summary of Atterberg limits and linear shrinkage

Borehole	Depth (m)	Sample Description	LL (%)	PL (%)	PI (%)	LS (%)
BH308	1.0-1.45	Fill: Silty Clay	47	24	23	10.5
BH313	1.0-1.45	Natural: Clay	57	24	33	13.0
BH313	2.5-2.95	Natural: Clay	33	18	15	7.5
BH319	2.0-2.1	Natural: Silty Sandy Clay	27	17	10	7.0

Legend:

PI - Plastic Index LL - Liquid Limit PL - Plastic Limit LS - Linear Shrinkage

8.2 Rock testing

Point Load Strength Index ($Is_{(50)}$) strength testing was carried out on the recovered core at regular depth intervals. The results are presented on the borehole logs and show $Is_{(50)}$ values generally in the range 0.03 MPa to 2.0 MPa, with the indicative rock strength ranging from very low strength up high strength. To obtain inferred unconfined compressive strengths (UCS) from $Is_{(50)}$ test results, a conversion factor of 20 is typically suggested. Using this conversion factor, rock strengths in the range of 0.6 MPa to about 40 MPa are indicated for the encountered rock. It is noted one $Is_{(50)}$ test result in BH319 at 10.2 m depth was 4.8 MPa, suggesting a localised very high strength layer which is possibly iron indurated.

8.1 Soil aggressivity testing

Three soil samples from the boreholes were tested in a NATA-accredited analytical laboratory to determine soil aggressivity (pH, electrical conductivity, sulfate and chloride ion concentrations and resistivity). The soil aggressivity results are summarised in Table 10 with the laboratory test reports included in Appendix D.

Table 10: Laboratory Test Results for Aggressivity to Buried Concrete and Steel.

Borehole	Origin	Elevation of Sample ⁽¹⁾ (RL m)	pH	EC ⁽²⁾ (μ S/cm)	Chloride (mg/kg)	Sulfate (mg/kg)	Resistivity ⁽⁴⁾ (ohm m)
BH301	Fill	47.8	6.3	94	<10	41	110
BH308	Fill	47.6	7.7	260	10	230	39
BH313	Residual soil	50.3	4.5	240	260	31	43
BH317	Residual soil	50.0	4.7	76	69	27	130
BH319	Extremely weathered rock	50.4	4.6	260	270	36	39

Notes: (1) Elevation quoted is for the top of the sample.

(2) EC = Electrical Conductivity.

(3) Analysed soils were tested as a 1:5 mixture of soil:water.

(4) Laboratory calculated value.

8.2 Soil contamination

It is noted that laboratory analysis of soil samples was carried out during the investigation for common contaminants of concern, including screening and quantitative tests for assessment of potential acid sulfate soil conditions. The contamination results are presented and discussed in the companion site contamination investigation report (Douglas, 2024).

9. Proposed development

The project comprises the demolition of the existing car park and construction of a new data centre development including the following key components:

- Demolition of existing car park and associated structures;
- Site preparation works including tree removal and earthworks;
- Construction and operation of six storey data centre development, with a maximum height of 45 m and a combined total gross floor area (GFA) of approximately 19,434 m² including;
 - o Lobby, meeting rooms and ancillary space: 6,010 m².
 - o Offices: 830 m².
 - o Three storeys of technical data floor space accommodating 12 data houses: 12,594 m².

- Vehicle access via Road 22 (Murrell Street) with 25 parking spaces within the building footprint;
- Associated landscaping including trees, shrubs and grasses;
- Business identification signage zones; and
- Provision of required utilities, including diesel generator back up power system.

The proposed development will require the excavation of a 'lower level' that will require excavation of up to about 7 m deep to be 'cut into' the central and south western part of the site, with finished floor levels of RL+50.5 m (AHD) and RL+47.5 m (AHD) respectively. The lower level will accommodate fuel storage, a rainwater tank, fire tank, parking and a loading dock. The floor level of the lower level at the north eastern part of the site approximately matches existing site levels with some minor cut and fill.

Concept plans are included in Appendix G.

10. Ground model

Based on the subsurface conditions encountered during the investigation, including information from the previous investigations, the general subsurface profile comprises surface pavement layers then variable depths of uncontrolled fill overlying a horizon of residual clay soil that transitions into bedrock belonging to the Ashfield Shale or Mittagong Formation geological units. The Mittagong Formation is underlain by Hawkesbury Sandstone. Groundwater mostly occurs near the top of the bedrock and is thought to vary in depth according to seasonal influences.

Drawings 2 and 3 in Appendix A present interpreted geotechnical cross-sections through the site. It should be noted that the interpreted boundaries shown on the sections are accurate at the borehole locations only and layers shown diagrammatically on the drawings are inferred only. Bands of lower and higher strength rock should be expected within the generalised layers.

As discussed previously in Section 2, there are historical records that indicate a former creek and some farms dams were originally located in the footprint of the north eastern part of the site. It is possible that there are areas of deeper fill and a more deeply weathered rock profile in this area. The interpreted presence of the alluvial soil is shown on cross-section A-A' on Drawing 2 in Appendix A.

The rock encountered in the current and previous investigations has been classified in accordance with the system developed by Pells, Douglas et al (1978), which uses a combination of rock strength and fracture spacing to divide the rock into five classes ranging from Class I (high strength with very few defects) to Class V (very low strength and/or highly fractured). The interpreted Reduced Level (RL) at the top of the various rock classes in each borehole (current and previous boreholes) is shown in Table 10.

It is noted that Ashfield Shale was inferred at the 'top of rock' in the south western most cored borehole BH319, which correlates to Ashfield Shale that was encountered in previous nearby boreholes to the west of the site. The south western part of the proposed footprint where the proposed 'lower level' excavation is deepest is interpreted to be the approximate limit of the Ashfield Shale unit that becomes more dominant to the west of the site.

The interpreted geotechnical cross section C-C' from the previous 2020 Douglas investigation (as presented in Appendix E) shows the inferred presence of Ashfield Shale bordering the site, including a possible low angle thrust fault located about 50 m to 80 m to the west of the site. If this inferred thrust fault is present, it is probable that it is oriented parallel to the Homebush Bay Fault Line, which has been mapped as striking approximately NNE along Lane Cove Road to the east of the site. Rock units in the immediate vicinity of such reverse thrust faults are often more variably weathered and stratigraphy can change abruptly. It is possible that the southern western part of the 'lower level' excavation may expose such variations in weathering and strength associated with the above described Ashfield Shale, Mittagong Formation and the underlying Hawkesbury Sandstone.

Table 11: Summary of reduced level to top of various strata (cored boreholes)

Stratum	RL of Top of Stratum (m, AHD)											
	Current Investigation					Previous Investigations						
	BH301	BH308	BH313	BH317	BH319	BH204 2022	BH6 1995	BH08 2020	BH101 2011	BH103 2011	BH3 1991	BH2 1991
Fill / Residual Soil	48.7	50.1	52.8	54.0	54.2	54.3	53.1	54.0	52.9	50.4	47.3	51.7
Class V Shale	-	-	-	-	52.2	-	-	-	-	-	-	-
Class IV Shale	-	-	-	-	-	50.2	-	49.8	-	-	-	-
Class V Sandstone	46.1	45.8	48.6	49.7	50.2	48.0	49.6	49.5	49.1	46.8	44.2	47.3
Class IV Sandstone	-	44.1	-	48.4	-	-	48.8	47.4	47.6	-	41.9	-
Class III Sandstone	41.8	-	45.4 ¹	-	48.0	-	-	-	-	-	-	-
Class II Sandstone	40.3	41.5	40.2	47.7	46.0 ³	46.7	46.8	46.9	47.0	-	39.5	45.0
Base of Borehole	33.5	35.3	37.7	39.0	38.9	45.1	46.1	40.9	45.0	43.2	38.9	41.8

Notes: ' - ' = not encountered; Shale = SHALE / SILTSTONE / LAMINITE

1. Low strength laminite/siltstone bands in BH313 from RL43.8 m to 42.7 m and RL 40.7 m to RL 40.2 m AHD.

11. Comments

11.1 Site classification

Clay fill materials were encountered within the boreholes at the site to depths of at least up to 3.8 m below the current ground surface. The fill is inferred to have been placed during raising and levelling of the site during previous development phases and in the absence of engineering records, must be considered as 'uncontrolled'. As there is more than 0.4 m of uncontrolled fill at the site, the site is classified as Class P when assessed in accordance with Australian Standard AS2870-2011, noting the applicability of AS2870-2011 to the current development proposal needs to be assessed by the structural designers.

Where seasonal ground movements are to be considered for design of the suspended ground floor slabs over retained clay fill and residual site soils, the site can be assumed to be similar to a Class M site, i.e., free surface movements in the order of 20 mm to 40 mm may be expected. Such movements may be reduced with the use of an appropriately designed granular material capping layer (such as ripped sandstone) constructed to provide a working platform and act as the soffit for the suspended slab. The presence of trees or removal of existing trees will result in more severe surface movements and should be considered.

11.2 Site preparation and trafficability

Site preparation works are likely to include:

- The demolition and removal of the existing concrete structure, slabs and redundant foundation footings / piles (if present), including the possible need for selective removal of trees from the site and some removal of asphalt pavements and drainage infrastructure;
- Bulk excavation for the 'lower level' floors;
- Formation of working platforms/capping layer for machinery such as piling rigs / excavators and mobile cranes; and
- Preparation of support for ground floor slabs, noting they are recommended to be designed as fully suspended to control potential differential settlements associated with the variable quality and variable thickness of uncontrolled fill in the central and north eastern parts of the site. In the south western part of the site where the bulk excavation is expected to encounter weathered rock (refer cross-sections in Appendix A), slab-on-grade construction is possible, with appropriate drainage layers.

The fill materials encountered at the site mostly comprised cohesive materials. Clay fill may be exposed within the site following surface stripping, which may become slippery, difficult to traverse and possibly causing 'soft spots' to emerge following periods of rain. Some rutting / surface damage of this material should be expected, particularly if traversed following periods of prolonged rainfall. It is anticipated that tracked machines would be able to safely travel over most of the site and work on the fill materials when they are exposed, but some allowance for potential 'soft spots' should be made during construction planning. Larger machines may not be able to work on the existing fill without a granular working platform, possibly including a layer of crushed rock or recycled concrete of at least 300 mm thickness possibly with some additional geogrid reinforcement, in conjunction with rolling (i.e., compaction) using a minimum 10 tonne

smooth drum roller. For support of mobile crane outriggers and piling equipment, an assessment of the required thickness of required working platform should be made once this equipment has been selected.

If the floor slabs of buildings (and any other structures) will be fully supported (i.e., suspended) on piles / footings founded on rock then it may be possible to leave the existing layers of fill materials in place and use them as 'form fill'. Further geotechnical advice should be obtained if floor slabs are to be supported by the existing uncontrolled fill.

Where site levels need to be modestly raised in the north eastern part of the site (towards Talavera Road) to create the 'form fill' for the suspended slabs, the following site preparation measures are recommended:

- Remove any topsoil, demolition materials, old structures or vegetation-affected fill materials which may degrade over time;
- Test roll the exposed surface using a minimum 12-tonne smooth drum roller in non-vibration (i.e. 'static' mode). The surface should be rolled a minimum of six times with the last two passes observed by an experienced geotechnical engineer to detect any 'soft spots';
- Any heaving materials or 'soft spots' identified during proof rolling should be removed as directed by the geotechnical engineer; and
- Placement of suitable site won materials (preferably CBR greater than 4%) in layers of 250 mm maximum (loose) thickness, maintaining a moisture content to within 2% of standard optimum moisture content (SOMC) and compacted to a minimum of 98% of Standard maximum dry density (SMDD) up to top of design levels, with appropriate compaction control testing to AS3798: 2007 Guidelines on Earthworks for Commercial and Residential Developments.

The design levels for new pavements are not yet known but are assumed to be at approximately current grades. Subgrade conditions will therefore principally comprise clayey fill materials. For the construction of pavements, the following site preparation measures are recommended:

- Excavate and remove all encountered materials to 1.5 m below the top of pavement subgrade level within the pavement footprint;
- Remove any remaining topsoil or vegetation-affected fill materials at the exposed surface, and any other materials which may degrade over time;
- Test roll the exposed surface using a minimum 12-tonne smooth drum roller in non-vibration (i.e. 'static' mode). The surface should be rolled a minimum of six times with the last two passes observed by an experienced geotechnical engineer to detect any 'soft spots';
- Any heaving materials or 'soft spots' identified during proof rolling should be removed as directed by the geotechnical engineer; and
- Placement of suitable select granular fill materials, such as ripped sandstone (crushed to <75mm size) of minimum CBR 12%, in layers of 250 mm maximum (loose) thickness and compacted to 100% SMDD in layers up to top of design levels with compaction control testing to AS3798:2007.

For the above case, if existing uncontrolled fill is left in place there is a higher risk of unpredictable settlement occurring over the long term due to the inherent variability of the fill. Given that the fill has been in place for many years, and the existing pavements appear to be in reasonable condition, it may be possible to accept this approach provided pavement/traffic loading remains similar. If higher loads are proposed, or if it is preferable to further reduce risk, then it may be necessary to consider the complete removal of uncontrolled fill or deeper removal and replacement to greater depths to reduce the thickness of uncontrolled fill and to provide a thicker layer of controlled / engineered fill to subgrade level.

11.3 Excavation considerations

11.3.1 Conditions

Excavation up to about 7 m depth for the 'lower level' in the south western part of the site will be required in fill, residual soil and weathered rock of varying strength, including possibly medium strength Hawkesbury Sandstone.

Bulk excavation of existing fill, residual soil and up to low strength rock should be achievable using conventional earthmoving equipment, such as bulldozers and hydraulic excavators. The assistance of rock hammering or ripping may also be required for effective removal of any iron-cemented bands within this stratum.

Excavation of any medium strength rock will generally require heavier ripping with a large bulldozer, together with the use of large hydraulic rock breakers especially where the rock is slightly fractured or unbroken.

Footing and trench excavations at the base of the excavation in the south western end of the site may be locally within medium and medium to high strength sandstone, and may require the use of using rotary rock saws or milling heads, in conjunction with large hydraulic rock hammers or breakers.

11.3.2 Disposal of excavated materials

All excavated materials to be removed from site will need to be disposed of in accordance with the provisions of the current legislation and guidelines including the Waste Classification Guidelines (EPA, 2014). This includes fill and natural materials that may be removed from the site. Accordingly, environmental testing will need to be carried out to classify spoil prior to transport from the site. Reference should be made to Douglas' Detailed Site Investigation (DSI) contamination report (reference 99657.08.R.001.Rev0, dated December 2024).

11.3.3 Vibrations

During demolition and excavation, it will be necessary to use appropriate methods and equipment to keep ground vibrations at adjacent buildings and structures within acceptable limits. Excavations within soil and very low strength rock using conventional earth moving equipment are not expected to generate excessive vibrations. The use of ripping tynes and rock hammers to remove the stronger rock (and ironstone bands), however, would be expected to generate vibrations which should be monitored.

Ground vibration can be strongly perceptible to humans at levels above 2.5 mm/s (component) peak particle velocity (PPVi). This is generally much lower than the vibration levels required to cause structural damage to buildings. The Australian Standard AS2670.2-1990 "Evaluation of human exposure to whole-body vibrations – continuous and shock induced vibrations in buildings (1-80 Hz)" indicates an acceptable day time limit of 8 mm/s PPVi for human comfort.

It is suggested that a maximum PPVi of 8 mm/s (applicable at the foundation level of adjacent buildings/ or structures) be provisionally employed at this site to protect the architectural features of the buildings and for human comfort considerations. A site-specific vibration monitoring trial will be required to determine vibration attenuation once excavation plant and methods have been finalised. Rock sawing along the boundaries may be required in the stronger rock to reduce vibrations on adjacent sites although this may not be relevant for this site.

11.3.4 Dilapidation surveys

Dilapidation surveys should be carried out on adjacent buildings, pavements and infrastructure that may be affected by the excavation works. The dilapidation surveys should be undertaken before the commencement of any excavation work in order to document any existing defects so that claims for damage due to construction related activities can be accurately assessed.

11.4 Excavation support

11.4.1 General

Vertical excavation within the soils (fill and residual clays) as well as in the shale, siltstone and laminite will require both temporary and permanent lateral support during and after excavation.

Shoring support will be required for the full depth of the 'lower level' floor construction, which involves a maximum cutting depth of 7 m at the south western part of the proposed building. Soldier piles with reinforced shotcrete infill panels are commonly used to support excavations in clays and shale and would generally be suitable for this site. Soldier piles should be embedded in rock below the 'lower level' floor level.

The soldier piles would generally be spaced at about 2 m to 2.5 m centres. Closer spaced piles may be needed close to structures or services or in areas of deeper fill. Reinforced shotcrete will be needed over the soil and the shale / laminite and should be undertaken in approximately 2.5 m drops as excavation proceeds in order to reduce the risk of local slippages. A reduced panel height of 1.2 m to 1.5 m may be appropriate for some of the fill and residual soils, if they are found to be susceptible to collapse (e.g., sandy).

11.4.2 Batter slopes

Temporary batters of 1.5(H):1(V) may be used for excavations to a maximum depth of 3 m in the fill and residual soil profile. Higher batters may need to incorporate an intermediate bench and additional stability analysis will be required to determine the safe batter slopes. All surcharge loads must be kept behind a distance from the crest equal to the height of the batter.

Permanent batters for excavations and embankments should be no steeper than 2.5(H):1(V) and flatter, where vegetation maintenance is required. Erosion protection should be provided for all permanent batters.

Temporary batters will need to be backfilled once the new 'lower level' walls have been constructed and if this zone is needed to support pavements, services or slabs then the backfill will need to be placed and compacted in a controlled manner (i.e., placed and compacted to a specification).

11.4.3 Retaining Wall / Shoring Design

The shoring walls will be subjected to lateral pressures from the ground surface down to the top of the medium strength or stronger sandstone. These pressures are due to earth pressures in the fill, soil and weathered rock, and from potentially unstable rock wedges in the stronger shale, siltstone or laminite.

It is suggested that preliminary design of shoring with one row of anchors or propping be based on a triangular earth pressure distribution using the earth pressure coefficients provided in Table 11. Cantilevered shoring systems are not recommended for the deep excavations or excavations near movement sensitive structures/services.

Table 12: Recommended Design parameters for shoring systems

Material	Unit Weight (kN/m ³)	Earth Pressure Coefficient	
		Active (K_a)	At Rest (K_o)
Fill / Residual Soil	20	0.4	0.6
Class V/VI Shale	22	0.3	0.45
Class V/IV Sandstone	22	0.2	0.3
Class III Sandstone	24	0.1	0.15

'Active' earth pressure coefficient (K_a) values may be used for a flexible wall where some wall movement is acceptable, and 'at rest' earth pressure (K_o) values should be used where the wall movement needs to be reduced (e.g., adjacent to existing structures or utilities).

Where multiple rows of anchors or propping are used, it is suggested that preliminary design of shoring walls could be based on a trapezoidal earth pressure distribution with a maximum pressure calculated based on $4H$ kPa where H is equal to the retained height of soil and very low to low strength rock. The maximum pressure should be increased to $6H$ to $8H$ where wall movement needs to be reduced. In each case the maximum pressure generally acts over the central 60% of the wall height, reducing to zero at the top and base.

The design of the shoring walls should allow for all surcharge loads, including building footings, inclined slopes behind the wall, traffic, site sheds, and construction related activities.

Shoring walls should also be designed for hydrostatic pressures unless drainage of the ground behind impermeable walls can be provided. Drainage could comprise 150 mm wide strip drains pinned to the face at 1 m to 2 m centres behind the shotcrete in-fill panels. The base of the strip drains should extend out from the shoring wall (via 'spitter' pipes) to allow any seepage to flow into a perimeter toe drain, which directs seepage into the sub-floor drainage system that pumps water periodically to the stormwater drainage system, subject to water quality criteria.

Passive resistance for piles founded in rock below the base of the bulk excavation (including allowance for services, pits and/or footings) may be based on the ultimate passive resistance values provided in Table 12. These ultimate values represent the pressure mobilised at high displacements and therefore it will be necessary to incorporate a factor of safety of at least 2 to limit wall movements. The top 0.5 m of the socket should be ignored due to possible disturbance and over-excavation.

Table 12: Recommended Passive Resistance Values

Foundation Stratum	Ultimate Passive Pressure (kPa)
Class V Sandstone	500
Class IV Sandstone	2,000*
Class III Sandstone	4,000*
Class II Sandstone	6,000*

Note: * subject to geotechnical inspection

Detailed design of shoring should preferably be carried out using WALLAP, PLAXIS, FLAC or other accepted computer analysis programs, which are capable of modelling progressive excavation and anchoring, and predicting potential lateral movements, stresses and bending moments. PLAXIS or FLAC (or similar) would be required if it is necessary to assess ground movements on surrounding properties or for utilities in footpaths or roads, as WALLAP will only assess wall movements.

11.4.4 Ground anchors

The design of temporary and permanent ground anchors or rock bolts for the support of excavations and / or shoring systems may be carried out on the basis of the bond stresses given in Table 13. The anchors should preferably have their bond length within medium strength or stronger rock, but this will depend on design anchor loads.

Table 13: Recommended Bond Stresses for Rock Anchor Design

Material Description	Maximum Allowable Bond Stress (kPa)	Maximum Ultimate Bond Stress (kPa)
Class V Shale/Sandstone	50	100
Class IV Shale/Sandstone	100	200
Class III Sandstone	400	800
Class II Sandstone	800	1600

The parameters given in Table 13 assume that the drilled holes are clean and adequately flushed. The anchors should be bonded behind a line drawn up at 45 degrees from the base of the shoring or from the top of the Class II Sandstone bedrock (whichever is higher). It is suggested that ground anchors should be proof loaded to 125% of the design Working load to confirm the anchor capacities and locked-off at no higher than 80% of the Working load. "Lift-off" tests should be carried out to confirm that the specified lock off loads have been appropriately achieved.

In normal circumstances the building will restrain the 'lower level' excavation over the long-term and therefore ground anchors are expected to be temporary only. The use of permanent anchors would require careful attention to corrosion protection. Further advice on design and specification should be sought if permanent anchors are to be employed at this site.

It will be necessary to obtain permission from neighbouring landowners prior to installing anchors that will extend beyond the site boundary. Alternative restraint to the piles may need to be considered if anchors are not preferable along these site boundaries, such as bracing and / or struts. In addition, care should be taken to avoid damaging buried services and pipes during anchor installation, and possible conflicts with neighbouring buried structures

Vertical anchors for uplift support could also be designed using the parameters given in Table 13. The designer should also check the 'cone pull-out' failure mechanism by assuming a 90-degree cone for the soil and rock, when measured from the middle of the bond length (refer to Table B3 of AS 4678).

11.5 Groundwater considerations

11.5.1 General

It is expected that perched groundwater seepage will occur along the top of the rock and through joints and along bedding planes within the rock exposed in the 'lower level' floor and walls. Based on groundwater measurements to date and the depth of the proposed excavation, it is anticipated that some groundwater seepage will occur into the 'lower level' excavation. Seepage would mainly occur in the south-western portion of the excavation where groundwater is shallowest and the proposed 'lower level' is deepest (as shown on Drawings 2 and 3, Appendix A). However, due to the relatively low hydraulic conductivity of the soils and rock, the seepage inflow to the 'lower level' is expected to be minor. Some additional inflow due to seepage of water through the fill is expected after rainfall.

During construction and in the long term, it is anticipated that seepage into the excavation could be controlled by perimeter and subfloor drainage connected to a sump-and-pump system. On this basis, it is technically feasible to construct a 'drained basement' for this site without any significant adverse impacts to surrounding groundwater systems.

Approval of a 'drained basement' may be subject to review by Council and relevant authorities. Preparation of a dewatering management plan (DMP) will support the necessary applications. As a part of the DMP, detailed groundwater modelling will be required to estimate predicted groundwater inflows into the proposed 'lower level' excavations. The DMP will be prepared once three months of groundwater level data have been collected as per the guidelines for construction dewatering in NSW (DPE, 2022).

It is possible that seepage may give rise to precipitation of red brown iron-oxide residue from the groundwater and therefore perimeter and subfloor drains should be designed for easy access to allow for long term inspection, maintenance and periodic cleaning.

11.5.2 Drawdown and settlement

Based on the results of the geotechnical investigation, any groundwater drawdown associated with minor dewatering is expected to occur within the shale and sandstone bedrock. Settlements on adjacent structures due to the drawdown in such rocks are expected to be negligible. Similarly, drawdown on any nearby groundwater receptors would also be negligible.

Potential impacts due to groundwater drawdown will be further discussed in the DMP when finalised after the three month monitoring period.

11.5.3 Groundwater disposal

Disposal of any groundwater seepage collected during construction and in the long term will be subject to approval by Council and relevant authorities.

Groundwater quality was tested as part of the detailed site (contamination) investigation (DSI) for the development (Douglas, 2024). Groundwater quality results and selected site assessment criteria (SAC) are discussed in Douglas' DSI report (Douglas, 2024). Some concentrations of metals and PFAS exceeded the SAC. Therefore, treatment may be required prior to disposal of groundwater. Treatment plans and monitoring requirements will be further discussed in the DMP.

11.6 Foundations

Based upon the investigation results, very low to low strength sandstone bedrock grading vertically and laterally to medium and high strength sandstone is expected to be encountered during bulk excavation for the 'lower level'. As shown on cross-section A-A' and B-B', very low to low strength sandstone is indicated at the bulk excavation level, as well as medium strength sandstone close to or below the excavation level in some areas. Fill and residual clay may be exposed at the north-eastern end of the lower level with weathered rock about 0.5 m to 1 m below the excavation level.

The proposed 'lower level' and the building more generally should be uniformly founded on sandstone bedrock. Pad and strip footings may be suitable for the deeper 'lower level' footprint following excavation to bulk levels, subject to load and settlement tolerances. Piles will be required in the central and north eastern parts of the site to reach the underlying sandstone. Higher bearing capacities could be achieved in some parts of the site if the piles were taken deeper to found within medium strength or stronger rock.

The use of bored piling methods would require the use of temporary or permanent liners or casings down into competent bedrock, to prevent hole collapse particularly in more sandy soils or where seepage occurs near the rock surface, or possibly higher after rainfall.

Spread footings (e.g. pads) and rock-socketed piles subject to axial compression loading may be designed using the maximum pressures for the various rock strata presented in Table 14. Shaft adhesion values for uplift (tension) may be taken as being equal to 70% of the values for compression.

Table 14: Recommended Design Parameters for Foundation Design

Foundation Stratum	Maximum Allowable Pressure		Maximum Ultimate Pressure		Field Elastic Modulus (MPa)
	End Bearing ² (kPa)	Shaft Adhesion ¹ (Compression) (kPa)	End Bearing ² (kPa)	Shaft Adhesion ¹ (Compression) (kPa)	
Sandstone – Class V	1,000	75	3,000	150	50
Sandstone – Class IV	1,500	100	4,000	250	100
Sandstone – Class III	3,500	300	30,000	600	500
Sandstone – Class II	6,000	500	60,000	1,200	1000

Notes: 1. For pile foundations in compression, only and assuming that “R2” roughness is achieved on socket sidewalls, as defined by Walker & Pells (1998); reduce by 30% to obtain values for design against uplift.
 2. End bearing parameters for piles assume a minimum embedment of two pile diameters in the subject rock class and that no weaker seams are present within three pile diameters of the pile base.

All footings should be founded below the ‘zone of influence’ of adjacent excavations, drawn upwards at 45 degrees from the toe of the excavation (such as lift shafts or tanks, relative to shallow pad footings).

For limit state design, selection of the geotechnical strength reduction factor (ϕ_g) in accordance with Australian piling code AS 2159 is based on a series of individual risk ratings (IRR), which are weighted on numerous factors and lead to an average risk rating (ARR). Therefore, it is recommended that an appropriate geotechnical strength reduction factor be calculated by the pile designer. Preliminary design could be based on a ϕ_g of 0.4 and refined as the design progresses. Footing settlements may be calculated for assessment of the Serviceability limiting state using the elastic modulus values given in Table 14.

Foundations proportioned on the basis of the allowable bearing pressures in Table 14 would be expected to experience total settlements of less than 1% of the footing width / pile diameter under the applied working load, with differential settlements between adjacent columns expected to be less than half of this value.

Pile excavations (if bored) should be inspected by a geotechnical engineer to confirm that foundation conditions are suitable for the design parameters, with additional investigative drilling completed as appropriate.

The presence of sandstone boulders, building rubble and possible remnant concrete footings may result in hitting obstructions during pile drilling. It may be feasible to mobilize a large excavator during piling works to remove obstructions in pile positions, if encountered. Alternatively, it would be necessary to either penetrate such obstructions or incorporate sufficient flexibility in the design layout of foundation piles, that piles can be relocated with a few meters of the design position of each pile.

If spread footings are adopted across the deeper 'lower level' part of the building footprint where rock is expected in the base of the excavation, design may be based on the end bearing parameters provided in Table 14. Based on the irregular presence of defects observed in the rock cores it is recommended that spoon hole testing is carried out for one third of the footings designed for an allowable end bearing pressures of 3500 kPa, increasing to 100% of spread footings designed for an allowable bearing pressure of greater than 3500 kPa.

11.7 Soil aggressivity

The laboratory test results indicate that the soil samples tested are 'mildly' aggressive to buried concrete and 'non-aggressive' to buried steel elements in accordance with the guidelines given in Australian Standard AS 2159 – 2009 Piling – Design and installation.

11.8 Seismic design

A Hazard Factor (Z) of 0.08 is appropriate for the development site in accordance with Australian Standard AS 1170.4 – 2007 Structural design actions – Part 4: Earthquake actions in Australia. The site sub-soil class is assessed to be shallow soil, Class C_e.

11.9 Pavements

Based on the subsurface conditions encountered on the site and our previous experience in the Macquarie Park area, it is recommended that a design subgrade CBR of 5% be adopted for preliminary design of all new internal roads. This design subgrade CBR should be confirmed by laboratory testing of bulk subgrade samples at about 50 m to 100 m intervals along new roads.

Site preparation recommendations provided in Section 11.2 of this report will also need to be adopted for this CBR design value. It is further recommended that good surface and subsurface drainage measures (including subsoil drains to at least 0.5 m below the subgrade) be included in the design for all pavement areas to reduce the risk of subgrade softening.

11.10 Geotechnical construction monitoring

Geotechnical monitoring will be required through the construction phase of the project to ensure design requirements are met and impacts to adjacent infrastructure is controlled. It is recommended that a Geotechnical and Hydrogeological Monitoring Plan (GHMP) to be prepared when the detailed design has been progressed to at least 75%. The recommended final GHMP would include as a minimum, the following elements:

- Roles and responsibilities;
- Monitoring systems, procedures and trigger levels;
- Hydrogeological monitoring;
- Vibration monitoring; and
- Certification requirements.

12. References

Douglas. (2024). *Report on Detailed Site (Contamination) Investigation - part of 1-5 Khartoum Road, Macquarie Park*. Dated November 2024. Reference 99657.08.R.002.Rev0: Prepared for Stockland Development Pty Ltd.

