INTRUSIVE GEOTECHNICAL INVESTIGATION REPORT

New High School for Jordan Springs

16 December 2024

Prepared for:
Department of Education (DoE)

Prepared by:
Stantec Australia Pty Ltd

Project Number:
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Revision - 4

School Name:	New High School for Jordan Springs
School ID:	To be determined
School Address:	Corner of Infantry St and Armoury Road, Jordan Springs East, NSW 2747
School Region:	Western Sydney Region
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Prepared by:

Signature

Henry Chiu,
Geotechnical Engineer
BEng, MIEAUST

Printed Name

Reviewed and approved by:

Signature

Deven Date,
Principal Geotechnical Engineer CPEng, NER, TfNSW

Printed Name

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Abbreviations

ASS	Acid Sulfate Soil
ASSMAC	Acid Sulfate Soils Management Advisory Committee
CBR	California Bearing Ratio
REF	Review of Environmental Factors
DBYD	Dial Before You Dig
DCP	Dynamic Cone Penetration Test
DP	Deposited Plan
FMC	Field Moisture Content
GSG	Great Soil Group
IGIR	Intrusive Geotechnical Investigation Report
LGA	Local Government Authority
mAHD	Metres Ahead
mBGL	Metres Below Ground Level
MDD	Maximum Dry Density
NATA	National Association of Testing Authorities
OMC	Optimum Moisture Content
PDGR	Preliminary Desktop Geotechnical Investigation
PLT	Point Load Test
PPV	Peak Particle Velocity
PSD	Particle Size Distribution
RL	Reduced Level
SPOCAS	Suspension Peroxide Oxidation Combined Acidity and Sulfur
SPT	Standard Penetration Test
UCS	Uniaxial Compressional Shear

1.0 INTRODUCTION

This Intrusive Geotechnical Investigation Report has been prepared to accompany a Review of Environmental Factors (REF) for the Department of Education (DoE) for the construction and operation of a New High School for Jordon Springs (the activity) under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP TI).

This report examines and considers the relevant environmental factors in the Guidelines and *Environmental Planning and Assessment Regulations 2021* under Section 170, Section 171 and Section 171A of the EP&A Regulation as outlined in **Table 1.1.**

Table 1.1 – Summary of Relevant Section of the Part 5 Guidelines and EP&A Regulation

Regulation / Guideline Section	Requirement	Response	Report Section
Section 171 (2) (r)	other relevant environmental factors	The purpose of this investigation was to assess the site's surface and subsurface conditions to provide recommendations from a geotechnical viewpoint for the design and construction of the proposed school activity on the existing vacant site. The results of the investigation and interpretation are detailed in this report. The scope of work for this investigation was completed in accordance with work order DDWO05560/23.	Section 2 to Section 4

1.1 DOCUMENTATION REVIEW

The following plans/ reports identified in **Table 1.2** have been reviewed to inform the assessment contained within this report:

Table 1.2 – Plans and reports reviewed

Discipline	Document name	Revision	date
Geotechnical	Jordan Spring East – Stage 3 to 6 Geotechnical Investigation Report – Factual PSI 29457-WSP-SYD-GEO-REP-0011	2	28 April 2024

1.2 PROPOSED ACTIVITY

The proposed activity for the construction and operation of a New High School for Jordan Springs is proposed to have a capacity of 1,000 students and 80 staff to meet forecast enrolment demand associated with population growth in Jordan Springs and Ropes Crossing. The school will provide permanent General Learning Spaces (GLS), Support Learning Spaces (SLS), staff facilities and a library across three (3), three storey buildings, a single storey hall, half playing field, three (3) outdoor sport courts, 72 operational at grade parking spaces (including two (2) accessible spaces), 100 bicycle spaces and landscaping.

Public domain works and the permanent off-site OSD Basin are to be constructed by others under separate planning pathways.

Based on the review of available information, it is understood that the proposed activity will include the construction of multi-storey school buildings with a hall, carpark and sport field facilities. The proposed activity footprint is shown in **Figure 1.1** below:

Figure 1.1 Proposed Activity Site

1.3 PROPOSED ACTIVITY SCENARIOS

The project scope of works includes two (2) Scenarios, to allow construction and operation of the school, with (Scenario 1 – preferred option) or without (Scenario 2 – Interim Solution) the public domain works and permanent off-site basin being constructed by others under a separate planning pathway.

1.3.1 Scenario 1 – Preferred Option - Road Network completed and permanent OSD Basin Constructed

- **External works undertaken by others to facilitate Scenario 1**
  - Construction of Park Edge Road;
  - Any adjustments to Infantry Street;
  - Kiss and drop zone along Park Edge Road;
  - Support kiss and drop zone located along Infantry Street; and
  - Construction and operation of permanent OSD Basin off site.

Note – Scenario 1 is not to proceed if external works undertaken by others is not completed.

- **Scenario 1**

- Construction and Operation of the New High School for Jordan Springs, including:
  - Decommissioning of existing on-site OSD basin;
  - Earthworks;
  - Three (3) multi-storey classroom buildings;
  - One (1) school hall;
  - Three (3) outdoor sport's courts;
  - One (1) sport's field;
  - 72 at grade car parking spaces, including two (2) accessible parking spaces, and waste services, accessed via Park Edge Road;
  - 100 bicycle parking spaces across the site; and
  - Landscaping.

1.3.2 Scenario 2 - Interim Solution – Road network not completed, Permanent OSD Basin not constructed.

- **Scenario 2 - Stage 1**
  - Construction and operation of a temporary on-site OSD Basin;
  - Construction and operation of the New High School for Jordan Springs, including;
    - Earthworks;
    - Three (3) multi-storey classroom buildings;
    - One (1) sport's field;
    - Temporary carpark - 72 at grade car parking spaces, including two (2) accessible parking spaces and waste services, located on the northwest corner of the site, accessed off Armoury Road;
    - 100 bicycle parking spaces across;
    - Temporary Kiss and drop facilities on Armoury Road; and
    - Associated landscaping.

- **Scenario 2 - Stage 2**

  Stage 2 is not to be undertaken until the temporary on-site OSD basin under stage 1 works is completed and operational.
  - Decommissioning of existing on-site OSD basin, prior to the following works being undertaken:
    - 72 at grade car parking spaces, including two (2) accessible parking spaces, and waste services, located on the southeast corner of the site. This car park cannot be constructed until the decommissioning of the existing OSD basin is completed and will be non-operational with no road connection until completion of Scenario 2 – Stage 3;
    - One (1) school hall;
    - Three (3) outdoor sport's courts; and
    - Associated landscaping.

External works undertaken by others to facilitate Stage 3
- Construction of Park Edge Road;
- Any adjustments to Infantry Street;
- Kiss and drop zone along Park Edge Road;
- Support kiss and drop zone located along Infantry Street; and
- Construction and operation of OSD Basin off site.

Note – Scenario 2 - Stage 3 is not to proceed until the external works undertaken by others have been completed.

- **Scenario 2 - Stage 3**
  - Connection of the southeast carpark to Park Edge Road;
  - Rectification works along Armoury Road to remove temporary kiss and drop facilities and cross over for temporary carpark;
  - Demolition of temporary carpark, once permanent car park is operational; and
  - Decommissioning of temporary OSD basin.

1.4 ACTIVITY SITE

The project site is located on the corner of Armoury Road and Infantry Street in Jordan Springs and is legally described as part of Lots 2 and 3 in DP 1248480.

Figure 1.2 provides an aerial photograph of the project site, outlines the boundaries of the project site (in red) and the boundaries of Lots 2 and 3 in DP 1248480 (in blue). The project site is within the Central Precinct of the St Mary's Release Area in the Penrith Local Government Area.

Figure 1.2: Aerial Photograph

1.5 OTHER APPROVALS

- External works and construction of the permanent off-site OSD Basin are to be constructed by others.

2.0 FINDINGS OF INVESTIGATION

2.1 SITE DETAILS

The site is located at the corner of Infantry St and Armoury Road of New South Wales's Western Sydney suburb within the Penrith City Council. The site is irregular in shape convexly curved towards the west with an approximate area of 4.5 ha. The site at the current condition is barren and the ground is fairly level with services available. Roads and pavement has already been constructed with an on-site detention basin in the surrounding area.

Details of the site are summarized in the following **Table 2-1**:

Table 2.1 – Site Details

DETAILS	COMMENTS
Site Address	Corner of Infantry St and Armoury Road, Jordan Springs East.
Applicable Lot and Deposited Plan	Part Lots 2&3 Deposited Plan (DP) 1248480
Current Land Use	Vacant plots, tarmacked streets, concrete pavement and a temporary sediment basin.
Proposed Land Use	Educational Establishment
Local Government Authority (LGA)	Penrith City Council
Current Zoning (Sydney Regional Environmental Plan No 30-St Marys 2001)	CA - Complex Area & UR – Urban
Regional Contour (mAHD) and site Topography	The original site is slopping down from north east to north west from RL approx. 19 m to RL approx. 17m. Based on the review of available information, the subject site has been subject to extensive earthworks and included the importation of fill materials during 2016-2017 to regrade the site to about RL 21 to 23 m. The present surface level has been elevated of up to 5 m above the historic surface level.

2.2 SURROUNDING LAND USE

The land uses immediately surrounding the site were identified using aerial imagery and land zoning information from the NSW Planning Portal, Spatial Viewer (2023.10.12), as summarized below in **Table 2-2** below.

Table 2-2 Surrounding Land Use

Direction	Land Zoning	Land Use or Activity
North	Residential	Residential buildings along the corner of Armoury Road and Commodore Street.
East	Residential	Residential plannings along the Academy Street.
South	Residential	Residential plannings along the Infantry Street.
West	Residential	Residential buildings along the Armoury Road.

2.3 REGIONAL AND SITE SETTINGS

Site setting information, as listed within publicly available data sets, is summarized in **Table 2-3**.

Table 2-3 Site Setting Information

ITEMS	DETAILS
Regional Soil Landscape	Based on the soil data from MinView v2023.10.12 (MinView, 2023) indicated that the original natural site is underlain with Hydrosols in accordance with Australian Soil Classification and outcrops area. Information obtained from, the Australian Soil Classification, suggests that Hydrosols soils are characterised by seasonally or permanently wet soils. Also, according to Great Soil Group (GSG), the site is under with Gleyed Podzolic Soil, which is defined as poorly drained, acid soils with strongly differentiated profiles, including a bleached A2 overlying greyish or yellowish B horizons.
Regional Geology	In reference to Penrith 1:100,000 geological map, the original natural site geology is underlain by recent Alluvial floodplain deposits (Q_af). This is described as fine-grained sand silt and clay. Refer to Appendix B Geological Map.
Regional Groundwater	Investigations were done in the subject site by WSP for the Jordon Springs East-Stage 3 to 6 project, according to the factual report (PS129457-WSP-SYD-GEO-REP-0011, Rev2, dated 28 April 2023), the groundwater level can be found between 4 to 7 m below the surface level. Also, based on the groundwater monitoring well which installed about 20 m southeast from site. Recent groundwater measured data showed the depth of groundwater is ranging between RL 13.5m and 14.5m AHD.

Surface Water Bodies and site sediment basin	The site features a temporary sediment basin located within the central portion of the site. An ancillary and undefined pond was situated external to the eastern site boundary and 40 m east of the sediment basin, understood to act as a collection point for the treated stormwater discharged from the basin. A realigned riparian corridor extends parallel to the northern boundary of the site at approximately 70 m. It is understood that this channel flows towards South Creek, the largest natural water body in the local area, located approximately 200 m east of the site. It is anticipated that surface runoff from the site is likely to flow eastwards towards South Creek.
Acid Sulphate Soils	The NSW Government Planning Industry and Environment online mapping tool, eSPADE Version 2.2, indicates that the original natural site is classified as Class C - Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.
Salinity	No Dryland Salinity – National Assessment data on-site available.
Site Subsidence	Localised areas of land subsidence were observed during inspection primarily within sections of the vacant land areas of the site, with notable surface water accumulation observed at a subsidence point situated north-east of the sediment basin. It is understood that the surrounding area has ongoing subsidence issues.

2.4 SITE DESCRIPTION

The site is irregular in shape, with its western side attaching to Armoury Road, and southern side attaching to Infantry Street. The area is surrounded by existing low density residential properties. The present site surface comprises grass topsoil, and recently built roads. Site photos are shown below.

Photo 1 Site View
(From the south side, looking at northwest direction)

Photo 2 Site View
(From the east side, looking at southwest direction)

Photo 3 Site View
(From the west side, looking at east direction)

2.5 GEOLOGY

The geological plan provided by Statewide Seamless Geology v2.1 in Appendix B indicates that the original natural site geology is underlain by Alluvial floodplain deposits (Q_af). This is described as silt, very fine- to medium grained lithic to quartz-rich sand, clay.

The site is adjacent to two other lithological boundaries, however not considered to intrude the activity site area:

- Bringelly Shale (Twib) to the north and west, described as carbonaceous claystone shale, laminate, lithic sandstone, rare coal.
- Londonderry Clay (NM_d) to the south-east, described as clay, with patches of ferruginised, consolidated sand.

2.6 FIELD WORK

Geotechnical fieldwork was carried out in two stages. Initial investigation was carried out between 8 to 12 July 2024, with secondary investigation was carried out on 2 October 2024 and 8 to 11 October 2024.

Initial investigation comprised the following:

- A detailed walkover inspection of the site and surrounds.
- Drilling of a total of twelve (12) auger boreholes (numbering from BH101 to BH112 inclusive) to target depths of between 5.95m and 11.6m within the footprint of the site boundaries, using a track mounted drill rig provided by Traccess Drilling.
- SPT tests were carried out at 1.5 m interval to determine the soil consistency.

- Installation of groundwater monitoring wells at BH101 and BH112 locations, allowing for future groundwater sampling and monitoring.
- Selection of representative soil samples to external NATA accredited labs for geotechnical and environmental testing.

Secondary investigation comprised the following:

- Drilling of a total of five (5) boreholes (numbering from BH201 to BH205 inclusive) to target of a maximum of 16m depths (minimum 3m of rock) below ground level (BGL) within the footprint of the proposed site boundaries, using a track mounted drill rig provided by Traccess Drilling.
- SPT tests were carried out at 1.5 m interval to determine the soil consistency.
- Installation of groundwater monitoring wells at BH204 locations, allowing for future groundwater sampling and monitoring.
- Auger of 450mm diameter for four (4) boreholes (numbering from PH201 to PH204 inclusive) to target of maximum 5m depth below ground level (BGL) within the footprint of the proposed site boundaries, using an excavator with attached auger provided by First Civil Pty Ltd.
- Selection of representative soil and rock samples to external NATA accredited labs for geotechnical and environmental testing.

The borehole locations are shown on the enclosed Test Location Plan, see Figure 1 in **Appendix A**.

All fieldwork was carried out under full time supervision of a Stantec geotechnical engineer, who was responsible for locating the test locations, nominating sampling and testing, preparing engineering logs and recording site observations.

Additional supervision was carried out by the DoE representative for the 450mm diameter Auger fill investigation on 2 October 2024. No soil samples were collected for this works.

Test locations done at the subject site (Stantec 2024 and WSP 2022) are summarised in **Table 2.4** as follows:

Table 2-4 Test Locations Summary (Stantec 2024– BH101 to BH112, BH201 to BH205, PH201 to PH204; WSP 2023 – BH-P2; Stantec 2017 BH10 and BH11 for Lendlease East West Connector Road)

Test ID	East (m) MGA2020	North (m) MGA2020	RL (m AHD)	Depth (m)	Year Completed	Termination Notes
BH101	292060.948	6265225.284	23.01	10.25	July 2024	Refusal on shale bedrock
BH102	292080.778	6265265.119	22.97	5.95	July 2024	Target depth
BH103	292102.253	6265306.141	22.63	11.6	July 2024	Refusal on shale bedrock
BH104	292111.349	6265338.035	22.47	5.95	July 2024	Target depth
BH105	292112.826	6265378.407	22.22	10.8	July 2024	Refusal on shale bedrock

Table 2-4 Test Locations Summary (Stantec 2024– BH101 to BH112, BH201 to BH205, PH201 to PH204; WSP 2023 – BH-P2; Stantec 2017 BH10 and BH11 for Lendlease East West Connector Road)						
BH106	292109.402	6265412.832	22.01	5.95	July 2024	Target depth
BH107	292145.233	6265414.064	21.60	10.2	July 2024	Refusal on shale bedrock
BH108	292159.891	6265227.123	22.09	10	July 2024	Refusal on shale bedrock
BH109	292133.115	6265199.842	22.06	10.3	July 2024	Refusal on shale bedrock
BH110	292206.364	6265215.566	21.66	5.95	July 2024	Target depth
BH111	292228.159	6265410.527	20.85	10.3	July 2024	Refusal on shale bedrock
BH112	292185.130	6265409.412	21.28	10.08	July 2024	Refusal on shale bedrock
BH-P2-24	292134	6265391	21.8	3.5	Jan 2023	Refusal on concrete block in fill
BH-P2-25	292183	6265324	21.4	4.95	Jan 2023	Terminated at natural material
BH-P2-26	292185	6265202	21.5	6.45	Jan 2023	Terminated at natural material
BH-P2-30	292239	6265386	20.5	4.95	Jan 2023	Terminated at natural material
TP-P2-24	292128	6265433	N/A	5.2	Jan 2023	Terminated at natural material
TP-P2-25	292149	6265376	N/A	5.1	Jan 2023	Terminated at natural material
TP-P2-26	292116	6265327	N/A	5.0	Jan 2023	Terminated at natural material
TP-P2-28	292147	6265202	N/A	4.4	Jan 2023	Terminated at natural material
BH10	292425.640	6265143.600	19.446	Auger 0-8 Core 8-15.81	Oct 2017	Terminated in bedrock at 15.81m
BH11	292376.530	6265119.920	19.362	Auger 0-7.4 Core 7.4-15.61	Oct 2017	Terminated in bedrock at 15.61m
BH201	6265226.962	292093.048	22.804	Auger 0-11.4 Core 11.4-15.0	Oct 2024	Target depth
BH202	6265270.494	292099.289	22.6996	Auger 0-11.6 Core 11.6-15.0	Oct 2024	Target depth
BH203	6265318.419	292120.231	22.4577	Auger 0-11.7 Core 11.7-15.0	Oct 2024	Target depth
BH204	6265359.012	292119.890	22.2374	Auger 0-11.7 Core 11.7-15.16	Oct 2024	Target depth
BH205	6265258.324	292149.303	21.8996	Auger 0-11.9 Core 11.9-16.0	Oct 2024	Target depth

Table 2-4 Test Locations Summary (Stantec 2024– BH101 to BH112, BH201 to BH205, PH201 to PH204; WSP 2023 – BH-P2; Stantec 2017 BH10 and BH11 for Lendlease East West Connector Road)						
PH201	6265194.388	292212.562	20.8969	5.5	Oct 2024	Target depth
PH202	6265235.708	292135.268	22.2208	5.5	Oct 2024	Target depth
PH203	6265349.008	292104.487	22.0945	5.0	Oct 2024	Target depth
PH204	6265420.900	292187.371	21.0177	5.0	Oct 2024	Target depth

2.7 SURFACE CONDITIONS

Based on the observations from the geotechnical investigation, the sub surface profile within the footprint of the proposed activity can be generalised as follows:

- Fill typically comprises variable assemblages of gravel, sand, silt and clay with occasional cobbles and boulders, inferred imported from other areas of Sydney as well as locally won. Layering and compaction degrees are inconsistent, although similar assemblages can be generally recognised across the site. This degree of compaction which appears to be compacted was confirmed in the investigation done in PH201 to PH204. Gravel and cobbles are typically sub-angular to angular, comprising brick, concrete, shale and sandstone, to depths of between 2.3m (BH111) and 5.5m (BH101-BH103); overlying,
- Alluvial deposit and Residual Sandy and Silty Clay: grey, brown-yellow, medium to high plasticity, fine grained sand, with various thickness of gravelly clay layers, to depths of 10.15m and 11.0m below ground level across the site; overlying,
- Bedrock profile, comprising of Shale Class V / IV, brown and pale grey, inferred very low strength to low strength, about 5m thick, to depths of around 11.0m to 16.0m; over,
- Bedrock profile, estimated depth to Shale Class III or better is considered approximately 16.0 meters below ground level. However, all investigatory boreholes terminated prior to confirming this rock strength transition. Further geotechnical investigatory works maybe required to validate actual depths to shale class III or better.