DPE. (2022). *Minimum requirements for building site groundwater investigations and reporting in NSW*. Department of Planning and Environment.

AS 1726:2017, *Geotechnical Site Investigations*, Standards Australia.

AS 2870:2011, *Residential Slabs and Footings*, Standards Australia.

AS/ISO 2631.2:2014, *Mechanical vibration and shock – Evaluation of human exposure to whole-body vibration – Vibration in buildings (1 Hz to 80 Hz)*, Standards Australia / International Standards Organisation.

AS 3798:2007, *Guidelines on Earthworks for Commercial and Residential Developments*, Standards Australia.

AS 4678:2002, *Earth Retaining Structures*, Standards Australia.

AS 2159:2009, *Piling Design and Installation*, Standards Australia.

AS 1170.4:2024, *Structural design actions, Part 4: Earthquake actions in Australia*, Standards Australia.

NSW Environment Protection Authority (EPA: 2014), *Waste Classification Guidelines*.

Pells PJN, Mostyn G, Walker BF, (1998), *Foundations on Shale and Sandstone in the Sydney Region*, Australian Geomechanics Journal, December 1998, pp17-99.

13. Limitations

Douglas Partners Pty Ltd (Douglas) has prepared this report for this project at Part of 1-5 Khartoum Road, Macquarie Park in line with Douglas' proposal dated 1 October 2024 and acceptance received from Maud Garnier of Stockland Development Pty Ltd dated 9 October 2024. The work was carried out under the standing agreement between Stockland and Douglas. This report is provided for the exclusive use of Stockland Development Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of Douglas, does so entirely at its own risk and without recourse to Douglas for any loss or damage. In preparing this report Douglas has necessarily relied upon information provided by the client and / or their agents.

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

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

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical and groundwater components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

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

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

The scope of work for this report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials, refer DSI (Douglas, 2024) for further details.

Appendix A

About this Report

Drawings

Introduction

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

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

Copyright

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

Borehole and Test Pit Logs

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

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

Groundwater

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

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather

changes. They may not be the same at the time of construction as are indicated in the report; and

- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

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

Reports

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

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

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

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

About this Report

Site Anomalies

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

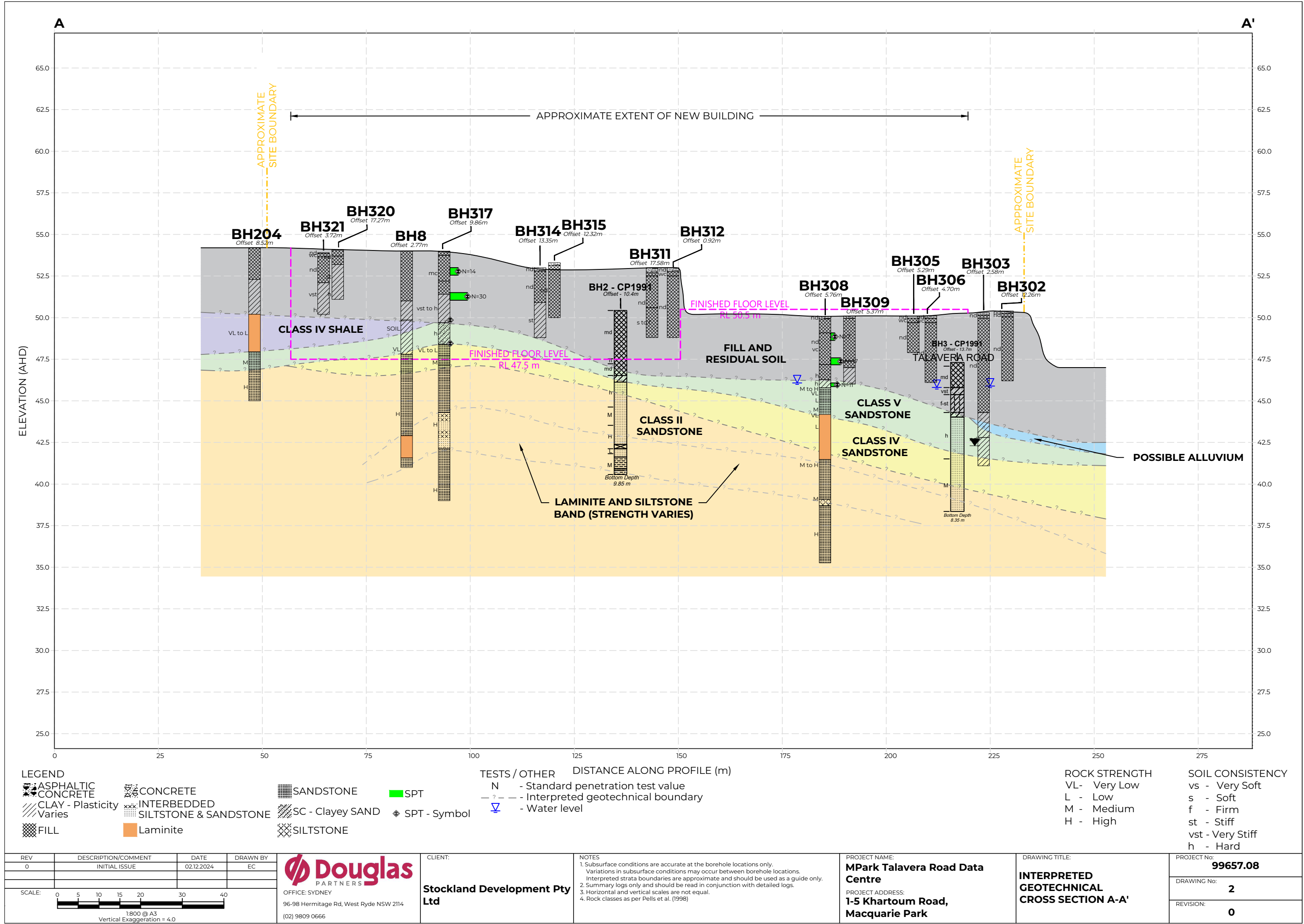
Information for Contractual Purposes

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

Site Inspection

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

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Appendix B

Site Photographs



Photo 1: South western end of site, asphalt car park on-grade.

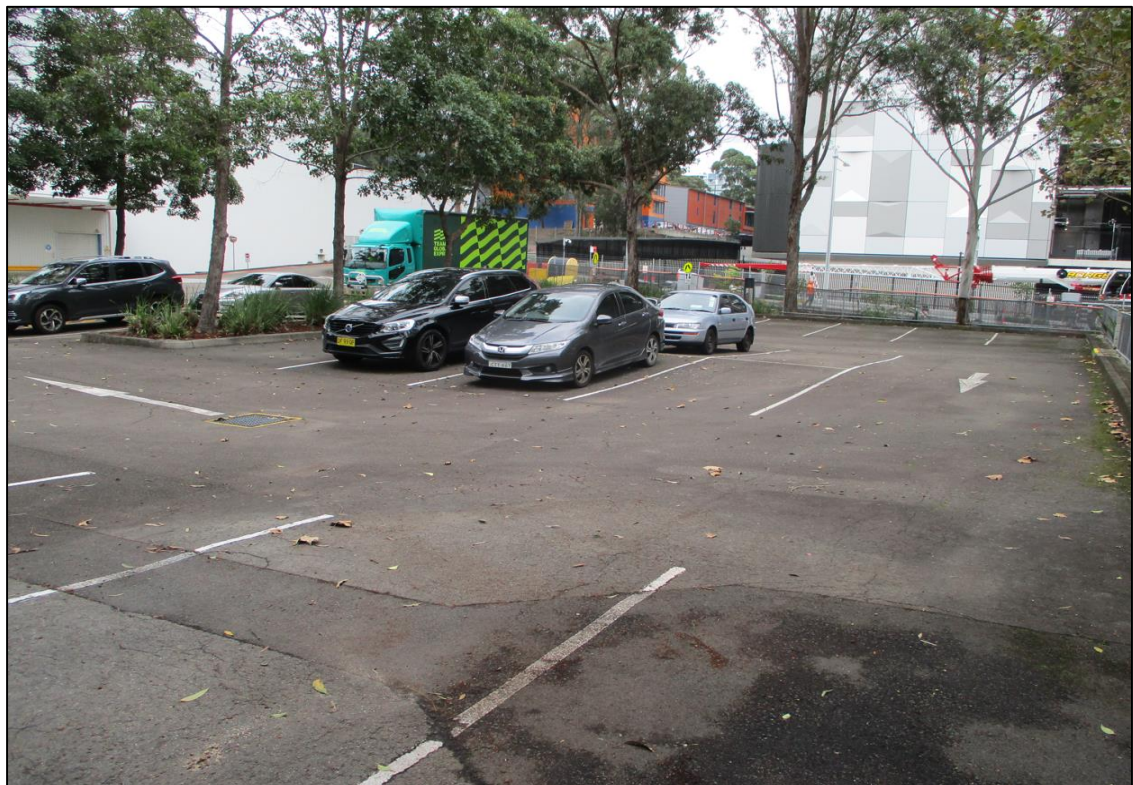


Photo 2: South western end of site, asphalt car park on-grade



GROUNDED
EXPERTISE

Project No.
99657.09

Site Photographs A1

Photo Date:
May 2024

MPark Talavera Road Data Centre
Client: Stockland Development Pty Ltd



Photo 3: Central part of site, concrete carpark structure.



Photo 4: Central part of site, concrete hardstand.



GROUND
ED
EXPERTISE

Project No.
99657.09

Site Photographs A2

Photo Date:
May 2024

MPark Talavera Road Data Centre
Client: Stockland Development Pty Ltd



Photo 5: Asphalt access road, western boundary of site.



Photo 6: Concrete car park structure, central and northern end of site.



GROUND
ED
EXPERTISE

Project No.
99657.09

Site Photographs A3

Photo Date:
May 2024

MPark Talavera Road Data Centre
Client: Stockland Development Pty Ltd



Photo 7: Access from Talavera Road, northern boundary of site.



Photo 8: Batter slope frontage along Talavera Road.



GROUND
EXPERTISE

Project No.
99657.09

Site Photographs A4

Photo Date:
May 2024

MPark Talavera Road Data Centre
Client: Stockland Development Pty Ltd

Appendix C

Terminology, Symbols and Abbreviations

Soil Descriptions

Rock Descriptions (optional)

Sampling, Testing and Excavation Methodology

Results of Field Work

Introduction to Terminology, Symbols and Abbreviations

Douglas Partners' reports, investigation logs, and other correspondence may use terminology which has quantitative or qualitative connotations. To remove ambiguity or uncertainty surrounding the use of such terms, the following sets of notes pages may be attached Douglas Partners' reports, depending on the work performed and conditions encountered:

- Soil Descriptions;
- Rock Descriptions; and
- Sampling, insitu testing, and drilling methodologies

In addition to these pages, the following notes generally apply to most documents.

Abbreviation Codes

Site conditions may also be presented in a number of different formats, such as investigation logs, field mapping, or as a written summary. In some of these formats textual or symbolic terminology may be presented using textual abbreviation codes or graphic symbols, and, where commonly used, these are listed alongside the terminology definition. For ease of identification in these note pages, textual codes are presented in these notes in the following style **XW**. Code usage conforms with the following guidelines:

- Textual codes are case insensitive, although herein they are generally presented in upper case; and
- Textual codes are contextual (i.e. the same or similar combinations of characters may be used in different contexts with different meanings (for example `PL` is used for plastic limit in the context of soil moisture condition, as well as in `PL(A)` for point load test result in the testing results column)).

Data Integrity Codes

Subsurface investigation data recorded by Douglas Partners is generally managed in a highly structured database environment, where records "span" between a top and bottom depth interval. Depth interval "gaps" between records are considered to introduce ambiguity, and, where appropriate, our practice guidelines may require contiguous data sets. Recording meaningful data is not always appropriate (for example assigning a "strength" to a concrete pavement) and the following codes may be used to maintain contiguity in such circumstances.

Term	Description	Abbreviation Code
Core loss	No core recovery	KL
Unknown	Information was not available to allow classification of the property. For example, when auguring in loose, saturated sand auger cuttings may not be returned.	UK
No data	Information required to allow classification of the property was not available. For example if drilling is commenced from the base of a hole predrilled by others	ND
Not Applicable	Derivation of the properties not appropriate or beyond the scope of the investigation. For example providing a description of the strength of a concrete pavement	NA

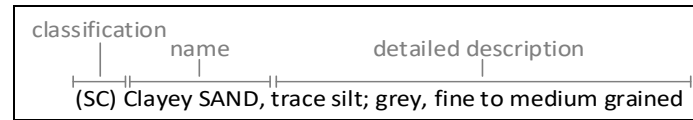
Graphic Symbols

Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has been provided in these notes.

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Introduction

All materials which are not considered to be “in-situ rock” are described in general accordance with the soil description model of AS 1726-2017 Part 6.1.3, and can be broken down into the following description structure:



The “classification” comprises a two character “group symbol” providing a general summary of dominant soil characteristics. The “name” summarises the particle sizes within the soil which most influence its behaviour. The detailed description presents more information about composition, condition, structure, and origin of the soil.

Classification, naming and description of soils require the relative proportion of particles of different sizes within the whole soil mixture to be considered.

Particle size designation and Behaviour Model

Solid particles within a soil are differentiated on the basis of size.

The engineering behaviour properties of a soil can subsequently be modelled to be either “fine grained” (also known as “cohesive” behaviour) or “coarse grained” (“non cohesive” behaviour), depending on the relative proportion of fine or coarse fractions in the soil mixture.

Particle Size Designation	Particle Size (mm)	Behaviour Model	
		Behaviour	Approximate Dry Mass
Boulder	>200	Excluded from particle behaviour model as “oversize”	
Cobble	63 - 200		
Gravel ¹	2.36 - 63	Coarse	>65%
Sand ¹	0.075 - 2.36		
Silt	0.002 - 0.075	Fine	>35%
Clay	<0.002		

¹ – refer grain size subdivision descriptions below

The behaviour model boundaries defined above are not precise, and the material behaviour should be assumed from the name given to the material (which considers the particle fraction which dominates the behaviour, refer “component proportions” below), rather than strict observance of the proportions of particle sizes. For example, if a material is named a “Sandy CLAY”, this is indicative that the material exhibits fine grained behaviour, even if the dry mass of coarse grained material may exceed 65%.

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a “primary”, “secondary”, or “minor” component of the soil mixture, depending on its influence over the soil behaviour.

Component Proportion Designation	Definition ¹	Relative Proportion	
		In Fine Grained Soil	In Coarse Grained Soil
Primary	The component (particle size designation, refer above) which dominates the engineering behaviour of the soil	The clay/silt component with the greater proportion	The sand/gravel component with the greater proportion
Secondary	Any component which is not the primary, but is significant to the engineering properties of the soil	Any component with greater than 30% proportion	Any granular component with greater than 30%; or Any fine component with greater than 12%
Minor ²	Present in the soil, but not significant to its engineering properties	All other components	All other components

¹ As defined in AS1726-2017 6.1.4.4

² In the detailed material description, minor components are split into two further sub-categories. Refer “identification of minor components” below.

Composite Materials

In certain situations, a lithology description may describe more than one material, for example, collectively describing a layer of interbedded sand and clay. In such a scenario, the two materials would be described independently, with the names preceded or followed by a statement describing the arrangement by which the materials co-exist. For example, “INTERBEDDED Silty CLAY AND SAND”.

Classification

The soil classification comprises a two character group symbol. The first character identifies the primary component. The second character identifies either the grading or presence of fines in a coarse grained soil, or the plasticity in a fine grained soil. Refer AS1726-2017 6.1.6 for further clarification.

Soil Name

For most soils, the name is derived with the primary component included as the noun (in upper case), preceded by any secondary components stated in an adjective form. In this way, the soil name also describes the general composition and indicates the dominant behaviour of the material.

Component ¹	Prominence in Soil Name
Primary	Noun (eg "CLAY")
Secondary	Adjective modifier (eg "Sandy")
Minor	No influence

¹ – for determination of component proportions, refer component proportions on previous page

For materials which cannot be disaggregated, or which are not comprised of rock or mineral fragments, the names "ORGANIC MATTER" or "ARTIFICIAL MATERIAL" may be used, in accordance with AS1726-2017 Table 14.

Commercial or colloquial names are not used for the soil name where a component derived name is possible (for example "Gravelly SAND" rather than "CRACKER DUST").

Materials of "fill" or "topsoil" origin are generally assigned a name derived from the primary/secondary component (where appropriate). In log descriptions this is preceded by uppercase "FILL" or "TOPSOIL". Origin uncertainty is indicated in the description by the characters (?), with the degree of uncertainty described (using the terms "probably" or "possibly" in the origin column, or at the end of the description).

Identification of minor components

Minor components are identified in the soil description immediately following the soil name. The minor component fraction is usually preceded with a term indicating the relative proportion of the component.

Minor Component Proportion Term	Relative Proportion	
	In Fine Grained Soil	In Coarse Grained Soil
With	All fractions: 15-30%	Clay/silt: 5-12% sand/gravel: 15-30%
Trace	All fractions: 0-15%	Clay/silt: 0-5% sand/gravel: 0-15%

The terms "with" and "trace" generally apply only to gravel or fine particle fractions. Where cobbles/boulders are encountered in minor proportions (generally less than about 12%) the term "occasional" may be used. This term describes the sporadic distribution of the material within the confines of the investigation excavation only, and there may be considerable variation in proportion over a wider area which is difficult to factually characterise due to the relative size of the particles and the investigation methods.

Soil Composition

Plasticity

Descriptive Term	Laboratory liquid limit range	
	Silt	Clay
Non-plastic materials	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35 and ≤50
High plasticity	>50	>50

Note, Plasticity descriptions generally describe the plasticity behaviour of the whole of the fine grained soil, not individual fine grained fractions.

Grain Size

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

Grading

Grading Term	Particle size (mm)
Well	A good representation of all particle sizes
Poorly	An excess or deficiency of particular sizes within the specified range
Uniformly	Essentially of one size
Gap	A deficiency of a particular size or size range within the total range

Note, AS1726-2017 provides terminology for additional attributes not listed here.

Soil Condition

Moisture

The moisture condition of soils is assessed relative to the plastic limit for fine grained soils, while for coarse grained soils it is assessed based on the appearance and feel of the material. The moisture condition of a material is considered to be independent of stratigraphy (although commonly these are related), and this data is presented in its own column on logs.

Applicability	Term	Tactile Assessment	Abbreviation code
Fine	Dry of plastic limit	Hard and friable or powdery	w<PL
	Near plastic limit	Can be moulded	w=PL
	Wet of plastic limit	Water residue remains on hands when handling	w>PL
	Near liquid limit	"oozes" when agitated	w=LL
	Wet of liquid limit	"oozes"	w>LL
Coarse	Dry	Non-cohesive and free running	D
	Moist	Feels cool, darkened in colour, particles may stick together	M
	Wet	Feels cool, darkened in colour, particles may stick together, free water forms when handling	W

The abbreviation code **NDF**, meaning "not-assessable due to drilling fluid use" may also be used.

Note, observations relating to free ground water or drilling fluids are provided independent of soil moisture condition.

Consistency/Density/Compaction/Cementation/Extremely Weathered Material

These concepts give an indication of how the material may respond to applied forces (when considered in conjunction with other attributes of the soil). This behaviour can vary independent of the composition of the material, and on logs these are described in an independent column and are generally mutually exclusive (i.e it is inappropriate to describe both consistency and compaction at the same time). The method by which the behaviour is described depends on the behaviour model and other characteristics of the soil as follows:

- In fine grained soils, the "consistency" describes the ease with which the soil can be remoulded, and is generally correlated against the materials undrained shear strength;
- In granular materials, the relative density describes how tightly packed the particles are, and is generally correlated against the density index;
- In anthropogenically modified materials, the compaction of the material is described qualitatively;
- In cemented soils (both natural and anthropogenic), the cemented "strength" is described qualitatively, relative to the difficulty with which the material is disaggregated; and
- In soils of extremely weathered material origin, the engineering behaviour may be governed by relic rock features, and expected behaviour needs to be assessed based the overall material description.

Quantitative engineering performance of these materials may be determined by laboratory testing or estimated by correlated field tests (for example penetration or shear vane testing). In some cases, performance may be assessed by tactile or other subjective methods, in which case investigation logs will show the estimated value enclosed in round brackets, for example **(VS)**.

Consistency (fine grained soils)

Consistency Term	Tactile Assessment	Undrained Shear Strength (kPa)	Abbreviation Code
Very soft	Extrudes between fingers when squeezed	<12	VS
Soft	Mouldable with light finger pressure	>12 - ≤25	S
Firm	Mouldable with strong finger pressure	>25 - ≤50	F
Stiff	Cannot be moulded by fingers	>50 - ≤100	St
Very stiff	Indented by thumbnail	>100 - ≤200	VSt
Hard	Indented by thumbnail with difficulty	>200	H
Friable	Easily crumbled or broken into small pieces by hand	-	Fr

Relative Density (coarse grained soils)

Relative Density Term	Density Index	Abbreviation Code
Very loose	<15	VL
Loose	>15 - ≤35	L
Medium dense	>35 - ≤65	MD
Dense	>65 - ≤85	D
Very dense	>85	VD

Note, tactile assessment of relative density is difficult, and generally requires penetration testing, hence a tactile assessment guide is not provided.

Compaction (anthropogenically modified soil)

Compaction Term	Abbreviation Code
Well compacted	WC
Poorly compacted	PC
Moderately compacted	MC
Variably compacted	VC

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MOD
Weakly cemented	WEK

Extremely Weathered Material

AS1726-2017 considers weathered material to be soil if the unconfined compressive strength is less than 0.6 MPa (i.e. less than very low strength rock). These materials may be identified as “extremely weathered material” in reports and by the abbreviation code **XWM** on log sheets. This identification is not correlated to any specific qualitative or quantitative behaviour, and the engineering properties of this material must therefore be assessed according to engineering principles with reference to any relic rock structure, fabric, or texture described in the description.

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RS
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than ‘very low’ as per as1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Fluvial	Deposited by channel fill and overbank (natural levee, crevasse splay or flood basin)	FLV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LAC
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Slopewash	Thin layers of soil and rock debris gradually and slowly deposited by gravity and possibly water	SW
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or seashore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

The presence of particles considered to be “oversize” may be described using one of the following strategies:

- Oversize encountered in a minor proportion (when considered relative to the wider area) are noted in the soil description; or
- Where a significant proportion of oversize is encountered, the cobbles/boulders are described independent of the soil description, in a similar manner to composite soils (described above) but qualified with “MIXTURE OF”.

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Rock Strength

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

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

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

¹ Rock strength classification is based on UCS. The UCS to $I_{s(50)}$ ratio varies significantly for different rock types and specific ratios may be required for each site. The point load Index ranges shown above are as suggested in AS1726 and should not be relied upon without supporting evidence.

The following abbreviation codes are used for soil layers or seams of material “within rock” but for which the equivalent UCS strength is less than 0.6 MPa.

Scenario	Abbreviation Code
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The properties of the material encountered over this interval are described in the “Description of Strata” and soil properties columns.	SOIL
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The prominence of the material is such that it can be considered to be a seam (as defined in Table 22 of AS1726-2017) and the properties of the material are described in the defect column.	SEAM

Degree of Weathering

The degree of weathering of rock is classified as follows:

Weathering Term	Description	Abbreviation Code
Residual Soil ¹	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.	RS
Extremely weathered ¹	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible	XW
Highly weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.	HW
Moderately weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MW
Slightly weathered	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.	SW
Fresh	No signs of decomposition or staining.	FR
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.	DW

¹ The parent rock type, of which the residual/extremely weathered material is a derivative, will be stated in the description (where discernible).

Degree of Alteration

The degree of alteration of the rock material (physical or chemical changes caused by hot gasses or liquids at depth) is classified as follows:

Term	Description	Abbreviation Code
Extremely altered	Material is altered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.	XA
Highly altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is changed by alteration. Some primary minerals are altered to clay minerals. Porosity may be increased by leaching or may be decreased due to precipitation of secondary materials in pores.	HA
Moderately altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MA
Slightly altered	Rock is slightly discoloured but shows little or no change of strength from fresh rock	SA
Note: If HA and MA cannot be differentiated use DA (see below)		
Distinctly altered	Rock strength usually changed by alteration. The rock may be highly discoloured, usually by staining or bleaching. Porosity may be increased by leaching or may be decreased due to precipitation of secondary minerals in pores.	DA

Degree of Fracturing

The following descriptive classification apply to the spacing of natural occurring fractures in the rock mass. It includes bedding plane partings, joints and other defects, but excludes drilling breaks. These terms are generally not required on investigation logs where fracture spacing is presented as a histogram, and where used are presented in an unabbreviated format.

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

Rock Quality Designation

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

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

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

Stratification Spacing

These terms may be used to describe the spacing of bedding partings in sedimentary rocks. Where used, these terms are generally presented in an unabbreviated format

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

Rock Descriptions

Terminology
Symbols
Abbreviations

Defect Descriptions

Defect Type

Term	Abbreviation Code
Bedding plane	B
Cleavage	CL
Crushed seam	CS
Crushed zone	CZ
Drilling break	DB
Decomposed seam	DS
Drill lift	DL
Extremely Weathered seam	EW
Fault	F
Fracture	FC
Fragmented	FG
Handling break	HB
Infilled seam	IS
Joint	JT
Lamination	LAM
Shear seam	SS
Shear zone	SZ
Vein	VN
Mechanical break	MB
Parting	P
Sheared Surface	S

Rock Defect Orientation

Term	Abbreviation Code
Horizontal	H
Vertical	V
Sub-horizontal	SH
Sub-vertical	SV

Rock Defect Coating

Term	Abbreviation Code
Clean	CN
Coating	CT
Healed	HE
Infilled	INF
Stained	SN
Tight	TI
Veneer	VNR

Rock Defect Infill

Term	Abbreviation Code
Calcite	CA
Carbonaceous	CBS
Clay	CLAY
Iron oxide	FE
Manganese	MN
Pyrite	Py
Secondary material	MS
Silt	M
Quartz	Qz
Unidentified material	MU

Rock Defect Shape/Planarity

Term	Abbreviation Code
Curved	CU
Discontinuous	DIS
Irregular	IR
Planar	PR
Stepped	ST
Undulating	UN

Rock Defect Roughness

Term	Abbreviation Code
Polished	PO
Rough	RF
Smooth	SM
Slickensided	SL
Very rough	VR

Defect Orientation

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

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Sampling and Testing

A record of samples retained, and field testing performed is usually shown on a Douglas Partners' log with samples appearing to the left of a depth scale, and selected field and laboratory testing (including results, where relevant) appearing to the right of the scale, as illustrated below:

SAMPLE			DEPTH (m)	TESTING	
SAMPLE REMARKS	TYPE	INTERVAL		TEST TYPE	RESULTS AND REMARKS
	SPT		1.0 1.45	SPT	4,9,11 N=20

Sampling

The type or intended purpose for which a sample was taken is indicated by the following abbreviation codes.

Sample Type	Code
Auger sample	A
Acid Sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Environmental sample	ES
Driven Tube sample	DT
Gas sample	G
Piston sample	P
Sample from SPT test	SPT
Undisturbed tube sample	U ¹
Water sample	W
Material Sample	MT
Core sample for unconfined compressive strength testing	UCS

¹ – numeric suffixes indicate tube diameter/width in mm

The above codes only indicate that a sample was retained, and not that testing was scheduled or performed.

Field and Laboratory Testing

A record that field and laboratory testing was performed is indicated by the following abbreviation codes.

Test Type	Code
Pocket penetrometer (kPa)	PP
Photo ionisation detector (ppm)	PID
Standard Penetration Test x/y = x blows for y mm penetration HB = hammer bouncing HW = fell under weight of hammer	SPT
Shear vane (kPa)	V

Unconfined compressive strength, (MPa)	UCS
--	-----

Field and laboratory testing (continued)

Test Type	Code
Point load test, (MPa), axial (A), diametric (D), irregular (I)	PLT(L)
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP9/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

▷	seepage/inflow
▽	standing or observed water level
NFGWO	no free groundwater observed
OBS	observations obscured by drilling fluids

Drilling or Excavation Methods/Tools

The drilling/excavation methods used to perform the investigation may be shown either in a dedicated column down the left-hand edge of the log, or stated in the log footer. In some circumstances abbreviation codes may be used.

Method	Abbreviation Code
Direct Push	DP
Solid flight auger. Suffixes: /T = tungsten carbide tip, /V = v-shaped tip	AD ¹
Air Track	AT
Diatube	DT ¹
Hand auger	HA ¹
Hand tools (unspecified)	HAND
Existing exposure	X
Hollow flight auger	HSA ¹
HQ coring	HQ3
HMLC series coring	HMLC
NMLC series coring	NMLC
NQ coring	NQ3
PQ coring	PQ3
Predrilled	PD
Push tube	PT ¹
Ripping tyne/ripper	R
Rock roller	RR ¹
Rock breaker/hydraulic hammer	EH
Sonic drilling	SON ¹
Mud/blade bucket	MB ¹
Toothed bucket	TB ¹
Vibrocore	VC ¹
Vacuum excavation	VE
Wash bore (unspecified bit type)	WB ¹

¹ – numeric suffixes indicate tool diameter/width in mm

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 1 of 3

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	0.04	ASPHALTIC CONCRETE		FILL			M		ES	0.04 - 0.20	0.20	PID	<1ppm		
	0.20	FILL / Gravelly SAND, trace silt: dark grey; fine to coarse; fine to coarse, igneous gravel.							A	0.20 - 0.48	0.48	PID	<1ppm		
	0.48	FILL / Silty CLAY, trace gravel: brown and orange-brown; medium to high plasticity; fine, siltstone and ironstone gravel.		FILL	MC				ES	0.48 - 0.50	0.50	PID	<1ppm		
	1.00								A/ES	0.90 - 1.00	1.00	PID	<1ppm		
	1.50								SPT	1.00 - 1.50	1.50	SPT	6,12,13 N=25		
	1.50	Silty Sandy CLAY (CL-CI), trace gravel: red-brown and pale grey; low to medium plasticity; fine to coarse sand; fine, ironstone and sandstone gravel.					w<PL		ES	1.50 - 1.90	1.90	PID	<1ppm		
	2.00			RS	H				A/ES	1.90 - 2.00	2.00	PID	<1ppm		
	2.60	Continued as rock							PFAS	2.40 - 2.50	2.50	PID	<1ppm		
	2.60								SPT	2.50 - 2.64	2.64	SPT	8 (HB) Refusal		
	3.00										3.00				
	4.00										4.00				
	5.00										5.00				
	6.00										6.00				
	7.00										7.00				
	8.00										8.00				
	9.00										9.00				

0.04/1/24

45

44

43

42

41

40

39

Backfill

Bentonite

Sand

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Commachio Geo405
METHOD: DT to 0.04m, AD/T to 2.6m, NMLC to 15.2m
REMARKS: BDUP20241029; Gatic and Concrete cap to 0.1m

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 2.6m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 2 of 3

CONDITIONS ENCOUNTERED														SAMPLE			TESTING			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE		
	48													0.15						
	1													0.50						
														1.00						
	47													1.50						
	2													2.00						
		Continued from soil												2.50						
	3	SANDSTONE: pale grey, red-brown and orange-brown, fine to coarse grained, bedded, 0 to 15°, with iron-indurated bands, extremely weathered and clay bands. Mittagong Formation		HW	2.60	L				260-2.70m B x3 0-5°, IR, SN Fe, VR				2.64	PLT	PL(A)=0.10MPa				
				XW	2.70	VL								3						
	45			HW	3.50	M to H	100	0		355-3.70m: JT, 85°, IR, SN Fe, VR										
	4			XW to HW	3.85	H								4	PLT	PL(A)=1.0MPa				
	4.50																			
	44	LAMINITE: pale grey sandstone, fine to medium grained, dark grey siltstone, laminated, 0 to 15°; with frequent extremely weathered bands and iron-indurated seams. Mittagong Formation		HW	4.60					460-5.04m B x15, 0-5°, PR, SN, RF										
	5				4.90	VL	100	0						5						
				XW to HW																
	6													6	PLT	PL(A)=0.04MPa				
	42																			
	6.80				6.80	VL to L				6.80-7.00m: JT, 60°, IR, SN Fe, VR				7	PLT	PL(A)=0.09MPa				
	7	SANDSTONE: pale grey, fine to medium grained, cross bedded, 0 to 15°, with frequent extremely weathered bands and iron-indurated seams. Hawkesbury Sandstone		MW	7.00	M	95	90		7.10m: DS, 0°, 10mm 7.25m: DS, 5°, 30mm 7.40m: DS, 10°, 10mm 7.45-7.49m DS, 25°, 40 mm 7.60-7.70m: DS, 25°, 60 mm 7.91m: DS, 5°, 30mm 7.92-8.00m: JT, 85°, IR, SN Fe, VR 8.04m DS, 10°, 5mm 8.10-8.15m: DS, 0°, 50mm 8.21-8.23m: JT, 25°, IR, CN, VR 8.23-8.30m: DS, 5°, 70 mm 8.43-8.55m: JT, 65°, IR, SN Fe, VR 8.56m DS, 10°, 10mm 8.59m DS, 10°, 10mm 8.66-8.67m: JT, 30°, PR, CN, RF 8.71-8.74m: JT, 60°, PR, CN, RF 9.54m: DS, 0°, 8mm 9.84m DS, 0°, 10mm						7	PLT	PL(A)=0.40MPa		
				XW	7.60	SEAM														
	8			MW	7.70	M								8	PLT	PL(A)=0.70MPa				
	8.30																			
	8.40			MW	8.10	M														
		SANDSTONE: pale grey, fine to coarse grained, cross bedded, 0 to 15°. Hawkesbury Sandstone			8.30															
	9			SW	8.40									9	PLT	PL(A)=1.3MPa				
				FR	9.10	H	100	85												
	39																			

NOTES: #Soil origin is "probable" unless otherwise stated.

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Commachio Geo405
METHOD: DT to 0.04m, AD/T to 2.6m, NMLC to 15.2m
REMARKS: BDUP20241029; Gatic and Concrete cap to 0.1m

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 2.6m

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED										SAMPLE				TESTING																									
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.			DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE																		
			[CONT] SANDSTONE: pale grey, fine to coarse grained, cross bedded, 0 to 15°. Hawkesbury Sandstone		DS XW HW NW SW FR	VL L M H VH	L L H H EH	100	85			11.63m: DS, 0°, 10mm 11.67-11.71m: DS, 0°, 35 mm 12.66m B, 0°, CU, INF Clay 2mm, RF 14.21m: DS, 5°, 5mm					11	PLT	PL(A)=1.7MPa																				
	38																																						
	37	12																																					
	36	13																																					
	35	14																																					
	34	15						100	100								15	PLT	PL(A)=1.5MPa																				
			Borehole discontinued at 15.20m depth. Target depth reached.															PLT	PL(A)=1.7MPa																				
	33	16																																					
	32	17																																					
	31	18																																					
	30	19																																					
	29																																						

NOTES: [#]Soil origin is "probable" unless otherwise stated.

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Commachio Geo405
METHOD: DT to 0.04m, AD/T to 2.6m, NMLC to 15.2m
REMARKS: BDUP20241029; Gatic and Concrete cap to 0.1m

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 2.6m

Refer to explanatory notes for symbol and abbreviation definitions

CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 1 of 2



CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 2 of 2



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.4 AHD
COORDINATE: E:326595.0, N:6260680.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH302
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(%)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
25/10/24 No free groundwater observed whilst augering	RL (m)	CONCRETE SLAB			ND							
	0.14	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; fine to medium, angular to sub-angular, igneous gravel.		FILL	ND	M		ES	0.14 0.35	PID	<1ppm	
	0.35											
	50	FILL / Silty CLAY, trace ironstone gravel: pale grey, brown and orange-brown.						ES	0.80 1.00	PID	<1ppm	
												1
	49							ES	1.80 2.00	PID	<1ppm	
												2
	48			FILL	ND	w<PL		ES	2.80 3.00	PID	<1ppm	
												3
	47	3.50m: Becoming orange mottled red-brown						ES	3.80 4.00	PID	<1ppm	
4												
46	Borehole discontinued at 4.20m depth. Target depth reached.											

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: [#]Soil origin is "probable" unless otherwise stated. [†]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe

OPERATOR: Terratest

LOGGED: ZW

METHOD: Diacore to 0.14m, PT to 4.2 m

CASING: Uncased

REMARKS: *Field replicate BD1/241025 sample taken at 3.9-4m

Generated with CORE-GS by Geroc - Soil Log

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.3 AHD
COORDINATE: E:326606.0, N:6260670.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH303
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS						
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	0.15	CONCRETE SLAB													
	0.35	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; fine to medium, angular to sub-angular, igneous gravel.		FILL	ND		ND		ES	0.15 0.35	PID	<1ppm			
	1	FILL / Silty CLAY, trace ironstone: pale grey, pale brown and orange brown.							ES	0.80 1.00	PID	<1ppm			
		1.50m: orange brown below													
	2	2.00m: 50% recovery, possibly increased gravel or inclusions							ES	1.80 2.00	PID	<1ppm			
	3			FILL	ND		w<PL		ES	2.80 3.00	PID	<1ppm			
	4	From 4.00m: start auger							ES	3.80 4.00	PID	<1ppm			
	5								ES	4.80 5.00	PID	<1ppm			
	6.00	Silty CLAY (CI), with gravel: pale brown mottled pale grey; medium plasticity; fine to medium, rounded to sub-rounded, ironstone and siltstone gravel.		ALV					* ES	6.20 6.40	PID	<1ppm			
	7														
	7.50	Silty CLAY (CI): pale brown to brown; medium plasticity.			ND		w>PL								
	8			XWM											
	9														
		Borehole discontinued at 9.20m depth. Target depth reached.													
	10														
	11														

Groundwater seep observed below 8m

25/10/24

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.15m, PT to 4.35m, AD/T to 9.2m
REMARKS: *Field replicate BD2/241025 sample taken at 6.2-6.4m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 49.3 AHD
COORDINATE: E:326566.0, N:6260678.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH304
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	0.03	ASPHALTIC CONCRETE		FILL	WC				ES	0.03	PID	<1ppm			
	0.20	FILL / Silty Gravelly SAND: grey; fine to coarse; fine to medium, angular to sub-angular, igneous gravel.		FILL	ND		w<PL		ES	0.20	PID	<1ppm			
	0.80	FILL / Silty CLAY: grey-brown and orange-brown; medium plasticity; trace fine to medium siltstone and ironstone gravel, decomposed organics (roots).		RS	(St) to (VSt)		w<PL		ES	0.80	PID	<1ppm			
	1	Silty CLAY (CI): pale brown to pale orange-brown; medium plasticity; trace rootlets.								1.10					
	2.00	SANDSTONE: pale brown and yellow brown, laminated								2					
	3									3					
	4	3.50m: red-brown,decreasing auger resistance, increasing moisture								4					
	5									5					
	6	5.50m: grey brown to dark grey, siltstone, increasing moisture			ND		ND			6					
	7	6.00m: pale grey and grey, laminite, groundwater seep								7					
	8									8					
	9	7.50m: pale grey, sandstone								9					
	9.20	Borehole discontinued at 9.20m depth. Target depth reached.													
	10														
	11														

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03mm, PT to 1.1m, AD/T to 9.2m
REMARKS: *Field replicate BD1/241024 sample taken at 0.4-0.6 m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

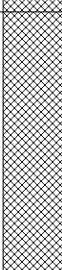
Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326590.0, N:6260663.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH305
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
24/01/24 No free groundwater observed whilst augering.	50	0.13	CONCRETE SLAB			ND	ND						
			FILL / Silty Sandy CLAY: grey-brown; low to medium plasticity; with gravel, trace organics (sticks).		FILL	WC	w=PL		ES	0.13 0.30	PID	<1ppm	
		0.40	FILL / Silty CLAY, with gravel: pale grey, red-brown and brown; medium to high plasticity; siltstone and ironstone gravel.										
		1			FILL	ND	w=PL		ES	0.80 1.00	PID	<1ppm	
	49												
		2							ES	1.80 2.00	PID	<1ppm	
	48		Borehole discontinued at 2.20m depth. Limit of headroom.										
		3											
	47												
		4											
	46												

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.13m, PT to 2.2m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326598.0, N:6260657.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH306
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (%)	DENSITY (g/cm³)	MOISTURE	REMARKS	TYPE	INTERVAL
RL (m)										
50	0.14	CONCRETE SLAB			ND	ND				
	0.40	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; angular to sub-angular, igneous gravel; subgrade.		FILL	WC	D			ES	0.14 - 0.40
		FILL / Silty CLAY, with gravel: orange-brown, grey-brown and pale brown; medium plasticity; fine to coarse, siltstone and ironstone gravel; trace rootlets.								
	1.00	1.00m: pale brown and pale orange brown							ES	0.80 - 1.00
	2.00								ES	1.80 - 2.00
	3.00	3.00m: orange-brown and pale brown, sandy clay							ES	2.80 - 3.00
	4.00	Borehole discontinued at 4.00m depth. Target depth reached.							ES	3.80 - 4.00

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.14m, PT to 4.0m
REMARKS: *Field replicate BD2/241024 sample taken at 1.8-2m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.2 AHD
COORDINATE: E:326548.0, N:6260656.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH307
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
24/10/24 No free groundwater observed whilst augering	0.03	ASPHALTIC CONCRETE			ND						0.03		
	0.25	FILL / Silty Sandy GRAVEL: grey; fine to medium, angular to sub-angular, igneous.		FILL	WC		D		ES		0.25	PID	<1ppm
	0.60	FILL / Silty CLAY, trace decomposed organics (roots), trace gravel: grey-brown and orange-brown.		FILL	ND				ES		0.60	PID	<1ppm
	1.00	Silty CLAY (CI), trace rootlets, trace gravel: pale brown to orange brown and red-brown; medium plasticity; ironstone gravel.							ES		1.00	PID	<1ppm
	1.60	1.60m: becoming pale grey SANDY CLAY with extremely weathered sandstone, ironstone gravel/bands		RS	(St)		w<PL		ES		1.60	PID	<1ppm
	2.00										2.00		
	2.40										2.40		
	2.60										2.60		
	3.00										3.00		
	3.60										3.60		
Borehole discontinued at 2.60m depth. Target depth reached													
	4.00										4.00		
	4.40										4.40		
	4.80										4.80		
	5.20										5.20		
	5.60										5.60		
	6.00										6.00		
	6.40										6.40		
	6.80										6.80		
	7.20										7.20		
	7.60										7.60		

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 2.6m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 1 of 3

CONDITIONS ENCOUNTERED						SAMPLE				TESTING AND REMARKS				
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN ^(#)	CONSIS. ^(*) DENSITY ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
28/10/24 No free groundwater observed whilst augering	0.16	CONCRETE SLAB			ND	ND		ES	0.20	PID	>1ppm			
		FILL / Clayey Silty SAND: brown; fine to medium; fine to medium sand, trace tile fragment, trace gravel, siltstone gravel, trace sand, low plasticity.		FILL			PFAS	ES	0.40 0.50	PID	>1ppm			
49	1.00	FILL / Silty CLAY: brown,orange-brown and dark brown; medium plasticity; trace sand; fine to medium sand; trace pale grey clay nodule, trace degraded roots.						A	0.80 0.90 1.00	PID	>1ppm			
							SPT			SPT	4,3,4 N=7			
48	2	2.50m: Trace charcoal and glass fragment		FILL	VC	w<PL		ES	1.45 1.60	PID	>1ppm			
							A/ES	1.90 2.00	PID	>1ppm				
47	2.90	2.90m: Sandstone cobble (SPT refusal)						ES	2.40 2.50	PID	>1ppm			
							SPT			PP	300-320kPa 4,7,10/110 (HB) Refusal			
46	3.80	FILL / Silty Sandy CLAY: red-brown mottled orange-brown; medium plasticity; fine to medium sand; trace degraded roots and brick fragments, trace gravel, fine sandstone and igneous gravel.		FILL				A/ES	2.91 3.00	PID	>1ppm			
45	4	Silty CLAY (CI-CH): brown mottled red-brown; medium plasticity; with fine to medium sand.		RS	H	w=PL		A/ES	3.90 4.00			8,11/70 (HB) Refusal		
							SPT							
44	4.30	Continued as rock												
43	5									5				
42	6									6				
41	7									7				
40	8									8				
39	9									9				

NOTES: ^(#) Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: ¹⁴ Soil origin is "probable" unless otherwise stated. ¹⁵ Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied

PLANT: XC
METHOD: DT to 0.16m, AD/T to 4.3m, NMLC to 14.82m
REMARKS: BDUP1 / 241028; Gatic and concrete plug to 0.1m

OPERATOR: Terratest (AC)

LOGGED: CSY
CASING: HWT to 3.5m

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 2 of 3

CONDITIONS ENCOUNTERED										SAMPLE				TESTING				
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	RL (m)			PS XS XW LW MW SW FR		VL L M H VH			0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50									
28/10/24 No free groundwater observed whilst augering																		
	50													0.20				
	49													0.50				
	48													0.90				
	47													1.00				
	46													1.45				
	45													1.60				
	44													2.00				
	43													2.50				
	42													2.91				
	41													3.00				
	40													4.00				
	39													4.22				
	38													4.40				
	37													4.44				
	36													4.80				
	35													5.30				
	34													5.89				
	33													6.88				
	32													7.28				
	31													8.60				
	30													9.72				
	29													9.88				
	28													9.90				
	27																	
	26																	
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	11																	
	10																	
	9																	

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: XC
METHOD: DT to 0.16m, AD/T to 4.3m, NMLC to 14.82m
REMARKS: BDUP1 / 241028; Gatic and concrete plug to 0.1m

OPERATOR: Terratest (AC)

LOGGED: CSY
CASING: HWT to 3.5m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED										SAMPLE		TESTING								
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE		
	40	[CONT] SANDSTONE: pale grey, fine to coarse grained, 0 to 10°, thinly bedded, grey and dark grey siltstone and/or carbonaceous laminae. Hawkesbury Sandstone SILTSTONE: subhorizontally bedded; laminite band SANDSTONE: pale grey, fine to coarse grained, cross bedded, 0 to 15°, thinly bedded. Hawkesbury Sandstone		FR			100	85												
	11.00					M	100	90												
	11.38																			
	12																			
	13																			
	14																			
	15	Borehole discontinued at 14.82m depth. Target depth reached.																		
	16																			
	17																			
	18																			
	19																			

NOTES: [#]Soil origin is "probable" unless otherwise stated.

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: XC
METHOD: DT to 0.16m, AD/T to 4.3m, NMLC to 14.82m
REMARKS: BDUP1 / 241028; Gatic and concrete plug to 0.1m

OPERATOR: Terratest (AC)

LOGGED: CSY
CASING: HWT to 3.5m

Refer to explanatory notes for symbol and abbreviation definitions

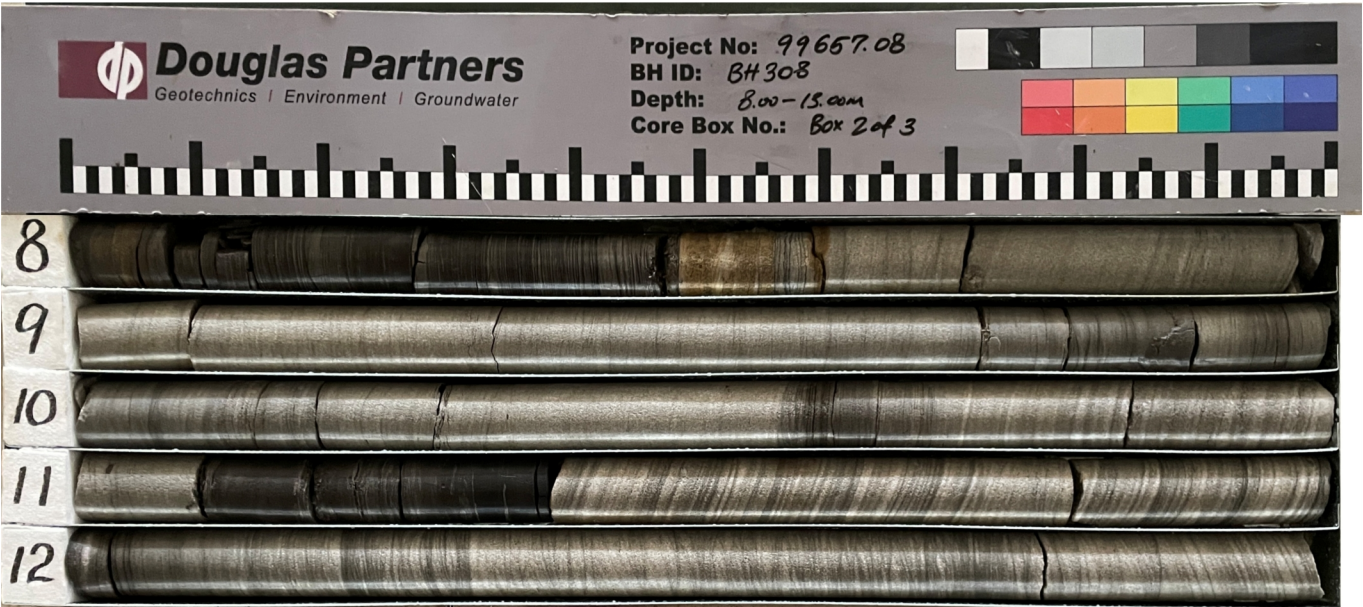


CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 1 of 2

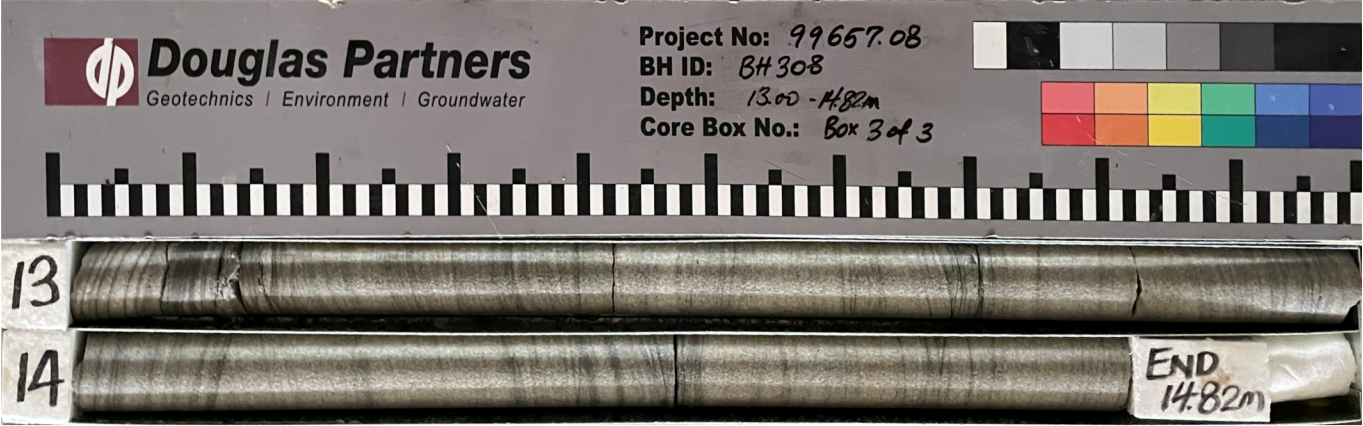


CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 2 of 2



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326584.0, N:6260639.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH309
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS				
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
25/10/24 No free groundwater observed whilst augering	50	0.14	CONCRETE SLAB				ND						
			FILL / Silty CLAY: pale brown, pale grey and orange-brown; medium plasticity; fine to coarse, sub-angular to platy, siltstone and ironstone gravel.							ES	0.14 0.35	PID	<1ppm
		1			FILL		w<PL			ES	0.80 1.00	PID	<1ppm
	49					ND							
		2								ES	1.80 2.00	PID	<1ppm
	48												
		2.70	FILL / Silty CLAY: dark brown; medium plasticity; trace gravel, ironstone gravel.		FILL		w=PL			ES	2.80 3.00	PID	<1ppm
	47												
	3.10	Silty CLAY (CI-CH): pale-brown mottled orange and red-brown; medium to high plasticity; trace ironstone gravel, decomposed roots.			RS	(H)	w<PL		* ES	3.50 3.70	PID	<1ppm	
	4										4		
46													
			Borehole discontinued at 4.10m depth. Target depth reached										
NOTES: ^(*) Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.													

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.14m, PT to 4.10m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326530.0, N:6260637.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH310
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾	DENSITY. ⁽¹⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
RL (m)														
24/10/24 No free groundwater observed whilst augering	0.03	ASPHALTIC CONCRETE									0.03			
	0.20	FILL / Silty Gravelly SAND: dark brown, orange-brown and grey-brown; fine to coarse; fine to medium, angular to sub-angular, igneous gravel; subgrade.		FILL	(WC)	ND	M		ES		0.03 - 0.20	PID	<1ppm	
		FILL / Silty CLAY: dark brown, orange-brown and grey-brown; medium to high plasticity; with fine to medium siltstone and ironstone gravel, trace decomposed roots, rootlets, clinker/slag.		FILL	ND				ES		0.20 - 0.50	PID	<1ppm	
											0.50 - 0.70			
	1.00	Silty CLAY (CI-CH): yellow-brown to pale orange-brown; medium to high plasticity; trace siltstone and ironstone gravel/ bands.					w=PL				1.00			
		1.50m: below becoming red-brown mottled orange and pale brown		RS	(St) to (VSt)			PFAS	ES		1.50 - 1.70	PID	<1ppm	
											1.70 - 2.00			
	2.30	Silty CLAY (CI-CH): pale grey mottled red-brown; medium to high plasticity.		XWM	(H)	ND			ES		2.30 - 2.70	PID	<1ppm	
											2.70 - 3.00			
		3	Borehole discontinued at 3.00m depth. Pushtube refusal. Target depth reached .											
	4													

NOTES: ⁽¹⁾Soil origin is "probable" unless otherwise stated. ⁽²⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 3 m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.0 AHD
COORDINATE: E:326541.0, N:6260623.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH311
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
31/10/24 No free groundwater observed whilst augering	52		CONCRETE SLAB					ND											
		0.30	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with fine to medium angular to subangular igneous gravel.		FILL			M		ES		0.30	PID	<1ppm					
		0.50									0.50								
			FILL / Silty CLAY: pale grey and pale red-brown; medium to high plasticity; with angular siltstone and ironstone gravel.							*	ES		0.60	PID	<1ppm				
											0.80								
		1											1						
			1.80m: trace asphalt		FILL			w=PL		ES		1.60	PID	<1ppm					
											1.80								
		2											2						
			2.40					ND		ES		2.20	PID	<1ppm					
		2.40																	
		FILL / Silty CLAY (CI): grey-brown to dark grey-brown; medium plasticity; trace ironstone gravel, hydrocarbon stained, slight hydrocarbon odour, with decomposed roots, appears poorly compacted(possible firm consistency) from 2.4m to 3.5m.						ES		2.50	PID	3.4ppm							
									2.70										
3											3								
		3.50m: tan-brown		FILL			w<PL		ES		3.50	PID	<1ppm						
										3.70									
4											4								
Borehole discontinued at 4.20m depth. Refusal on sandstone bedrock. Target depth reached.																			

NOTES: [#] Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.3m, PT to 4.2m
REMARKS: *Field replicate BD1/241031 at 0.6-0.8m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.0 AHD
COORDINATE: E:326556.0, N:6260615.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH312
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
31/10/24 No free groundwater observed whilst augering	0.24	CONCRETE SLAB			ND		ND						
	0.50	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with fine to medium angular to sub angular igneous gravel.		FILL	(WC)		M			ES	0.24 0.50	PID	<1ppm
	1.00	FILL / Silty CLAY: pale grey and red brown; medium to high plasticity; with angular to platy siltstone and ironstone gravel.								ES	0.80 1.00	PID	<1ppm
	2.00									ES	1.80 2.00	PID	<1ppm
	3.00			FILL	ND		w<PL			ES	2.80 3.00	PID	<1ppm
	4.00	3.80m: dark brown, possibly relic topsoil								ES	3.80 4.00	PID	<1ppm
	Borehole discontinued at 4.20m depth. Target depth reached												

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.24m, PT to 4.2m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 1 of 3

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS				
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
30/10/24 No free groundwater observed whilst augering	0.03	ASPHALTIC CONCRETE		FILL ^(*)	(MC)	M		A/ES	0.10	PID	<1ppm		
	0.10	FILL / Sandy GRAVEL: grey and pale grey; medium to coarse, angular to sub-angular.		FILL	(MC)	w<PL		A/ES	0.20	PID	<1ppm		
	0.80	FILL / Silty CLAY, trace gravel: grey brown; low plasticity.								0.40	PID	<1ppm	
	1	CLAY (CH), trace gravel: pale grey mottled brown; high plasticity; ironstone gravel.		RS	St to VSt	w=PL	PFAS	A/ES	0.90	PID	<1ppm		
	1.80							SPT	1.00	SPT	7,9,14 N=23		
	2	CLAY (CL-CI), trace gravel: pale grey and red-brown; low to medium plasticity; ironstone gravel.		RS	VSt to H			A/ES	1.45	PID	<1ppm		
	2.50							A	1.60	PID	<1ppm		
	3								1.90	PID	<1ppm		
	3.50	SANDSTONE: grey brown; very low to low strength, with clay bands.		XWM	H	w<PL		SPT	2.00	SPT	8,18,26 N=44		
	4								2.50				
	4.25	Continued as rock						A	2.95	PID	<1ppm		
	4.3							SPT	3.50	PID	<1ppm		
	4.4								3.60				
	4.5							SPT	4.00	SPT	15,25/50 (HB) Refusal		
	4.6								4.20				
4.7													
4.8													
4.9													
5													
6													
7													
8													
9													

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geo405
METHOD: DT to 0.03m, AD/T to 4.25m, NMLC to 15.14m
REMARKS: BD3/0102024

OPERATOR: Terratest (JW)

LOGGED: SI/CSY
CASING: HWT to 4.3m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 2 of 3

CONDITIONS ENCOUNTERED											SAMPLE				TESTING			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
30/10/24, No free groundwater observed whilst augering	52													0.20				
	51													0.50				
	1													1.00				
														1.45				
	2													1.60				
	50													2.00				
	3													2.95				
	4													3.60				
	49													4				
	48	Continued from soil SANDSTONE: pale grey, fine to coarse grained, iron-indurated bands and grey bands, bedded. Mittagong Formation		HW	4.25 4.47 4.57 4.70 4.96	M VL M M	100	90		> 4.47-4.57m: Fe, FG, Clay 4.70-4.74m CS 4.93-4.96m: CS				4.20	PLT	PL(A)=0.60MPa		
	5													5	PLT	PL(A)=0.70MPa		
	47	LAMINITE: grey sandstone, fine to medium grained, dark grey siltstone laminae, laminated, with frequent extremely weathered seams and clay seams. Mittagong Formation		SW	5.80	M H L to M				5.30m: B, 10°, Fe 5.60m: B, 5°, Fe, Clay 5.67m: B, 5°, Fe 5.86m: B, 0°, CT, Clay				6	PLT	PL(A)=0.80MPa		
	46				6.42 6.54	SEAM				SEAM				6	PLT	PL(A)=1.1MPa		
	7					VL to L								6	PLT	PL(A)=0.30MPa		
	7.35	SANDSTONE: pale grey, fine to coarse grained. Hawkesbury Sandstone		FR	7.30 7.35 7.65	SEAM VL to L M to H	100	94		7.30-7.35m CS 7.43m B, 5°, 5mm, Clay 7.65m: B, 5°, 5mm, Clay				7	PLT	PL(A)=0.11MPa		
	45													8	PLT	PL(A)=1.3MPa		
	8													8	PLT	PL(A)=1.1MPa		
	44	LAMINITE: grey sandstone, fine to medium grained, siltstone laminae, laminated. Hawkesbury Sandstone		MW	8.95	L	100	60		8.11m JT, 45°, PR, CN, RF				9	PLT	PL(A)=0.15MPa		
	43													9	PLT	PL(A)=0.20MPa		
															PLT	PL(A)=2.0MPa		
NOTES: # Soil origin is "probable" unless otherwise stated.																		