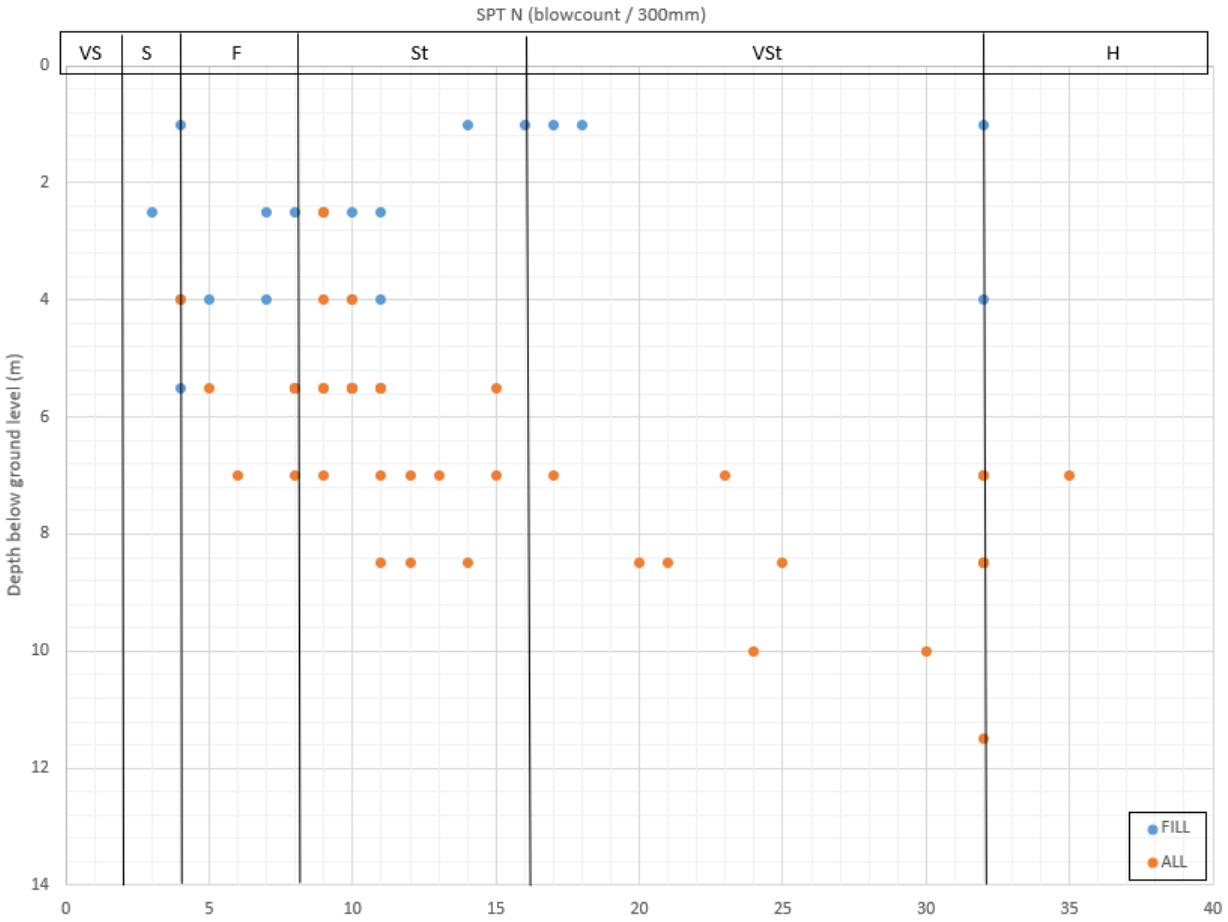
The encountered subsurface materials and their relative strengths have been recorded and logged as Engineering Log of Boreholes and on a Penetration Resistance of Soil Test Sheet. These have been enclosed in **Appendix E**.

2.8 IN-SITU FIELD TEST RESULTS

2.8.1 SPT Testing

SPT tests have been performed at each borehole by driving a road-attached split spoon sampler into the ground with a 63.5kg dropping hammer from a height of 760mm and counting the blows for successive 150mm increments of penetration. The procedure is repeated two more times until a total penetration of 450mm is achieved. The complete count of hammer strike for the last 300mm is termed as the “standard penetration resistance”, also known as the “N Value”. SPT test is typically start from 1.0m below the existing ground surface and continues in minimal of 1.0 interval until refusal or bouncing. The results are used to determine the consistency of cohesive soil.

SPT N values have been obtained within cohesive soils with clayey fills generally encountered from 0.0m to 5.0m from existing ground level, depicting consistency of typically firm to stiff. The alluvial deposit generally encountered 5.0m from existing ground level were encountered as stiff to very stiff consistency to 10.0m. SPT N value blow counts versus depth for cohesive soil is plotted in the following figure



2.9 GROUNDWATER CONDITIONS

Groundwater ingress was encountered during investigatory works, was observed as follows:

Table 2-5 Groundwater Ingress Summary

Test ID	RL (m AHD)	Depth (m)	Groundwater Ingress Depth (m)
BH101	23.01	10.25	5.5
BH102	22.97	5.95	Not encountered
BH103	22.63	11.6	5.5
BH104	22.47	5.95	4
BH105	22.22	10.8	Not encountered
BH106	22.01	5.95	4
BH107	21.60	10.2	6.5
BH108	22.09	10	5.4
BH109	22.06	10.3	5.5
BH110	21.66	5.95	Not encountered
BH111	20.85	10.3	5.5
BH112	21.28	10.08	7
BH201	22.804	15.0	5
BH202	22.6996	15.0	5
BH203	22.4577	15.0	5.5
BH204	22.2374	15.16	5
BH205	21.8996	16.0	5.3
PH201	20.8969	5.5	Not encountered
PH202	22.2208	5.5	Not encountered
PH203	22.0945	5.0	4.4
PH204	21.0177	5.0	Not encountered

During initial investigation, two groundwater monitoring wells were installed at BH101 and BH112, to allow for future groundwater sampling and monitoring. Revisit was carried out on 10 July 2024 to perform measurements. Standing groundwater levels were measured at BH101 - 4.5m (RL18.51m) and BH112 – 3.8m (RL17.49m).

Following secondary investigatory works, one groundwater monitoring well was installed at BH204, allowing for future groundwater sampling and monitoring. Revisit was carried out on 20 October 2024 to perform measurements. Standing groundwater level were measured at BH204 – 5.09m (RL 17.15m)

Groundwater levels of between RL 17.49m and 18.51m are consistent to the original bushland landform (prior to earth fill placement) surface ranging from approx. RL 17-20m AHD.

It should be noted that variations in groundwater and seepage flows may occur due to variations in rainfall duration and intensity.

2.10 LABORATORY TEST RESULTS

Geotechnical testing was undertaken at Macquarie Geotech Pty Ltd, an NATA accredited laboratory, with testing certificates included in **Appendix G**. Tables in the following sections summarise the laboratory test results undertaken on soil samples obtained from the boreholes.

Soil samples were also sent for environmental testing at Eurofins Pty Ltd, an NATA accredited laboratory with testing certificates included in **Appendix G**. Tables in the following sections summarise the environmental test results undertaken on soil samples obtained from the borehole.

2.10.1 Field moisture content and Atterberg limit test

Moisture content and Atterberg limit test tests were scheduled on selected samples. The results are summarised in **Table 2-7** below.

Table 2-7 Atterberg Limit Test Results

Sample No.	Depth (m)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Linear Shrinkage (%)	Field Moisture Content(%)
BH103	3.5 – 4.0	46	13	33	14.5	18.9
BH104	0.5 – 1.0	-	-	-	-	13.1
BH107	1.6 - 2.0	32	16	16	6.5	9.5
BH108	6.5 – 7.0	54	14	40	15.5	19.3
BH109	4.5 – 5.0	35	13	22	7.5	18.0
BH110	0.5 – 1.0	-	-	-	-	15.9
BH110	5.0 – 5.5	42	14	28	12.5	16.7
BH112	6.0 – 6.5	36	13	23	8.5	18.3
BH201	5.0 – 6.0	44	15	29	11.5	25.6
BH202	7.5 – 8.0	38	13	25	11.0	19.9

BH203	6.0 – 7.0	47	18	29	13.5	27.1
BH204	7.5 – 8.0	37	12	25	9.5	19.7
BH205	6.0 – 7.0	34	13	21	9.5	24.6

2.10.2 Soil Reactivity

The soil reactivity and its swell potential can be classified based on the available liquid limit data available, as per liquid limit range and site classification by Kay (1990), as shown in the following **Table 2.8**

Table 2-8 Liquid limit range and site classification by Kay (1990)

Liquid Limit Range	Field moisture content (%)
<20	S (slightly expansive)
20-40	M (moderately expansive)
40-70	H (highly expansive)
>70	E (extremely expansive)

2.10.3 Particle size distribution test and Emerson Crumb test

The Particle Size Distribution (PSD) and Emerson Class tests were performed on a selection of disturbed soil samples. Test results are summarised in **Table 2-9**.

Table 2-9 Particle Size Distribution, Hydrometer, and Emerson Class Test Results

Sample No.	Depth (m)	Material Description	Gravels (%)	Sand (%)	Fines (Silt & Clay, %)	Emerson Class
BH103	3.5 – 4.0	FILL: SILTY CLAY: brown-grey, medium to high plasticity, with fine to medium grained sand, appeared moderately compacted	4	28	68 (32% Silt 36% Clay)	-
BH104	0.5 – 1.0	FILL: SILTY SANDY CLAY: grey brown orange, medium plasticity, fine to medium grained sand, trace subangular gravel, appeared moderately compacted	25	27	52	5
BH107	1.6 - 2.0	FILL: CLAYEY SILT: grey, grey-brown, low plasticity, with siltstone, subangular gravel, appeared moderately to well compacted	10	34	56	-

Table 2-9 Particle Size Distribution, Hydrometer, and Emerson Class Test Results

Sample No.	Depth (m)	Material Description	Gravels (%)	Sand (%)	Fines (Silt & Clay, %)	Emerson Class
BH110	0.5 – 1.0	FILL: SILTY CLAY: grey, medium plasticity, with fine to medium grained sand, trace subangular gravel, appeared poorly compacted	1	29	70	-
BH110	5.0 – 5.5	SANDY CLAY: orange-grey, medium to high plasticity, fine to medium grained sand	20	25	55	5
BH108	6.5 – 7.0	SILTY CLAY: yellow-brown, grey, high plasticity, with fine to medium grained sand	4	31	65 (31% Silt 34% Clay)	-
BH109	4.5 – 5.0	SANDY CLAYEY SILT: orange-grey, medium to high plasticity, fine to medium grained sand	5	31	64 (42% Silt 22% Clay)	-
BH112	6.0 – 6.5	CLAYEY SILT: grey, brown-yellow, medium plasticity, with fine to medium grained sand, trace subangular gravel	1	24	75 (47% Silt 28% Clay)	-
BH201	5.0 – 6.0	SILTY CLAY: brown, orange brown, mottled grey, medium to high plasticity, trace fine grained sand	9	20	71	6
BH202	7.5 – 8.0	SANDY SILTY CLAY: brown, orange brown, low to medium plasticity, fine grained sand	0	44	56	6
BH203	6.0 – 7.0	SILTY CLAY: brown grey, medium to high plasticity, with fine grained sand	6	31	63	4
BH204	7.5 – 8.0	SILTY SANDY CLAY: orange brown, medium to high plasticity, fine to medium sand, with subangular gravel	1	24	75	5
BH205	6.0 – 7.0	SILTY CLAY: brown, orange brown, medium to high plasticity, with fine grained sand, trace fine grained, subrounded ironstone gravel	6	41	53	6

2.10.4 CBR and Standard Compaction Tests

A single California Bearing Ratio (CBR) test was completed on 31 July 2024, Results of the standard compaction Test, CBR%, and Swell values are presented below.

Table 2-11 CBR Test and Standard Compaction Test Results

Sample No.	Depth (m)	Material	OMC (%)	MDD (t/m^3)	CBR (%)	Swell (%)
BH104	0.5 – 1.0	Fill: Silty Sand Clay	11.6	1.97	5	2.4

2.10.5 Point Load Tests

Point load strength index testing results are listed in **Table 2-12**, generally indicate very low to low strength Bringelly shale bedrock.

Table 2-12 Point load Test Results

Sample No.	Depth (m)	Material	Diametral Point Load Index Is(50) MPa	Axial Point Load Index Is(50) MPa
BH201	12.50 – 12.61	Siltstone	0.07	0.07
	13.90 – 14.00	Siltstone	0.52	0.54
	14.52 – 14.60	Siltstone	0.20	0.21
BH202	12.34 – 12.44	Siltstone	0.04	0.04
	13.84 – 13.96	Siltstone	0.54	0.89
	14.81 – 14.90	Siltstone	0.10	0.23
BH203	12.44 – 12.52	Siltstone	0.05	0.07
	13.87 – 14.00	Siltstone	0.18	0.21
	14.82 – 14.94	Siltstone	0.19	0.12
BH204	11.70 – 11.86	Siltstone	0.05	0.26
	13.52 – 13.68	Siltstone	0.34	0.59
	13.71 – 13.88	Siltstone	0.06	0.32
BH205	12.56 – 12.63	Siltstone	0.19	0.21
	13.72 – 13.81	Siltstone	0.06	0.13
	15.07 – 15.19	Siltstone	0.09	0.24

2.10.6 Uniaxial Compression Shear (UCS) Tests

UCS testing was conducted on core samples from selected boreholes. Results are presented in **Table 2-13** below:

Table 2-13 UCS Test Results Sample No.	Depth Range (m)	Material	UCS (MPa)	Depth Range (m)	Nearest Axial $Is_{(50)}$ (MPa)
BH201	13.62 – 13.74	Siltstone IV/V	2	13.90-14.00	0.54
BH202	13.34 – 13.51	Siltstone IV/V	2.7	13.84-13.96	0.89
BH203	14.62 – 14.82	Siltstone IV/V	1.7	14.82-14.94	0.12
BH204	13.71 – 13.88	Siltstone IV/V	1.9	13.71-13.88	0.32
BH205	15.75 – 15.92	Siltstone IV/V	2.5	15.07-15.19	0.24

2.10.7 Soil Aggressivity and Salinity

Laboratory soil aggressivity testing was carried out on the soil samples taken on site. Results are summarised in **Table 2-10**.

Table 2-10 Soil Aggressivity Test Results						
Sample No.	**Depth (m)**	**Chloride (mg/kg)**	**Conductivity (µs/cm)**	**pH**	**Resistivity (ohm.m)**	**Sulfate (mg/kg)**
BH101	7.0 - 7.45	420	340	7.5	29	<25
BH103	5.5 - 5.95	<10	28	8.1	360	<25
BH107	8.0	170	380	11	26	310
BH109	6.5 - 7.0	610	410	5.9	25	<25
BH111	4.5 – 5.0	25	46	7.9	220	<25
BH112	6.0 – 6.5	25	39	7.4	260	<25
BH201	5.5	580	410	6.9	25	<10
BH202	10	300	190	6.2	53	<10
BH203	2.5	68	100	7.9	99	71
BH204	7.0 – 7.45	25	41	7.6	250	<10
BH205	3.5	130	240	8.3	41	200

Based on the findings, both fill and alluvial sandy clay material assessed on the site are within the Non-Saline to Moderately Saline range. Salinity management plan will be required as per the guidelines provided by the Department of Land Water Conservation NSW, 2002.

2.10.8 Acid Sulphate Soil

Six (6) selected soil samples were scheduled for SPOCAS Acid Sulfate Soil testing. The results of analysis for the soils are compared to the below ASSMAC assessment criteria. It is assumed that >1000 tonnes of material would be disturbed hence the action criteria for greater than 1000 tonnes have been applied.

Table 2-14 NSW ASSMAC Action Criteria

Type of Material Texture	Approx. Clay Content (% < 0.002 mm)	Action Criteria >1000 tonnes Sulfur Trail Spos or Stos (%)	Action Criteria >1000 tonnes Acid Trail TPA or TSA mole (H^+/t)
Coarse e.g., Sands	< 5	0.03	18
Loams / Light Clays	5 – 40	0.03	18
Medium to Heavy Fine Clays / Silts (adopted)	**≥ 40**	**0.03**	**18**

Results of SPOCAS testing are shown below:

Table 2-15 Results of SPOCAS Testing

Sample No.	Depth (m)	pH_{field}	pH_{kcl}	Net Acidity (% S)	Net Acidity moles (H^+/t)
BH101	7.0 – 7.45	7.5	6.3	0.02	15
BH103	5.5 – 5.95	8.1	6.7	0.02	<10
BH107	8.0	11	10	0.02	<10
BH109	6.5 – 7.0	5.9	5.2	0.02	<10
BH111	4.5 – 5.0	7.9	7.6	0.02	<10
BH112	6.0 – 6.5	7.4	5.9	0.02	<10

Based on the SPOCAS test results summarised in Table 2-12, no PASS and ASS are identified on the selected samples. Acid Sulphate Soils Management Plan will not be required for this proposed activity.

3.0 INTERPRETED GEOTECHNICAL CONDITIONS

3.1 PROPOSED ACTITIVTY

It is understood that the activity works comprise the construction of three classroom blocks and one school hall. The proposed permanent buildings are understood to be up to 3 storeys. Proposed earthwork will include subgrade treatment and leveling to the proposed ground floor level.

It is understood that the main column loads will be loaded and found on piles with socket into the underlain Bringelly Shale bedrock.

3.2 EXCAVATION AND BATTER SUPPORT

Excavation will be limited to minor cutting, filling, and levelling and is expected to encounter mostly overburden soils comprising topsoil and cohesive fill. Excavation of soil may be readily achieved using conventional earthmoving equipment such as excavators. Ripping or hammering will not be required for the proposed earthwork. Therefore, the induced vibration and noise monitoring plan will not be required.

Vertical excavations in filling and sandy soil are not expected to be stable for any extended period. Temporary batters may be feasible above the groundwater table and should be cut no steeper than 2(H):1(V) for cuts up to 3 m depth. Flatter batters or batters that incorporate intermediate benching should be provided for deeper cuts and stability analysis will need to be undertaken to confirm appropriate batter geometries in this case.

Considering the poor fill condition encountered, it is assessed that permanent batter is not suitable.

3.3 GEOTECHNICAL DESIGN PARAMETERS

Based on the borehole logs and the results of laboratory tests, geotechnical design parameters are inferred and presented to assist with geotechnical design.

Table 3-1: Geotechnical Design Parameter for excavation support structure (if any)

Material	Unit Weight γ (kN/m3)	Effective Cohesion c' (kPa)	Effective Friction Angle ϕ' (º)	Modulus Elastic E (MPa)	Poisson Ratio (ν)
Fill (assumed Firm)	18	2	23	3	0.3
Fill (assumed Stiff)	19	3	24	4	0.3
St to VSt Alluvial Clay	18	5	27	8	0.3
Class V Shale	21	10	28	75	0.3
Class IV Shale	22	20	30	100	0.3

Note:

1. Parameters for in-situ fill have been provided, subject to the designer's review of each borehole to determine the appropriate parameters to adopt for site specific location.

3.4 EARTH PRESSURE

Table below outlines earth pressure parameters that could be used for design of excavation support structure (if any). The coefficient provided are based on drained conditions

Table 3-2: Coefficient of Lateral Pressure

Material	Bulk Density (kN/m^3)	Coefficient of Active Earth Pressure (K_a)	Coefficient of Earth Pressure at Rest (K_o)	Ultimate Passive Earth Pressure (kPa)
Fill	18	0.42	0.60	-
St to VSt Alluvial Clay	19	0.38	0.50	100

A triangular lateral earth pressure distribution can be assumed for cantilevered walls and walls with a single row of support. Lateral pressure due to surcharge loads from any adjacent structures, sloping ground surface, the existing traffic corridors, and construction machinery should be included where relevant. Hydrostatic pressure acting on the shoring walls should also be included in the design where adequate drainage is not provided behind the full height of the walls.

3.5 SITE CLASSIFICATION

Based on this geotechnical investigation, we consider that the subsurface conditions comprise topsoil overlying cohesive fill and alluvial materials. The site is classified as “Class P” due to unevenly distributed fill. It is recommended to design foundations for main buildings with deep pile only. However, if reclassified based on soil reactivity from section 2.10.3, it would be categorized as H1 (indicating highly reactive clay sites, which may experience high ground movement from moisture changes)

3.6 SUBGRADE PREPARATION

Considering the ongoing subsidence issue across the area, pending to the finished ground floor level, it is recommended to retreat the upper 1m zone across the proposed activity footprint for long term performance. Site preparation (including backfill of sediment basin) would include the following steps:

- Strip the surface of any vegetation and remove existing stockpile, basin bedding, or dispose of material (if any) as appropriate;
- Remove the existing filling to a depth of about 1000 mm within the proposed activity footprint;
- Proof roll the exposed surface with six passes of a 10-12 tonne roller, with the final pass carried out under observation by a geotechnical engineer to check for any soft or compressible zones. Any such zones should be over-excavated to a maximum depth of 300 mm and replaced with compacted granular material;
- Existing site fill materials are considered not suitable for reuse. New filling brought to site should be approved engineering fill by either the civil or geotechnical engineer before use. Moderately to highly reactive clays cannot be used;

- Filling should be placed in horizontal layers of 300 mm maximum loose thickness, with each layer placed and compacted to a minimum dry density ratio of 98% Standard at levels more than 500 mm below the proposed subgrade level; increasing to 100% Standard in the upper 500 mm of filling. Overcompaction of clayey filling should be avoided. The moisture content during filling should be controlled so that it is always within 2% of the Standard optimum moisture content (SOMC) test.

Compaction testing of all engineered filling and prepared subgrade surfaces should be carried out in accordance with AS 3798. Filling should be placed under Level 1 supervision as defined in AS 3798.

A consequence of placing filling on the site is that the filling acts as a surcharge and will cause settlement of the underlying material over time. An initial estimate is that there would be approximately 5 - 10 mm of settlement of the underlying soils for every metre of filling added to the site. In addition, there may be some consolidation of the filling under its own weight over time, depending on the quality of the imported filling. For properly compacted imported filling, the upper bound of settlement of the filling could be about 0.5% of the filling depth per log cycle. That is, up to 5 mm per metre of filling over the first 10 years and another 5 mm over the next 90 years could be expected. Therefore, for a 30-year life, adding 1 m of filling over the site could result in settlements up to 15 - 20 mm. Some of this settlement would occur during the placement of the filling before construction of the buildings commences.

Another option instead of retreating the upper 1m zone, the suspended slab will need to be founded on piers supported on the underlying bedrock as recommended below. Suspended slabs will need to be underlain by degradable void formers of at least 75mm thickness to reduce the risk of swelling soils 'jacking' the slabs off the piles. Where fill is used to raise site level and the slabs are designed as suspended slabs then the fill would not need to be placed as engineered fill. The parameters for Ym and Ys based on AS 2870-2011 Residential slabs and footings are shown in **Table 3.3**.

Table 3-3: Analysis Parameters for Stiffened Rafts

Analysis Parameter for Stiffened Rafts	
Differential Mound Movement Y_m	38
Characteristic Surface Movement Y_s	55

3.7 PAVEMENT

Following earthworks fill placement, it is expected that most of the exposed subgrade will comprise filling which has been compacted in accordance with the recommendations given. Therefore, the combined CBR value for pavement and ground slab design (if any) will depend on the type of filling material brought to site to form the subgrade. For example, Silty Sandy Clay fill of 5% (existing fill) subgrade with 1m thick crushed sandstone of CBR 15% or better, typical combined CBR of 8% could be achieved.

3.8 SOIL AGGRESSIVENESS

Based on the soil durability test results on selected soil samples, soil aggressiveness was assessed using criteria in Table 6.4.2(C) and Table 6.5.2(C) of AS2159-2009 – Piling Design and Installation. The results

obtained to date indicate that the in-situ soils are classified as mild-aggressive towards buried concrete piles and non-aggressive towards steel piles. The results should be considered in the structural durability design.

Test results are shown in **Appendix G**.

3.9 FOUNDATIONS

To avoid risk of excessive long term differential settlement, shallow footings for the main building structure are not recommended on this site except for lightweight steel structure such as awings, lightpoles and seating.

3.9.1 Shallow foundation types

Considering the inconsistency of alluvial deposit soil strength (refer to section 2.8.1 for SPT plot), which varies between soft to very stiff, auger or screw piles may not be able to achieve suitable bearing capacity in the soil.

For lightweight structures such as awings maybe a feasible option provided the footings are founded in a competent stratum. Due to the unknown loads and footing system, an assumption of 1.0mx1.0m (width x length) and minimum embedment of 1.0m for the allowable end bearing pressure. Once specific loadings have been ascertained, the footing size and depth should be optimised to suit the loading on the founding material. The bearing capacity of the footing in soil needs to be subjected to a geotechnical checking considering footing size, depth, slope (ground surface and/or footing base) and loadings (i.e. bearing capacity is not a soil property but is dependant of footing size, depth, slope and loadings). A footing subjected to pull-out forces should be further geotechnical assessment in addition to bearing, overturning and sliding.

Table 3-4: Shallow Pad Footing Parameters (For Lightweight Steel Structure only)

Material	Design Bearing Pressure (Kpa)	Remarks
Fill (assumed Firm)	100	Only for lightweight steel structures such as awings. The footing must have a minimum 1mx1m (width x length) and 1.0m embedment. This is based on a geotechnical strength reduction factor of 0.4.
Fill (assumed Stiff)	120	

3.9.2 Deep footings

Suitable pile types include concrete or grout-injected CFA piles, bored piles drilled with temporary or permanent casing, or driven pile-types such as precast concrete, steel tube or steel H-section piles.

CFA piles and bored piles found and minimum socketed 2.5m into the underlain Class V/IV Shale.

The total settlement of a pile designed using the 'allowable' parameters would be expected to be less than 10 mm upon application of the design load.

Driven piles are often used to support high column loads on sites in which driving is practicable. Considering cobble and boulder encountered in the fill profile, this method may be difficult. The capacity of a pile driven to refusal in rock is likely to be governed by the structural capacity of the pile and the weight/efficiency of the driving equipment. The installation of test piles and pile load testing should then be undertaken to confirm driving conditions, pile set, pile capacity and an appropriate geotechnical strength reduction factor, if driven pile method is adopted. Settlement of a driven pile should be estimated using load test data obtained during the design confirmation stage of the piling process. However, if bored piles are adopted, the base of the piles must be inspected during construction to ensure that material of adequate.

In addition, pile geotechnical capacity manly relies on the skin friction and end bearing of rock and contribution from the surrounding soil is negligible and can be ignored in the calculation. Therefore, it is reasonable to say that the pile capacity is independent of the ground water table. If presence of shallow groundwater is encountered during piling works, the contractor shall account for its impact during the piling installation, and temporary casing maybe necessary.

3.10 GEOTECHNICAL STRENGTH REDUCTION FACTOR

In accordance with AS 2159 – 2009 "Piling Design and Installation", the individual risk rating (IRR) for the pile design in this activity has been assessed from consideration of various risk factor related to the site, the site investigation information, and the pile design and testing procedures. Subsequently, the relevant weighting from Table 4.3.2(A) of AS 2159-2009 are then applied to each risk factor to calculate the average risk rating (ARR). For this activity Table 3.5 shows the summary of geotechnical strength reduction factor based on the ARR and the assumption of that no load testing of constructed piles is to be undertaken.

Table 3-5: Geotechnical Strength Reduction Factor

Structure	ARR as per Table 4.3.2© of AS2159-2009	Basic geotechnical strength reduction factor phi (Φ_g)
Piles	3.83 (Moderate to High)	0.40

Notes:

1. The above assessments were evaluated based on following assumptions
2. Level of Construction Control – Detailed with professional geotechnical supervision.
3. No monitoring of the support structure during and after construction.

3.11 EARTHQUAKE ACTIONS

The site stratigraphy comprises filling underlain by stiff to hard silty clays, overlying bedrock at depths larger than 10 m within the footprint of the proposed structure. Therefore, the site's sub-soil class when

assessed in accordance with AS 1170.4 – 2007 (Ref 4) is considered a shallow soil site and a classification of Class C_e is suggested. A hazard design factor (Z) of 0.08 is recommended for Figure 3.2(A), AS1170.4-2017.

Acceleration coefficient (a) is replaced with the hazard design factor as A = Z =0.08.

4.0 LIMITATIONS

Intrusive Geotechnical Investigation Report – New High School in Jordan Springs for the purpose and objectives and scope identified in this report.

The agreed scope of this assessment has been limited to the current purposes of the Client. Subsurface conditions may vary considerably away from the sample locations where information has been obtained.

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5.0 MITIGATION MEASURES

The intrusive geotechnical investigation results from section 2 to section 4 support the proposed activity at the New High School for Jordon Springs however the following mitigation measures are identified in **Table 5.1**

Table 5.1 – Mitigation Measure Table

Mitigation Number/ Name	Mitigation Measure	Reason for Mitigation Measure
1. Additional geotechnical testing for foundation piles.	Additional geotechnical testing is required to be conducted by the main contractor to assess whether class 3 shale is being encountered prior to the confirmed embedment length. At least one borehole for each building footprint.	To ensure class 3 shale is encountered.
2. Subgrade preparation	1. Surface Preparation: Remove vegetation, stockpile and basin bedding. 2. Excavation: Remove the existing filling to a depth of 1000 mm. 3. Proof rolling: Rolling the exposed surface with a minimum of six passes of a 10-12 tonne drum roller, with the final pass supervised by a geotechnical engineer. Any soft spot should be remediated by over-excavated to a maximum depth of 300 mm and replaced with compacted granular engineering fill. 4. Imported Fill: New filling brought to the site should be approved engineering fill by either the civil or geotechnical engineer before use. Existing site fill materials and moderately to highly reactive clays are considered unsuitable for reuse as backfill materials. 5. Compaction: Place fill in 300 mm layers, compacting to 98% Standard density below 500 mm of subgrade level, and 100% in the upper 500 mm. Control moisture content within 2% of the Standard optimum.	Site ongoing subsidence issue

3. Soil aggressivity	The structural engineer should take the results of the soil aggressivity into consideration for the design of concrete structures	mild-aggressive towards buried concrete piles
4. Foundations	A deep foundation system should be adopted instead of a shallow foundation footing. Concrete bored piles or grouted injected CFA piles are recommended.	Due to the risk of excessive long-term differential settlement, shallow footing systems are not recommended. Considering the inconsistency of alluvial deposit soil strength, which varies between soft to very stiff, auger or screw piles may not be able to achieve suitable bearing capacity in the soil.

6.0 EVALUATION OF ENVIRONMENTAL IMPACTS

Based on the findings of this assessment, the potential risks are not considered to have a significant effect on the environment following the implementation of the above mitigation measures (as required)

Appendix A SITE PLAN

Site Plan

Jordan Springs Proposed new high school
Site Investigation
Jordan Spring, NSW

Project Code: 305001663
Drawn By: PB, Checked By: DD
Rev: -00
Date: 2024-10-17
Figure No: -01

Legend

- Boreholes
- 400 mm diameter borehole
- Stantec Completed Boreholes 2024
- Test Locations Completed by WSP 2024

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Site Map Supplied by Metromap (2024).