PLANT: Geo405
METHOD: DT to 0.03m, AD/T to 4.25m, NMLC to 15.14m
REMARKS: BD3/0102024

OPERATOR: Terratest (JW)

LOGGED: SI/CSY
CASING: HWT to 4.3m

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED										SAMPLE			TESTING					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	10.26	[CONT] LAMINITE: grey sandstone, fine to medium grained, siltstone laminae, laminated. Hawkesbury Sandstone			10.26	L												
	11	SANDSTONE: pale grey, fine to coarse grained, cross, bedded, 5 to 15°. Hawkesbury Sandstone			11.53	M	100	60		10.32-10.38m: , iron-10.56-10.57m: DB, 0.5°, IR, CT, RF 10.78-10.81m , weathered one? 10.86m: CS, 0°, 5 mm				11	PLT	PL(A)=1.3MPa		
	12				11.89	H												
	12.06	SILTSTONE: dark grey; with fine grained sandstone interbeds and rip up clasts			12.05	SEAM				11.57-11.59m: DS, 0°, 20 mm 11.79-11.82m: DS, 0°, 30 mm				12	PLT	PL(A)=1.5MPa		
	12.64				12.20	VL				12.05-12.20m DS, 0°, 150 mm								
	13	SANDSTONE: pale grey, fine to coarse grained, cross, bedded, 5 to 15°. Hawkesbury Sandstone			12.64	M				12.24-12.64m: DS, 0°, 400 mm								
	14				13.68	H	100	79		12.74-12.91m: HB 13.05m DB								
	15				13.74	SEAM				13.60m: DB 13.68-13.74m: DS, 10°, 60 mm								
	16				14.67	M				14.72-14.74m: DS, 15°, 20 mm 14.80-14.84m: DS, 15°, 40 mm								
	17				14.84	H												
	18																	
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NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: DT to 0.03m, AD/T to 4.25m, NMLC to 15.14m
REMARKS: BD3/0102024

OPERATOR: Terratest (JW)

LOGGED: SI/CSY
CASING: HWT to 4.3m

Refer to explanatory notes for symbol and abbreviation definitions

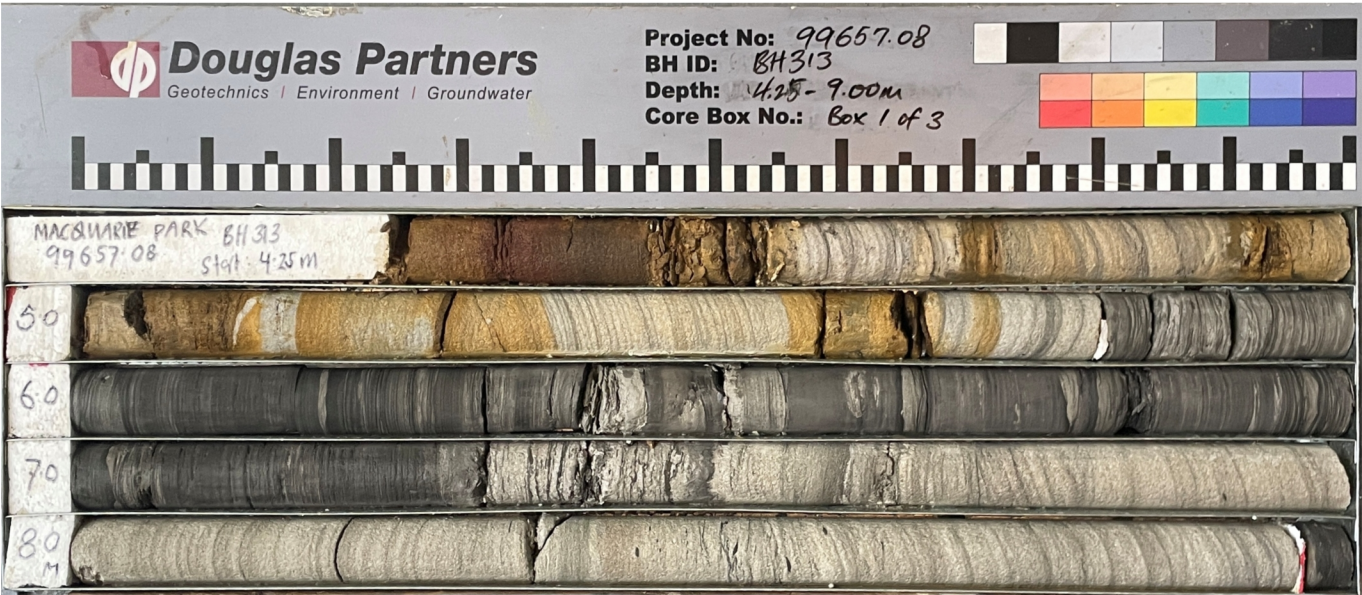


CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 1 of 2

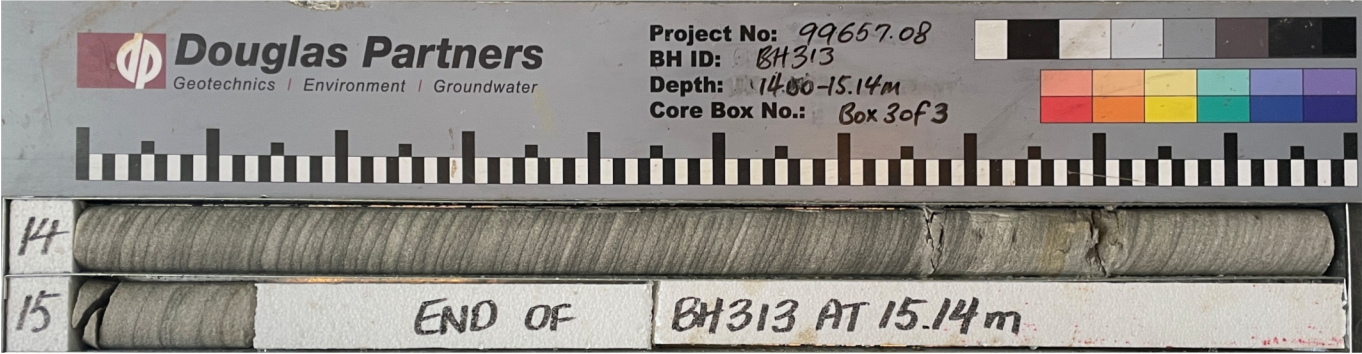


CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 2 of 2

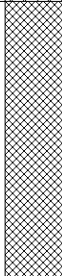
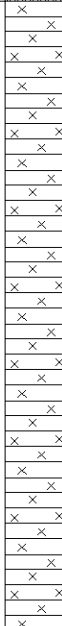


BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.0 AHD
COORDINATE: E:326525.0, N:6260597.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH314
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

GROUNDWATER	CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS				
	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(°)	CONSIS.(°) DENSITY.(°)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
25/10/24 No free groundwater observed whilst augering		0.20	CONCRETE SLAB			ND	ND							
			FILL / Silty CLAY: grey-brown and orange-brown; medium to high plasticity; with fine to medium, angular, siltstone and ironstone gravel, trace sandstone gravel.		FILL	ND	w<PL		ES		0.20 0.40	PID	<1ppm	
		1							ES		0.80 1.00	PID	<1ppm	
			1.90m: below pale grey mottled red						ES		1.70 1.90	PID	<1ppm	
		2							* ES		2.00 2.20	PID	<1ppm	
		2.10	Silty CLAY: pale brown-brown mottled orange brown; medium to high plasticity; trace siltstone and ironstone gravel/bands, natural.		RS	(St)	w=PL							
		3										3		
		4										4		
		Borehole discontinued at 4.20m depth. Target depth reached.												
NOTES: ° Soil origin is "probable" unless otherwise stated. ° Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.														

NOTES: [#]Soil origin is "probable" unless otherwise stated. [†]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe

OPERATOR: Terratest

LOGGED: ZW

METHOD: Diacore to 0.2m, PT to 4.2m

CASING: Uncased

REMARKS: *Field replicate BD3/41025 sample taken at 2-2.2m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.3 AHD
COORDINATE: E:326528.0, N:6260599.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH315
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED													SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS				
31/10/24 No free groundwater observed whilst augering	53		CONCRETE SLAB															
		0.15	FILL / Silty Gravelly SAND: grey brown; fine to coarse angular to subangular igneous and concrete gravel.		FILL			ND		ES		0.15	PID	<1ppm				
		0.40	FILL / Silty CLAY: pale grey-brown, brown and orange-brown; medium to high plasticity; with angular, siltstone and ironstone gravel.									0.40						
		1																
		52																
		2				FILL			w<PL		ES		0.80	PID	<1ppm			
													1.00					
	51		2.50m: trace sandstone gravel															
	3																	
	50																	
			Borehole discontinued at 3.30m depth. Refusal on inclusion in fill.															
	4																	
	49																	

NOTES: [#]Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.15m, PT to 3.3m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.6 AHD
COORDINATE: E:326496.0, N:6260592.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH316
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
24/10/24 No free groundwater observed whilst augering		0.03	ASPHALTIC CONCRETE					ND						
		0.20	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with angular to subangular, fine to medium igneous gravel.		FILL			M			ES	0.03 - 0.20	PID	<1ppm
			FILL / Silty CLAY: grey, grey-brown and red-brown; medium plasticity; trace siltstone gravel.		FILL	ND					ES	0.20 - 0.50	PID	<1ppm
												0.50 - 0.70		
		0.90	Silty CLAY (CI-CH): orange mottled red-brown ; medium to high plasticity; trace siltstone gravel with rootlets.								* ES	0.70 - 1.00	PID	<1ppm
												1.00 - 1.20		
			1.50m: below becoming grey mottled red-brown		RS	(VSt)								
		2.00	Silty CLAY (CI-CH): grey to pale grey; medium to high plasticity; with siltstone gravel/bands.								ES	1.20 - 2.00	PID	<1ppm
													2.00 - 2.20	
					XWM	(H)								
		3	Borehole discontinued at 3.00m depth. Target depth reached.											

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 3.0m
REMARKS: *Field replicate BD3/241024 sample taken at 1.0-1.2m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:326513.0, N:6260577.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH317
PROJECT No: 99657.08
DATE: 01/11/24
SHEET: 1 of 3

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
RL (m)												
01/11/24 No free ground water observed whilst augering	0.03	ASPHALTIC CONCRETE.		FILL		M		A	0.10	PID	<1ppm	
	0.25	FILL / Sandy GRAVEL: grey and pale grey; medium to coarse, angular to sub-rounded; medium to coarse sand; aggregates and concrete.		FILL	(MC)			A	0.20	PID	<1ppm	
	1							A	0.40	PID	<1ppm	
								A	0.50			
								A	0.90	PID	<1ppm	
	1.80	FILL / Silty CLAY: grey; low plasticity; trace shale/siltstone gravel.		FILL				SPT	1.00	SPT	4,6,8 N=14	
									1.45	PID	<1ppm	
								A	1.60			
	2.60	Silty CLAY (CI-CH): pale grey brown to orange brown; medium to high plasticity; trace ironstone gravel.		RS	VSt to H	w<PL		A	1.90	PID	<1ppm	
									2.00			
								A	2.40	PID	<1ppm	
	3	Silty Sandy CLAY (CL-CI): pale grey and mottled brown; low to medium plasticity; fine sand.			H			SPT	2.50	SPT	8,11,19 N=30	
									2.95			
	4.30	Continued as rock						A	3.90	PID	<1ppm	
								4.00	SPT	15,30/150 (HB) Refusal		
							SPT	4.30				
5.60												
								5				
							SPT	5.50	SPT	25/100 (HB) Refusal		
5.60												
								6				
6												
								7				
7												
								8				
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								9				
9												

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geo405
METHOD: AD/T to 5.6m, then NMLC to 15m
REMARKS: *Field replicate B01 01112024 taken at 0.9-1.0m

OPERATOR: Terratest (JW)

LOGGED: SI
CASING: HW to 5.5m

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:326513.0, N:6260577.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH317
PROJECT No: 99657.08
DATE: 01/11/24
SHEET: 2 of 3

GROUNDWATER	CONDITIONS ENCOUNTERED											SAMPLE			TESTING							
	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.				DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
01/11/24 No free ground water observed whilst augering	53	1			PS	XW	HW	DW										0.20				
					LW	FW	FW	FW										0.50				
					FW	FW	FW	FW										1.00				
					FW	FW	FW	FW										1.45				
					FW	FW	FW	FW										1.60				
	52	2			FW	FW	FW	FW										2.00				
					FW	FW	FW	FW										2.50				
					FW	FW	FW	FW										2.95				
	51	3			FW	FW	FW	FW														
					FW	FW	FW	FW														
					FW	FW	FW	FW														
	50	4			FW	FW	FW	FW														
					FW	FW	FW	FW														
					FW	FW	FW	FW														
	49	5			FW	FW	FW	FW														
					FW	FW	FW	FW														
					FW	FW	FW	FW														
			Continued from soil																			
	48	6	SANDSTONE: pale grey brown, fine grained. Mittagong Formation			HW				VL to L	100	0		5.68-6.08m: B x4, 0-5°, Fe 5mm, Clay				5.60	PLT	PL(A)=0.10MPa		
	6.30													6.15m: JT, 45°, PR, Clay 5mm, SM								
	6.85	7	SANDSTONE: pale grey and brown, fine to medium grained; trace carbonaceous lamination. Mittagong Formation			SW				M				6.50m: B x2 0°, Fe					PLT	PL(A)=0.82MPa		
	47													6.89m: B, 0°, Fe								
			SANDSTONE: pale grey and brown, medium to coarse grained; indistinctly bedded and cross bedded. Hawkesbury Sandstone								100	90		7.53m: B, 10°, Clay 2mm					PLT	PL(A)=1.5MPa		
46	8												7.63m: JT, 45°, UN, Clay									
													8.33m: B, 5°, 2mm, Clay					PLT	PL(A)=1.5MPa			
													8.80m JT, 25°, CU, 5mm, SM, siltstone									
45	9												9.33m JT, 40°, PR, Fe 5 mm									
										100	100		9.50m: JT, 25-45°, CU, Fe					PLT	PL(A)=1.5MPa			
	9.70												9.68m: JT, 30°, PR, Fe 30mm, SM, FG									
NOTES: ¹ Soil origin is "probable" unless otherwise stated.																						

NOTES: (H) Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: AD/T to 5.6m, then NMLC to 15m
REMARKS: *Field replicate B01 01112024 taken at 0.9-1.0m

OPERATOR: Terratest (JW)

LOGGED: SI
CASING: HW to 5.5m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:326513.0, N:6260577.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH317
PROJECT No: 99657.08
DATE: 01/11/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED													SAMPLE			TESTING								
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.					DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE	
			LAMINITE: grey and pale grey, laminated; siltstone (60%) and sandstone (40%), unbroken. Hawkesbury Sandstone	XXXXXX	PS XW HW LW SW FR																PLT	PL(A)=1.3MPa		
	43	11		XXXXXX								100	100						11		PLT	PL(A)=1.1MPa		
		11.85		XXXXXX																				
	42	12	SANDSTONE: pale grey, medium to coarse grained; with siltstone interbeds (<10%), unbroken. Hawkesbury Sandstone	XXXXXX															12		PLT	PL(A)=1.4MPa		
					FR																			
	41	13																	13		PLT	PL(A)=1.8MPa		
												100	99											
	40	14																	14		PLT	PL(A)=1.7MPa		
	39	15	Borehole discontinued at 15.00m depth. Target depth reached.																					
	38	16																						
	37	17																						
	36	18																						
	35	19																						

NOTES: #Soil origin is "probable" unless otherwise stated.

NOTES: (4) Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: AD/T to 5.6m, then NMLC to 15m
REMARKS: *Field replicate B01 01112024 taken at 0.9-1.0m

OPERATOR: Terratest (JW)

LOGGED: SI
CASING: HW to 5.5m

CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:326513.0, N:6260577.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH317
PROJECT No: 99657.08
DATE: 01/11/24
SHEET: 1 of 1



5.60-10.00 m depth



10.00-15.00 m depth

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.9 AHD
COORDINATE: E:326526.0, N:6260579.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH318
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS					
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) ■ ■ ■	DENSITY. ^(*) ■ ■ ■	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
25/10/24 No free groundwater observed whilst augering		0.14	CONCRETE SLAB (140mm)					ND						
			FILL / Silty CLAY: pale grey and brown; medium to high plasticity; with fine to medium angular to subangular siltstone and ironstone gravel.							ES		0.14 0.40	PID	<1ppm
	52	1	1.00m: clayey silt, 400mm		FILL	ND				ES		1.00 1.20	PID	<1ppm
	51	2						w<PL		ES		2.00 2.20	PID	<1ppm
		2.30	Silty CLAY (CI-CH): pale brown mottled orange-brown; medium to high plasticity; with siltstone and ironstone gravel/bands.		RS	(VSt)				ES		2.50 2.70	PID	<1ppm
	50													
		3.00	Silty CLAY (CI-CH): pale grey, mottled red-brown; medium to high plasticity.		XWM	(H)						3		
	49													
		4	Borehole discontinued at 4.00m depth. Target depth reached.											
	48													

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.14m, PT to 4.0m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 3

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾	DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	0.04	ASPHALTIC CONCRETE							ES	0.04	0.15	PID	<1ppm		
	0.50	FILL / Silty SAND, with gravel: brown; fine to coarse; fine to medium, igneous gravel.		FILL	ND		M		ES	0.40	0.50	PID	<1ppm		
	1	Silty CLAY (CH): pale grey mottled orange-brown and red-brown; high plasticity; trace gravel, fine to medium ironstone gravel.		RS	St to VSt		w=PL		A	0.80	0.90	PID	<1ppm		
									ES	0.90	1.00				
									SPT	1.00	1.10	SPT	5,8,9 N=17		
									ES	1.10	1.50	PID	<1ppm		
	2.00	Silty Sandy CLAY (CL), trace gravel: pale grey and red-brown; low plasticity; fine sand; fine, ironstone and sandstone gravel; (possible Ashfield Shale).		XWM					A	2.00	2.10	PID	<1ppm		
									SPT	2.50	2.61	SPT	21/110 (HB) Refusal		
	3.00	Silty Gravelly CLAY (CL-CI): dark grey and grey; low to medium plasticity; fine, laminite gravel; with clay bands and weathered laminite bands.		XWM	H		w<PL				3				
	4.00	Continued as rock							A	3.80	4.00				
											4.08				
	5										5				
	6										6				
	7										7				
	8										8				
	9										9				

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geo405
METHOD: DT to 0.04m, AD/T to 4.0m, NMLC to 15.1m
REMARKS: BDUP20241031

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 4m

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 2 of 3

CONDITIONS ENCOUNTERED														SAMPLE			TESTING				
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.			DEPTH (m)	STRENGTH	RECOVERY	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
					PS	LXW	FW														
					FW	SW	FR														

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: DT to 0.04m, AD/T to 4.0m, NMLC to 15.1m
REMARKS: BDUP20241031

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 4m

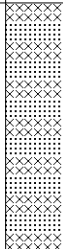
Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED										SAMPLE			TESTING					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	44	LAMINITE: pale grey sandstone, fine to medium grained, dark grey siltstone and occasional carbonaceous lenses, laminated, 0 to 5°. Hawkesbury Sandstone																

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: DT to 0.04m, AD/T to 4.0m, NMLC to 15.1m
REMARKS: BDUP20241031

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 4m

Refer to explanatory notes for symbol and abbreviation definitions

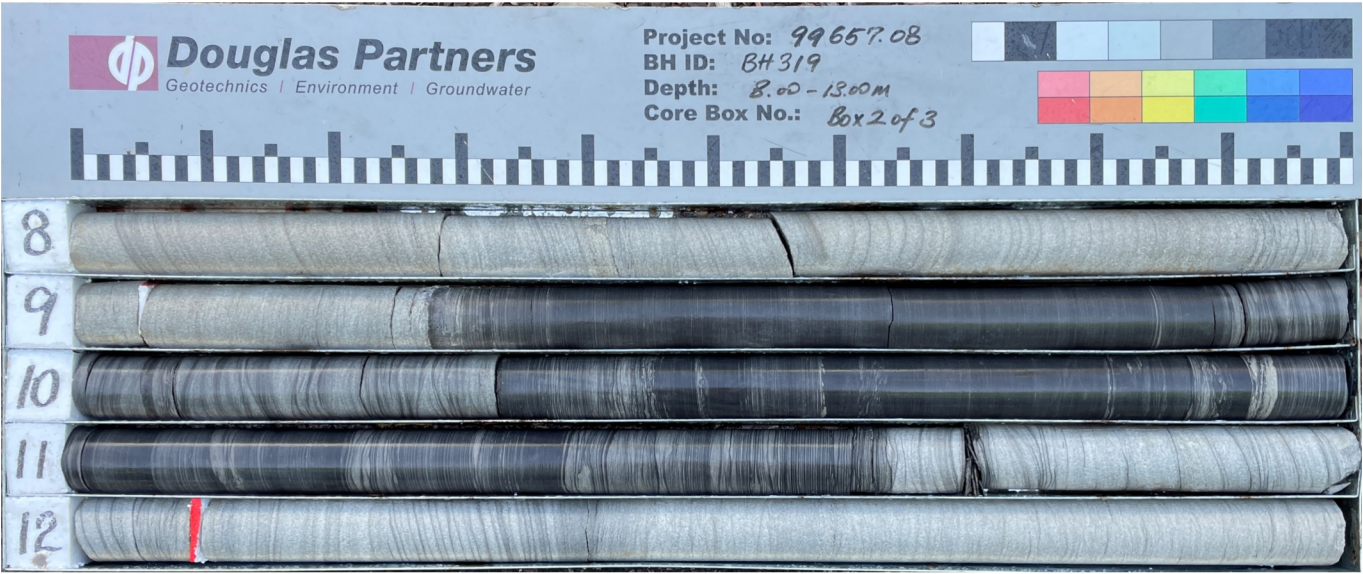


CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 2



CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 2 of 2

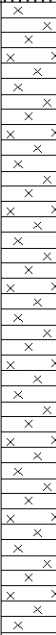


BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.1 AHD
COORDINATE: E:326491.0, N:6260562.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH320
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
25/10/24 No free groundwater observed whilst augering	54	0.03	ASPHALTIC CONCRETE (30 mm)		FILL	ND		M		ES	0.03 - 0.30	0.03	PID	<1ppm					
		0.40	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with fine to medium angular to subangular igneous gravel, trace clinker.												FILL	ND	ES	0.30 - 0.50	0.50
		0.90	FILL / Silty CLAY: brown, orange-brown and grey-brown; trace siltstone and ironstone gravel.	FILL	ND	ES	0.50 - 0.70	0.70		PID	<1ppm								
		1	Silty CLAY (CI-CH): pale brown-brown mottled orange brown; medium to high plasticity; with siltstone and ironstone gravel/bands.		RS	(St)	w<PL	ES		1.20 - 1.40	1.20	PID	<1ppm						
		2	2.40m: becoming pale grey mottled tan-brown grading into extremely weathered siltstone											(H)					
		3	Borehole discontinued at 3.00m depth. Pushtube refusal																
		4																	
		5																	
		6																	
		7																	
8																			

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 3.0m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.9 AHD
COORDINATE: E:326505.0, N:6260546.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH321
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (°)	DENSITY (°)	MOISTURE	REMARKS	TYPE	INTERVAL
	RL (m)									
	0.03	ASPHALTIC CONCRETE(30 mm)			ND	ND				
	0.25	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with angular to subangular, fine to medium igneous gravel.		FILL	(WC)		M		ES	
		FILL / Silty CLAY: tan-brown,orange-brown and grey-brown; medium plasticity; with fine to medium angular siltstone gravel, trace sandstone gravel.								
	0.50								ES	
	0.70									
	1			FILL	ND		w<PL			
	1.50								ES	
	1.70									
	1.80	Silty CLAY (CI-CH): tan-brown mottled orange brown; medium to high plasticity; with ironstone and siltstone gravel/bands.								
	2								ES	
	2.00									
	2.20									
	3			RS	(VSt)		w<PL			
	3.20m	becoming pale grey mottled orange and red-brown, extremely weathered siltstone			(H)					
	4	Borehole discontinued at 3.70m depth. Pushtube refusal								

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 3.7m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

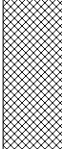


BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326590.0, N:6260688.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA1
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
31/10/24 No free groundwater observed whilst augering	50		FILL / Silty CLAY: brown and grey brown; medium plasticity; with surficial dead fall, fine to coarse siltstone gravel and cobble, trace ironstone, igneous gravel, fabric, roots and rootlets, trace asphalt.		FILL	ND		w=PL		ES		0.30	PID	<1ppm					
Borehole discontinued at 0.50m depth. Target depth reached.																			
	1																		
	2																		
	3																		
	4																		

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hand Tools
METHOD: HA to 0.5m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

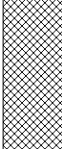


BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326603.0, N:6260679.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA2
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS				
31/10/24 No free groundwater observed whilst augering	50		FILL / Silty CLAY: brown and grey brown; medium plasticity; with surficial dead fall, fine to coarse siltstone gravel and cobble, trace ironstone, igneous gravel, fabric, roots and rootlets.		FILL	ND		w=PL		ES		0.30	PID	<1ppm				
Borehole discontinued at 0.50m depth. Target depth reached.																		
31/10/24 No free groundwater observed whilst augering	49	1																
31/10/24 No free groundwater observed whilst augering	48	2																
31/10/24 No free groundwater observed whilst augering	47	3																
31/10/24 No free groundwater observed whilst augering	46	4																

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hand Tools

OPERATOR: Terratest

LOGGED: ZW

METHOD: HA to 0.5m

CASING: Uncased

REMARKS: *Field replicate BD2/241031 sample taken at 0-0.3m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 1 of 3

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (°)	DENSITY. (°)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	0.04	ASPHALTIC CONCRETE		FILL			M		ES	0.04 - 0.15	0.15	PID	<1ppm		
	0.20	FILL / Gravelly SAND, trace silt: dark grey; fine to coarse; fine to coarse, igneous gravel.							A	0.15 - 0.40	0.40	PID	<1ppm		
	0.48	FILL / Silty CLAY, trace gravel: brown and orange-brown; medium to high plasticity; fine, siltstone and ironstone gravel.		FILL	MC				ES	0.40 - 0.50	0.50	PID	<1ppm		
	1								A/ES	0.90 - 1.00	1.00	PID	<1ppm		
	1.50	Silty Sandy CLAY (CL-CI), trace gravel: red-brown and pale grey; low to medium plasticity; fine to coarse sand; fine, ironstone and sandstone gravel.					w<PL		SPT	1.00 - 1.50	1.50	SPT	6,12,13 N=25		
	2			RS	H				ES	1.50 - 1.90	1.90	PID	<1ppm		
	2.60	Continued as rock							A/ES	1.90 - 2.00	2.00	PID	<1ppm		
	2.60							PFAS	ES	2.40 - 2.50	2.50	PID	<1ppm		
	3								SPT	2.50 - 2.64	2.64	SPT	8 (HB) Refusal		
	3										3				
	4										4				
	5										5				
	6										6				
	7										7				
	8										8				
	9										9				

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Commachio Geo405
METHOD: DT to 0.04m, AD/T to 2.6m, NMLC to 15.2m
REMARKS: BDUP20241029; Gatic and Concrete cap to 0.1m

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 2.6m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 2 of 3

CONDITIONS ENCOUNTERED														SAMPLE				TESTING			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE			
	48													0.15							
	1													0.50							
														1.00							
	47													1.50							
	2													2.00							
		Continued from soil												2.50							
		SANDSTONE: pale grey, red-brown and orange-brown, fine to coarse grained, bedded, 0 to 15°, with iron-indurated bands, extremely weathered and clay bands. Mittagong Formation		HW	2.60	L				230m: , Unless stated otherwise, the rock is fractured along B, 0-15°, PR, RF, Fe SN or CN.				2.64	PLT	PL(A)=0.10MPa					
	3			XW	2.70	VL				260-2.70m B x3 0-5°, IR, SN Fe, VR				3							
					3.50	M to H	100	0		355-3.70m: JT, 85°, IR, SN Fe, VR				4	PLT	PL(A)=1.0MPa					
	4			HW	3.85	H								4							
				XW to HW										4.50							
	4.50				4.60									5							
		LAMINITE: pale grey sandstone, fine to medium grained, dark grey siltstone, laminated, 0 to 15°; with frequent extremely weathered bands and iron-indurated seams. Mittagong Formation		HW	4.90	VL	100	0		460-5.04m B x15, 0-5°, PR, SN, RF				5							
	5													6	PLT	PL(A)=0.04MPa					
				XW to HW										6							
	4.50				6.80	VL to L								6.80							
	4.50				7.00	M	95	90		6.80-7.00m: JT, 60°, IR, SN Fe, VR				7	PLT	PL(A)=0.09MPa					
	4.50			MW						7.10m: DS, 0°, 10mm				7	PLT	PL(A)=0.40MPa					
	4.50				7.60	SEAM				7.25m: DS, 5°, 30mm				8							
	4.50			XW	7.70	M				7.40m: DS, 10°, 10mm				8	PLT	PL(A)=0.70MPa					
	4.50			MW						7.45-7.49m DS, 25°, 40 mm				8							
	4.50				8.10	SEAM				7.60-7.70m: DS, 25°, 60 mm				8							
	4.50			XW						7.91m: DS, 5°, 30mm				8							
	4.50			MW						7.92-8.00m: JT, 85°, IR, SN Fe, VR				8							
	4.50				8.30	M				8.04m DS, 10°, 5mm				8							
	4.50			XW	8.40					8.10-8.15m: DS, 0°, 50mm				8							
	4.50			MW						8.21-8.23m: JT, 25°, IR, CN, VR				8							
	4.50									8.23-8.30m: DS, 5°, 70 mm				8							
	4.50			SW						8.43-8.55m: JT, 65°, IR, SN Fe, VR				8	PLT	PL(A)=1.3MPa					
	4.50									8.56m DS, 10°, 10mm				8							
	4.50									8.59m DS, 10°, 10mm				8							
	4.50									8.66-8.67m: JT, 30°, PR, CN, RF				8							
	4.50									8.71-8.74m: JT, 60°, PR, CN, RF				8							
	4.50									9.54m: DS, 0°, 8mm				8							
	4.50									9.84m DS, 0°, 10mm				8							
	4.50													8							
	4.50													8							
	4.50													8							
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	4.50													8							
	4																				

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Commachio Geo405
METHOD: DT to 0.04m, AD/T to 2.6m, NMLC to 15.2m
REMARKS: BDUP20241029; Gatic and Concrete cap to 0.1m

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 2.6m

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED										SAMPLE				TESTING																														
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.				DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE																						
			[CONT] SANDSTONE: pale grey, fine to coarse grained, cross bedded, 0 to 15°. Hawkesbury Sandstone		DS SW HW MW SW FR	VL L M H VH				100	85			11.63m: DS, 0°, 10mm 11.67-11.71m: DS, 0°, 35 mm 12.66m B, 0°, CU, INF Clay 2mm, RF 14.21m: DS, 5°, 5mm					PLT	PL(A)=1.7MPa																								
	38	11																																										
		37																					12																					
		36																					13																					
		35																					14																					
		34	15							100	100									PLT	PL(A)=1.5MPa																							
																				PLT	PL(A)=1.7MPa																							
		33	Borehole discontinued at 15.20m depth. Target depth reached.		DS SW HW MW SW FR	VL L M H VH																																						
		32																						16																				
																								17																				
		31																						18																				
		30																						19																				
		29																																										

NOTES: Soil origin is "probable" unless otherwise stated.