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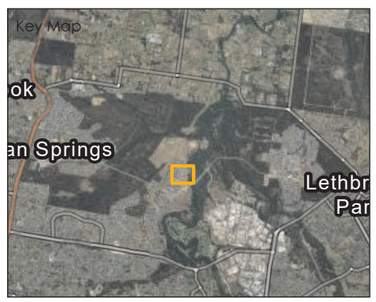
0 10 20 30 40 50 Metres

Scale at A3: 1:1,400



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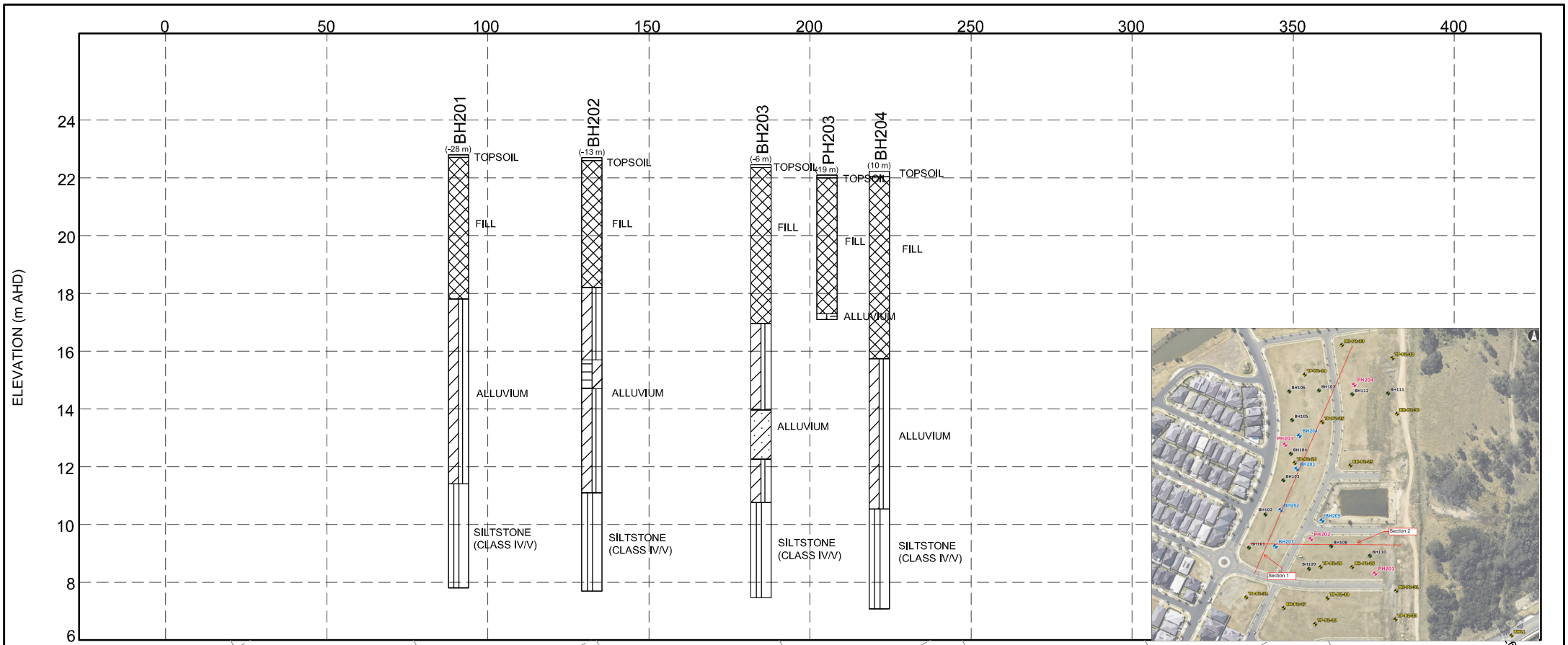
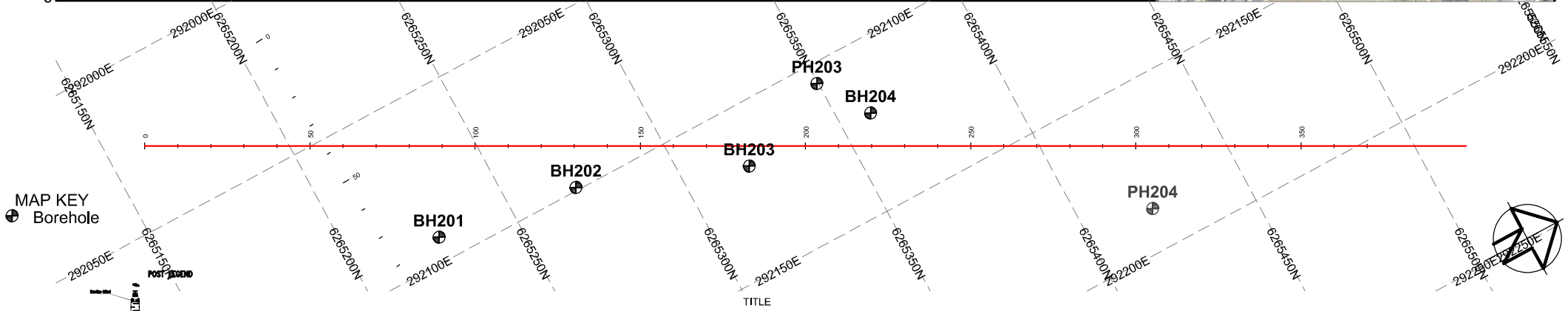
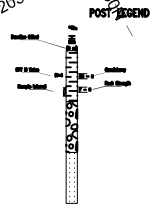




MAP KEY
Borehole



H 1:1794
0 5 10 15 20 25m
V 1:200
0 1 2 3 4 5m
Coord.System: MGA20 Zone 56 Height Datum: AHD

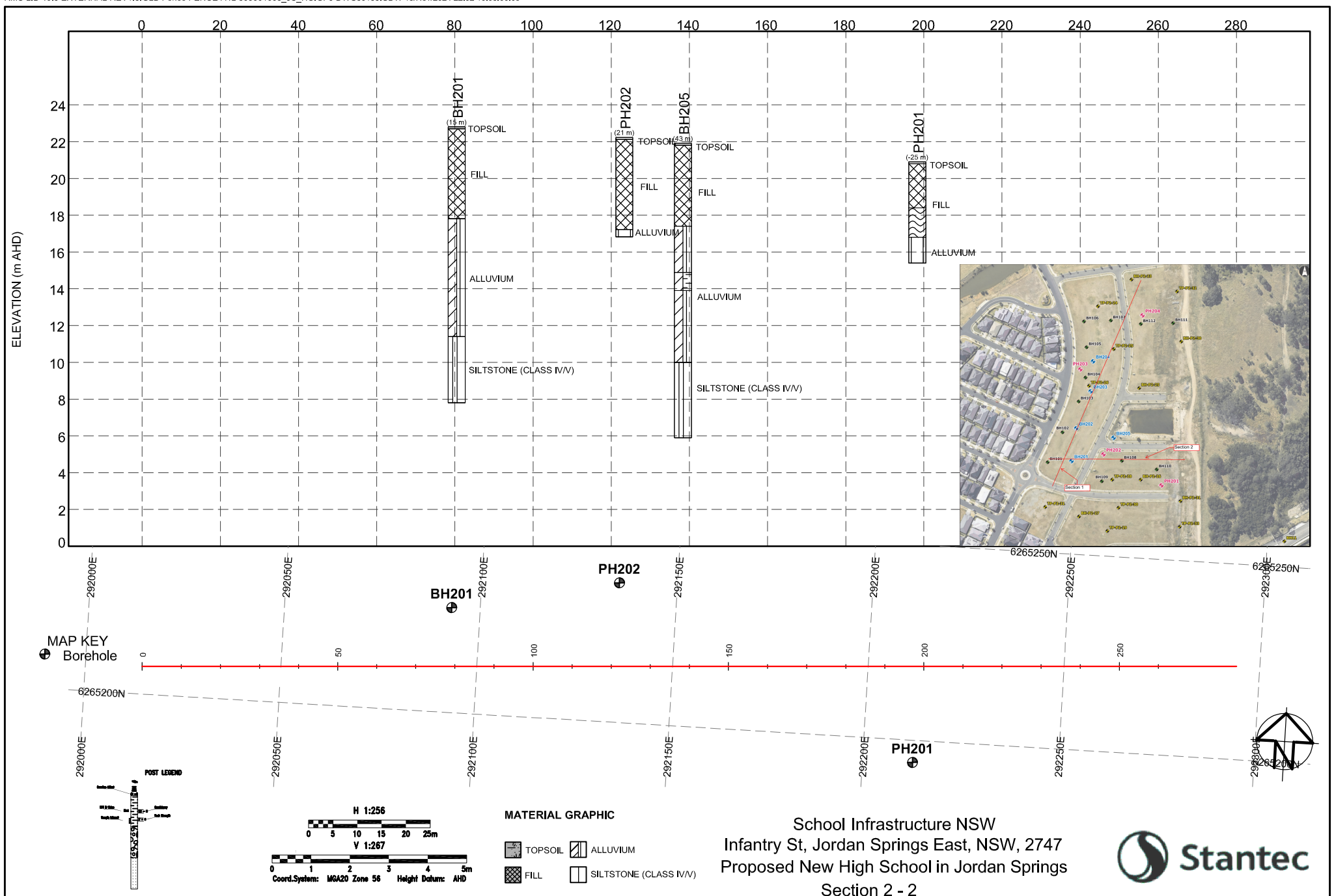
MATERIAL GRAPHIC
TOPSOIL
ALLUVIUM
FILL
SILTSTONE (CLASS IV/V)

TITLE

School Infrastructure NSW
Infantry St, Jordan Springs East, NSW, 2747
Proposed New High School in Jordan Springs
Section 1 - 1

Stantec

RMS LIB 40.3 EXTERNAL REV1.3.GLB Fence FENCE A4L 305001663_JS_HC.GPJ DWG36133.GDW 13/Nov/2024 22:02 10.03.00.09



School Infrastructure NSW
Infantry St, Jordan Springs East, NSW, 2747
Proposed New High School in Jordan Springs
Section 2 - 2

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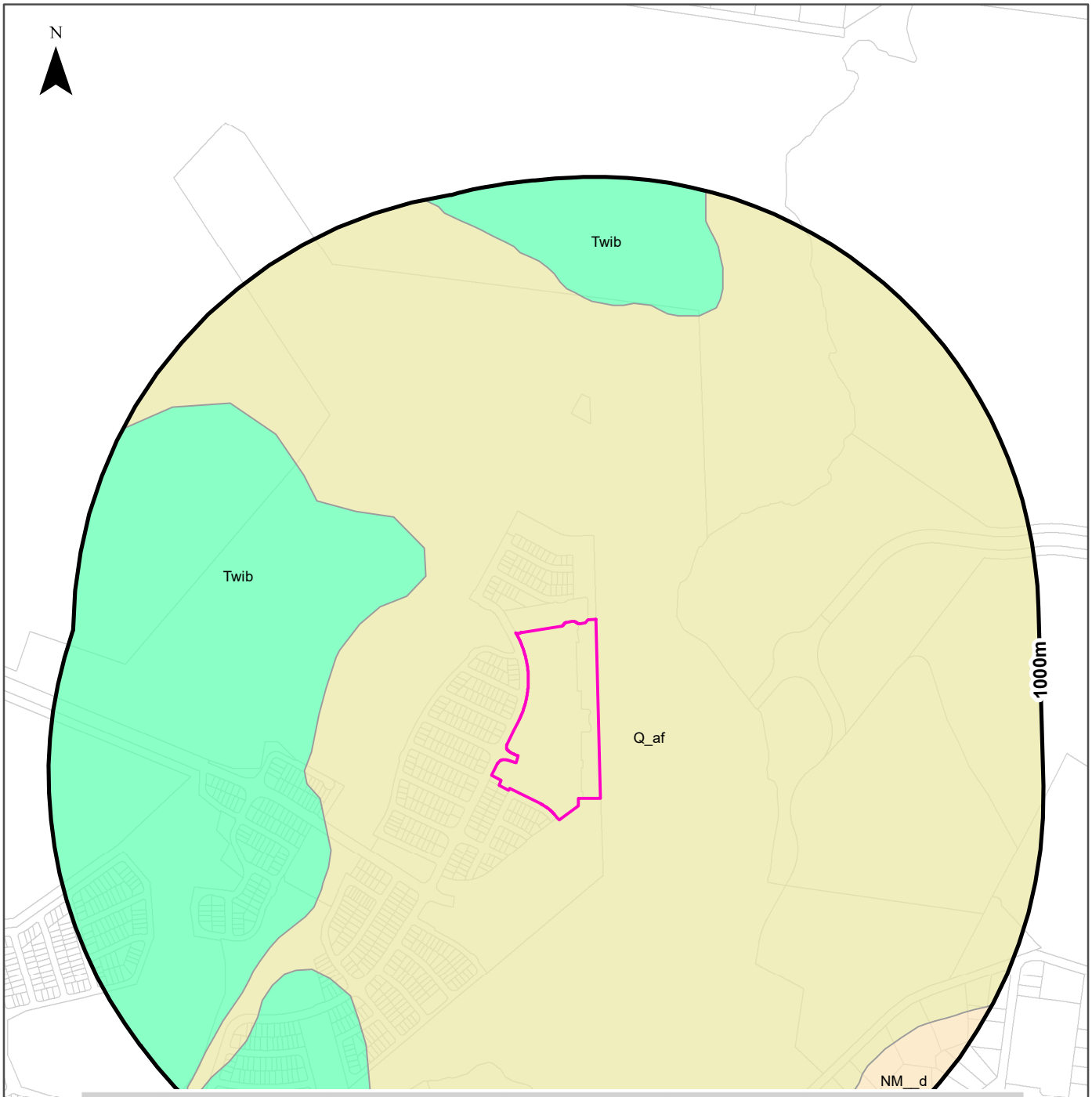
Appendix B GEOLOGICAL PLAN

Geology

Infantry Street, Jordan Springs, NSW 2747



Unit Code	Unit Name	Description	Unit Stratigraphy	Age	Dominant Lithology	Distance
Q_af	Alluvial floodplain deposits	Silt, very fine- to medium-grained lithic to quartz-rich sand, clay.	/Alluvium//Alluvial floodplain deposits//	Quaternary (base) to Now (top)	Clastic sediment	0m
Twib	Bringelly Shale	Shale, carbonaceous claystone, laminite, lithic sandstone, rare coal.	/Wianamatta Group//Bringelly Shale//	Middle Triassic (base) to Middle Triassic (top)	Shale	241m
NM__d	Londonderry Clay	Clay, patches of ferruginised, consolidated sand.	///Londonderry Clay//	Oligocene (base) to Upper Pleistocene (top)	Clay	854m

Legend

Site Boundary
Buffer 1000m
Property Boundary

Structures

Boundary lines
Faults
Intrusive boundary
Trendlines
Marker bed
Shear zone or schist zone boundary

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2023

Coordinate System: GDA 1994 MGA Zone 56

Date: 31 October 2023

Geology

Infantry Street, Jordan Springs, NSW 2747

Geological Units

What are the Geological Units within the dataset buffer?

Unit Code	Unit Name	Description	Unit Stratigraphy	Age	Dominant Lithology	Distance
Q_af	Alluvial floodplain deposits	Silt, very fine- to medium-grained lithic to quartz-rich sand, clay.	/Alluvium//Alluvial floodplain deposits//	Quaternary (base) to Now (top)	Clastic sediment	0m
Twib	Bringelly Shale	Shale, carbonaceous claystone, laminite, lithic sandstone, rare coal.	/Wianamatta Group//Bringelly Shale//	Middle Triassic (base) to Middle Triassic (top)	Shale	241m
NM__d	Londonderry Clay	Clay, patches of ferruginised, consolidated sand.	///Londonderry Clay//	Oligocene (base) to Upper Pleistocene (top)	Clay	854m

Linear Geological Structures

What are the Dyke, Sill, Fracture, Lineament and Vein trendlines within the dataset buffer?

Map ID	Feature Description	Map Sheet Name	Distance
No Features			

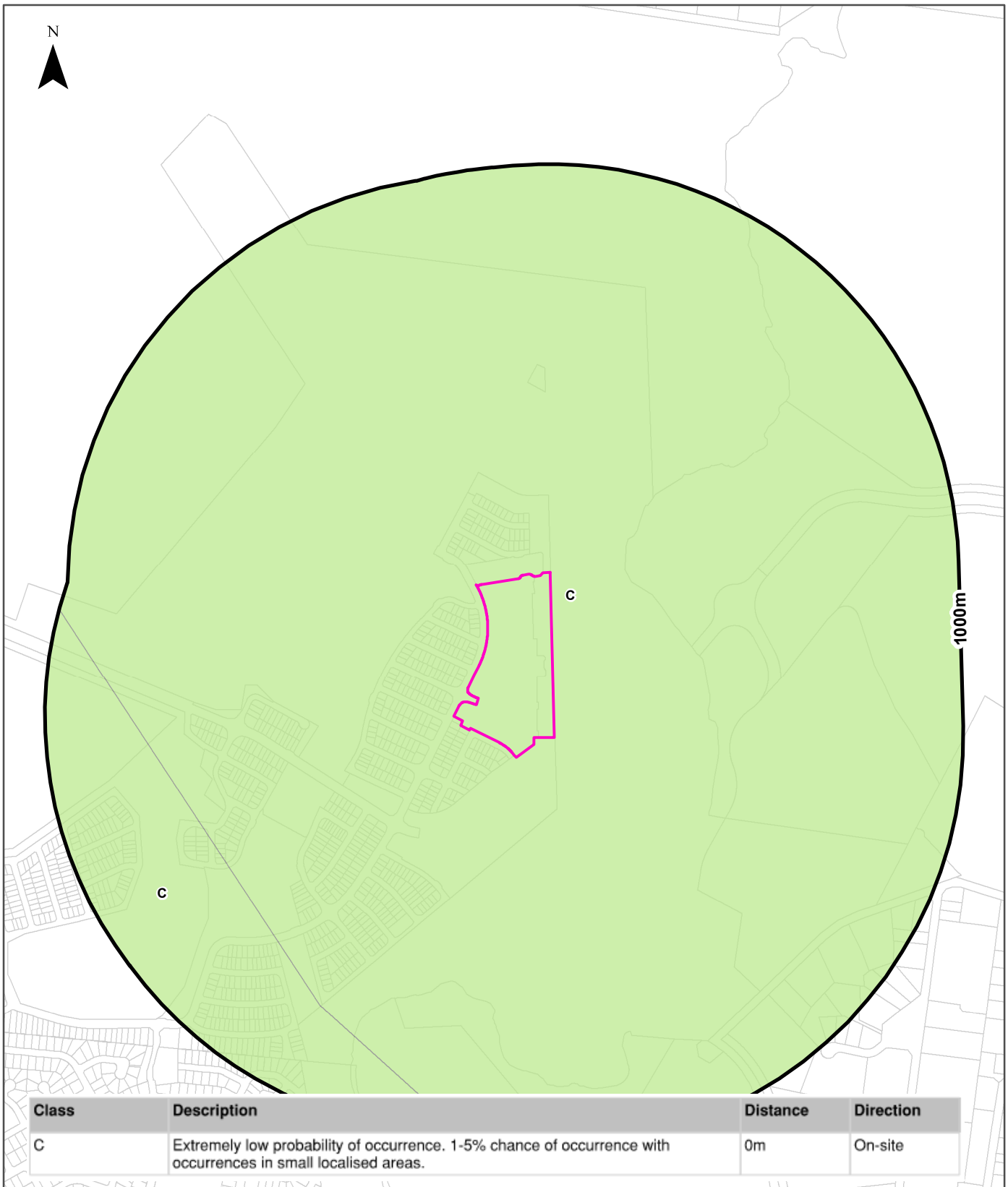
What are the Faults, Shear zones or Schist zones, Intrusive boundaries & Marker beds within the dataset buffer?

Map ID	Boundary Type	Description	Map Sheet Name	Distance
No Features				

Appendix C ASS RISK MAP

Atlas of Australian Acid Sulfate Soils

Infantry Street, Jordan Springs, NSW 2747



Class	Description	Distance	Direction
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m	On-site

Legend

- Site Boundary
- Buffer 1000m
- Property Boundary

Probability of occurrence of Acid Sulfate Soils

- A. High (>70%)
- B. Low (6-70%)
- C. Extremely Low (1-5%)
- D. No Chance (0%)
- No Data

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2023

Coordinate System: GDA 1994 MGA Zone 56

Date: 31October 2023

Acid Sulfate Soils

Infantry Street, Jordan Springs, NSW 2747

Atlas of Australian Acid Sulfate Soils

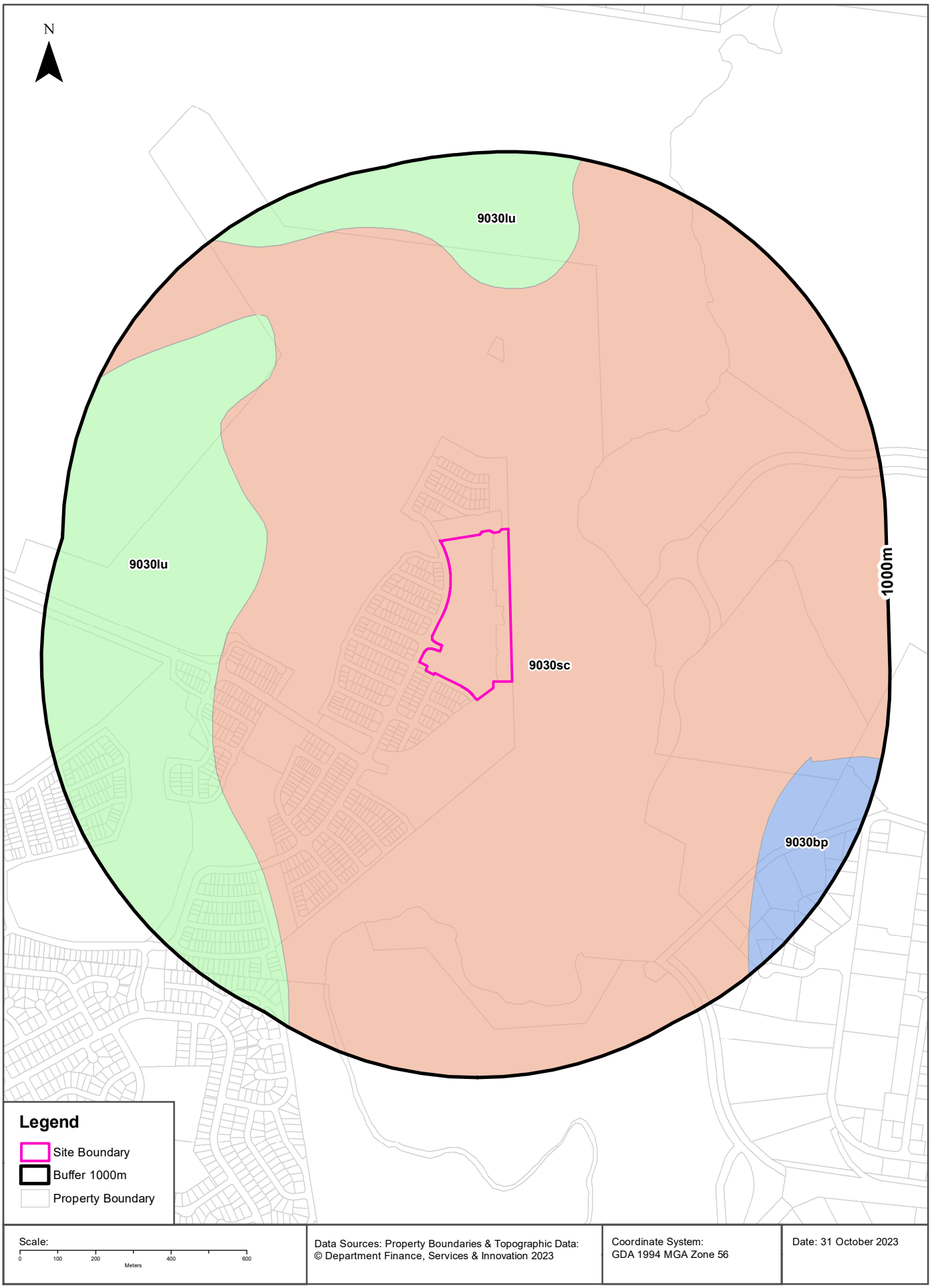
Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance	Direction
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m	On-site

Appendix D SOIL ZONE MAPPING

Soil Landscapes of Central and Eastern NSW

Infantry Street, Jordan Springs, NSW 2747



Soils

Infantry Street, Jordan Springs, NSW 2747

Soil Landscapes of Central and Eastern NSW

Soil Landscapes of Central and Eastern NSW within the dataset buffer:

Soil Code	Name	Distance	Direction
9030sc	South Creek	0m	On-site
9030lu	Luddenham	458m	West
9030bp	Berkshire Park	766m	South East

Acid Sulfate Soils

Infantry Street, Jordan Springs, NSW 2747

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

Soil Class	Description	EPI Name
N/A		

If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	EPI Name	Distance	Direction
N/A				

Appendix E BOREHOLES

Explanatory Notes

The methods of description and classification of soils and rocks used in this report are based on the Australian Standard AS1726-2017 Geotechnical Site Investigations. Material descriptions are deduced from field observation or engineering examination, and may be appended or confirmed by in situ or laboratory testing. The information is dependent on the scope of investigation, the extent of sampling and testing, and the inherent variability of the conditions encountered.

Subsurface investigation may be conducted by one or a combination of the following methods.

Method	
Test Pitting: excavation/trench	
BH	Backhoe bucket
EX	Excavator bucket
R	Ripper
H	Hydraulic Hammer
X	Existing excavation
N	Natural exposure
Manual drilling: hand operated tools	
HA	Hand Auger
Continuous sample drilling	
PT	Push tube
PS	Percussion sampling
SON	Sonic drilling
Hammer drilling	
AH	Air hammer
AT	Air track
Spiral flight auger drilling	
AS	Auger screwing
AD/V	Continuous flight auger: V-bit
AD/T	Continuous spiral flight auger: TC-Bit
HFA	Continuous hollow flight auger
Rotary non-core drilling	
WB	Washbore drilling
RR	Rock roller
Rotary core drilling	
PQ	85mm core (wire line core barrel)
HQ	63.5mm core (wire line core barrel)
NMLC	51.94mm core (conventional core barrel)
NQ	47.6mm core (wire line core barrel)
DT	Diatube (concrete coring)

Sampling is conducted to facilitate further assessment of selected materials encountered.

Sampling method	
Soil sampling	
B	Bulk disturbed sample
D	Disturbed sample
C	Core sample
ES	Environmental soil sample
SPT	Standard Penetration Test sample
U	Thin wall tube 'undisturbed' sample
WS	Environmental water sample
P	Piston Sampler

Field testing may be conducted as a means of assessment of the in situ conditions of materials.

Field testing	
SPT	Standard Penetration Test
HV/PP	Hane Vane (P-Peak R-Residual) / Pocket Penetrometer
Dynamic Penetrometers (blows per noted increment)	
DCP	Dynamic Cone Penetrometer
PSP	Perth Sand Penetrometer
MC	Moisture Content
VS	Vane Shear
PBT	Plate Bearing Test
SP	Single Packer Test
DP	Double Packer Test

If encountered, refusal (R), virtual refusal (VR) or hammer bouncing (HB) of penetrometers may be noted.

The quality of the rock can be assessed by the degree of natural defects/fractures and the following.

Rock quality description	
TCR	Total Core Recovery (%) (length of core recovered divided by the length of core run)
RQD	Rock Quality Designation (%) (sum of axial lengths of core greater than 100mm long divided by the length of core run)

Notes on groundwater conditions encountered may include.

Groundwater	
Not Encountered	Excavation is dry in the short term
Not Observed	Water level observation not possible
Seepage	Water seeping into hole
Inflow	Water flowing/flooding into hole

Perched groundwater may result in a misleading indication of the depth to the true water table. Groundwater levels are also likely to fluctuate with variations in climatic and site conditions.

Notes on the stability of excavations may include.

Excavation conditions	
Stable	No obvious/gross short term instability noted
Spalling	Material falling into excavation (minor/major)
Unstable	Collapse of the majority, or one or more face of the excavation

Explanatory Notes: General Soil Description

The methods of description and classification of soils used in this report are based on Australian Standard AS1726-2017 Geotechnical Site Investigations. In practice, a material is described as a soil if it can be remoulded by hand in its field condition. The dominant component is shown in upper case, with secondary components in lower case. In general descriptions cover: soil type, plasticity or particle size/shape, colour, strength or density, moisture and inclusions.

In general, soil types are classified according to the dominant particle on the basis of the following particle sizes.

Soil Classification		Particle Size (mm)
CLAY		< 0.002
SILT		0.002 0.075
SAND	fine	0.075 to 0.21
	medium	0.21 to 0.6
	coarse	0.6 to 2.36
GRAVEL	fine	2.36 to 6.7
	medium	6.7 to 19
	coarse	19 to 63
COBBLES		63 to 200
BOULDERS		> 200

Soil types may be qualified by the presence of minor components on the basis of field examination methods and/or the soil grading.

Terminology	In coarse grained soils		In fine soils
	% fines	% coarse	% coarse
Trace	≤5	≤15	≤15
With	>5, ≤12	>15, ≤30	>15, ≤30

The strength of cohesive soils is classified by engineering assessment or field/lab testing as follows.

Strength	Symbol	Undrained shear strength
Very Soft	VS	≤12kPa
Soft	S	12kPa to ≤25kPa
Firm	F	25kPa to ≤50kPa
Stiff	St	50kPa to ≤100kPa
Very Stiff	VSt	100kPa to ≤200kPa
Hard	H	>200kPa

Cohesionless soils are classified on the basis of relative density as follows.

Relative Density	Symbol	Density Index
Very Loose	VL	<15%
Loose	L	15% to ≤35%
Medium Dense	MD	35% to ≤65%
Dense	D	65% to ≤85%
Very Dense	VD	>85%

The plasticity of cohesive soils is defined by the Liquid Limit (LL) as follows.

Plasticity	Silt LL	Clay LL
Low plasticity	≤ 35%	≤ 35%
Medium plasticity	N/A	> 35% ≤ 50%
High plasticity	> 50%	> 50%

The moisture condition of soil (*w*) is described by appearance and feel and may be described in relation to the Plastic Limit (PL), Liquid Limit (LL) or Optimum Moisture Content (OMC).

Moisture condition and description	
Dry	Cohesive soils: hard, friable, dry of plastic limit. Granular soils: cohesionless and free-running
Moist	Cool feel and darkened colour: Cohesive soils can be moulded. Granular soils tend to cohere
Wet	Cool feel and darkened colour: Cohesive soils usually weakened and free water forms when handling. Granular soils tend to cohere

The structure of the soil may be described as follows.

Zoning	Description
Layer	Continuous across exposure or sample
Lens	Discontinuous layer (lenticular shape)
Pocket	Irregular inclusion of different material

The structure of soil layers may include: defects such as softened zones, fissures, cracks, joints and root-holes; and coarse grained soils may be described as strongly or weakly cemented.

The soil origin may also be noted if possible to deduce.

Soil origin and description	
Fill	Anthropogenic deposits or disturbed material
Topsoil	Zone of soil affected by roots and root fibres
Peat	Significantly organic soils
Colluvial	Transported down slopes by gravity/water
Aeolian	Transported and deposited by wind
Alluvial	Deposited by rivers
Estuarine	Deposited in coastal estuaries
Lacustrine	Deposited in freshwater lakes
Marine	Deposits in marine environments
Residual soil	Soil formed by in situ weathering of rock, with no structure/fabric of parent rock evident
Extremely weathered material	Formed by in situ weathering of geological formations, with the structure/fabric of parent rock intact but with soil strength properties

The origin of the soil generally cannot be deduced solely on the appearance of the material and the inference may be supplemented by further geological evidence or other field observation. Where there is doubt, the terms ‘possibly’ or ‘probably’ may be used

Explanatory Notes: General Rock Description

Description of Rock

i. Rock name (BLOCK LETTERS)

ii. Grain size and mineralogy

iii. Colour

iv. Fabric and texture

v. Features, inclusions, minor components, moisture content and durability

vi. Strength

vii. Weathering and/or alteration

viii. Rock mass properties – discontinuities and structure of rock

ix. Interpreted stratigraphic unit

x. Additional observations including geological structure

Simple rock names are used to provide a reasonable engineering description, rather than a precise geological classification and have been completed in general accordance with AS1726-2017. The rock name is chosen by considering the nature and shape of the grains or crystals, the texture and fabric of the rock material, the geological structure and setting, and information from the geological map of the area. Further guidance on the naming of rocks can be found in AS1726-2017, Tables 15, 16, 17 and 18. Typical rock types are described below, though subject to site specific variations.

Rock Type	Description	Example of Rock Name
Sedimentary	Formed by deposited beds of sediments, have grains that are cemented together and often rounded. Significant porosity	COMMON: Conglomerate, Breccia, Sandstone, Mudstone, Siltstone, Claystone ≥90% CARBONATE: Limestone, Dolomite, Calcirudite, Calcarenite, Calcisiltite, Calcilutite PYROCLASTIC: Agglomerate, Volcanic Breccia, Tuff
Igneous	Formed from molten rock and have a crystalline texture. Typically massive and low porosity. Rock types are from coarse to fine grained.	HIGH QUARTZ CONTENT: Granite, Microgranite, Rhyolite MODERATE QUARTZ CONTENT: Diorite, Microdiorite, Andesite LOW QUARTZ CONTENT: Gabbro, Dolerite, Basalt
Metamorphic	Formed when rocks are subject to heat and/or pressure and have typically have directional fabric. Typically have low porosity and crystalline structure. Rock types are from coarse to fine grained	FOLIATED: Gneiss, Schist, Phyllite, Slate NON-FOLIATED: Marble, Quartzite, Serpentinite, Hornfels
Duricrust	Formed as part of a weathering profile and show evidence of being cemented in situ. Cementation is typically irregular and exhibits replacement textures.	Ferricrete (Iron oxides and hydroxides) Silicrete (Silica) Calcrete (Calcium carbonate) Gypcrete (Gypsum)

Note: ( ) denotes dominant cementing mineralogy

Colour

Colour is described in the moist condition, using simple terms such as black, white, grey, red, brown, orange, yellow, purple, green, blue, etc. These may be modified as necessary, e.g. by 'pale', 'dark' or 'mottled'. Borderline colours are described as a combination of these colours. Refer to the core photographs accompanying borelogs for colour charts to assist with colour identification.

Grain Size

Terms describing dominate grain size in sedimentary rocks.

Term	Grain size
Coarse	Mainly 0.6 mm to 2 mm
Medium	Mainly 0.2 mm to 0.6 mm
Fine	Mainly 0.06mm (just visible) to 0.2 mm

Terms describing dominate grain size in igneous and metamorphic rocks

Term	Grain size
Coarse	Mainly greater than 2 mm
Medium	0.06 mm to 2 mm
Fine	Mainly less than 0.06 mm (just visible) to 0.2mm

Bedding and Fabric

Term	Definition
Massive	No obvious development of bedding – rock appears homogenous
Bedding	Layering produced by changes in sedimentation which may be defined by grain size, color or other features
Laminations	Similar to bedding but developed in layer thicknesses of less than 20mm
Foliation	The parallel arrangement of minerals due to metamorphic processes

Cleavage	A type of foliation developed in fine grained metamorphic rocks such as slates
Indistinct Fabric	There is little effect on strength - properties
Distinct Fabric	The rock may break more easily parallel to the fabric

Rock Strength

Term (Code)	UCS (MPa)	$Is_{(50)}$ (MPa)	Field Guide to Strength
Very Low (VL)	0.6 – 2	> 0.03 to ≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 3 cm thick can be broken by finger pressure.
Low (L)	2 - 6	> 0.1 to ≤ 0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blow of the pick point; has dull soun under hammer. A piece of core 150 mm long 50 mm in diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium (M)	6 - 20	> 0.3 to ≤ 1.0	Readily scored with a knife; a piece of core 150 mm long by 50 mm in diameter can be broken by hand with difficulty.
High (H)	20 - 60	> 1 to ≤ 3	A piece of core 150 mm long by 50 mm in diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High (VH)	60 - 200	> 3 to ≤ 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High (EH)	>200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Rock strength is assessed by laboratory Uniaxial Compressive Strength (UCS) testing and/or Point Load Strength Index (PLT) testing to obtain the Is(50) the strength table implies a 20 times correlation between Is(50) and UCS used for classification. Note however, multiplier may range from 4 (e.g. some carbonated and low strength rocks) to 40 (e.g. some igneous rocks and/or some high strength rocks). A site specific correlation based on testing, previous investigation or literature may be used where the strength of the rock mass which may be considered weaker due to the available. These terms refer to the strength of the rock material and not to effect of rock defects.