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Commachio Geo405
METHOD: DT to 0.04m, AD/T to 2.6m, NMLC to 15.2m
REMARKS: BDUP20241029; Gatic and Concrete cap to 0.1m

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 2.6m

Refer to explanatory notes for symbol and abbreviation definitions

CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited

PROJECT: MPark Talavera Road Data Centre

LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD

COORDINATE: E:326573.6, N:6260686.9

DATUM/GRID: MGA2020 Zone 56

DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301

PROJECT No: 99657.08

DATE: 29/10/24

SHEET: 1 of 2



CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 48.7 AHD
COORDINATE: E:326573.6, N:6260686.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 99657.08
DATE: 29/10/24
SHEET: 2 of 2



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.4 AHD
COORDINATE: E:326595.0, N:6260680.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH302
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

GROUNDWATER	CONDITIONS ENCOUNTERED					SAMPLE				TESTING AND REMARKS						
	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN ^(#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
25/10/24 No free groundwater observed whilst augering			CONCRETE SLAB			ND										
		0.14	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; fine to medium, angular to sub-angular, igneous gravel.		FILL	ND	M					0.14	PID	<1ppm		
		0.35							ES		0.35					
			FILL / Silty CLAY, trace ironstone gravel: pale grey, brown and orange-brown.													
		1								ES			0.80	PID	<1ppm	
													1.00			
		2									ES			1.80	PID	<1ppm
													2.00			

PLANT: Geoprobe
METHOD: Diacore to 0.14m, PT to 4.2 m
REMARKS: *Field replicate BD1/241025 sample taken at 3.9-4m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.3 AHD
COORDINATE: E:326606.0, N:6260670.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH303
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS						
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE	
Groundwater seep observed below 8m. 25/07/24	50	0.15	CONCRETE SLAB			ND	ND									
	49	0.35	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; fine to medium, angular to sub-angular, igneous gravel.		FILL				ES	0.15 0.35		PID	<1ppm			
	48	1	FILL / Silty CLAY, trace ironstone: pale grey, pale brown and orange brown.						ES	0.80 1.00		PID	<1ppm			
	47		1.50m: orange brown below													
	46	2	2.00m: 50% recovery, possibly increased gravel or inclusions						ES	1.80 2.00		PID	<1ppm			
	45	3			FILL	ND	w<PL		ES	2.80 3.00		PID	<1ppm			
	44	4	From 4.00m: start auger						ES	3.80 4.00		PID	<1ppm			
	43	5							ES	4.80 5.00		PID	<1ppm			
	42	6.00	Silty CLAY (CI), with gravel: pale brown mottled pale grey; medium plasticity; fine to medium, rounded to sub-rounded, ironstone and siltstone gravel.		ALV				* ES	6.20 6.40		PID	<1ppm			
	41	7														
	40	7.50	Silty CLAY (CI): pale brown to brown; medium plasticity.			ND	w>PL									
	39	8			XWM											
		9														
		10		Borehole discontinued at 9.20m depth. Target depth reached.												
		11														

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.15m, PT to 4.35m, AD/T to 9.2m
REMARKS: *Field replicate BD2/241025 sample taken at 6.2-6.4m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 49.3 AHD
COORDINATE: E:326566.0, N:6260678.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH304
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	0.03	ASPHALTIC CONCRETE		FILL	WC				ES	0.03	0.03	PID	<1ppm		
	0.20	FILL / Silty Gravelly SAND: grey; fine to coarse; fine to medium, angular to sub-angular, igneous gravel.		FILL	ND		w<PL		ES	0.20	0.40	PID	<1ppm		
	0.80	FILL / Silty CLAY: grey-brown and orange-brown; medium plasticity; trace fine to medium siltstone and ironstone gravel, decomposed organics (roots).		RS	(St) to (VSt)		w<PL		ES	0.40	0.60	PID	<1ppm		
	1	Silty CLAY (CI): pale brown to pale orange-brown; medium plasticity; trace rootlets.						0.60	0.90	PID	<1ppm				
	2.00	SANDSTONE: pale brown and yellow brown, laminated								0.90	1.10				
	49										2				
	48										3				
	47										3				
	46	3.50m: red-brown,decreasing auger resistance, increasing moisture									4				
	45										4				
	5										5				
	44	5.50m: grey brown to dark grey, siltstone, increasing moisture			ND		ND				5				
	6	6.00m: pale grey and grey, laminite, groundwater seep									6				
	43										6				
	7										7				
	42	7.50m: pale grey, sandstone									7				
	8										8				
	41										8				
	9										9				
	40	Borehole discontinued at 9.20m depth. Target depth reached.									9				
	39										10				
	11										11				
	38														

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03mm, PT to 1.1m, AD/T to 9.2m
REMARKS: *Field replicate BD1/241024 sample taken at 0.4-0.6 m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

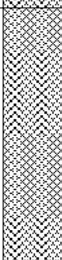


BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326590.0, N:6260663.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH305
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS							
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
24/01/24 No free groundwater observed whilst augering.	50	CONCRETE SLAB			ND		ND									
	0.13	FILL / Silty Sandy CLAY: grey-brown; low to medium plasticity; with gravel, trace organics (sticks).		FILL	WC	w=PL	ES							0.13	PID	<1ppm
	0.40	FILL / Silty CLAY, with gravel: pale grey, red-brown and brown; medium to high plasticity; siltstone and ironstone gravel.												0.30		
	1			FILL	ND	w=PL	ES							0.80	PID	<1ppm
	49															
														1.00		
	2													1.80	PID	<1ppm
	48													2.00		
Borehole discontinued at 2.20m depth. Limit of headroom.																
	3															
	47															
	4															
	46															

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.13m, PT to 2.2m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326598.0, N:6260657.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH306
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (%)	DENSITY (g/cm³)	MOISTURE	REMARKS	TYPE	INTERVAL
RL (m)										
50	0.14	CONCRETE SLAB			ND	ND				
	0.40	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; angular to sub-angular, igneous gravel; subgrade.		FILL	WC	D			ES	0.14 - 0.40
		FILL / Silty CLAY, with gravel: orange-brown, grey-brown and pale brown; medium plasticity; fine to coarse, siltstone and ironstone gravel; trace rootlets.								
	1.00	1.00m: pale brown and pale orange brown							ES	0.80 - 1.00
	2.00								ES	1.80 - 2.00
	3.00	3.00m: orange-brown and pale brown, sandy clay							ES	2.80 - 3.00
	4.00	Borehole discontinued at 4.00m depth. Target depth reached.							ES	3.80 - 4.00

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.14m, PT to 4.0m
REMARKS: *Field replicate BD2/241024 sample taken at 1.8-2m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.2 AHD
COORDINATE: E:326548.0, N:6260656.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH307
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
24/10/24 No free groundwater observed whilst augering	49	0.03	ASPHALTIC CONCRETE			ND					0.03		
		0.25	FILL / Silty Sandy GRAVEL: grey; fine to medium, angular to sub-angular, igneous.		FILL	WC	D		ES		PID	<1ppm	
		0.60	FILL / Silty CLAY, trace decomposed organics (roots), trace gravel: grey-brown and orange-brown.		FILL	ND			ES		PID	<1ppm	
		1.00	Silty CLAY (CI), trace rootlets, trace gravel: pale brown to orange brown and red-brown; medium plasticity; ironstone gravel.						ES		PID	<1ppm	
		1.60	1.60m: becoming pale grey SANDY CLAY with extremely weathered sandstone, ironstone gravel/bands		RS	(St)	w<PL	ES		PID	<1ppm		
		2.00											
		2.40											
		2.60											
		2.80											
		3.00											
Borehole discontinued at 2.60m depth. Target depth reached	47	3.00											
		3.20											
		3.40											
		3.60											
		3.80											
		4.00											
		4.20											
		4.40											
		4.60											
		4.80											
	46	5.00											
		5.20											
		5.40											
		5.60											
		5.80											
		6.00											
		6.20											
		6.40											
		6.60											
		6.80											

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 2.6m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 1 of 3

[illegible]

NOTES: ⁽⁴⁾Soil origin is "probable" unless otherwise stated. ⁽⁷⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: XC
METHOD: DT to 0.16m, AD/T to 4.3m, NMLC to 14.82m
REMARKS: BDUP1 / 241028; Gatic and concrete plug to 0.1m

OPERATOR: Terratest (AC)

LOGGED: CSY
CASING: HWT to 3.5m

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 2 of 3

[illegible]

PLANT: XC
METHOD: DT to 0.16m, AD/T to 4.3m, NMLC to 14.82m
REMARKS: BDUP1 / 241028; Gatic and concrete plug to 0.1m

OPERATOR: Terratest (AC)

LOGGED: CSY

CASING: HWT to 3.5m

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED										SAMPLE				TESTING								
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE				
	40	[CONT] SANDSTONE: pale grey, fine to coarse grained, 0 to 10°, thinly bedded, grey and dark grey siltstone and/or carbonaceous laminae. Hawkesbury Sandstone SILTSTONE: subhorizontally bedded; laminite band SANDSTONE: pale grey, fine to coarse grained, cross bedded, 0 to 15°, thinly bedded. Hawkesbury Sandstone					100	85		10.30m: B, 15°, PR, CT CBS, RF 10.60m DS, 0°, 5mm					11	PLT	PL(A)=0.60MPa					
	11.00						100	90		11.10m: DS, 0°, 15mm 11.19m DS, 0°, 5mm 11.23m DS, 0°, 2mm 11.26m: B, 5°, UN, CN, RF 11.37m: B, 0°, UN, CN, RF 11.39m: B, 20°, CU, CN, RF						PLT	PL(A)=0.30MPa					
	11.38				11.38																	
	12																12			PLT	PL(A)=0.90MPa	
	13					H	100	95		13.08m: B, 10°, PR, CN, RF 13.12m DS, 5°, 12mm				13	PLT	PL(A)=1.5MPa						
	14						100	100		13.71m: B, 0°, PR, CT CBS, RF				14	PLT	PL(A)=1.1MPa						
	15	Borehole discontinued at 14.82m depth. Target depth reached.																				
	16																					
	17																					
	18																					
	19																					

NOTES: [#]Soil origin is "probable" unless otherwise stated.

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: XC
METHOD: DT to 0.16m, AD/T to 4.3m, NMLC to 14.82m
REMARKS: BDUP1 / 241028; Gatic and concrete plug to 0.1m

OPERATOR: Terratest (AC)

LOGGED: CSY
CASING: HWT to 3.5m

Refer to explanatory notes for symbol and abbreviation definitions



CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 1 of 2



CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326575.3, N:6260646.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 99657.08
DATE: 28/10/24
SHEET: 2 of 2

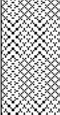
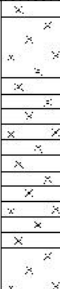


BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326584.0, N:6260639.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH309
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
25/10/24 No free groundwater observed whilst augering	50	0.14	CONCRETE SLAB					ND											
			FILL / Silty CLAY: pale brown, pale grey and orange-brown; medium plasticity; fine to coarse, sub-angular to platy, siltstone and ironstone gravel.		FILL	ND	w<PL			ES	0.14 - 0.35	PID	<1ppm						
										ES	0.80 - 1.00	PID	<1ppm						
										ES	1.80 - 2.00	PID	<1ppm						
										ES	2.80 - 3.00	PID	<1ppm						
		2.70	FILL / Silty CLAY: dark brown; medium plasticity; trace gravel, ironstone gravel.		FILL		w=PL			ES	2.80 - 3.00	PID	<1ppm						
		3	Silty CLAY (CI-CH): pale-brown mottled orange and red-brown; medium to high plasticity; trace ironstone gravel, decomposed roots.		RS	(H)	w<PL			* ES	3.50 - 3.70	PID	<1ppm						
		3.10																	
		4																	
	46	Borehole discontinued at 4.10m depth. Target depth reached																	
NOTES: ^(*) Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.																			

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.14m, PT to 4.10m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326530.0, N:6260637.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH310
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾	DENSITY. ⁽¹⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
24/10/24 No free groundwater observed whilst augering	50	0.03	ASPHALTIC CONCRETE		FILL	(WC)	ND	M	PFAS	ES	0.03 0.20	PID	<1ppm		
	0.20	FILL / Silty Gravelly SAND: dark brown, orange-brown and grey-brown; fine to coarse; fine to medium, angular to sub-angular, igneous gravel; subgrade.		FILL	ND	ND	ES	0.50 0.70		PID				<1ppm	
	1.00	Silty CLAY (CI-CH): yellow-brown to pale orange-brown; medium to high plasticity; trace siltstone and ironstone gravel/ bands.		RS	(St) to (VSt)	w=PL	ES				1.50 1.70	PID	<1ppm		
	2	1.50m: below becoming red-brown mottled orange and pale brown		RS	(St) to (VSt)	w=PL	ES	2.50 2.70		PID				<1ppm	
	2.30	Silty CLAY (CI-CH): pale grey mottled red-brown; medium to high plasticity.		XWM	(H)	ND	ES								
	3	Borehole discontinued at 3.00m depth. Pushtube refusal. Target depth reached .													
	47														
	4														
	46														

NOTES: [#]Soil origin is "probable" unless otherwise stated. ¹Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 3 m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.0 AHD
COORDINATE: E:326541.0, N:6260623.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH311
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
31/10/24 No free groundwater observed whilst augering			CONCRETE SLAB					ND											
		0.30	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with fine to medium angular to subangular igneous gravel.		FILL			M		ES		0.30	PID	<1ppm					
		0.50									0.50								
			FILL / Silty CLAY: pale grey and pale red-brown; medium to high plasticity; with angular siltstone and ironstone gravel.							* ES		0.60	PID	<1ppm					
											0.80								
		1	1.80m: trace asphalt		FILL			w=PL				1	PID	<1ppm					
		2						ND		ES		1.60	PID	<1ppm					
										1.80									
	2.40	FILL / Silty CLAY (CI): grey-brown to dark grey-brown; medium plasticity; trace ironstone gravel, hydrocarbon stained, slight hydrocarbon odour, with decomposed roots, appears poorly compacted(possible firm consistency) from 2.4m to 3.5m.									2.20	PID	<1ppm						
										2.40									
										2.50									
										2.70									
	3	3.50m: tan-brown		FILL				w<PL			3	PID	3.4ppm						
	4								ES		3.50	PID	<1ppm						
										3.70									
											4								
Borehole discontinued at 4.20m depth. Refusal on sandstone bedrock. Target depth reached.																			

NOTES: ^(#) Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.3m, PT to 4.2m
REMARKS: *Field replicate BD1/241031 at 0.6-0.8m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.0 AHD
COORDINATE: E:326556.0, N:6260615.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH312
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
31/10/24 No free groundwater observed whilst augering			CONCRETE SLAB			ND		ND											
		0.24	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with fine to medium angular to sub angular igneous gravel.		FILL	(WC)		M			ES		0.24	PID	<1ppm				
		0.50										0.50							
			FILL / Silty CLAY: pale grey and red brown; medium to high plasticity; with angular to platy siltstone and ironstone gravel.								ES		0.80	PID	<1ppm				
		1										1.00							
					FILL	ND		w<PL			ES		1.80	PID	<1ppm				
		2										2.00							
											ES		2.80	PID	<1ppm				
		3										3.00							
			3.80m: dark brown, possibly relic topsoil								ES		3.80	PID	<1ppm				
	4										4.00								
		Borehole discontinued at 4.20m depth. Target depth reached																	

NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.24m, PT to 4.2m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 1 of 3

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS				
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
30/10/24 No free groundwater observed whilst augering	0.03	ASPHALTIC CONCRETE		FILL ^(*)	(MC)	M		A/ES	0.10	PID	<1ppm		
	0.10	FILL / Sandy GRAVEL: grey and pale grey; medium to coarse, angular to sub-angular.		FILL	(MC)	w<PL		A/ES	0.20	PID	<1ppm		
	0.80	FILL / Silty CLAY, trace gravel: grey brown; low plasticity.								0.40	PID	<1ppm	
	1	CLAY (CH), trace gravel: pale grey mottled brown; high plasticity; ironstone gravel.		RS	St to VSt	w=PL	PFAS	A/ES	0.90	PID	<1ppm		
	1.80							SPT	1.00	SPT	7,9,14 N=23		
	2	CLAY (CL-CI), trace gravel: pale grey and red-brown; low to medium plasticity; ironstone gravel.		RS	VSt to H			A/ES	1.45	PID	<1ppm		
	2.50							A	1.60	PID	<1ppm		
	3								1.90	PID	<1ppm		
	3.50	SANDSTONE: grey brown; very low to low strength, with clay bands.			H			SPT	2.00	SPT	8,18,26 N=44		
	4								2.50				
	4.25	Continued as rock		XWM				A	2.95				
	4.8								3.50	PID	<1ppm		
	5								3.60				
	6							SPT	4.00	SPT	15,25/50 (HB) Refusal		
	7								4.20				
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NOTES: ^(*)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geo405
METHOD: DT to 0.03m, AD/T to 4.25m, NMLC to 15.14m
REMARKS: BD3/0102024

OPERATOR: Terratest (JW)

LOGGED: SI/CSY
CASING: HWT to 4.3m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 2 of 3

CONDITIONS ENCOUNTERED													SAMPLE				TESTING			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE		
30/10/24, No free groundwater observed whilst augering	0.20													0.20						
	0.50													0.50						
	1.00													1.00						
	1.45													1.45						
	1.60													1.60						
	2.00													2.00						
	2.95													2.95						
	3.60													3.60						
	4.20	Continued from soil			4.25	M								4.20	PLT	PL(A)=0.60MPa				
	4.47	SANDSTONE: pale grey, fine to coarse grained, iron-indurated bands and grey bands, bedded. Mittagong Formation		HW	4.47	VL					4.47-4.57m: Fe, FG, Clay				4.47	PLT	PL(A)=0.70MPa			
	4.57				M						4.70-4.74m: CS									
	4.70				M						4.93-4.96m: CS									
	4.96				M						5.30m: B, 10°, Fe									
	5.80				M						5.60m: B, 5°, Fe, Clay									
	5.80	LAMINITE: grey sandstone, fine to medium grained, dark grey siltstone laminae, laminated, with frequent extremely weathered seams and clay seams. Mittagong Formation		SW	5.80	L to M					5.67m: B, 5°, Fe				5.80	PLT	PL(A)=1.1MPa			
	6.42				SEAM						5.86m: B, 0°, CT, Clay									
	6.54				VL to L						6.42-6.54m: DS									
	7.30				SEAM						7.30-7.35m: CS									
	7.35				SEAM						7.43m: B, 5°, 5mm, Clay									
	7.65	SANDSTONE: pale grey, fine to coarse grained. Hawkesbury Sandstone		FR	7.65	M to H					7.65m: B, 5°, 5mm, Clay				7.65	PLT	PL(A)=1.3MPa			
8.11	H									8.11m: JT, 45°, PR, CN, RF										
8.95	L																			
9.00																				
10.26																				
9.00-10.26m: B x10, 0°, PR																				
9.00-10.26m: B x10, 0°, PR																				
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PLANT: Geo405
METHOD: DT to 0.03m, AD/T to 4.25m, NMLC to 15.14m
REMARKS: BD3/0102024

OPERATOR: Terratest (JW)

LOGGED: SI/CSY
CASING: HWT to 4.3m

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED										SAMPLE			TESTING					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	RL (m)			PS XW HW MW SW FR		VL L M H VH EH												
	42	[CONT] LAMINITE: grey sandstone, fine to medium grained, siltstone laminae, laminated. Hawkesbury Sandstone			10.26	L				10.32-10.38m: iron-10.56-10.57m: DB, 0.5°, IR, CT, RF					PLT	PL(A)=1.3MPa		
	11	SANDSTONE: pale grey, fine to coarse grained, cross, bedded, 5 to 15°. Hawkesbury Sandstone			11.53	M to H	100	60		10.78-10.81m: weathered one? 10.86m: CS, 0°, 5 mm				11	PLT	PL(A)=1.5MPa		
	41				11.89	M to H				11.57-11.59m: DS, 0°, 20 mm								
	12				11.89	M to H				11.79-11.82m: DS, 0°, 30 mm								
	12.06	SILTSTONE: dark grey; with fine grained sandstone interbeds and rip up clasts			12.05	SEAM				12.05-12.20m DS, 0°, 150 mm				12				
	40				12.20	VL				12.24-12.64m: DS, 0°, 400 mm					PLT	PL(A)=0.03MPa		
	13	SANDSTONE: pale grey, fine to coarse grained, cross, bedded, 5 to 15°. Hawkesbury Sandstone			12.64	M to H				12.74-12.91m: HB				13	PLT	PL(A)=0.40MPa		
	39				13.68	H	100	79		13.05m DB					PLT	PL(A)=1.0MPa		
	14				13.74	SEAM				13.68-13.74m: DS, 10°, 60 mm				14				
	38				14.67	M				14.72-14.74m: DS, 15°, 20 mm					PLT	PL(A)=1.3MPa		
	15				14.84	H				14.80-14.84m: DS, 15°, 40 mm				15	PLT	PL(A)=1.4MPa		
	37	Borehole discontinued at 15.14m depth. Target depth reached.																
	16																	
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NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: DT to 0.03m, AD/T to 4.25m, NMLC to 15.14m
REMARKS: BD3/0102024

OPERATOR: Terratest (JW)

LOGGED: SI/CSY
CASING: HWT to 4.3m

Refer to explanatory notes for symbol and abbreviation definitions



CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 1 of 2

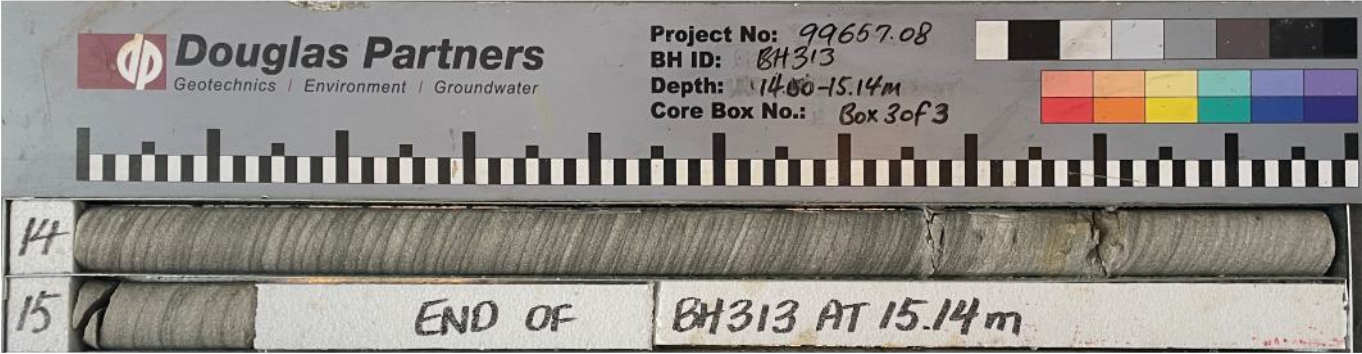


CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.8 AHD
COORDINATE: E:326515.0, N:6260616.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH313
PROJECT No: 99657.08
DATE: 30/10/24
SHEET: 2 of 2

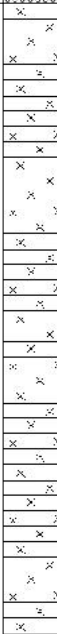


BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.0 AHD
COORDINATE: E:326525.0, N:6260597.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH314
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

GROUNDWATER	CONDITIONS ENCOUNTERED						SAMPLE				TESTING AND REMARKS				
	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾ DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS		
25/10/24 No free groundwater observed whilst augering	52	0.20	CONCRETE SLAB			ND	ND				0.20	PID	<1ppm		
			FILL / Silty CLAY: grey-brown and orange-brown; medium to high plasticity; with fine to medium, angular, siltstone and ironstone gravel, trace sandstone gravel.		FILL	ND	w<PL							ES	0.40
51	50	1									0.80	PID	<1ppm		
50	49	2	1.90m: below pale grey mottled red								1.70	PID	<1ppm		
		2.10	Silty CLAY: pale brown-brown mottled orange brown; medium to high plasticity; trace siltstone and ironstone gravel/bands, natural.		RS	(St)	w=PL				2.00	PID	<1ppm		
											2.20				
											3				
											4				

NOTES: [#]Soil origin is "probable" unless otherwise stated. [†]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe

OPERATOR: Terratest

LOGGED: ZW

METHOD: Diacore to 0.2m, PT to 4.2m

CASING: Uncased

REMARKS: *Field replicate BD3/41025 sample taken at 2-2.2m

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.3 AHD
COORDINATE: E:326528.0, N:6260599.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH315
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

[illegible]

NOTES: [#]Soil origin is "probable" unless otherwise stated. [†]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.15m, PT to 3.3m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.6 AHD
COORDINATE: E:326496.0, N:6260592.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH316
PROJECT No: 99657.08
DATE: 24/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS		
RL (m)														
24/10/24 No free groundwater observed whilst augering	0.03	ASPHALTIC CONCRETE		FILL	ND	M		ES	0.03 0.20	PID	<1ppm			
	0.20	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with angular to subangular, fine to medium igneous gravel.		FILL										
	53	FILL / Silty CLAY: grey, grey-brown and red-brown; medium plasticity; trace siltstone gravel.		FILL										
	0.90	Silty CLAY (CI-CH): orange mottled red-brown ; medium to high plasticity; trace siltstone gravel with rootlets.		RS										
	52	1.50m: below becoming grey mottled red-brown		RS	(VSt)	w<PL								
	2.00	Silty CLAY (CI-CH): grey to pale grey; medium to high plasticity; with siltstone gravel/bands.		XWM	(H)									
	51			RS	(VSt)									
	3			XWM	(H)									
	50			RS	(VSt)									
	4			XWM	(H)									
49			XWM	(H)										
Borehole discontinued at 3.00m depth. Target depth reached.														

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 3.0m
REMARKS: *Field replicate BD3/241024 sample taken at 1.0-1.2m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:326513.0, N:6260577.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH317
PROJECT No: 99657.08
DATE: 01/11/24
SHEET: 1 of 3

GROUNDWATER		CONDITIONS ENCOUNTERED					SAMPLE				TESTING AND REMARKS	
RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾ DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
01/11/24 No free ground water observed whilst augering	0.03	ASPHALTIC CONCRETE.		FILL		M		A	0.10	PID	<1ppm	
	0.25	FILL / Sandy GRAVEL: grey and pale grey; medium to coarse, angular to sub-rounded; medium to coarse sand; aggregates and concrete.						A	0.20			
								A	0.40	PID	<1ppm	
								A	0.50			
	1	FILL / Silty CLAY: pale grey and brown; low plasticity; trace sandstone gravel and medium to coarse sand.		FILL	(MC)			A	0.90	PID	<1ppm	
								SPT	1.00	SPT	4,6,8 N=14	
								A	1.45	PID	<1ppm	
								A	1.60			
	1.80	FILL / Silty CLAY: grey; low plasticity; trace shale/siltstone gravel.		FILL				A	1.90	PID	<1ppm	
	2							A	2.00			
	2.60	Silty CLAY (CI-CH): pale grey brown to orange brown; medium to high plasticity; trace ironstone gravel.						A	2.40	PID	<1ppm	
								SPT	2.50	SPT	8,11,19 N=30	
	3								2.95			
				RS	VSt to H	w<PL						
	4							A	3.90	PID	<1ppm	
								SPT	4.00	SPT	15,30/150 (HB) Refusal	
	4.30	Silty Sandy CLAY (CL-CI): pale grey and mottled brown; low to medium plasticity; fine sand.							4.30			
	5				H							
	5.60	Continued as rock						SPT	5.50	SPT	25/100 (HB) Refusal	
									5.60			
	6											
	7											
	8											
	9											

NOTES: ⁽¹⁾ Soil origin is "probable" unless otherwise stated. ⁽²⁾ Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: [#]Soil origin is "probable" unless otherwise stated. [†]Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied

PLANT: Geo405
METHOD: AD/T to 5.6m, then NMLC to 15m
REMARKS: *Field replicate B01 01112024 taken at 0.9-1.0m

OPERATOR: Terratest (JW)

LOGGED: SI
CASING: HW to 5.5m

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:326513.0, N:6260577.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH317
PROJECT No: 99657.08
DATE: 01/11/24
SHEET: 2 of 3

GROUNDWATER	CONDITIONS ENCOUNTERED													SAMPLE			TESTING						
	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.				DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE	
01/11/24 No free ground water observed whilst augering	53	1			PS	XW	HW	DW										0.20					
																		0.50					
																		1.00					
																		1.45					
																		1.60					
	52	2																2.00					
																		2.50					
																		2.95					
	51	3																					
	50	4																4.00					
																		4.30					
	49	5																5					
			Continued from soil																				
	48	6	SANDSTONE: pale grey brown, fine grained. Mittagong Formation		HW					5.60	VL to L	100	0		5.68-6.08m: B x4, 0-5°, Fe 5mm, Clay				5.60	PLT	PL(A)=0.10MPa		
	6.30									6.30					6.15m: JT, 45°, PR, Clay 5mm, SM								
	6.85	7	SANDSTONE: pale grey and brown, fine to medium grained; trace carbonaceous lamination. Mittagong Formation		SW						M				6.50m: B x2 0°, Fe					PLT	PL(A)=0.82MPa		
	47									7.10					6.85m: B, 0°, Fe				7				
			SANDSTONE: pale grey and brown, medium to coarse grained; indistinctly bedded and cross bedded. Hawkesbury Sandstone									100	90		7.53m: B, 10°, Clay 2mm 7.63m: JT, 45°, UN, Clay					PLT	PL(A)=1.5MPa		
46	8													8.33m: B, 5°, 2mm, Clay				8	PLT	PL(A)=1.5MPa			
														8.80m JT, 25°, CU, 5mm, SM, siltstone									
45	9													9.33m JT, 40°, PR, Fe 5 mm									
											100	100		9.50m: JT, 25-45°, CU, Fe					PLT	PL(A)=1.5MPa			
	9.70													9.68m: JT, 30°, PR, Fe 30mm, SM, FG									
NOTES: 1# Soil origin is "probable" unless otherwise stated.																							

NOTES: (H) Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: AD/T to 5.6m, then NMLC to 15m
REMARKS: *Field replicate B01 01112024 taken at 0.9-1.0m

OPERATOR: Terratest (JW)

LOGGED: SI
CASING: HW to 5.5m

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:326513.0, N:6260577.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH317
PROJECT No: 99657.08
DATE: 01/11/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED														SAMPLE			TESTING							
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.					DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE	
			LAMINITE: grey and pale grey, laminated; siltstone (60%) and sandstone (40%), unbroken. Hawkesbury Sandstone		RS	XW	HW	DW	FR												PLT	PL(A)=1.3MPa		
	43	11										100	100							11	PLT	PL(A)=1.1MPa		
	11.85	12	SANDSTONE: pale grey, medium to coarse grained; with siltstone interbeds (<10%), unbroken. Hawkesbury Sandstone						FR		H									12	PLT	PL(A)=1.4MPa		
	42																							
	41	13														12.58m B, 5°, 1mm, Clay			13	PLT	PL(A)=1.8MPa			
												100	99											
	40	14								13.75						13.75m: B, 0°, 15mm, Clay			14	PLT	PL(A)=1.7MPa			
	39	15	Borehole discontinued at 15.00m depth. Target depth reached.																					
	38	16																						
	37	17																						
	36	18																						
	35	19																						

NOTES: #Soil origin is "probable" unless otherwise stated.