Rock Weathering

Term (Code)	Definition
Residual soil (RS)	Soil developed on extremely weathered rock. The rock mass structure and substance fabric are no longer evident but the soil has not been significantly transported.
Extremely weathered (EW)	Rock is weathered to such an extent that it has 'soil' properties, i.e, it either disintegrates or can be remoulded in water, b the texture of original rock is still evident.
Highly weathered (HW)	Distinctly weathered (DW)*	Whole rock material is discoloured usually by extent that iron staining or bleaching and other signs of chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original rock substance is no longer recognisable	*Where is it not practical to distinguish between 'HW' and MW'. 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 weathering products in pores
Moderately weathered (MW)		Whole rock material is discoloured usually by staining that original colour of the fresh rock is no longer recognisable	
Slightly weathered (SW)		Rock is slightly discoloured but shows little or no change of strength from fresh rock	
Fresh rock (F)		Rock shows no sign of decomposition or staining	

Rock Alteration

Term (Code)	Definition
Extremely altered (XA)	Rock is altered to such an extent that it has 'soil' properties, i.e, it either disintegrates or can be remoulded in water, b the texture of original rock is still evident.
Highly Altered (HA)	Distinctly Altered (DA)	Whole rock material is discoloured usually by extent that iron staining or bleaching and other signs of chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original rock substance is no longer recognisable	*Where is it not practical to distinguish between 'HA' and MA'. Rock strength usually changed by alteration The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of

Moderately Altered (MA)		Whole rock material is discoloured usually by staining that original colour of the fresh rock is no longer recognisable	weathering products in pores
Slightly altered (SA)		Rock is slightly discoloured but shows little or no change of strength from fresh rock	

Rock Core Recovery

TCR = Total Core Recovery (%)

$$\frac{Length\ of\ Core\ Recovered}{Length\ of\ Core\ Run} x\ 100$$

SCR = Solid Core Recovery (%)

$$\frac{Sum\ Length\ of\ Cylindrical\ Core\ Recovered}{Length\ of\ Core\ Run} x\ 100$$

RQD = Rock Quality Designation (%)

$$\frac{Sum\ Length\ of\ Sound\ Core\ Pieces > 100mm\ in\ legnth}{Length\ of\ Core\ Run} x\ 100$$

Types of Discontinuities

Term	Code	Description
Parting	BP	A surface or crack across which the rock has little or no tensile strength. Parallel or sub-parallel to layering (e.g. bedding) or a planar anisotropy in the rock material (e.g. cleavage). May be open or closed.
Joint	JT	A surface or crack with no apparent shear displacement and across which the rock ahs little or no tensile strength, but which is not parallel or sub-parallel to layering or to planar anisotropy in the rock material. May be open or closed.
Sheared Surface	SS	A near planar, curved or undulating surface which is usually smooth, polished or slickensided and which show evidence of shear displacement
Shear Zone	SZ	A zone with roughly parallel planar boundaries of rock substance consisting of closely spaced joints with smooth slickensided surfaces often curved. The joints divide the rock mass into unit blocks usually of lenticular or wedge shape.
Sheared Seam	SSe	Seam of soil material with roughly parallel almost planar boundaries, composed of soil materials with roughly parallel near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge-shaped blocks.
Crushed Seam	CS	A zone or seam with roughly parallel planar boundaries of rock substance composed of disoriented, usually angular, fragments of the host rock substance which may be more weathered than the host rock. The seam has soil properties
Infilled Seam	IS	Seam of soil material usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1 mm thick may be described as a veneer or coating on a joint surface.
Extremely Weathered Seam	EWS	Seam of soil material, often with gradational boundaries. Formed by weathering of the rock material in place.
Seam	SM	Seam of soil material, often with gradational boundaries whereby the origin is not able to be distinguished in the field

Note: RMS specific terms such as drill breaks (DB) and handling breaks (HB) are used on the logs which are not strictly defined by AS1726-2017. These breaks are not included as natural discontinuity for fracture spacing calculations

Discontinuity Observation

Term	Code	Description
Clean	CN	No visible coating or infill
Stain	SN	No visible coating or infill but surfaces are discoloured by mineral staining
Veneer	VNR	A visible coating or soil or mineral substance but usually unable to be measured. If discontinuous over the plane, patchy veneer.
Coating <1 mm	CT	A visible coating or infilling of soil or mineral substance. Describe composition and thickness.
Filling (Filled) >1 mm	FLD	A visible filling of soil or mineral substance. Describe composition and

Infill Material

Code	Description	Code	Description
Ca	Calcite	Gp	Gypsum
Ch	Chlorite	Mn	Manganese
Cl	Clay	MS	Secondary mineral

Co	Coal	Py	Pyrite
Fe	Limonite / Ironstone	Um	Unidentified mineral
Fe Cl	Iron oxide clay	Qz	Quartz
Fl	Feldspar	X	Carbonaceous

Discontinuity Planarity

Term	Definition
CU	Curved – A defect with a gradual change in orientation
IR	Irregular – A defect with many sharp changes in orientation
PL	Planar – Defect forms a continuous plane without variation in orientation
ST	Stepped – A defect with distinct sharp steps or step
UN	Undulose – A defect with undulations

Discontinuity Roughness

Abbreviation	Description
RF	Rough – Many small surface irregularities generally related to the grain size of the parent rock
SM	Smooth – Few or no surface irregularities related to the grain size of the parent rock
PO	Polished – Planes have a distinct sheen or a smoothness
S	Slickensided – Planes have a polished, grooved or striated surface consistent with differential movement of the parent rocs along the plane
VR	Very rough – many large surface irregularities, amplitude generally more than 1mm

Discontinuity Spacing

Spacing (mm)	Description
>6000	Extremely Widely Spaced
2000 - 6000	Very Widely Spaced
600 - 2000	Widely Spaced
200 - 600	Medium Spaced
60 - 200	Closely Spaced
20 - 60	Very Closely Spaced
<20	Extremely Closely Spaced

Visual log

A diagrammatic plot of defects showing type, spacing and orientation in relation to the core axis.

Defects open in situ or clay sealed

Defects closed in-situ

Drill induced fractures or handling breaks

Infilled seam

Water

WATER			
	Water level at date shown		Partial water loss
	Water inflow		Complete water loss

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH101
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292060.95, N: 6265225.28 (56 MGA2020) SURFACE ELEVATION : 23.01 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 9/7/24 DATE LOGGED : 9/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F	10/07/24 ▽	1.00m SPT 4, 2, 2 Nc=4 1.45m	0.0 23.0			FILL: SILTY CLAY: pale grey, medium plasticity, trace fine grained sand, appeared moderately compacted			FILL
								0.30m FILL: SILTY SANDY CLAY: pale grey, brown, medium plasticity, trace siltstone, subangular gravel, appeared moderately compacted, trace concrete and brick fragments			1.00: SPT recovery 450mm
					1.0 22.0						
					2.0 21.0						
				2.50m SPT 6, 6, 5 Nc=11 2.95m				2.50m FILL: GRAVELLY CLAY: grey brown, medium plasticity, subangular gravel, trace siltstone, angular gravel, appeared moderately compacted, trace concrete and brick fragments	M		2.50: SPT recovery 450mm
					3.0 20.0						
				4.00m SPT 2, 2, 5 Nc=7 4.45m	4.0 19.0			4.00m FILL: SANDY CLAY: grey, orange, medium to high plasticity, fine grained sand, trace subangular to angular gravel, appeared moderately compacted			4.00: SPT recovery 450mm
					5.0 18.0						
				5.50m SPT 4, 5, 6 Nc=11 5.95m				5.50m SANDY CLAY: grey-orange, medium to high plasticity, fine grained sand			ALLUVIUM 5.50: SPT recovery 450mm
					6.0 17.0						
							CI-CH		W	St	
				7.00m ~~BT~~ 4, 5, 4 Nc=9 7.45m	7.0 16.0						7.00: SPT recovery 450mm
					8.0 15.0						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH101
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292060.95, N: 6265225.28 (56 MGA2020) SURFACE ELEVATION : 23.01 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 9/7/24 DATE LOGGED : 9/7/24 LOGGED BY : AS CHECKED BY : TH

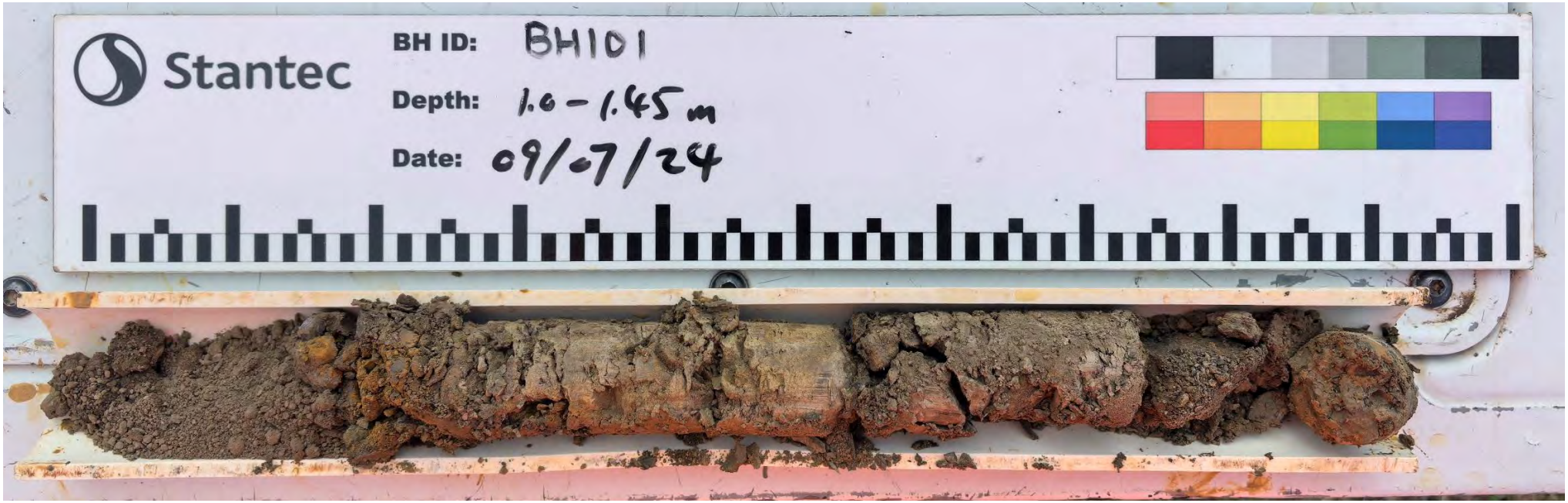
DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					8.0 15.0			SANDY CLAY: grey-orange, medium to high plasticity, fine grained sand *(continued)*			ALLUVIUM
							CI-CH			St	
				8.50m SPT 6, 8, 11 Nc=19				8.50m GRAVELLY SANDY CLAY: yellow brown orange red, medium plasticity, fine to medium grained sand, subangular gravel			RESIDUAL SOIL 8.50: SPT recovery 450mm
AD/T		E-F		8.95m	9.0 14.0		CI		W	VSt	
				10.00m SPT 8, 15/100m Nc=R 10.25m	10.0 13.0		CI	10.00m SILTY CLAY: grey brown, medium plasticity 10.15m		H	10.00: SPT recovery 250mm
		H						10.25m SHALE: pale grey, inferred very low to low strength			WEATHERED ROCK
								BOREHOLE BH101 TERMINATED AT 10.25 m Refusal			
					11.0 12.0						
					12.0 11.0						
					13.0 10.0						
					14.0 9.0						
					15.0 8.0						
					16.0 7.0						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

Stantec	TITLE: Borehole Core Photographs – BH101 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH101 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH101 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH101 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH101 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH101 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **8.5.0m to 8.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH101 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **10.0m to 10.25m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH102
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292080.78, N: 6265265.12 (56 MGA2020) SURFACE ELEVATION : 22.97 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 9/7/24 DATE LOGGED : 9/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F	Not Encountered	1.00m SPT 6, 10, 8 Nc=18 1.45m	0.0 23.0			FILL: SILTY CLAY: brown, medium plasticity, with fine to medium grained sand, appeared moderately compacted			FILL
					0.30m			FILL: GRAVELLY SILTY CLAY: grey-brown, medium plasticity, subangular gravel, appeared moderately compacted, trace concrete and brick fragments			1.00: SPT recovery 450mm
					1.0 22.0						
					2.0 21.0						
				2.50m SPT 4, 7, 7 Nc=14 2.95m	2.50m			FILL: GRAVELLY CLAY: grey, brown, red, low to medium plasticity, subangular gravel, appeared moderately compacted, trace concrete and brick fragments	M		2.50: SPT recovery 450mm
					3.0 20.0						
				4.00m SPT 2, 2, 6 Nc=8 4.45m	4.00m 4.0 19.0			FILL: GRAVELLY SILTY CLAY: brown, yellow, grey, medium to high plasticity, trace siltstone, angular gravel, appeared moderately compacted			4.00: SPT recovery 450mm
					5.0 18.0						
				5.50m SPT 4, 4, 4 Nc=8 5.95m	5.50m		CH	SANDY CLAY: brown, red, yellow, high plasticity, fine to medium grained sand		F to St	ALLUVIUM 5.50: SPT recovery 450mm
					5.95m 6.0 17.0			BOREHOLE BH102 TERMINATED AT 5.95 m Target depth			
					7.0 16.0						
					8.0 15.0						

See Explanatory Notes for details of abbreviations & basis of descriptions.

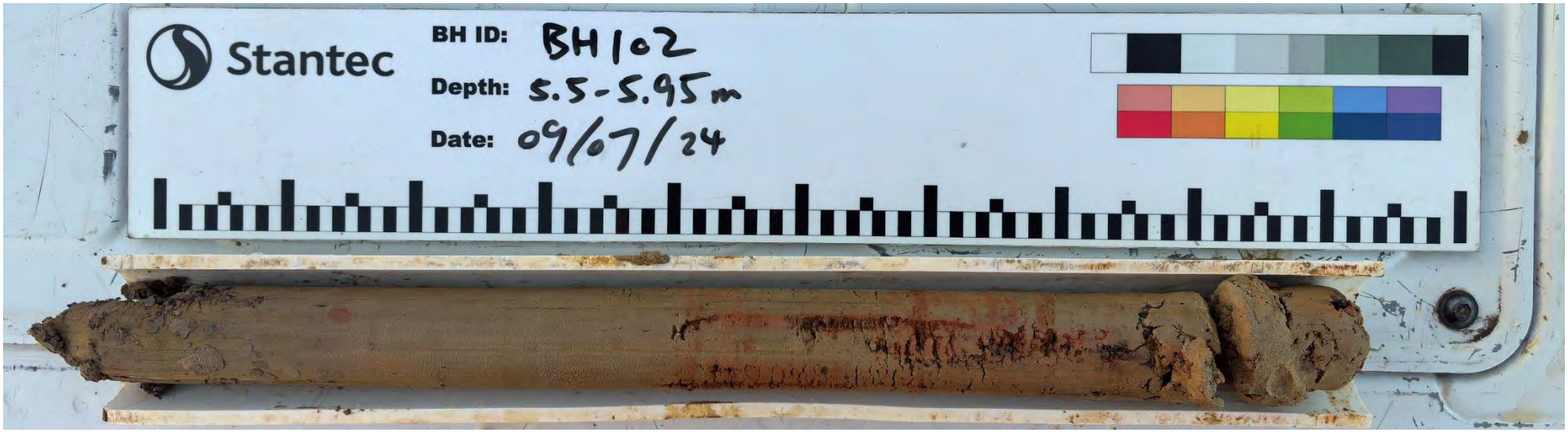
STANTEC AUSTRALIA PTY LTD

Stantec

Stantec	TITLE: Borehole Core Photographs – BH102 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH102 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH102 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH103
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292102.25, N: 6265306.14 (56 MGA2020) SURFACE ELEVATION : 22.64 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 11/7/24 DATE LOGGED : 9/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F		1.00m SPT 5/50mm Nc=R 1.05m	0.0 22.6			FILL: SILTY CLAY: brown, medium plasticity, with fine grained sand, appeared poorly compacted			FILL
					1.00m 1.0 21.6			1.00m FILL: SANDY CLAY: grey, grey-brown, low plasticity, with subangular, possible cobble gravel, appeared moderately to well compacted, trace concrete and brick fragments			1.00: SPT recovery 50mm
				2.50m SPT 7, 8, 5 Nc=13 2.95m	2.0 20.6			2.50m FILL: SILTY CLAY: grey-brown, medium plasticity, with subangular gravel, appeared moderately compacted, trace concrete and brick fragments	M		2.50: SPT recovery 450mm
				3.50m D	3.0 19.6			3.50m FILL: SILTY CLAY: brown-grey, medium to high plasticity, with fine to medium grained sand, appeared moderately compacted			
				4.00m SPT 2, 3, 5 Nc=8 4.45m	4.0 18.6						4.00: SPT recovery 450mm
				5.50m SPT 2, 5, 5 Nc=10 5.95m	5.0 17.6			5.50m SANDY CLAY: yellow, brown, high plasticity, fine to medium grained sand, trace subangular gravel			ALLUVIUM 5.50: SPT recovery 450mm
					6.0 16.6		CH		W	St	
				7.00m SPT 4, 5, 8 Nc=13 7.45m	7.0 15.6			7.00m SANDY CLAY: red, brown, high plasticity, fine grained sand, trace subangular gravel			7.00: SPT recovery 450mm
					8.0 14.6		CH			St	

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH103
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292102.25, N: 6265306.14 (56 MGA2020) SURFACE ELEVATION : 22.64 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 11/7/24 DATE LOGGED : 9/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					8.0 14.6			SANDY CLAY: red, brown, high plasticity, fine grained sand, trace subangular gravel *(continued)*		St	
				8.50m SPT 10, 11, 14 Nc=25			CH				8.50: SPT recovery 450mm
				8.95m				8.80m SANDY CLAY: grey, brown, high plasticity, fine grained sand			
					9.0 13.6		CH			VSt	
AD/T		E-F						9.80m GRAVELLY CLAY: yellow brown, grey, high plasticity, subangular gravel	W		RESIDUAL SOIL
				10.00m SPT 15, 19/140mm Nc=R 10.29m	10.0 12.6						10.00: SPT recovery 290mm
							CH			H	
					11.0 11.6			11.00m SHALE: pale grey, inferred very low to low strength			WEATHERED ROCK
		H						11.60m			
								BOREHOLE BH103 TERMINATED AT 11.60 m Refusal Backfilled with spoil			
					12.0 10.6						
					13.0 9.6						
					14.0 8.6						
					15.0 7.6						
					16.0 6.6						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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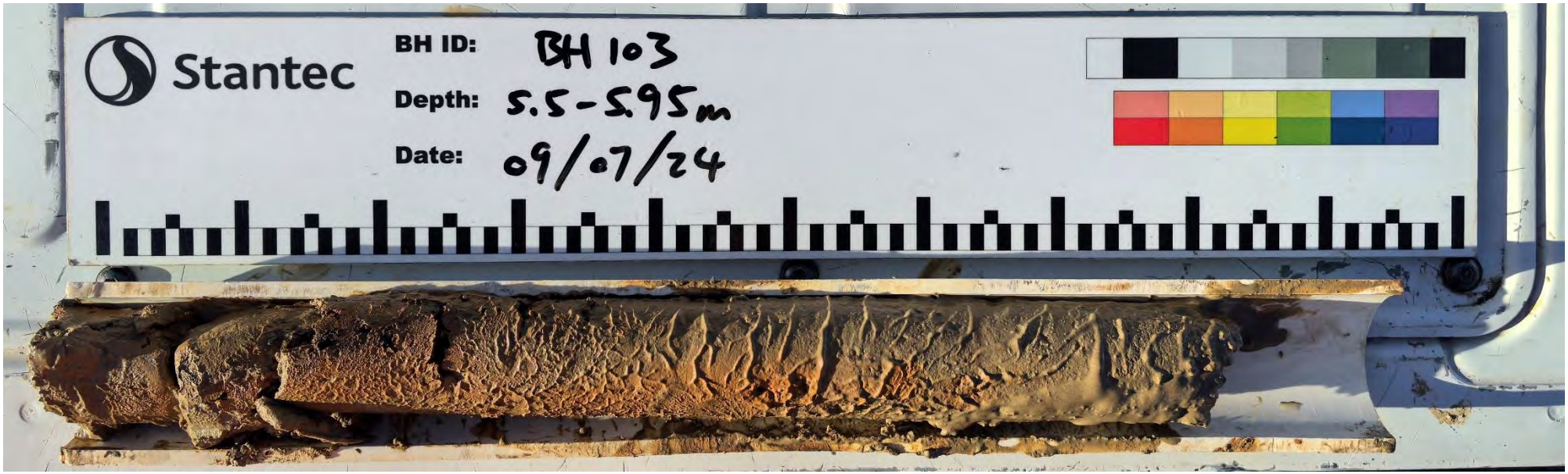
Stantec	TITLE: Borehole Core Photographs – BH103 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.05m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH103 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

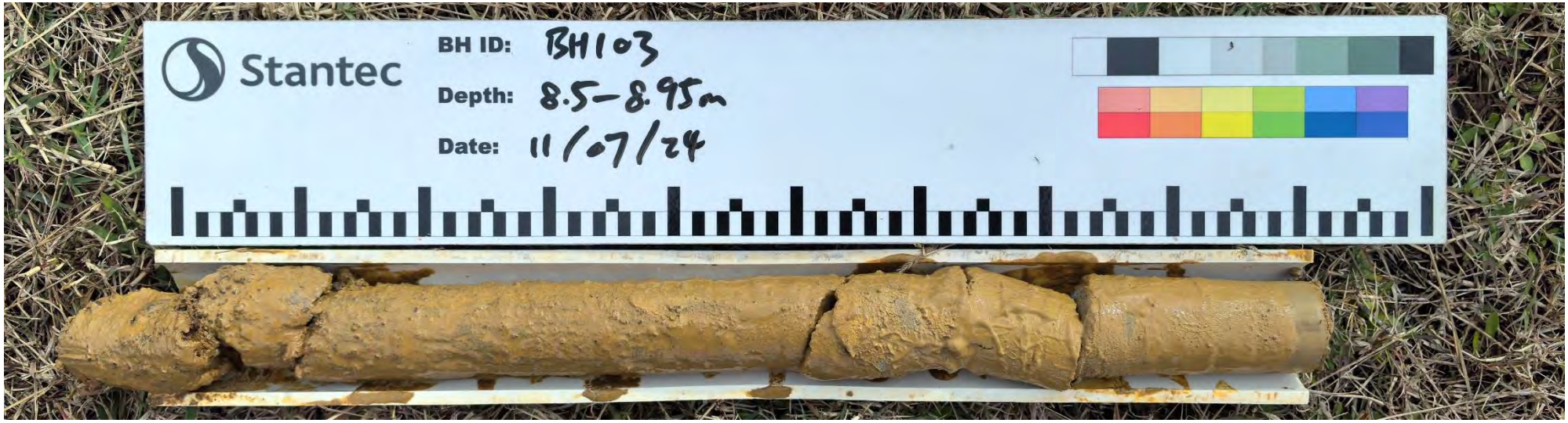
Stantec	TITLE: Borehole Core Photographs – BH103 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH103 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH103 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH103 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **8.5m to 8.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH103 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **10m to 10.29m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH104
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292111.35, N: 6265338.04 (56 MGA2020) SURFACE ELEVATION : 22.48 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 11/7/24 DATE COMPLETED : 11/7/24 DATE LOGGED : 11/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F		0.50m LB	0.0 22.5			FILL: SILTY CLAY: grey, brown, medium plasticity, with fine to medium grained sand, appeared poorly compacted			FILL
				1.00m SPT 6, 4, 4 N=8	1.0 21.5			0.30m FILL: SILTY SANDY CLAY: grey brown orange, medium plasticity, fine to medium grained sand, trace subangular gravel, appeared moderately compacted, trace concrete and brick fragments			0.60: DCP to 600mm 1.00: SPT recovery 450mm
				1.45m							
					2.0 20.5				M		
				2.50m SPT 5, 6, 7 N=13				2.50m FILL: SILTY CLAY: brown, medium to high plasticity, with fine to medium grained sand, trace subangular gravel, appeared moderately compacted, trace concrete and brick fragments			2.50: SPT recovery 450mm
				2.95m	3.0 19.5						
				3.50m D							
			▶	4.00m SPT 2, 3, 10 N=13	4.0 18.5			4.00m FILL: SILTY CLAY: grey-brown, medium to high plasticity, trace subangular gravel, appeared moderately compacted			4.00: SPT recovery 450mm
				4.45m							
					5.0 17.5			5.00m CLAYEY SAND: grey, brown, fine grained sand, medium to high plasticity, trace subangular gravel	W		ALLUVIUM
				5.50m SPT 6, 4, 4 N=8			SC			F to St	5.50: SPT recovery 450mm
				5.95m				5.95m			
					6.0 16.5			BOREHOLE BH104 TERMINATED AT 5.95 m Target depth Backfilled with spoil			
					7.0 15.5						
					8.0 14.5						

See Explanatory Notes for details of abbreviations & basis of descriptions.

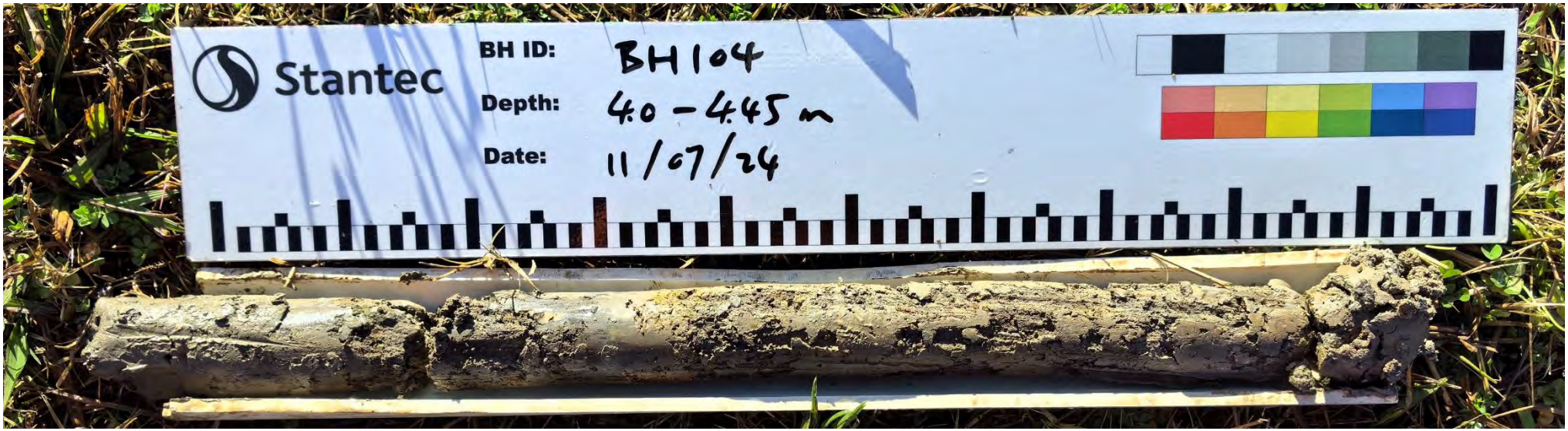
STANTEC AUSTRALIA PTY LTD

Stantec

Stantec	TITLE: Borehole Core Photographs – BH104 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH104 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH104 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH104 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH105
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292112.83, N: 6265378.41 (56 MGA2020) SURFACE ELEVATION : 22.22 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 8/7/24 DATE COMPLETED : 8/7/24 DATE LOGGED : 8/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T					0.0 22.2			0.20m FILL: SILTY CLAY: brown, medium plasticity, trace fine grained sand, appeared poorly compacted			FILL
				1.00m SPT 20/150mm Nc=R 1.15m	1.0 21.2			FILL: SILTY SANDY GRAVEL: brown, grey, fine to medium gravel, angular, medium grained sand, with medium plasticity clay, appeared moderately to well compacted, trace concrete and brick fragments			1.00: SPT recovery 150mm
					2.0 20.2			2.00m FILL: SILTY CLAY: brown, yellow-brown, medium plasticity, with subangular gravel, trace fine to medium grained sand, appeared moderately compacted, trace concrete and brick fragments, up to cobble size	M		
				2.50m SPT 4, 4, 6 Nc=10							2.50: SPT recovery 450mm
				2.95m	3.0 19.2						
		E-F		4.00m SPT 8, 11, 9 Nc=20	4.0 18.2						4.00: SPT recovery 450mm
				4.45m							4.50: borehole collapse around 4.5-6m
					5.0 17.2			5.50m SILTY SANDY CLAY: grey and brown, fine to medium, medium to high plasticity, with gravel			ALLUVIUM 5.50: unable to drop SPT tube pass this depth. no return on the auger, some steel wires wrapped around the auger
					6.0 16.2				W		
							SC			S to F	
					7.0 15.2						7.00: unable to drop SPT tube due to collapsing hole
					8.0 14.2						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH105
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292112.83, N: 6265378.41 (56 MGA2020) SURFACE ELEVATION : 22.22 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 8/7/24 DATE COMPLETED : 8/7/24 DATE LOGGED : 8/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F			8.0 14.2		SC	SILTY SANDY CLAY: grey and brown, fine to medium, medium to high plasticity, with gravel *(continued)*	W	S to F	ALLUVIUM 8.50: unable to drop SPT tube due to collapsing hole
					9.0 13.2						
					10.0 12.2						10.00: unable to drop SPT tube due to collapsing hole
		H						10.50m 10.80m			WEATHERED ROCK
					11.0 11.2			BOREHOLE BH105 TERMINATED AT 10.80 m Refusal			
					12.0 10.2						
					13.0 9.2						
					14.0 8.2						
					15.0 7.2						
					16.0 6.2						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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Stantec	TITLE: Borehole Core Photographs – BH105 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.15m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH105 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH105 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH106
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292109.40, N: 6265412.83 (56 MGA2020) SURFACE ELEVATION : 22.01 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 11/7/24 DATE COMPLETED : 11/7/24 DATE LOGGED : 11/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F			0.0 22.0			FILL: SILTY CLAY: grey, brown, medium plasticity, with subangular gravel, appeared poorly compacted			FILL
								0.30m FILL: SANDY GRAVEL SILTSTONE: pale grey, grey, sub-angular to angular, fine to medium grained sand, trace low to medium plasticity clay, appeared moderately to well compacted, trace concrete and brick fragments			
				1.00m SPT 9, 13, 7 Nc=20	1.0 21.0						1.00: SPT recovery 450mm
				1.45m							
					2.0 20.0			2.00m FILL: SILTY CLAY: grey, brown, medium to high plasticity, with subangular gravel, appeared moderately to well compacted, trace concrete and brick fragments	M		
				2.50m SPT 1, 11, 12 Nc=23				2.50m FILL: SILTY CLAY: pale, grey-grey brown, medium to high plasticity, with subangular gravel, appeared moderately to well compacted			2.50: SPT recovery 450mm
				2.95m	3.0 19.0						
				4.00m SPT 10, 9, 8 Nc=17	4.0 18.0			4.00m FILL: SANDY GRAVEL: grey, brown, sub-angular, fine to medium grained sand, with medium to high plasticity clay, appeared moderately to well compacted			4.00: SPT recovery 450mm
				4.45m	5.0 17.0				W		
				5.50m SPT 4, 2, 3 Nc=5				5.50m CLAYEY SAND: yellow brown, fine grained sand, high plasticity clay, with subangular gravel			ALLUVIUM 5.50: SPT recovery 450mm, steel wire observed
				5.95m			SC	5.95m		F	
					6.0 16.0			BOREHOLE BH106 TERMINATED AT 5.95 m Target depth Backfilled with spoil			
					7.0 15.0						
					8.0 14.0						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH106 1 OF 1

Stantec	TITLE: Borehole Core Photographs – BH106 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH106 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH106 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH106 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH107
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292145.23, N: 6265414.06 (56 MGA2020) SURFACE ELEVATION : 21.61 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 8/7/24 DATE COMPLETED : 8/7/24 DATE LOGGED : 8/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F	▶	1.00m SPT 7, 9, 11 Nc=20 1.45m 1.60m D 2.00m 2.50m SPT 4, 14, 13 Nc=27 2.95m 4.00m SPT 8, 8, 6 Nc=14 4.45m 5.50m SPT 3, 4, 5 Nc=9 5.95m 7.00m SPT 12, 15, 20 Nc=35 7.45m 8.00m	0.0 *21.6* 1.0 *20.6* 2.0 *19.6* 3.0 *18.6* 4.0 *17.6* 5.0 *16.6* 6.0 *15.6* 7.0 *14.6* 8.0 *13.6*		CH CL-CI	FILL: SILTY CLAY: brown, medium plasticity, trace fine to medium grained sand, appeared poorly compacted 0.30m FILL: CLAYEY SILT: grey, grey-brown, low plasticity, with siltstone, subangular gravel, appeared moderately to well compacted, trace concrete and brick fragments 2.30m FILL: GRAVELLY CLAY: brown, low to medium plasticity, subangular gravel, trace fine to medium grained sand, appeared moderately to well compacted, trace concrete and brick fragments 4.00m FILL: SILTY SANDY GRAVEL: fine to medium gravel, sub-angular, fine to medium grained sand, with low to medium plasticity clay, trace timber gravel, appeared moderately compacted 5.40m SANDY CLAY: brown-yellow, brown, grey, high plasticity, fine to medium sand, trace subangular gravel 7.00m GRAVELLY SANDY CLAY: brown-yellow, brown, low to medium plasticity, medium grained sand, angular gravel	M W	St H	FILL 1.00: SPT recovery 450mm 2.50: SPT recovery 450mm 4.00: SPT recovery 450mm ALLUVIUM 5.50: SPT recovery 450mm 7.00: SPT recovery 450mm