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: AD/T to 5.6m, then NMLC to 15m
REMARKS: *Field replicate B01 01112024 taken at 0.9-1.0m

OPERATOR: Terratest (JW)

LOGGED: SI
CASING: HW to 5.5m

Refer to explanatory notes for symbol and abbreviation definitions



CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:326513.0, N:6260577.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH317
PROJECT No: 99657.08
DATE: 01/11/24
SHEET: 1 of 1



5.60-10.00 m depth



10.00-15.00 m depth

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 52.9 AHD
COORDINATE: E:326526.0, N:6260579.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH318
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾	DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
25/10/24 No free groundwater observed whilst augering		0.14	CONCRETE SLAB (140mm)					ND				0.14		
			FILL / Silty CLAY: pale grey and brown; medium to high plasticity; with fine to medium angular to subangular siltstone and ironstone gravel.							ES		0.14 0.40	PID	<1ppm
		1	1.00m: clayey silt, 400mm											
					FILL	ND				ES		1.00 1.20	PID	<1ppm
		2						w<PL						
										ES		2.00 2.20	PID	<1ppm
		2.30	Silty CLAY (CI-CH): pale brown mottled orange-brown; medium to high plasticity; with siltstone and ironstone gravel/bands.											
					RS	(VSt)				ES		2.50 2.70	PID	<1ppm
		3.00	Silty CLAY (CI-CH): pale grey, mottled red-brown; medium to high plasticity.											
					XWM	(H)							3	
	4	Borehole discontinued at 4.00m depth. Target depth reached.												
	48													

NOTES: ⁽¹⁾Soil origin is "probable" unless otherwise stated. ⁽²⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.14m, PT to 4.0m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 3

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS					
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
		0.04	ASPHALTIC CONCRETE						ES	0.04	0.15	PID	<1ppm		
		0.50	FILL / Silty SAND, with gravel: brown; fine to coarse; fine to medium, igneous gravel.		FILL	ND	M		ES	0.40	0.50	PID	<1ppm		
		1	Silty CLAY (CH): pale grey mottled orange-brown and red-brown; high plasticity; trace gravel, fine to medium ironstone gravel.		RS	St to VSt	w=PL		A	0.80	0.90	PID	<1ppm		
									ES	0.90	1.00				
									SPT	1.00	1.10	SPT	5,8,9 N=17		
									ES	1.10	1.50	PID	<1ppm		
		2.00	Silty Sandy CLAY (CL), trace gravel: pale grey and red-brown; low plasticity; fine sand; fine, ironstone and sandstone gravel; (possible Ashfield Shale).		XWM				A	2.00	2.10	PID	<1ppm		
		3.00	Silty Gravelly CLAY (CL-CI): dark grey and grey; low to medium plasticity; fine, laminite gravel; with clay bands and weathered laminite bands.		XWM	H	w<PL		SPT	2.50	2.61	SPT	21/110 (HB) Refusal		
		4.00	Continued as rock						A	3.80	4.00				
											4.00				
		5									5				
		6									6				
		7									7				
		8									8				
		9									9				

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geo405
METHOD: DT to 0.04m, AD/T to 4.0m, NMLC to 15.1m
REMARKS: BDUP20241031

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 4m

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 2 of 3

CONDITIONS ENCOUNTERED										SAMPLE				TESTING					
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	54														0.15				
		1													0.50				
	53														0.90				
		2													1.00				
															1.50				
	52														2				
															2.10				
		3													2.61				
	51														3				
		4	Continued from soil																
			LAMINITE: pale grey, fine to medium grained, sandstone, dark grey siltstone, laminated; with frequent extremely weathered bands and iron-indurated bands. Mittagong Formation		XW	4.00	SOIL			SOIL	4.00m : , Unless stated otherwise, the rock is fractured along B, 0-5°, PR, RF, Fe SN.				4.00				
	50				HW	4.17	VL				4.00-4.17m: DS, 0°, 170 mm				4.08				
		5				4.88	L	100	50		4.05m JT, PR, SN Fe, RF								
	49				XW	5.02	VL				4.17-4.34m: B xx5, 0-5°, PR, SN Fe, RF								
					HW	5.39					4.36m: JT, 60°, PR, SN Fe, RF								
					XW	5.62	L				4.42-4.90m: B xx6, 0-5°, PR, SN Fe, RF								
		6			HW	5.86					4.76-4.85m JT, 85°, 1R, SN Fe, VR								
	48					6.08					5.02-5.27m: DS, 0°, 250 mm								
						6.20					5.42m: B, 0°, PR, SN Fe, RF								
		7	SANDSTONE: pale grey, fine to coarse grained, cross bedded, 0 to 15°. Hawkesbury Sandstone		MW						5.68-5.70m: DS, 0°, 20 mm								
											5.76-5.86m: DS, 0°, 100 mm								
											6.24-6.45m: JT, 80°, ST, SN Fe, VR								
		8				7.46		100	90		6.63-6.69m: B xx5, 5°, PR, CT CBS, RF								
											6.92m: B, 5°, PR, CT CBS, RF								
											7.25m: DS, 0°, 7mm								
											7.39m: DS, 0°, 10mm								
		9			SW	8.00					8.41m DS, 0°, 10mm								
	45					9.30	H	100	95		9.28m: DS, 5°, 15mm								
					FR						9.91m B, 5°, PR, CT CBS,								
NOTES: # Soil origin is "probable" unless otherwise stated.																			

PLANT: Geo405
METHOD: DT to 0.04m, AD/T to 4.0m, NMLC to 15.1m
REMARKS: BDUP20241031

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 4m

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 3 of 3

CONDITIONS ENCOUNTERED										SAMPLE			TESTING					
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	44	LAMINITE: pale grey sandstone, fine to medium grained, dark grey siltstone and occasional carbonaceous lenses, laminated, 0 to 5°.								RF					PLT	PL(A)=4.8MPa		
	11	Hawkesbury Sandstone					100	95		10.09m B, 0°, PR, CT CBS, RF 10.23m B, 0°, PR, CT CBS, RF 10.33m B, 0°, PR, CT CBS, RF					PLT	PL(A)=1.9MPa		
	11.64	SANDSTONE: pale grey, fine to coarse grained, 0 to 5°; siltstone interbeds (<5%).								11.63m: B, 5°, PR, CT CBS, RF 11.71m: B, 0°, PR, CT CBS, RF					PLT	PL(A)=1.9MPa		
	12	Hawkesbury Sandstone																
	13														PLT	PL(A)=2.1MPa		
	14									13.60m: B, 5°, UN, CT CBS, RF 13.89m: DS, 5°, 25mm 14.03-14.05m: B xx2, 5°, PR, CT CBS, RF 14.33m B xx2 5-10°, UN, CT CBS, RF					PLT	PL(A)=2.4MPa		
	15	From 14.37m: medium to coarse grained													PLT	PL(A)=1.9MPa		
Borehole discontinued at 15.10m depth. Target depth reached.																		

NOTES: #Soil origin is "probable" unless otherwise stated.

PLANT: Geo405
METHOD: DT to 0.04m, AD/T to 4.0m, NMLC to 15.1m
REMARKS: BDUP20241031

OPERATOR: Terratest (JW)

LOGGED: CSY
CASING: HWT to 4m

Refer to explanatory notes for symbol and abbreviation definitions

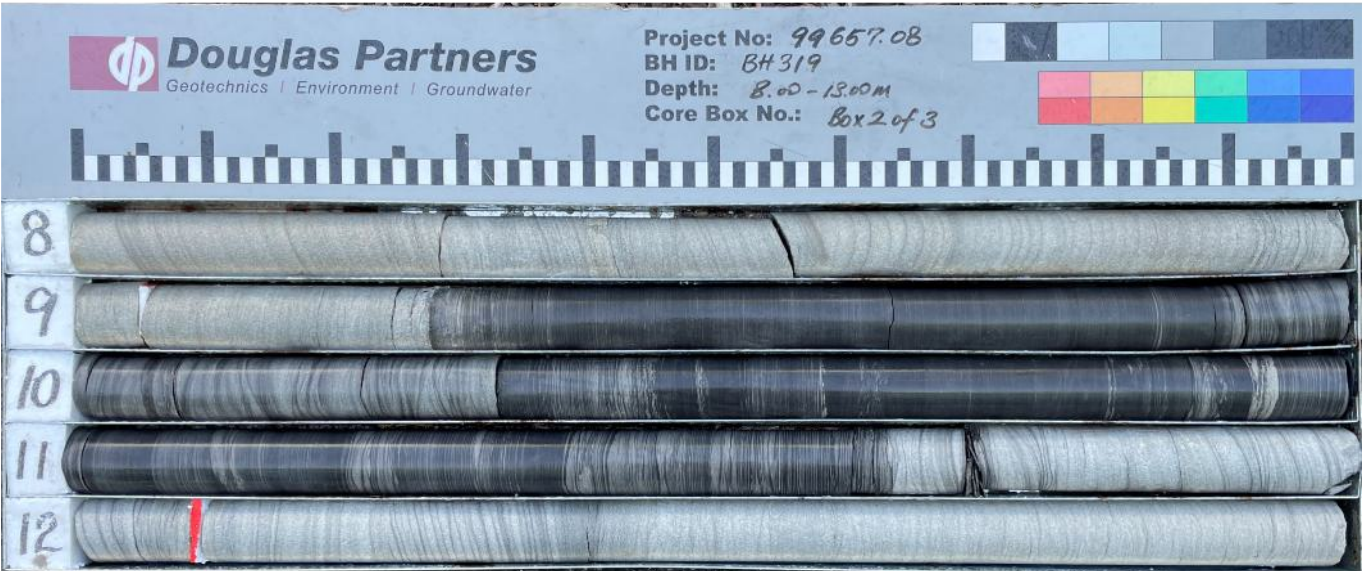


CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD
COORDINATE: E:326479.0, N:6260572.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 2



CORE PHOTO LOG

CLIENT: Stockland Development Pty Limited

PROJECT: MPark Talavera Road Data Centre

LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.2 AHD

COORDINATE: E:326479.0, N:6260572.0

DATUM/GRID: MGA2020 Zone 56

DIP/AZIMUTH: 90°/---°

LOCATION ID: BH319

PROJECT No: 99657.08

DATE: 31/10/24

SHEET: 2 of 2



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 54.1 AHD
COORDINATE: E:326491.0, N:6260562.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH320
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED										SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾	DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	
25/10/24 No free groundwater observed whilst augering	0.03	ASPHALTIC CONCRETE (30 mm)					ND				0.03			
	0.40	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with fine to medium angular to subangular igneous gravel, trace clinker.		FILL			M		ES		0.30	PID	<1ppm	
	0.90	FILL / Silty CLAY: brown, orange-brown and grey-brown; trace siltstone and ironstone gravel.		FILL	ND				ES		0.50	PID	<1ppm	
	1.00	Silty CLAY (CI-CH): pale brown-brown mottled orange brown; medium to high plasticity; with siltstone and ironstone gravel/bands.									1.20	PID	<1ppm	
	2.40m	2.40m: becoming pale grey mottled tan-brown grading into extremely weathered siltstone		RS	(St)		w<PL				2.00			
	3.00m				(H)						3.00			
	3.00m	Borehole discontinued at 3.00m depth. Pushtube refusal												
	4.00m													

NOTES: ⁽¹⁾Soil origin is "probable" unless otherwise stated. ⁽²⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Geoprobe
METHOD: Diacore to 0.03m, PT to 3.0m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 53.9 AHD
COORDINATE: E:326505.0, N:6260546.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH321
PROJECT No: 99657.08
DATE: 25/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
25/01/24 No free groundwater observed whilst augering	0.03	ASPHALTIC CONCRETE(30 mm)									0.03		
	0.25	FILL / Silty Gravelly SAND: grey-brown; fine to coarse; with angular to subangular, fine to medium igneous gravel.		FILL	(WC)		M		ES		0.25	PID	<1ppm
		FILL / Silty CLAY: tan-brown,orange-brown and grey-brown; medium plasticity; with fine to medium angular siltstone gravel, trace sandstone gravel.								ES	0.50	PID	<1ppm
											0.70		
	1			FILL	ND		w<PL				1		
52	1.80	Silty CLAY (CI-CH): tan-brown mottled orange brown; medium to high plasticity; with ironstone and siltstone gravel/bands.									1.80		
	2										2		
51	3										3		
50													
49													
48													
47													
46													
45													
44													
43													
42													
41													
40													
39													
38													

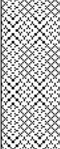
PLANT: Geoprobe	OPERATOR: Terratest	LOGGED: ZW
METHOD: Diacore to 0.03m, PT to 3.7m		CASING: Uncased
REMARKS:		

BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326590.0, N:6260688.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA1
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
31/10/24 No free groundwater observed whilst augering	50	0.30	FILL / Silty CLAY: brown and grey brown; medium plasticity; with surficial dead fall, fine to coarse siltstone gravel and cobble, trace ironstone, igneous gravel, fabric, roots and rootlets, trace asphalt.		FILL	ND		w=PL		ES		0.30	PID	<1ppm					
Borehole discontinued at 0.50m depth. Target depth reached.																			
	49	1																	
	48	2																	
	47	3																	
	46	4																	

NOTES: ^(#) Soil origin is "probable" unless otherwise stated. ^(*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. °Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hand Tools
METHOD: HA to 0.5m
REMARKS:

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

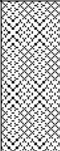


BOREHOLE LOG

CLIENT: Stockland Development Pty Limited
PROJECT: MPark Talavera Road Data Centre
LOCATION: 1-5 Khartoum Road, Macquarie Park, NSW 2113

SURFACE LEVEL: 50.1 AHD
COORDINATE: E:326603.0, N:6260679.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA2
PROJECT No: 99657.08
DATE: 31/10/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED													SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
31/10/24 No free groundwater observed whilst augering	50		FILL / Silty CLAY: brown and grey brown; medium plasticity; with surficial dead fall, fine to coarse siltstone gravel and cobble, trace ironstone, igneous gravel, fabric, roots and rootlets.		FILL	ND		w=PL		ES		0.30	PID	<1ppm			
Borehole discontinued at 0.50m depth. Target depth reached.																	
	49	1															
	48	2															
	47	3															
	46	4															

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ^(*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

NOTES: #Soil origin is "probable" unless otherwise stated. %Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hand Tools
METHOD: HA to 0.5m
REMARKS: *Field replicate BD2/241031 sample taken at 0-0.3m

OPERATOR: Terratest

LOGGED: ZW
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions



Appendix D

Laboratory Test Results

Material Test Report

Report Number: 99657.08-1
Issue Number: 1
Date Issued: 26/11/2024
Client: Stockland Development Pty Limited
Level 25/133 Castlereagh Street, SYDNEY NSW
Contact: Chantelle Thistleton
Project Number: 99657.08
Project Name: MPark Stage 3 Precinct - Geotechnical and Environmental Services
Project Location: 1-5 Khartoum Road, Macquarie Park NSW
Work Request: 11958
Sample Number: SY-11958A
Date Sampled: 11/11/2024
Dates Tested: 11/11/2024 - 18/11/2024
Sampling Method: Sampled by Engineering Department
The results apply to the sample as received
Preparation Method: AS 1289.1.1 - Sampling and Preparation of Soils
Sample Location: BH308 (1.0 - 1.45m)
Material: FILL / Silty CLAY: brown, orange-brown and dark brown, trace sand, trace degraded roots, fine to medium sand



Douglas Partners Pty Ltd

Sydney Laboratory

96 Hermitage Road West Ryde NSW 2114

Phone: (02) 9809 0666

Email: mick.gref@douglaspartners.com.au



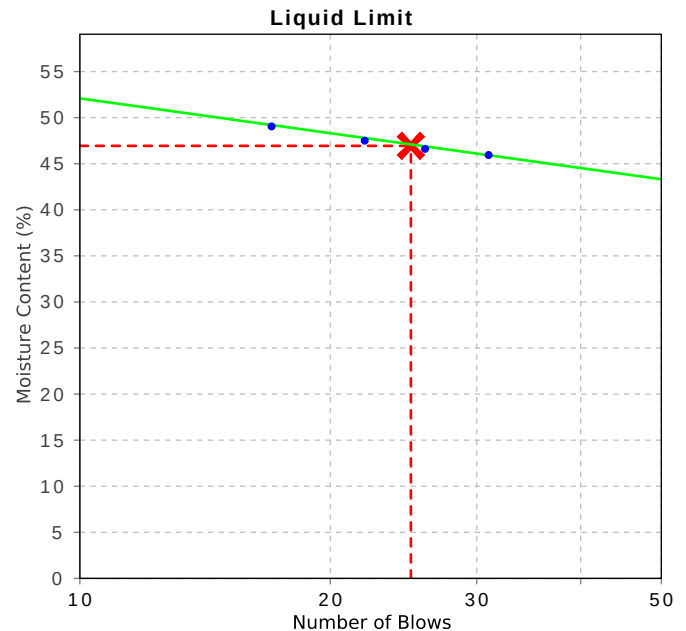
Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Mick Gref

Assistant Laboratory Manager

Laboratory Accreditation Number: 828

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	47		
Plastic Limit (%)	24		
Plasticity Index (%)	23		
Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	10.5		
Cracking Crumbling Curling	None		



Material Test Report

Report Number: 99657.08-1
Issue Number: 1
Date Issued: 26/11/2024
Client: Stockland Development Pty Limited
Level 25/133 Castlereagh Street, SYDNEY NSW
Contact: Chantelle Thistleton
Project Number: 99657.08
Project Name: MPark Stage 3 Precinct - Geotechnical and Environmental Services
Project Location: 1-5 Khartoum Road, Macquarie Park NSW
Work Request: 11958
Sample Number: SY-11958B
Date Sampled: 11/11/2024
Dates Tested: 11/11/2024 - 19/11/2024
Sampling Method: Sampled by Engineering Department
The results apply to the sample as received
Preparation Method: AS 1289.1.1 - Sampling and Preparation of Soils
Sample Location: BH313 (1.0 - 1.45m)
Material: CLAY: pale grey mottled brown, trace ironstone gravel



Douglas Partners Pty Ltd

Sydney Laboratory

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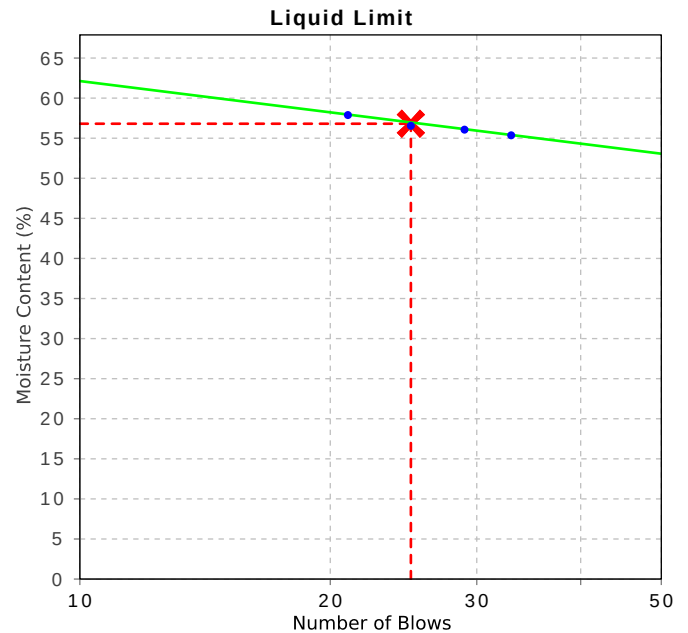
Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Mick Gref

Assistant Laboratory Manager

Laboratory Accreditation Number: 828

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	57		
Plastic Limit (%)	24		
Plasticity Index (%)	33		
Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	13.0		
Cracking Crumbling Curling	Curling		



Material Test Report

Report Number: 99657.08-1
Issue Number: 1
Date Issued: 26/11/2024
Client: Stockland Development Pty Limited
Level 25/133 Castlereagh Street, SYDNEY NSW
Contact: Chantelle Thistleton
Project Number: 99657.08
Project Name: MPark Stage 3 Precinct - Geotechnical and Environmental Services
Project Location: 1-5 Khartoum Road, Macquarie Park NSW
Work Request: 11958
Sample Number: SY-11958C
Date Sampled: 11/11/2024
Dates Tested: 11/11/2024 - 19/11/2024
Sampling Method: Sampled by Engineering Department
The results apply to the sample as received
Preparation Method: AS 1289.1.1 - Sampling and Preparation of Soils
Sample Location: BH313 (2.5 - 2.95m)
Material: CLAY: pale grey and red-brown, trace ironstone gravel



Douglas Partners Pty Ltd

Sydney Laboratory

96 Hermitage Road West Ryde NSW 2114

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Accredited for compliance with ISO/IEC 17025 - Testing

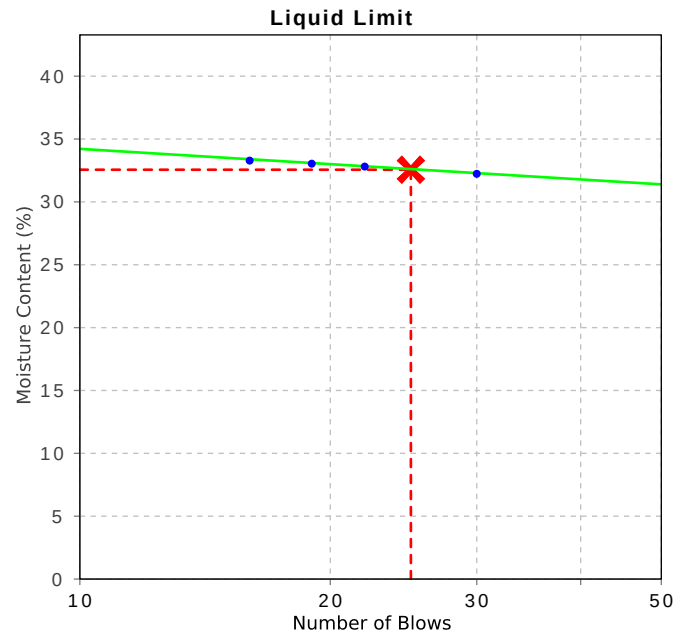
Approved Signatory: Mick Gref

Assistant Laboratory Manager

Laboratory Accreditation Number: 828

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	33		
Plastic Limit (%)	18		
Plasticity Index (%)	15		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	7.5		
Cracking Crumbling Curling	None		



Material Test Report

Report Number: 99657.08-1
Issue Number: 1
Date Issued: 26/11/2024
Client: Stockland Development Pty Limited
Level 25/133 Castlereagh Street, SYDNEY NSW
Contact: Chantelle Thistleton
Project Number: 99657.08
Project Name: MPark Stage 3 Precinct - Geotechnical and Environmental Services
Project Location: 1-5 Khartoum Road, Macquarie Park NSW
Work Request: 11958
Sample Number: SY-11958D
Date Sampled: 11/11/2024
Dates Tested: 11/11/2024 - 19/11/2024
Sampling Method: Sampled by Engineering Department
The results apply to the sample as received
Preparation Method: AS 1289.1.1 - Sampling and Preparation of Soils
Sample Location: BH319 (2.0 - 2.1m)
Material: Silty Sandy CLAY: pale grey and red-brown, trace gravel, fine sand, fine ironstone and sandstone gravel



Douglas Partners Pty Ltd

Sydney Laboratory

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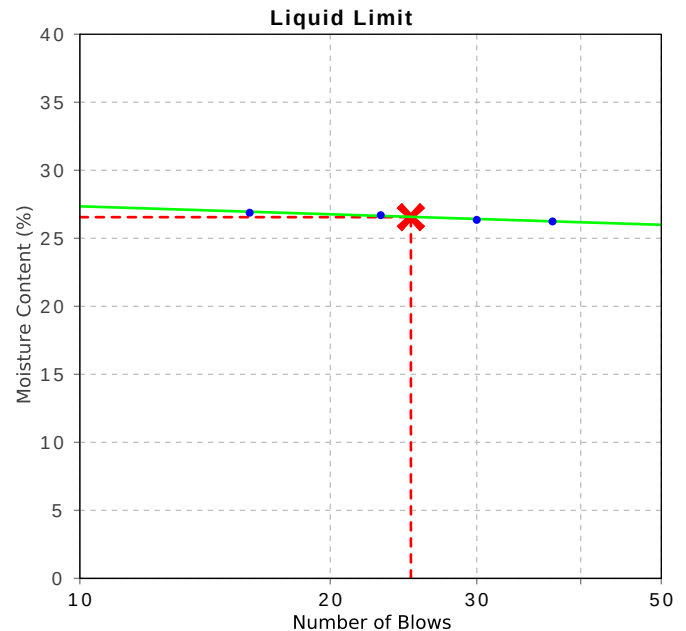
Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Mick Gref

Assistant Laboratory Manager

Laboratory Accreditation Number: 828

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	27		
Plastic Limit (%)	17		
Plasticity Index (%)	10		
Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	7.0		
Cracking Crumbling Curling	None		



CERTIFICATE OF ANALYSIS 366025

Client Details

Client	Douglas Partners Pty Ltd
Attention	Stephen Jackson
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>99657.08 Macquarie</u>
Number of Samples	5 Soil
Date samples received	11/11/2024
Date completed instructions received	11/11/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	18/11/2024
Date of Issue	18/11/2024
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Nick Sarlamis, Assistant Operation Manager

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil						
Our Reference		366025-1	366025-2	366025-3	366025-4	366025-5
Your Reference	UNITS	BH301	BH308	BH313	BH317	BH319
Depth		0.9-1	2.5-2.91	2.5-2.95	4-4.45	3.8-4
Date Sampled		29/10/2024	28/10/2024	30/10/2024	01/11/2024	31/10/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/11/2024	13/11/2024	13/11/2024	13/11/2024	13/11/2024
Date analysed	-	13/11/2024	13/11/2024	13/11/2024	13/11/2024	13/11/2024
pH 1:5 soil:water	pH Units	6.3	7.7	4.5	4.7	4.6
Electrical Conductivity 1:5 soil:water	µS/cm	94	260	240	76	260
Chloride, Cl 1:5 soil:water	mg/kg	<10	10	260	69	270
Sulphate, SO4 1:5 soil:water	mg/kg	41	230	31	27	36
Resistivity in soil*	ohm m	110	39	43	130	39

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA 22nd ED 2510 and Rayment & Lyons. Resistivity is calculated from Conductivity (non NATA). Resistivity (calculated) may not correlate with results otherwise obtained using Resistivity-Current method, depending on the nature of the soil being analysed.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.

QUALITY CONTROL: Misc Inorg - Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	366025-4
Date prepared	-			13/11/2024	3	13/11/2024	13/11/2024		13/11/2024	13/11/2024
Date analysed	-			13/11/2024	3	13/11/2024	13/11/2024		13/11/2024	13/11/2024
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	3	4.5	4.4	2	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	3	240	200	18	95	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	3	260	240	8	98	103
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	3	31	30	3	98	#
Resistivity in soil*	ohm m	1	Inorg-002	<1	3	43	49	13	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

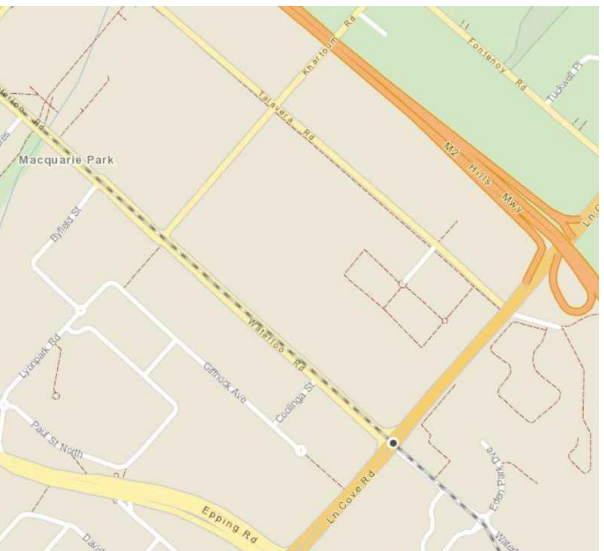
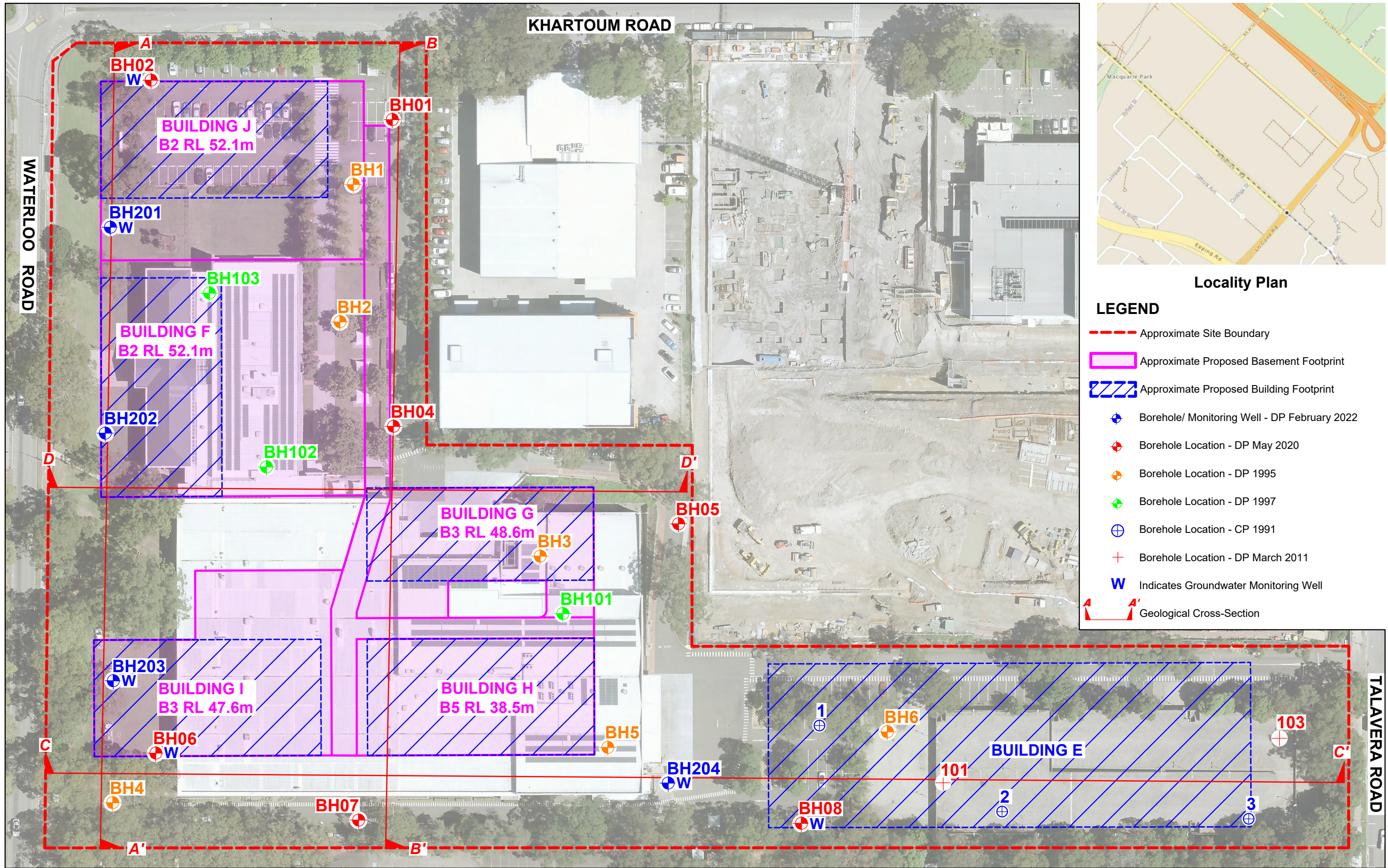
pH/EC - Samples were out of the recommended holding time for this analysis.

MISC_INORG_DRY:# Poor spike recovery was obtained for this sample. This is due to matrix interferences. However, an acceptable recovery was obtained for the LCS.

[illegible]

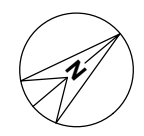
Appendix E

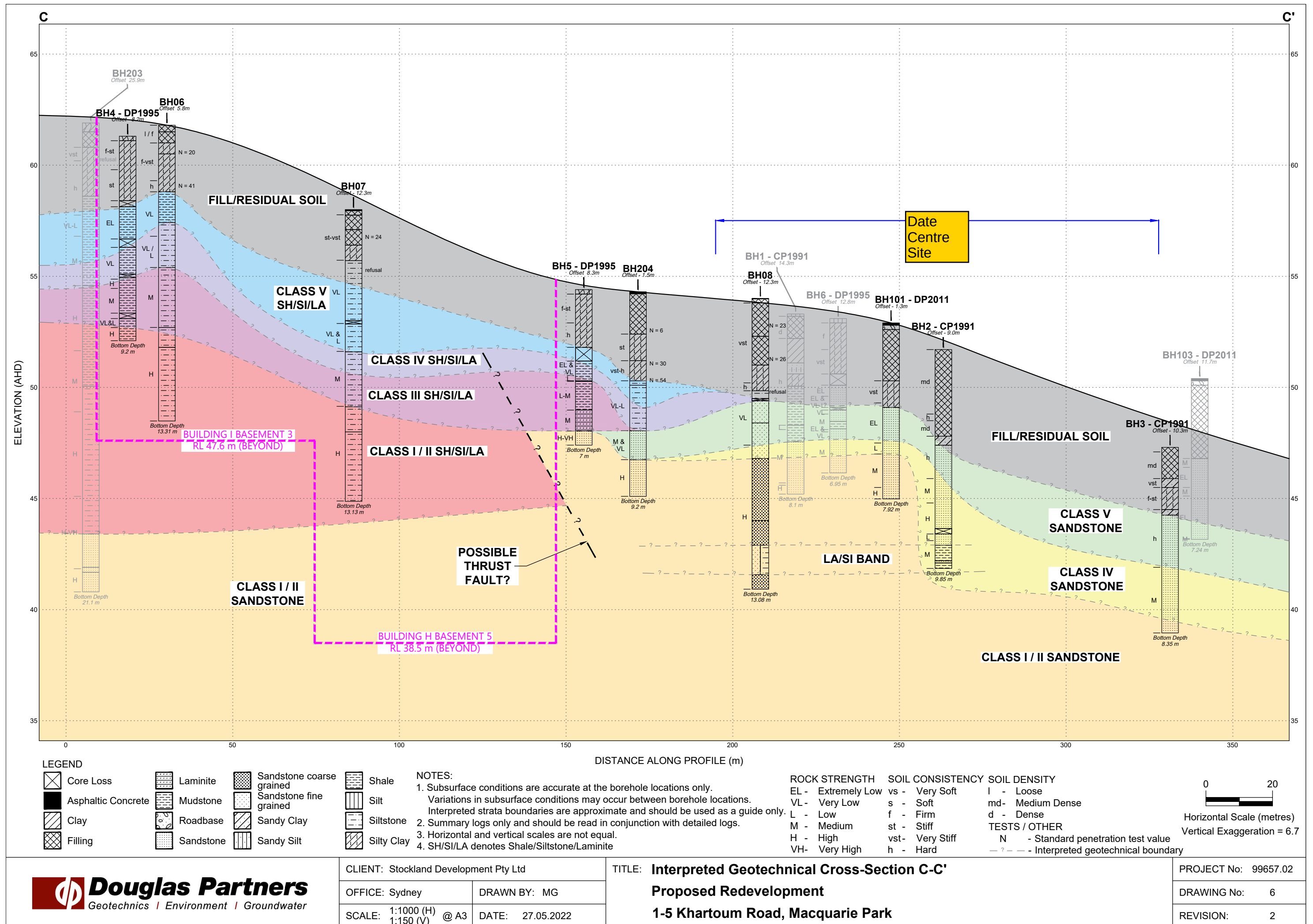
Previous Investigation Borehole Logs and Cross-Section



Locality Plan

- LEGEND**
- Approximate Site Boundary
 - Approximate Proposed Basement Footprint
 - Approximate Proposed Building Footprint
 - Borehole/ Monitoring Well - DP February 2022
 - Borehole Location - DP May 2020
 - Borehole Location - DP 1995
 - Borehole Location - DP 1997
 - Borehole Location - CP 1991
 - Borehole Location - DP March 2011
 - Indicates Groundwater Monitoring Well
 - Geological Cross-Section







borehole no:
BH1
sheet 1 of 3

engineering log - borehole

office job no: S9612/1

client:	CIVIL & CIVIC PTY LTD	hole commenced:	11/11/91
principal:		hole completed:	11/11/91
project:	PROPOSED DEVELOPMENT, TALavera ROAD, NORTH RYDE	logged by:	JAF
borehole location:	SEE DRAWING No S9612/1-1	checked by:	JGL
drill model and mounting:	EDSON 3000 - TRUCK	slope:	-90 DEG
hole diameter:	100mm	bearings:	
		R.L. Surface:	53.3
		datum:	AHD

method	penetration	support	water	notes samples, test, etc	R.L.	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetro- meter	structure and additional observations
AD1	23					53		ML	SANDY SILT: low plasticity, dark brown, some vegetation FILL: clay + some gravel	M	L		TOPSOIL FILL
						1							
						52		CH	CLAY: high plasticity, red-brown becoming mottled light brown & light grey	>wp	H		RESIDUAL
						2							
						51		SH	SILTY SAND: fine grained, light grey, some friable cementation				
						3		CL	SILTY CLAY: low plasticity, light grey some mottled light brown				EXTREMELY WEATHERED SHALE
						50			Y BIT REFUSAL AT 3.25m				
						49			SHALE: brown & grey becoming dark grey & dark brown	M	D		MODERATELY WEATHERED SHALE with some SANDSTONE below 4.85
						48							
						6			CONTINUED AS CORED BORE-HOLE				
						47							
						7							
						46							
						8							

METHOD	SUPPORT	NOTES	CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION	CONSISTENCY/DENSITY INDEX
AS auger screwing	C casing	USO undisturbed sample 50 mm diameter		VS very soft
AD auger drilling	M mud	D disturbed sample		S soft
R roller/tricone		N standard penetration test:	based on unified classification system	F firm
W washbore		Nx SPT + sample recovered		St stiff
CT cable tool		NC SPT with solid cone		Yst very stiff
HA hand auger		V vane shear		H hard
DI diatube		P pressuremeter	MOISTURE	Fb friable
xbt shown by suffix		Bs bulk sample	D dry	VL very loose
B blank bit		R refusal	M moist	L loose
V V bit			W wet	MD medium dense
T TC bit			Wp plastic limit	D dense
e.g. AD1				VD very dense



borehole no:

BH1

sheet 2 of 3

engineering log - cored borehole

office job no: 59612/1

client:	CIVIL & CIVIC PTY LTD	hole commenced:	11/11/91
principal:		hole completed:	11/11/91
project:	PROPOSED DEVELOPMENT, NORTH RYDE	logged by:	JAF
borehole location:	SEE DRAWING No 59612/1-1	checked by:	JGL
drill model and mounting:	EDSON 3000 - TRUCK	slope:	-90 DEG
barrel type and length:	NMLC - 3.0m	fluid:	WATER
		bearing:	
		R.L. Surface:	53.3
		datum:	AHD

drilling information				rock substance				rock mass defects			
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength	point load test Is (50) MPa	defect spacing mm	defect description type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
			53	1							
			52	2							
			51	3							
			50	4							
			49	5		Continued from non-core borehole					
NMLC			48	6		SHALE: grey, light grey, & brown, distinct bedding, 0-5deg with some interbedded sandstone fine grained	MW SW				5.00 to 5.19m numerous partings, joints & crush seams
			47	7		SANDSTONE: fine to medium grained, light grey, indistinct bedding, becoming distinct bedding, 0-5deg with occasional very narrow bands of interbedded siltstone	MW SW FR				eroded Fe seam 35mm thick with some clay & crush
			46								crush SW 5mm

General Defect Description:
Bedding Partings

METHOD			POINT LOAD TEST	WEATHERING	STRENGTH	DEFECTS			
AS	auger screwing	▽	water level	FR	-fresh	EL	-extremely low	JT	-joint
AD	auger drilling	▽	water inflow	SW	-slightly	VL	-very low	PT	-parting
R	roller/tricone	X	not measured	MW	-moderately	L	-low	SM	-stem
W	washbore	△	Drilling Water	HW	-highly	M	-medium	CL	-clay
NMLC	core drilling	△	partial loss	EW	-extremely	H	-high	RD	-rough
NO, HQ	core drilling	△	complete loss			VH	-very high	DC	-decomposed
	casing used					EH	-extremely high	PL	-planar
	barrel withdrawn							IR	-irregular

GRAPHIC LOG/CORE LOSS

core recovered
(hatching indicates material)
no core recovered



borehole no:

BH1

sheet 3 of 3

engineering log - cored borehole

office job no: S9612/1

client:	CIVIL & CIVIC PTY LTD	hole commenced:	11/11/91
principal:		hole completed:	11/11/91
project:	PROPOSED DEVELOPMENT, NORTH RYDE	logged by:	JAF
borehole location:	SEE DRAWING No S9612/1-1	checked by:	JGL
drill model and mounting:	EDSON 3000 - TRUCK	slope:	-90 DEG
barrel type and length:	NMLC - 3.0m	fluid:	WATER
		bearing:	
		R.L. Surface:	53.3
		datum:	AHD

drilling information					rock substance			rock mass defects																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength					point load test 1s (50) MPa	defect spacing mm	defect description type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
PMLC				45		SANDSTONE: fine to medium grained, light grey, indistinct bedding, becoming distinct bedding, 0-5deg with occasional very narrow bands of interbedded siltstone Borehole BH1 Terminated at 8.10 m																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</

General Defect Description:
Bedding Partings

METHOD			POINT LOAD TEST	WEATHERING	STRENGTH	DEFECTS
AS	auger screwing	▽	D -diametral	FR -fresh	EL -extremely low	JT -joint
AD	auger drilling	▽	A -axial	SW -slightly	VL -very low	PT -parting
R	roller/tricone	×		MN -moderately	L -low	SM -seam
W	washbore	△	GRAPHIC LOG/CORE LOSS	HN -highly	M -medium	CL -clay
NMLC	core drilling	△	core recovered (matching indicates material)	EW -extremely	H -high	RO -rough
NO, HO	core drilling	△	no core recovered		VH -very high	DC -decomposed
	casing used	△			EH -extremely high	PL -planar
	barrel withdrawn	△				IR -irregular



borehole no:
BH2
sheet 1 of 3

engineering log - borehole

office job no: S9612/1

client:	CIVIL & CIVIC PTY LTD	hole commenced:	11/11/91
principal:		hole completed:	11/11/91
project:	PROPOSED DEVELOPMENT, TALavera ROAD, NORTH RYDE	logged by:	JAF
borehole location:	SEE DRAWING No S9612/1-1	checked by:	JGL
drill model and mounting:	EDSON 3000 - TRUCK	slope:	-90 DEG
hole diameter:	100mm	bearing:	
		R.L. Surface:	51.7
		datum:	AHD

method	penetration	support	water	notes samples, test, etc	R.L.	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetro- meter	structure and additional observations
ADY	23					51			FILL: Clay with some gravel	M	MO		FILL
						50							
						49			V BIT REFUSAL AT 2.90m				
ADT						48			FILL: Sandstone Boulder		H		
						47			FILL: Clay, with some gravel		MO		
ADY						46			SANDY CLAY, medium to fine plasticity, yellow - brown, sand is fine V BIT REFUSAL AT 4.55m	>Mo	H		RESIDUAL
ADT						45			SANDSTONE: fine to medium grained, yellow - brown	M	D		HIGHLY TO MODERATELY WEATHERED SANDSTONE
						44			CONTINUED AS CORED BORE-HOLE				

METHOD	SUPPORT	NOTES	CLASSIFICATION	CONSISTENCY/DENSITY INDEX
AS auger screwing	C casing	USO undisturbed sample 50 mm diameter	SYMBOLS AND SOIL DESCRIPTION	VS very soft
AD auger drilling	M mud	O disturbed sample		S soft
R roller/tricone		N standard penetration test:	based on unified classification system	F firm
W washbore		Nx SPI + sample recovered		St stiff
CT cable tool		Nc SPI with solid cone		Yst very stiff
HA hand auger		V vane shear		H hard
DT diatube		P pressuremeter		Fb friable
bit shown by suffix		Os bulk sample	MOISTURE	VL very loose
B blank bit		R refusal	D dry	L loose
V V bit			M moist	MO medium dense
T TC bit			X wet	D dense
e.g. ADI			Np plastic limit	VD very dense



borehole no:

BH2

sheet 2 of 3

engineering log - cored borehole

office job no: S9612/1

client:	CIVIL & CIVIC PTY LTD	hole commenced:	11/11/91
principal:		hole completed:	11/11/91
project:	PROPOSED DEVELOPMENT, NORTH RYDE	logged by:	JAF
borehole location:	SEE DRAWING No S9612/1-1	checked by:	JGL
drill model and mounting:	EDSON 3000 - TRUCK	slope:	-90 DEG
barrel type and length:	NMLC - 3.0m	fluid:	WATER
		bearing:	
		R.L. Surface:	:51.7
		datum:	AHD

drilling information				rock substance				rock mass defects			
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength	point load test Is (50) MPa	defect spacing mm	defect description type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
			51	1							
			50	2							
			49	3							
			48	4							
			47	5							
			46			Continued from non-core borehole					
NMLC			45	6		SANDSTONE: fine to medium grained, banded light grey, light brown & yellow, - brown, distinct bedding, 5-25deg	SW				30mm zone with voids and Fe
			44	7			SW				CL SW 5mm CLAY/CRUSH SM 15mm
			43				SW				JTs 90deg IR RO clean
			42				SW				35mm weak zone with some EW
			41				SW				JT 50deg IR RO Fe
			40				SW				
			39				SW				
			38				SW				
			37				SW				
			36				SW				
			35				SW				
			34				SW				
			33				SW				
			32				SW				
			31				SW				
			30				SW				
			29				SW				
			28				SW				
			27				SW				
			26				SW				
			25				SW				
			24				SW				
			23				SW				
			22				SW				
			21				SW				
			20				SW				
			19				SW				
			18				SW				
			17				SW				
			16				SW				
			15				SW				
			14				SW				
			13				SW				
			12				SW				
			11				SW				
			10				SW				
			9				SW				
			8				SW				
			7				SW				
			6				SW				
			5				SW				
			4				SW				
			3				SW				
			2				SW				
			1				SW				

General Defect Description: brown, distinct bedding, 25deg
Bedding Partings

METHOD	WEATHERING	STRENGTH	DEFECTS
AS auger screwing	FR -fresh	EL -extremely low	JT -joint
AD auger drilling	SW -slightly	VL -very low	PT -parting
R roller/tricone	MW -moderately	L -low	SM -seam
W washbore	HV -highly	H -medium	CL -clay
NMLC core drilling	EX -extremely	VH -very high	RO -rough
NO, HO core drilling		EH -extremely high	DC -decomposed
C casing used			PL -planar
B barrel withdrawn			IR -irregular

POINT LOAD TEST	GRAPHIC LOG/CORE LOSS
D -diametral	core recovered
A -axial	matching indicates material
	no core recovered

WATER LEVEL	WATER INFLOW	NOT MEASURED	DRILLING WATER	PARTIAL LOSS	COMPLETE LOSS
▽	▽	x	▽	▽	▽



borehole no:

BH2

sheet 3 of 3

engineering log - cored borehole

office job no: 59612/1

client:	CIVIL & CIVIC PTY LTD	hole commenced:	11/11/91
principal:		hole completed:	11/11/91
project:	PROPOSED DEVELOPMENT, NORTH RYDE	logged by:	JAF
borehole location:	SEE DRAWING No 59612/1-1	checked by:	JGL
drill model and mounting:	EDSON 3000 - TRUCK	slope:	-90 DEG
barrel type and length:	NMLC - 3.0m	fluid:	WATER
		bearing:	
		R.L. Surface:	51.7
		datum:	AHD

drilling information				rock substance				rock mass defects			
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength	point load test Is (50) MPa	defect spacing mm	defect description type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
NMLC						SANDSTONE: fine to medium grained, brown, distinct bedding, 25deg NO CORE: 0.25m					8.30 to 8.50 very jointed & broken
				43		SANDSTONE: fine to medium grained, brown, indistinct bedding, SANDSTONE: fine grained, grey & dark grey, distinct bedding, 0deg with interbedded shale SHALE: dark grey, distinct bedding, 0deg with occasional interbedded sandstone fine grained					8.50 to 8.74 numerous partings & some CRUSH
				42		SANDSTONE: fine to coarse grained, light grey, distinct bedding, 0deg SHALE: dark grey, distinct bedding, 0deg with some interbedded sandstone fine grained					CRUSH SM 5mm 8.61 to 9.67 eroded zone with some crush CRUSH SM 10mm
				10		Borehole BH2 terminated at 9.85 m					
				41							
				11							
				40							
				12							
				39							
				13							
				38							
				14							
				37							
				15							
				36							
				16							

General Defect Description:
Bedding Partings

METHOD	water level	water inflow	not measured	Drilling Water	partial loss	complete loss	POINT LOAD TEST	GRAPHIC LOG/CORE LOSS	WEATHERING	STRENGTH	DEFECTS
AS AD R X NMLC NO, HQ H	auger screwing auger drilling roller/tricone washbore core drilling core drilling casing used barrel withdrawn						□ -diametral A -axial	□ core recovered hatching indicates material □ no core recovered	FR -fresh SM -slightly HW -moderately HW -highly EW -extremely	EL -extremely low VL -very low L -low M -medium H -high VH -very high EH -extremely high	JT -joint PT -parting SM -seam CL -clay RD -rough DC -decomposed PL -planar IR -irregular



borehole no:

BH3

sheet 1 of 3

engineering log - borehole

office job no: S9612/1

client: CIVIL & CIVIC PTY LTD
principal:
project: PROPOSED DEVELOPMENT, TALavera ROAD, NORTH RYDE
borehole location: SEE DRAWING No S9612/1-1

hole commenced: 11/11/91
hole completed: 11/11/91
logged by: JAF
checked by: JGL

drill model and mounting: EDSON 3000 - TRUCK
hole diameter: 100mm

slope: -90 DEG R.L. Surface: 47.3
bearing: datum: AHD

method	penetration	support	water	notes samples, test, etc	R.L. depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics colour, secondary and minor components	moisture condition	consistency/ density index	hand penetro- meter kPa	meter	structure and additional observations
ADY	23				47			FILL: Silty sand & grass roots FILL: Clay with some gravel	M	L			TOPSOIL FILL
					46		CC	SANDY CLAY: low plasticity, dark grey, some silt & roots	>Mp	VSt			ALLUVION
					45		CH	SILTY CLAY: high plasticity, mottled light grey & light brown, some ironstone gravel		St			ALLUVION?
					44		CC	SANDY CLAY: low plasticity, mottled light grey & light brown, sand is fine SANDSTONE: fine to medium grained, mottled light brown & light grey, with some 200mm bands of sandy clay V BIT REFUSAL AT 3.05m	M	H			RESIDUAL MODERATELY TO EXTREMELY WEATHERED SANDSTONE
					43								
					42			SANDSTONE: fine to medium grained, light grey					FRESH SANDSTONE
					41			CONTINUED AS CORED BOREHOLE					
					40								
METHOD AS auger screwing AD auger drilling R roller/tricone K washbore CT cable tool HA hand auger DT diatube xbit shown by suffix B blank bit V V bit T TC bit e.g. ADT SUPPORT C casing M mud PENETRATION 1 2 3 no resistance ranging to refusal WATER X not measured water level water outflow water inflow NOTES USO undisturbed sample 50 mm diameter D disturbed sample N standard penetration test: Nx SPT + sample recovered NC SPT with solid cone V vane shear P pressuremeter Bs bulk sample R refusal CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION based on unified classification system MOISTURE D dry M moist X wet Xp plastic limit CONSISTENCY/DENSITY INDEX VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MO medium dense D dense VD very dense													



borehole no:	BH3
sheet	2 of 3

engineering log - cored borehole

office job no: S9612/1

client:	CIVIL & CIVIC PTY LTD	hole commenced:	11/11/91
principal:		hole completed:	11/11/91
project:	PROPOSED DEVELOPMENT, NORTH RYDE	logged by:	JAF
borehole location:	SEE DRAWING No S9612/1-1	checked by:	JGL
drill model and mounting:	EDSON 3000 - TRUCK	slope:	-90 DEG
barrel type and length:	NALC - 3.0m	R.L. Surface:	47.3
	fluid: WATER	bearing:	datum: AHD

drilling information				rock substance				rock mass defects			
method	case-lift	water	R.L.	depth metres	graphic log core loss	substance description rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength	point load test Is (50) MPa	defect spacing mm	defect description type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
				47							
				1							
				46							
				2							
				45							
				3							
				44							
				4							
				43							
				5							
				42		Continued from non-core borehole					
NALC				6		SANDSTONE: fine to medium grained, becoming fine to coarse grained, light grey, distinct bedding, 0-10deg with occasional very narrowly interbedded siltstone	FR				
				41							
				7							
				40							
				8		SILTSTONE: dark grey, & grey, distinct bedding, 0deg with some interbedded sandstone fine grained SANDSTONE: fine to coarse grained, light grey, distinct bedding, 0-10deg with occasional very narrow bands of interbedded siltstone					

General Defect Description:
Bedding Partings

METHOD	GRAPHIC LOG/CORE LOSS	POINT LOAD TEST	WEATHERING	STRENGTH	DEFECTS
AS auger screwing	▽ water level	D -diametral	FR -fresh	EL -extremely low	JI -joint
AD auger drilling	▽ water inflow	A -axial	SW -slightly	VL -very low	PI -parting
R roller/tricone	* not measured		SM -moderately	L -low	SM -seam
W washbore	Drilling Water		MM -highly	M -medium	CL -clay
NALC core drilling	partial loss		HM -extremely	H -high	RO -rough
NQ, HQ core drilling	complete loss			VH -very high	OC -decomposed
casing used				EH -extremely high	PL -planar
barrel withdrawn					IR -irregular



borehole no:
BH3
Sheet 3 of 3

engineering log - cored borehole

office job no: 59612/1

client: CIVIL & CIVIC PTY LTD
principal:
project: PROPOSED DEVELOPMENT, NORTH RYDE
borehole location: SEE DRAWING No S9612/1-1
hole commenced: 11/11/91
hole completed: 11/11/91
logged by: JAF
checked by: JGL

drill model and mounting: EDSON 3000 - TRUCK
barrel type and length: NMLC - 3.0m
fluid: WATER
slope: -90 DEG
bearing: R.L. Surface: 47.3
datum: AHD

drilling information				rock substance				rock mass defects			
method	case/lift	water	R.L.	depth metres	graphic log core loss	substance description rock type: grain characteristics colour, structure, minor components	weathering	Est. Strength	point load test Is (50) MPa	defect soaking mm	defect description type, inclination planarity, roughness, coating, thickness unless otherwise noted defects follow general description below
NMLC			39			SANDSTONE: fine to coarse grained, light grey, distinct bedding, 0-100g with occasional very narrow bands of interbedded siltstone					
				9		Borehole BH3 Terminated at 8.35					
				38							
				10							
				37							
				11							
				36							
				12							
				35							
				13							
				34							
				14							
				33							
				15							
				32							
				16							

General Defect Description:
Bedding Partings

METHOD	water level	POINT LOAD TEST	WEATHERING	STRENGTH	DEFECTS
AS auger screwing	▽ water level	D -diametral	FR -fresh	EL -extremely low	JI -joint
AD auger drilling	▽ water inflow	A -axial	SL -slightly	VL -very low	PT -parting
R roller/tricone	* not measured	GRAPHIC LOG/CORE LOSS	SM -moderately	L -low	SM -seam
W washbore	Drilling Water	core recovered (hatching indicates material)	HW -highly	M -medium	CL -clay
NMLC core drilling	partial loss	no core recovered	EX -extremely	H -high	RD -rough
NO, HQ core drilling	complete loss			VH -very high	DC -decomposed
C casing used				EH -extremely high	PL -planar
B barrel withdrawn					IR -irregular

TEST BORE REPORT

PROJECT: PROPOSED DEVELOPMENT

LOCATION: KHARTOUM RD, NORTH RYDE

SURFACE LEVEL: 54.4m

DIP OF HOLE: 90°

BORE No: 5

DATE: 20 NOV 1995

SHEET 1 OF 2

AZIMUTH:

Depth (m)	Description of Strata	Degree of Weathering EW TW MW SW FS FR	Graphic Log	Rock Strength Ex. Low Very Low Low Medium High Very High Ext. Hg.	Discontinuities B - Bedding J - Joint S - Shear D - Drill Break	Fracture Spacing (m) 0.01 0.05 0.10 0.50 1.00	Sampling & In Situ Testing				
							Sample Type	Core Rec. %	RQD %	Test Results & Comments	
0	TOPSOIL - loose dark grey silty sand with root material										
0.2	SILTY CLAY - firm to stiff, grey mottled orange silty clay						D				
1.5	SILTY CLAY - hard, mottled grey orange silty clay						S				20/120mm
2.6	MUDSTONE - very low strength, highly weathered, highly fractured, brown mudstone with extremely low strength, extremely weathered (clay) layers				NOTE: Breaks due to drilling are not recorded All fractures are iron stained unless otherwise noted		D				
3.22					Core loss 620mm						
3.86					3.22m: 50mm clay		C	59	0		
4.13					3.51m: J 5' undulating 3.56m: 50mm clay 3.73m: 30mm clay						
4.13	MUDSTONE - low to medium strength, moderately weathered, fractured grey mudstone with fine light grey sandstone laminae				4.0m: B 5mm iron stained Core loss 30mm						
					4.53m: J 45° planar 4.60m: J 5' 4.73m: J 2° open 4.77m: J 10° 4.87m: B subhorizontal		C	98	0	PL (A)=0.5 MPa	

RIG: EDSON 3000

DRILLER: APS DRILIING (CEICEY) LOGGED: MELIS

CASING: NW TO 2.6m

TYPE OF BORING: SFA TO 2.6m THEN NMLC CORING TO 7.0m

WATER OBSERVATIONS: GROUNDWATER OBSERVED AT 3.5m DURING DRILLING

REMARKS: PIEZOMETER INSTALLED

SAMPLING & IN SITU TESTING LEGEND

A auger sample

PL point load strength I_s (50)MPa

B bulk sample

S, standard penetration test

C core drilling

Ux x mm dia. tube

pp pocket penetrometer (kPa)

V Shear Vane (kPa)

CHECKED:

Initials:

Date: 5/12/95



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TEST BORE REPORT

CLIENT: AUSTRALIA PACIFIC PROJECTS CORP.
PROJECT: PROPOSED DEVELOPMENT
LOCATION: KHARTOUM RD, NORTH RYDE

PROJECT No: 23535
SURFACE LEVEL: 54.4m
DIP OF HOLE: 90°

BORE No: 5
DATE: 20 NOV 1995
SHEET 2 OF 2
AZIMUTH:

Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Discontinuities B - Bedding J - Joint S - Shear D - Drill Break	Fracture Spacing (m)	Sampling & In Situ Testing			
							Sample Type	Core Rec. %	RQD %	Test Results & Comments
5	MUDSTONE - as above									
5.42	LAMINITE - medium strength, fresh, fractured, light and dark grey laminite				5.24m: B 5.40m: 45-90°, undulating		C	98	0	PL (A)=0.8 MPa
6										
6.36	SANDSTONE - high to very high strength, fresh, slightly fractured, light grey, fine grained sandstone with a laminite band from 6.71m to 6.83m				6.33m: 25mm fractured core		C	100	35	PL (A)=2.4 MPa
7	TEST BORE DISCONTINUED AT 7.0m									
8										
9										
10										

RIG: EDSON 3000

DRILLER: APS DRILLING (CEICEY) LOGGED: MELIS

CASING: NW TO 2.6m

TYPE OF BORING: SFA TO 2.6m THEN NMLC CORING TO 7.0m

WATER OBSERVATIONS: GROUNDWATER OBSERVED AT 3.51m DURING DRILLING

REMARKS: PIEZOMETER INSTALLED

SAMPLING & IN SITU TESTING LEGEND

A auger sample
B bulk sample
C core drilling
pp pocket penetrometer (kPa)
PL point load strength I_s (50)MPa
S standard penetration test
Ux x mm dia. tube
V Shear Vane (kPa)

CHECKED:

Initials: ER

Date: 5/12/95



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DOUGLAS PARTNERS PTY LTD
PROPOSED DEVELOPMENT - NORTH RYDE
BORE 5 PROJ NO 13535 NOVEMBER 1995

B5 13535 STARTED CORING AT 2.60m

CORE LOSS 620mm

30

40

50

60

KODAK Color Control Chart

2.60 - 7.00m

KODAK Gray Scale

TEST BORE REPORT

CLIENT: AUSTRALIA PACIFIC PROJECTS CORP.
PROJECT: PROPOSED DEVELOPMENT
LOCATION: KHARTOUM RD, NORTH RYDE

PROJECT No: 23535
SURFACE LEVEL: 53.1m
DIP OF HOLE: 90°

BORE No: 6
DATE: 17 NOV 1995
SHEET 1 OF 2
AZIMUTH:

Depth (m)	Description of Strata	Degree of Weathering EW MW SW VS FR	Graphic Log	Rock Strength Ex Low Very Low Low Medium High Very High Ex High	Discontinuities B - Bedding J - Joint S - Shear D - Drill Break	Fracture Spacing (m) 0.01 0.05 0.10 0.50 1.00	Sampling & In Situ Testing			
							Sample Type	Core Rec. %	RQD %	Test Results & Comments
0	SILT - soft brown silt with a trace of sand									
0.2	SILTY CLAY - firm mottled brown orange silty clay									
1.4	SILTY CLAY - very stiff orange mottled grey silty clay with ironstone fragments						S			4,8,11 N=19
2.5	SANDSTONE - very low strength, highly weathered, highly fractured brown, fine grained sandstone with extremely low strength, extremely weathered (clay) layers fro 3.0m to 3.92m				Core loss 500mm					
3.0							C	60	0	
4.0					Core loss 120mm					
4.12										
4.63	MUDSTONE - medium strength, highly weathered, fractured, light grey mudstone with fine grey sandstone laminae				4.60m: J 80° planar		C	42	11	PL (A)=0.9 MPa
4.96					4.96m: fragmented					

RIG: EDSON 3000

DRILLER: APS DRILLING (CEICEY) **LOGGED:** MELIS

CASING: NW TO 2.5m

TYPE OF BORING: SFA TO 2.5m THEN NMLC CORING TO 6.95m

WATER OBSERVATIONS: GROUNDWATER OBSERVED AT 4.71m DURING DRILLING

REMARKS: PIEZOMETER INSTALLED

SAMPLING & IN SITU TESTING LEGEND

A auger sample
B bulk sample
C core drilling
pp pocket penetrometer (kPa)
PL point load strength I_s (50)MPa
S standard penetration test
Ux x mm dia. tube
V Shear Vane (kPa)

CHECKED:

Initials: ER

Date: 5/12/95



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TEST BORE REPORT

CLIENT: AUSTRALIA PACIFIC PROJECTS CORP.
PROJECT: PROPOSED DEVELOPMENT
LOCATION: KHARTOUM RD, NORTH RYDE

PROJECT No: 23535
SURFACE LEVEL: 53.1m
DIP OF HOLE: 90°

BORE No: 6
DATE: 17 NOV 1995
SHEET 2 OF 2
AZIMUTH:

Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Discontinuities	Fracture Spacing (m)	Sampling & In Situ Testing			
							Sample Type	Core Rec. %	RQD %	Test Results & Comments
5	SANDSTONE - medium strength, moderately to highly weathered, fractured, brown fine grained sandstone	EW		Ex Low	B - Bedding J - Joint S - Shear D - Drill Break 5.02m: 40mm clay 5.06m: 50mm fragmented	0.01 0.05 0.10 0.50 1.00	C	42	11	PL (A)=0.8 MPa
6.25	SANDSTONE - medium strength, fresh, slightly fractured, grey fine grained sandstone	SW		Med	6.51m: B subhorizontal		C	100	50	PL (A)=0.7 MPa
6.95	TEST BORE DISCONTINUED AT 6.95m									
7										
8										
9										
10										

RIG: EDSON 3000

DRILLER: APS DRILLING (CEICEY) LOGGED: MELIS

CASING: NW TO 2.5m

TYPE OF BORING: SFA TO 2.5m THEN NMLC CORING TO 6.95m

WATER OBSERVATIONS: GROUNDWATER OBSERVED AT 4.71m DURING DRILLING

REMARKS: PIEZOMETER INSTALLED

SAMPLING & IN SITU TESTING LEGEND

A auger sample
B bulk sample
C core drilling
pp pocket penetrometer (kPa)
PL point load strength I_s (50)MPa
S standard penetration test
Ux x mm dia. tube
V Shear Vane (kPa)

CHECKED:

Initials: ER

Date: 5/12/95



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DOUGLAS PARTNERS PTY LTD
PROPOSED DEVELOPMENT - NORTH RYDE
BORE 6 PROJ NO 13535 NOVEMBER 1995



2.50 - 6.95 M

BOREHOLE LOG

CLIENT: Johnson & Johnson Medical Pty Ltd
PROJECT: Proposed Carpark
LOCATION: 1-5 Khartoum Road, Macquarie Park

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

BORE No: 101
PROJECT No: 72353
DATE: 23/3/2011
SHEET 1 OF 1

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

RIG: Tracess Bobcat

DRILLER: SK

LOGGED: AP

CASING: Uncased

TYPE OF BORING: 110mm diameter solid flight auger to 4.13m; NMLC-Coring to 7.92m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Interpolated from Dunlop Thorpe & Co drawing (Ref 16696-1) dated 4/11/2008

SURVEY DATUM:

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



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BOREHOLE LOG

CLIENT: Johnson & Johnson Medical Pty Ltd
PROJECT: Proposed Carpark
LOCATION: 1-5 Khartoum Road, Macquarie Park

SURFACE LEVEL: 50.4 AHD*
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 103
PROJECT No: 72353
DATE: 23/3/2011
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering				Graphic Log	Rock Strength						Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW		FS	FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
	0.1	ASPHALTIC CONCRETE																			
	0.3	ROADBASE - well compacted, orange brown, crushed sandstone and gravel roadbase, humid																A			
	1	FILLING - variably compacted, grey and orange brown, silty clay and gravelly clay filling with a trace of crushed sandstone, humid to damp																S			5,6,7 N = 13
	2																				
	3																	S			5,5,7 N = 12
	3.6	SANDSTONE - interbedded extremely low strength sandstone and medium to high strength ironstone bands, extremely to highly weathered, slightly fractured, red brown and light grey, fine to medium grained sandstone																C	100	49	PL(A) = 0.9
	4																				PL(A) = 0.9
	5																				
	5.29	SANDSTONE - extremely low strength, extremely weathered, slightly fractured, light grey mottled red, fine to medium grained sandstone																			PL(A) = 1
	6																	C	100	8	pp = 480
	7																				pp = 400
	7.2	SANDSTONE - medium strength, slightly weathered, light grey mottled red, fine to medium grained sandstone																			
	7.24	Bore discontinued at 7.24m																			
	8																				
	9																				
	41																				

RIG: Tracess Bobcat

DRILLER: SK

LOGGED: AP

CASING: NW to 3.6m

TYPE OF BORING: 110mm diameter solid flight auger to 3.6m; NMLC-Coring to 7.24m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Interpolated from Dunlop Thorpe & Co drawing (Ref 16696-1) dated 4/11/2008

SURVEY DATUM:

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



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DOUGLAS PARTNERS PTY LTD
JOHNSON & JOHNSON CARPARK – MACQUARIE PARK
BORE 101 PROJECT 72353 MAR 2011



4.13 – 7.92m

DOUGLAS PARTNERS PTY LTD
JOHNSON & JOHNSON CARPARK – MACQUARIE PARK
BORE 103 PROJECT 72353 MAR 2011



3.6 – 7.24m

BOREHOLE LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Due Diligence Assessment
LOCATION: 1-5 Khartoum Road, Macquarie Park

SURFACE LEVEL: 54.0 AHD
EASTING: 326517
NORTHING: 6260561
DIP/AZIMUTH: 90°/-

BORE No: BH08
PROJECT No: 99657.00
DATE: 3/5/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering EW HW MW SW FS FR	Graphic Log	Rock Strength Ex Low Very Low Low Medium High Very High Ex High	Water	Fracture Spacing (m) 0.01 0.05 0.10 0.50 1.00	Discontinuities B - Bedding J - Joint S - Shear F - Fault	Sampling & In Situ Testing			
									Type	Core Rec. %	RQD %	Test Results & Comments
0.02	0.2	ASPHALTIC CONCRETE							A/E			
		FILL/Gravelly SAND SW: fine to coarse, grey, fine to coarse igneous gravel, dry, appears well compacted, roadbase							A/E			
	1	FILL/Silty CLAY CI: medium plasticity, grey-brown, trace fine siltstone and ironstone gravel, w<PL, generally very stiff, possible reworked natural							A/E*			10,12,11 N = 23
	1.7								S			
		FILL/CLAY CI: medium plasticity, red-brown, trace fine siltstone and ironstone gravel, trace ash, trace possible ACM, w~PL, very stiff							A/E			
	2								A/E			
									S			7,13,13 N = 26
	3	Silty CLAY CI-CH: medium to high plasticity, grey mottled red, trace fine ironstone gravel, w~PL, very stiff, residual							A/E			
	3.80m	becoming hard							A/E			
	4								S			11,25,25/80 refusal
	4.15	SILTSTONE: grey, apparently very low strength, Ashfield Shale										
	4.5											
	4.6	SANDSTONE: fine to medium grained, pale grey and brown, very low strength with some medium strength ironstone bands, highly weathered, fractured, Mittagong Formation						4.5m: CORE LOSS: 100mm	C	93	0	PL(A) = 0.9
	5							5.23-5.60m: J(x3), 50-70°, pl, ro, fe stn				
	5.6	SANDSTONE: fine to medium grained, brown and pale grey, high strength with some very low strength bands, highly then moderately weathered, fractured, Mittagong Formation						5.75-5.78m: Cs, 30mm 5.92-6.12m: J60-80°, un, ro, fe stn	C	100	20	PL(A) = 1.2
	6							6.25-7.10m: J(x2), sv, un, ro, partially fe stn, partially fg 20-60mm				
	7											PL(A) = 1.5
	7.2	SANDSTONE: medium to coarse grained, pale grey, bedding dipping 10-20°, high strength, fresh, unbroken, Hawkesbury Sandstone										
	8											PL(A) = 1.3
	9							8.7m: B5°, un, ro, cbs vn	C	100	100	PL(A) = 1.5
	10.0							9.18m: B0°, pl, cly co 4mm				

RIG: Scout 1 **DRILLER:** JE **LOGGED:** JDB **CASING:** HW to 4.0m, HQ to 4.5m
TYPE OF BORING: Solid flight auger (TC Bit) to 4.0m, Wash boring (Roller bit) to 4.5m, NMLC coring to 13.0m
WATER OBSERVATIONS: No free groundwater observed during augering
REMARKS: *BD7/20200503 taken at 0.9-1.0m. Groundwater well installed to 13.0m; screen (13.0-4.0m), blank (4.0-0.10m), gravel (13.0- 3.5m), bentonite plug (3.5-2.5m), gravel backfill to ground level, gatic installed flushed with surface level.

SAMPLING & IN SITU TESTING LEGEND			
A Auger sample	G Gas sample	PID Photo ionisation detector (ppm)	
B Bulk sample	P Piston sample	PL(A) Point load axial test ls(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	SP Standard penetration test	
E Environmental sample	≡ Water level	V Shear vane (kPa)	

BOREHOLE LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Due Diligence Assessment
LOCATION: 1-5 Khartoum Road, Macquarie Park

SURFACE LEVEL: 54.0 AHD
EASTING: 326517
NORTHING: 6260561
DIP/AZIMUTH: 90°/-

BORE No: BH08
PROJECT No: 99657.00
DATE: 3/5/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering				Graphic Log	Rock Strength					Water	Fracture Spacing (m)				Discontinuities		Sampling & In Situ Testing																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
			EW	HW	MW	SW		FS	FR	Ex Low	Very Low	Low		Medium	High	Very High	Ex High	0.01	0.05	0.10	0.50	1.00	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %	RQD %	Test Results & Comments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
44		SANDSTONE: as above																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

RIG: Scout 1

DRILLER: JE

LOGGED: JDB

CASING: HW to 4.0m, HQ to 4.5m

TYPE OF BORING: Solid flight auger (TC Bit) to 4.0m, Wash boring (Roller bit) to 4.5m, NMLC coring to 13.0m

WATER OBSERVATIONS: No free groundwater observed during augering

REMARKS: *BD7/20200503 taken at 0.9-1.0m. Groundwater well installed to 13.0m; screen (13.0-4.0m), blank (4.0-0.10m), gravel (13.0- 3.5m), bentonite plug (3.5-2.5m), gravel backfill to ground level, gatic installed flushed with surface level.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test ls(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	≡	Water level	V	Shear vane (kPa)

BORE:08

PROJECT: MACQUARIE PARK

MAY 2020



Douglas Partners
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Project No: 99657.00

BH ID: 8

Depth: 4.5 - 9.0m

Core Box No.: 1/2



4.50-9.00m

BORE:08

PROJECT: MACQUARIE PARK

MAY 2020



Douglas Partners
Geotechnics | Environment | Groundwater

Project No: 99657.00

BH ID: 8

Depth: 9 - 13.08m

Core Box No.: 2/2



9.00-13.08m

BOREHOLE LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 1-5 Khartoum Road, Macquarie Park

SURFACE LEVEL: 54.3 AHD
EASTING: 326485
NORTHING: 6260540
DIP/AZIMUTH: 90°/-

BORE No: BH204
PROJECT No: 99657.02
DATE: 8/2/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)				Discontinuities		Sampling & In Situ Testing					
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium		High	Very High	Ex High	0.01	0.05	0.10	0.50	1.00	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
54	0.09	ASPHALTIC CONCRETE: 90 mm thick																								
53	1	FILL/Gravelly SAND: fine to coarse, dark grey, fine to medium angular igneous gravel, dry, apparently in a loose to medium dense condition																				A/E				
52	1.9	Silty CLAY Cl: medium plasticity, pale grey mottled red and brown, trace fine sub-angular ironstone gravel, w~PL, apparently in a stiff condition, residual																				A/E*				5.5,1 N = 6
51	3.1	Silty CLAY Cl: medium plasticity, pale grey, w~PL, very stiff to hard, residual, grading into weathered siltstone																				S				7.13,17 N = 30
50	4.0	SILTSTONE: pale grey, with iron indurated bands, very low strength, Mittagong Formation																				A/E				23,23,31 N = 54
49	4.2	SILTSTONE: thinly laminated, grey with 20% pale grey sandstone laminations, bedding dipping 0-10°, very low to low strength with clay seams, highly weathered, Mittagong Formation																								
48	6.25	SANDSTONE: fine to medium grained, orange brown and pale grey, bedding dipping 0-10°, medium strength with very low strength bands, highly to moderately weathered, Mittagong Formation																				C	100	45		PL(A) = 0.08
47	7.55	SANDSTONE: medium to coarse grained, pale grey, with 5% grey siltstone laminations, bedding dipping 0-10°, high strength, slightly weathered then fresh, Hawkesbury Sandstone																								PL(A) = 0.7
46	9.2	Bore discontinued at 9.2m Borehole terminated due to unknown obstruction to drilling at 9.2m																								PL(A) = 0.61
45																										PL(A) = 1.2
																										PL(A) = 1.1
																										PL(A) = 1.1

RIG: Geo 405

DRILLER: Terratest

LOGGED: RAS

CASING: HW to 4.2m

TYPE OF BORING: Solid Flight Auger to 1.0m; Hand auger to 1.5m; Solid Flight Auger to 4.5m; HQ coring to 9.2m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Field replicate sample *BD1/08022022 taken at 0.9-1.0m, and *BD2/08022022 taken at 2.1-2.2m. Groundwater well: screen from 9-6m, blank from 6-0.1m, gatic cover; Backfill: sand from 9.1-5.5m, bentonite from 5.5-5m, sand from 5-0.1m

SAMPLING & IN SITU TESTING LEGEND

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

BORE: BH204

PROJECT: 99657.02

FEBRUARY 2022



Project No: 99657.02
BH ID: BH204
Depth: 4.2m - 8.0m
Core Box No.: 1 of 2



4.20 - 8.00m

BORE: BH204

PROJECT: 99657.02

FEBRUARY 2022



Project No: 99657.02
BH ID: BH204
Depth: 8.0m to 9.2m
Core Box No.: 2 of 2



8.00 - 9.20m

Appendix F

Hydraulic Conductivity Test Results

Permeability Testing - Rising Head Test Report

[illegible]

Permeability Testing - Rising Head Test Report

Client:	Stockland Development Pty Limited	Project No:	99856.09
Project:	MPark Stage 3 Precinct	Test date:	18.11.2024
Location:	1-5 Khartoum Road, Macquarie Park, NSW 2113	Tested by:	CSY

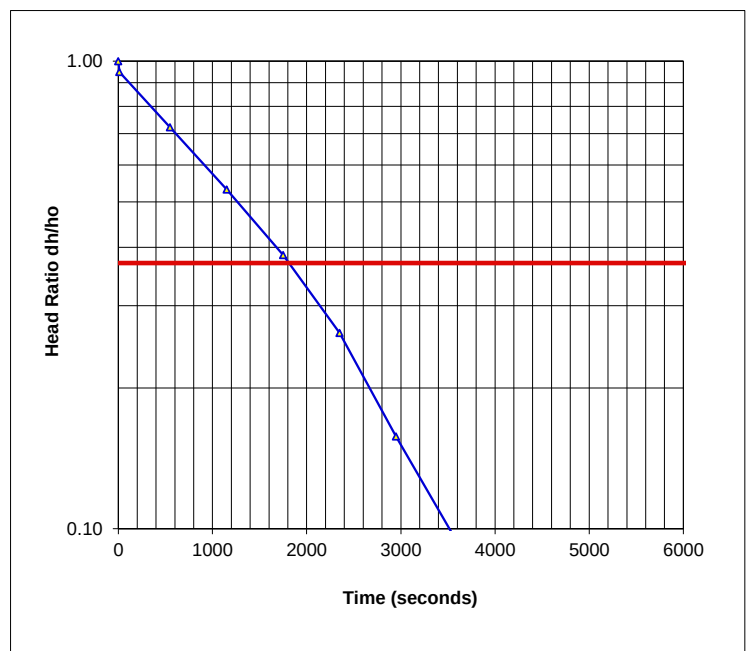
Test Location	Test No.	BH301
Description: Rising Head Test in well installed within borehole	Easting:	326573.6 m
Material type: Sandstone	Northing:	6260686.9 m
	Surface Level:	48.7 m AHD

Details of Well Installation

Effective diameter (2re)	50	mm	Depth to water before test	3.5	m
borehole diameter (2R)	76	mm	Depth to water at start of test	8.8	m
Effective Length of well screen (Le)	7	m	Depth of top of gravel pack	4.0	m
			Depth of base of gravel pack	11.0	m

Test Results

Time (sec)	Depth	Change in Head dH (m)	dH/Ho
0	9.00	5.50	1.000
10	8.53	5.03	0.948
550	7.33	3.83	0.722
1150	6.32	2.82	0.532
1750	5.54	2.04	0.385
2350	4.89	1.39	0.262
2950	4.33	0.83	0.157
3550	4.02	0.52	0.097
4150	3.83	0.33	0.062
4750	3.73	0.23	0.043
5350	3.66	0.16	0.030
5950	3.61	0.11	0.020
6550	3.57	0.07	0.014
7150	3.55	0.05	0.010
7750	3.52	0.02	0.003
8350	3.50	0.00	0.000
8950	3.50	0.00	0.000
9550	3.50	0.00	0.000



To = 30.0 mins
1800 secs

Theory:

Falling Head Permeability calculated using equation by Hvorslev

$$k = \frac{r^2 \ln(Le/R)}{2Le To}$$

where r = radius of casing

R = radius of well screen

Le = length of well screen

To = time taken to rise or fall to 37% of initial change

Hydraulic Conductivity

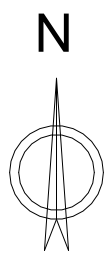
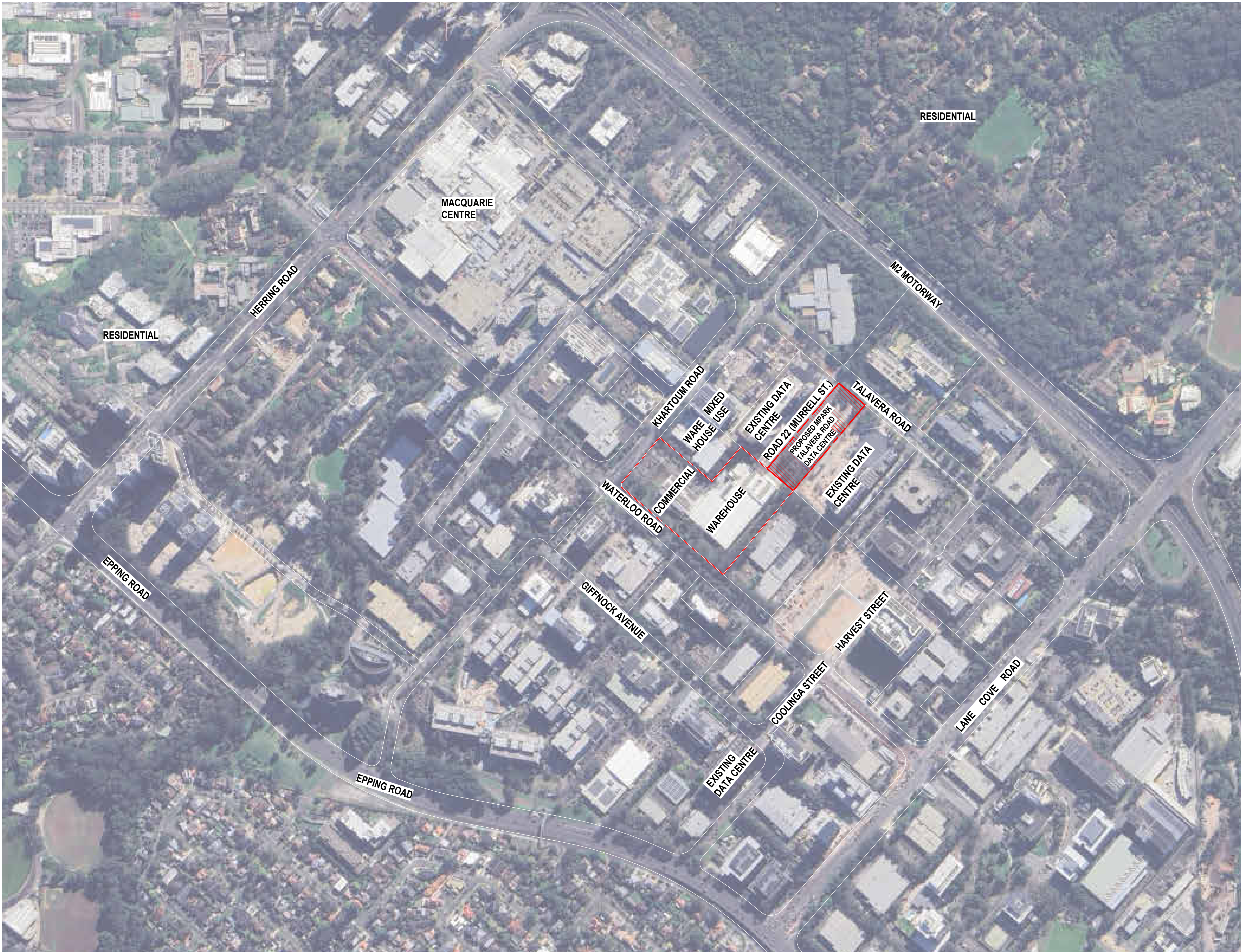
k = 1.3E-07 m/sec
= 0.011 m/day

Permeability Testing - Rising Head Test Report

[illegible]

Appendix G

Proposed Concept Design Plans



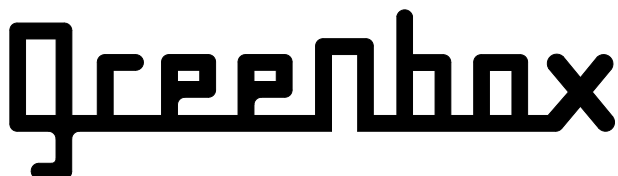
Issue	Date	Description
1	22.11.2024	ISSUED FOR SSDA
2	02.12.2024	ISSUED FOR SSDA

Key Plan

Engineer

ARUP

Client



+61 2 8069 8930
LEVEL 22
68 PITT STREET
SYDNEY NSW 2000 AUSTRALIA
GREENBOX ARCHITECTURE PTY LTD
ABN: 78 139 779 098
ISO 9001 CERTIFIED QUALITY SYSTEM

Notes
• Use written dimensions only • Do not scale from drawing • Contractors shall confirm all dimensions on-site prior to commencing any work or producing any shop drawings • All materials to be used in accordance with the manufacturer's specifications and instructions and shall comply with the relevant Australian Standards • Copyright of this drawing and design remain the property of Greenbox Architecture Pty Ltd • Nominated Architect - Gerard Page, NSW reg No.7247, Vic reg No.17664, QLD reg No.4538

Client

STOCKLAND

Project
MPARK TALAVERA ROAD
DATA CENTRE SSDA
1-5 KHARTOUM ROAD
MACQUARIE PARK 2113 NSW

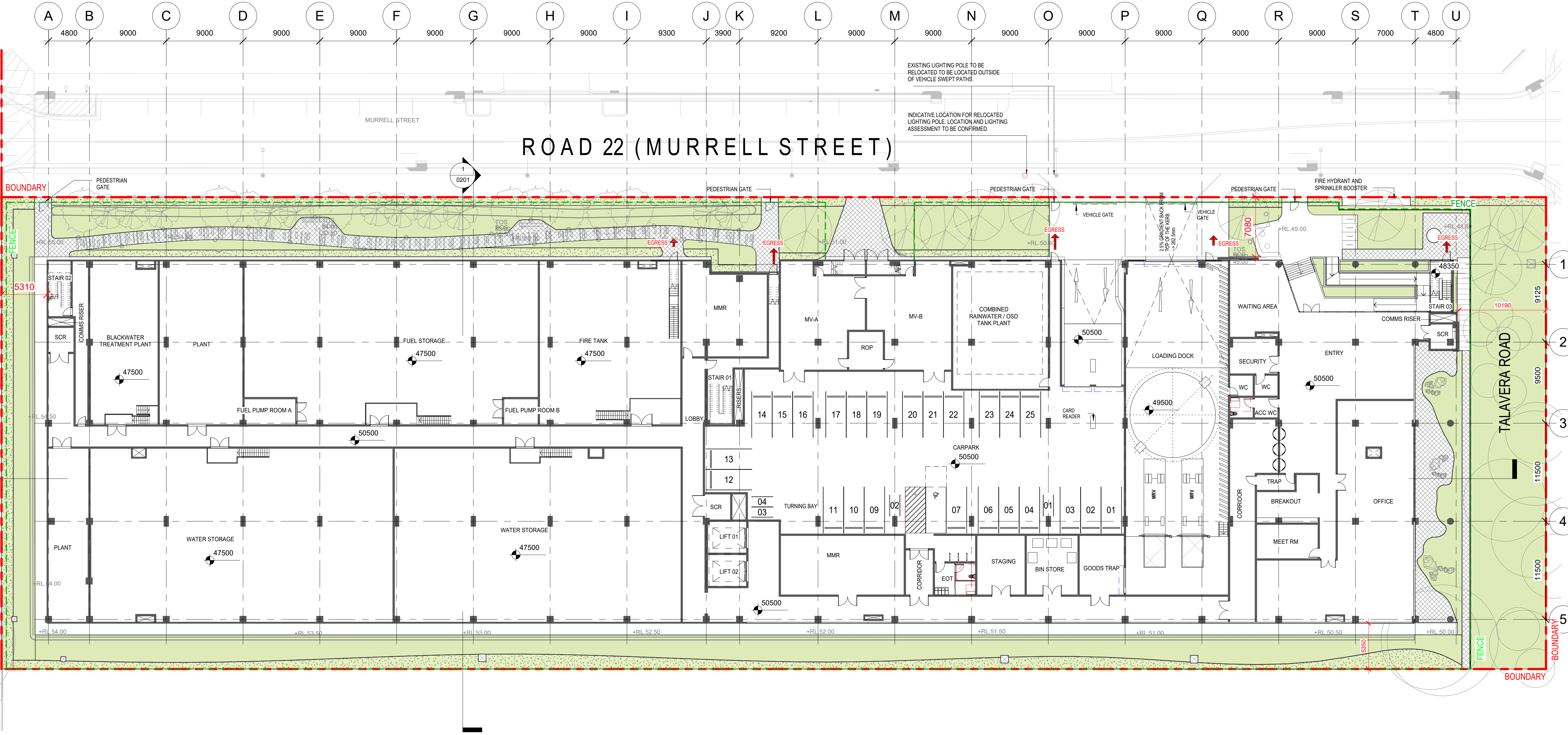
Scale

Drawn By
AE
Checked By
EX
Approved By
GP
Job Number
240053

Sheet	Scale Bar	DRAWING IS NOT TO SCALE
A1	N.T.S	DO NOT SCALE DRAWING

Project Status
DEVELOPMENT APPLICATION
Drawing Title
LOCALITY & CONTEXT PLAN

Drawing Number	Issue
MPARK2- GBA- BE- 01- DR- A- 0001	2



NOTE
DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL DRAWINGS.
DRAWINGS TO BE READ IN CONJUNCTION WITH LANDSCAPE DRAWINGS.

	Issue	Date	Description	Key Plan	Engineer	Client	Notes • Use written dimensions only • Do not scale from drawing • Contractors shall confirm all dimensions on-site prior to commencing any work or producing any shop drawings • All materials to be used in accordance with the manufacturer's specifications and instructions and shall comply with the relevant Australian Standards • Copyright of this drawing and design remain the property of Greenbox Architecture Pty Ltd • Nominated Architect - Gerard Page, NSW reg No.7247, Vic reg No.17664, QLD reg No.4538	Scale	Sheet	Scale Bar	Client STOCKLAND Project MPARK TALAVERA ROAD DATA CENTRE SSDA 1-5 KHARTOUM ROAD MACQUARIE PARK 2113 NSW	Project Status DEVELOPMENT APPLICATION Drawing Title GROUND FLOOR PLAN Drawing Number MPARK2- GBA- BE- 01- DR- A- 0100 Issue 3	
	1	15.11.2024	DRAFT DA					1:250	A1	1:250			
	2	22.11.2024	ISSUED FOR SSDA					Drawn By	SP	0 3.75 6.25 12.5m			
	3	03.12.2024	ISSUED FOR SSDA					Checked By	EX	Project Status			
A1								Approved By	GP	Drawing Title			
								Job Number	240053	Drawing Number			



A1	<table><tr><th>Issue</th><th>Date</th><th>Description</th></tr><tr><td>1</td><td>15.11.2024</td><td>DRAFT DA</td></tr><tr><td>2</td><td>22.11.2024</td><td>ISSUED FOR SSDA</td></tr><tr><td>3</td><td>02.12.2024</td><td>ISSUED FOR SSDA</td></tr></table>	Issue	Date	Description	1	15.11.2024	DRAFT DA	2	22.11.2024	ISSUED FOR SSDA	3	02.12.2024	ISSUED FOR SSDA	<table><tr><th>Key Plan</th></tr><tr><td></td></tr></table>	Key Plan		<table><tr><th>Engineer</th></tr><tr><td> ARUP </td></tr></table>	Engineer	ARUP	<table><tr><th>Client</th></tr><tr><td> Stockland </td></tr></table>	Client	Stockland	<table><tr><th>Notes</th></tr><tr><td> • Use written dimensions only • Do not scale from drawing • Contractors shall confirm all dimensions on-site prior to commencing any work or producing any shop drawings • All materials to be used in accordance with the manufacturer's specifications and instructions and shall comply with the relevant Australian Standards • Copyright of this drawing and design remain the property of Greenbox Architecture Pty Ltd • Nominated Architect - Gerard Page; NSW reg No.7247, Vic reg No.17664, QLD reg No.4538 </td></tr></table>	Notes	• Use written dimensions only • Do not scale from drawing • Contractors shall confirm all dimensions on-site prior to commencing any work or producing any shop drawings • All materials to be used in accordance with the manufacturer's specifications and instructions and shall comply with the relevant Australian Standards • Copyright of this drawing and design remain the property of Greenbox Architecture Pty Ltd • Nominated Architect - Gerard Page; NSW reg No.7247, Vic reg No.17664, QLD reg No.4538	<table><tr><td>Client</td><td>Scale</td><td>Sheet</td><td>Scale Bar</td></tr><tr><td>STOCKLAND</td><td>1 : 250</td><td>A1</td><td> 03.756.2512.5m </td></tr><tr><td rowspan="4"> Project MPARK TALAVERA ROAD DATA CENTRE SSDA 1-5 KHARTOUM ROAD MACQUARIE PARK 2113 NSW </td><td>Drawn By</td><td colspan="2">Project Status</td></tr><tr><td>AD</td><td colspan="2">DEVELOPMENT APPLICATION</td></tr><tr><td>Checked By</td><td colspan="2">Drawing Title</td></tr><tr><td>EX</td><td colspan="2">LONG SECTION</td></tr><tr><td>Approved By</td><td colspan="2"></td><td></td></tr><tr><td>GP</td><td colspan="2"></td><td></td></tr><tr><td>Job Number</td><td colspan="2">Drawing Number</td><td>Issue</td></tr><tr><td>240053</td><td colspan="2">MPARK2- GBA- BE- 01- DR- A- 0200</td><td>3</td></tr></table>	Client	Scale	Sheet	Scale Bar	STOCKLAND	1 : 250	A1	03.756.2512.5m	Project MPARK TALAVERA ROAD DATA CENTRE SSDA 1-5 KHARTOUM ROAD MACQUARIE PARK 2113 NSW	Drawn By	Project Status		AD	DEVELOPMENT APPLICATION		Checked By	Drawing Title		EX	LONG SECTION		Approved By				GP				Job Number	Drawing Number		Issue	240053	MPARK2- GBA- BE- 01- DR- A- 0200		3
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