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH107
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292145.23, N: 6265414.06 (56 MGA2020) SURFACE ELEVATION : 21.61 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 8/7/24 DATE COMPLETED : 8/7/24 DATE LOGGED : 8/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
				8.00m ES	8.0 13.6		CL-CI	GRAVELLY SANDY CLAY: brown-yellow, brown, low to medium plasticity, medium grained sand, angular gravel *(continued)*		H	
				8.50m				8.50m			8.50: SPT recovery 450mm
				SPT 7, 8, 12 Nc=20				SANDY CLAY: brown-yellow, grey, high plasticity, fine to medium grained sand			
				8.95m							
AD/T		E-F			9.0 12.6		CH		W	VSt	
								9.80m			
				10.00m				SILTY CLAY: brown-yellow, grey, brown, medium plasticity, with angular gravel			RESIDUAL SOIL
				SPT 15, 11/50mm N=R 10.20m	10.0 11.6		CI			H	10.00: SPT recovery 200mm
		H						10.15m 10.20m SHALE: pale grey, inferred very low to low strength			WEATHERED ROCK
								BOREHOLE BH107 TERMINATED AT 10.20 m Refusal			
					11.0 10.6						
					12.0 9.6						
					13.0 8.6						
					14.0 7.6						
					15.0 6.6						
					16.0 5.6						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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Stantec	TITLE: Borehole Core Photographs – BH107 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH107 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH107 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH107 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH107 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH107 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **8.5m to 8.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH107 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **10.0m to 10.2m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH108
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292159.89, N: 6265227.12 (56 MGA2020) SURFACE ELEVATION : 22.10 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 9/7/24 DATE LOGGED : 9/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F	▶	1.00m SPT 5, 8, 7 Nc=15 1.45m	0.0 22.1			FILL: SILTY CLAY: brown, medium to high plasticity, with fine to medium grained sand, trace gravel, appeared poorly compacted			FILL
					0.30m			FILL: SILTY CLAY: grey, grey-brown, low to medium plasticity, with siltstone, subangular gravel, appeared moderately compacted, trace concrete and brick fragments			
					1.0 21.1						1.00: SPT recovery 450mm
					2.00m			FILL: SILTY CLAY: pale brown, yellow-brown, high plasticity, with fine to medium grained sand, with subangular gravel, appeared poorly compacted, trace concrete and brick fragments, up to cobble size			
				2.50m SPT 6, 4, 2 Nc=6 2.95m	2.0 20.1				M		2.50: SPT recovery 450mm
					3.0 19.1						
				4.00m SPT 17/100mm Nc=R 4.45m	4.0 18.1			FILL: SILTY CLAY: grey, grey-brown, medium plasticity, with subangular gravel, trace cobbles, appeared moderately to well compacted			4.00: SPT recovery 100mm
					5.0 17.1						
			▶	5.50m SPT 4, 8, 7 Nc=15 5.95m	5.40m			SILTY CLAY: yellow-brown, grey, high plasticity, with fine to medium grained sand			ALLUVIUM 5.50: SPT recovery 450mm
					6.0 16.1		CH			St to VSt	
				6.50m D **6.75m** ES **7.00m** SPT 23/150mm Nc=R 7.15m					W		
					7.00m			GRAVELLY CLAY: yellow-brown, brown, grey, medium plasticity, angular gravel			7.00: SPT recovery 150mm
					7.0 15.1		CI			H	
					8.0 14.1						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH108
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292159.89, N: 6265227.12 (56 MGA2020) SURFACE ELEVATION : 22.10 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 9/7/24 DATE LOGGED : 9/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					8.0 14.1			GRAVELLY CLAY: yellow-brown, brown, grey, medium plasticity, angular gravel *(continued)*		H	
				8.50m SPT 11, 21/150mm Nc=R 8.80m			CI	8.50m SILTY CLAY: brown-yellow, medium plasticity, with fine grained sand			RESIDUAL SOIL 8.50: SPT recovery 300mm
AD/T		E-F			9.0 13.1		CI		W	H	
								9.70m SHALE: yellow-brown, recovered as clayey silt, low plasticity, inferred very low to low strength			WEATHERED ROCK
		H			10.0 12.1			10.00m BOREHOLE BH108 TERMINATED AT 10.00 m Refusal			
					11.0 11.1						
					12.0 10.1						
					13.0 9.1						
					14.0 8.1						
					15.0 7.1						
					16.0 6.1						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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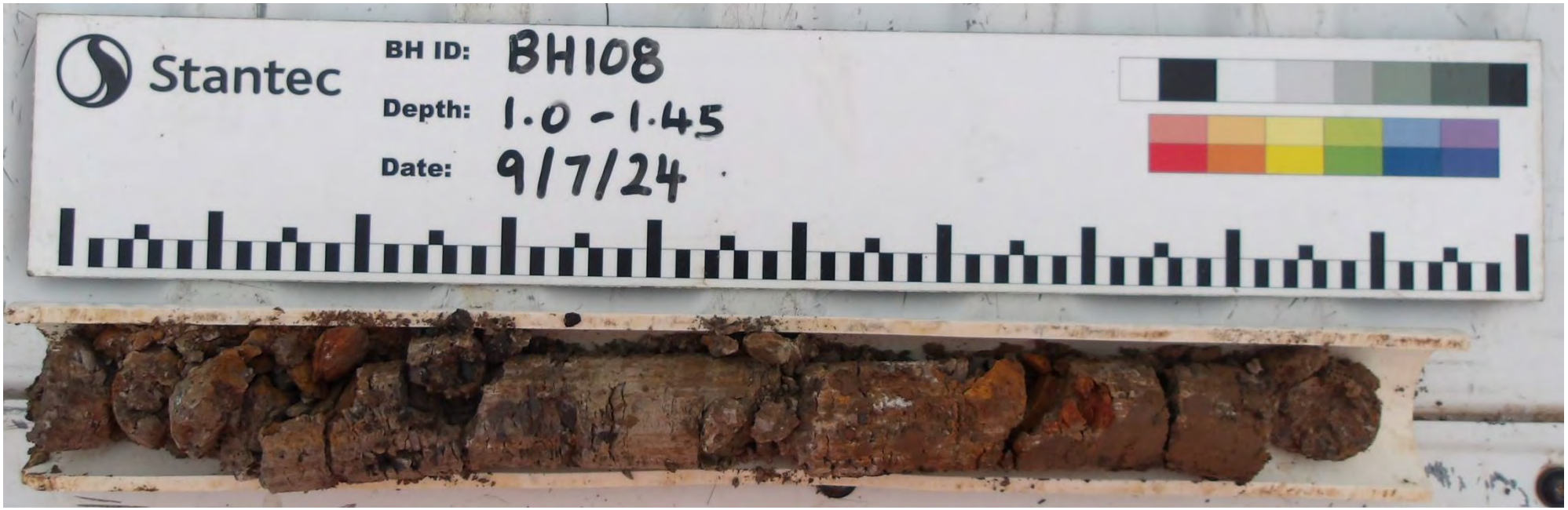
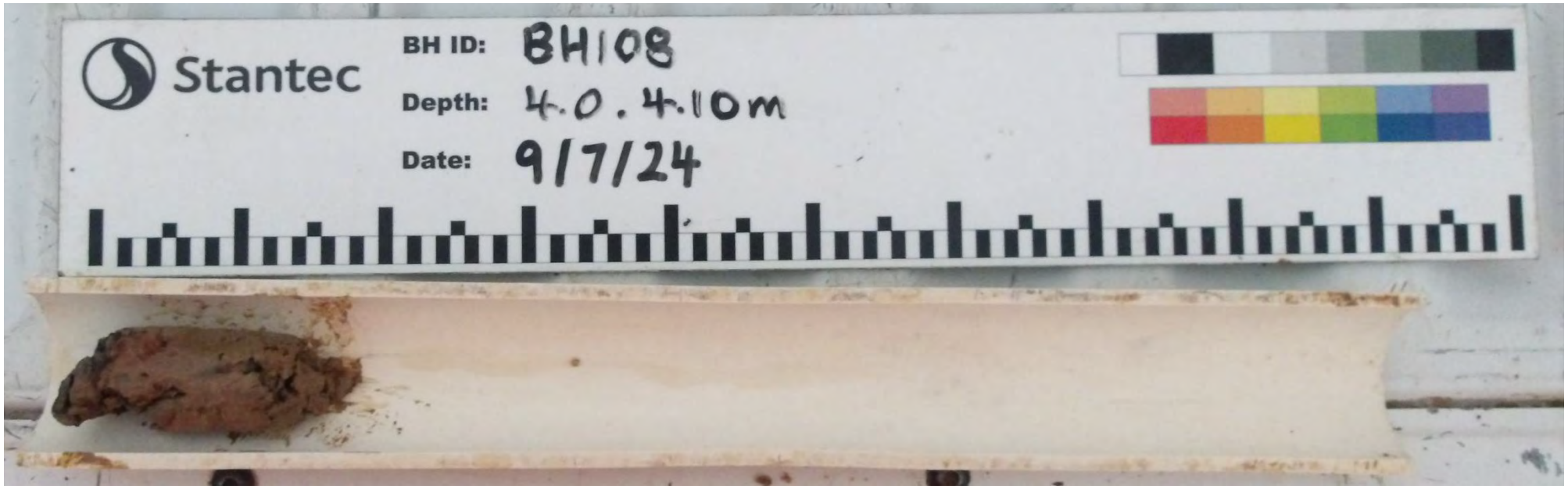
Stantec	TITLE: Borehole Core Photographs – BH108 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

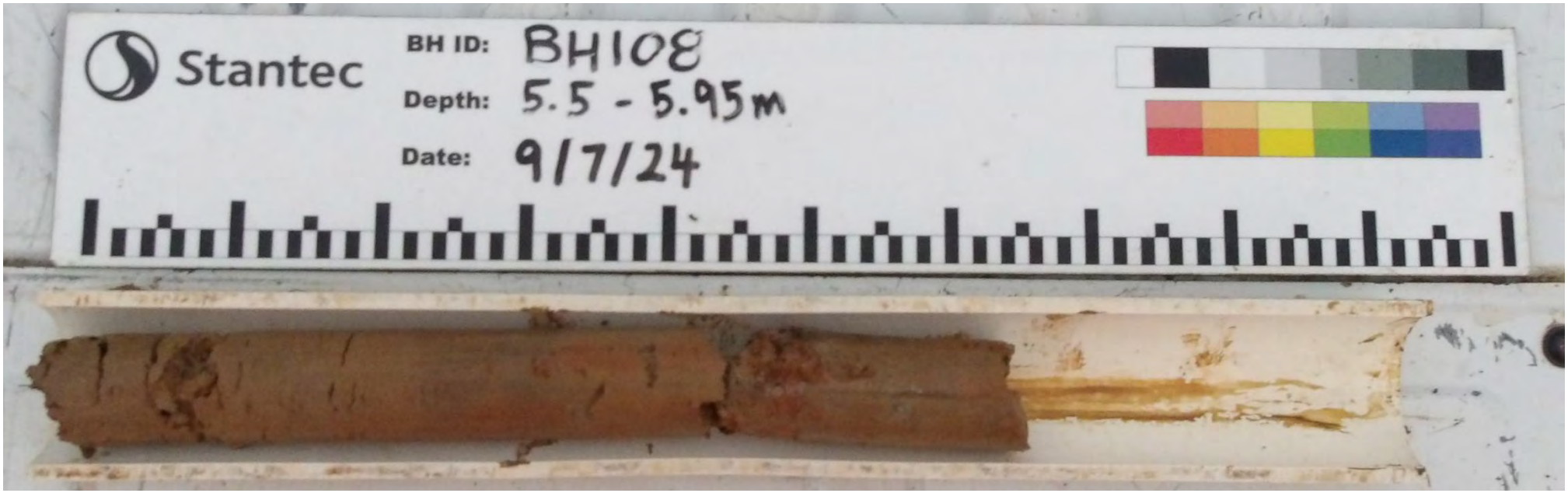


Stantec	TITLE: Borehole Core Photographs – BH108 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH108 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.10m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH108 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH108 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **7.0m to 7.15m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH108 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **8.5m to 8.8m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH109
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292133.12, N: 6265199.84 (56 MGA2020) SURFACE ELEVATION : 22.07 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 9/7/24 DATE LOGGED : 9/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F		1.00m SPT 5, 8, 3 Nc=11 1.45m	0.0 22.1			FILL: SILTY CLAY: brown, medium to high plasticity, with fine grained sand, trace gravel, appeared moderately compacted			FILL
				1.60m D 1.90m	1.0 21.1			1.20m FILL: SILTY CLAY: pale grey brown, medium plasticity, with siltstone, subangular gravel, appeared moderately compacted, trace concrete and brick fragments			1.00: SPT recovery 450mm
				2.50m SPT 4, 2, 6 Nc=8 2.95m	2.0 20.1			2.00m FILL: SILTY CLAY: yellow orange brown, medium to high plasticity, with fine grained sand, trace gravel, appeared moderately compacted, trace concrete and brick fragments			
					3.0 19.1			2.50m FILL: SILTY CLAY: grey brown, medium to high plasticity, with gravel, appeared moderately compacted	M		2.50: SPT recovery 450mm
				4.00m SPT 1, 2, 2 Nc=4 4.45m	4.0 18.1		CH	4.00m SILTY CLAY: dark grey to yellow grey, medium plasticity, with fine to medium grained sand, trace gravel		S to F	ALLUVIUM 4.00: SPT recovery 450mm
				5.50m SPT 5, 5, 5 Nc=10 5.95m	5.0 17.1			5.50m SANDY CLAY: orange brown, high plasticity, fine grained sand			5.50: SPT recovery 450mm
					6.0 16.1		CH			St	
				6.50m ES 7.00m SPT 8, 6, 11 Nc=17 7.45m	7.0 15.1		CI	7.00m GRAVELLY CLAY: yellow-brown, brown, medium plasticity, subangular gravel	W	VSt	7.00: SPT recovery 450mm
					8.0 14.1						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH109
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292133.12, N: 6265199.84 (56 MGA2020) SURFACE ELEVATION : 22.07 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 9/7/24 DATE LOGGED : 9/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F		8.50m SPT 21/150mm Nc=R 8.65m	8.0 14.1		Cl	GRAVELLY CLAY: yellow-brown, brown, medium plasticity, subangular gravel *(continued)*		VSt	
								8.50m GRAVELLY CLAY: brown-grey, medium plasticity, angular gravel, trace cobbles			8.50: SPT recovery 150mm
					9.0 13.1		Cl		W	H	
		F-H		10.00m SPT 7, 11/150mm Nc=R 10.30m	10.0 12.1		Cl	10.00m SILTY CLAY: yellow, grey, medium plasticity, with fine grained sand		H	RESIDUAL SOIL 10.00: SPT recovery 300mm
		H						10.25m 10.30m SHALE: yellow-brown, recovered as clayey silt, low plasticity, inferred very low to low strength			WEATHERED ROCK
								BOREHOLE BH109 TERMINATED AT 10.30 m Refusal			
					11.0 11.1						
					12.0 10.1						
					13.0 9.1						
					14.0 8.1						
					15.0 7.1						
					16.0 6.1						

See Explanatory Notes for details of abbreviations & basis of descriptions.

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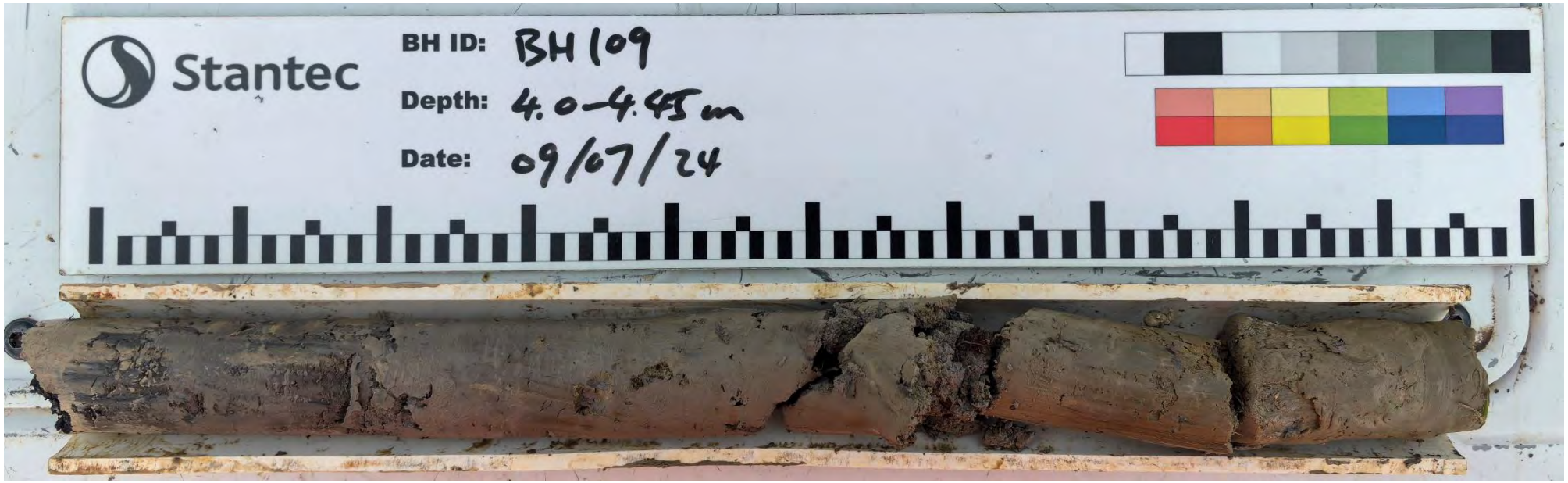
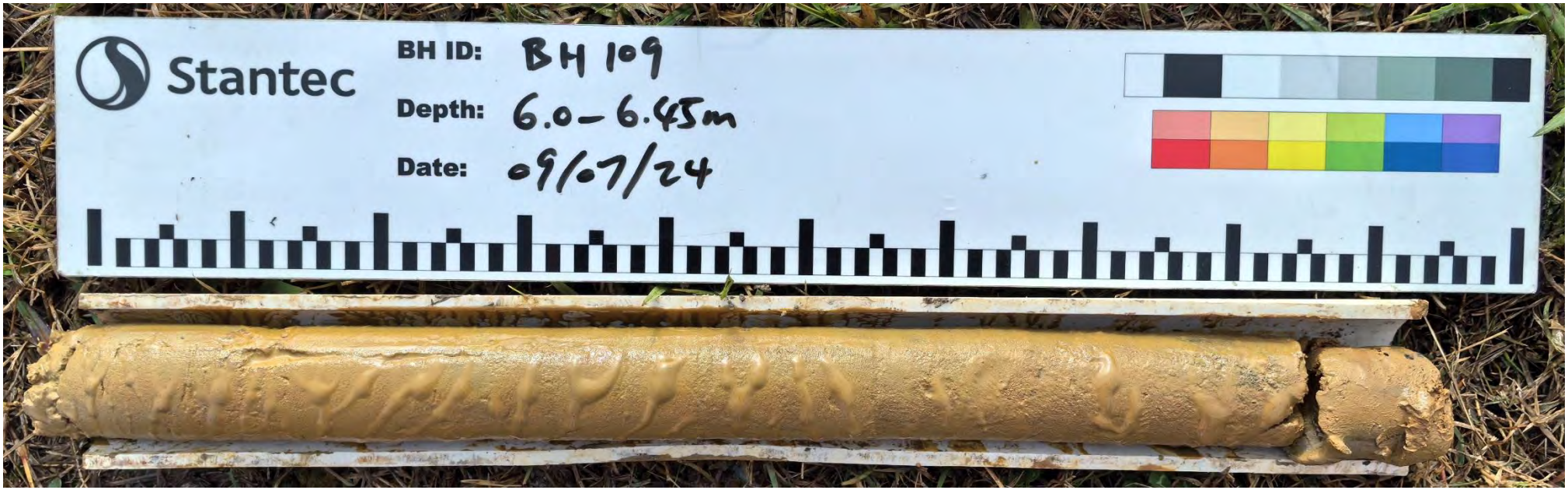
Stantec	TITLE: Borehole Core Photographs – BH109 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH109 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH109 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH109 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **6.0m to 6.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH109 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH109 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **8.5m to 8.65m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH109 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **09/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **10.0m to 10.3m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH110
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292206.36, N: 6265215.57 (56 MGA2020) SURFACE ELEVATION : 21.67 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 9/7/24 DATE COMPLETED : 11/7/24 DATE LOGGED : 9/7/24 LOGGED BY : AS CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F	Not Encountered		0.0 21.7			FILL: SILTY CLAY: dark brown, medium plasticity, with fine to medium grained sand, trace subangular gravel, appeared poorly compacted, trace concrete and brick fragments			
				0.50m B				0.30m FILL: SILTY CLAY: grey, medium plasticity, with fine to medium grained sand, trace subangular gravel, appeared poorly compacted, trace concrete and brick fragments, up to cobble size			
				1.00m SPT 7, 5, 3 Nc=8	1.0 20.7			1.00m FILL: SILTY CLAY: grey, pale brown, medium plasticity, with fine to medium grained sand, trace subangular gravel, appeared moderately compacted, trace concrete and brick fragments			1.00: SPT recovery 450mm
				1.45m							1.50: DCP to 1500mm
				2.50m SPT 4, 6, 7 Nc=13	2.0 19.7			2.50m FILL: SILTY CLAY: pale grey, brown, medium plasticity, with fine to medium grained sand, trace timber fragment gravel, appeared moderately compacted			2.50: SPT recovery 450mm
				2.95m	3.0 18.7				M		
								3.50m FILL: SILTY SAND: orange brown, fine to medium grained sand, trace gravel, transitioning into silty clay, grey, brown,with fine to medium grained sand, appeared moderately compacted			
				4.00m SPT 3, 4, 3 Nc=7	4.0 17.7			4.20m SILTY CLAY: pale grey, grey, pale brown, medium to high plasticity, with fine to medium grained sand			4.00: SPT recovery 450mm ALLUVIUM
				4.45m			CI-CH			F	
								4.70m SANDY CLAY: orange-grey, medium to high plasticity, fine to medium grained sand			
				5.00m D	5.0 16.7						
				5.25m ES			CI-CH			St	
				5.50m SPT 4, 6, 7 Nc=13							5.50: SPT recovery 450mm
				5.95m				5.95m BOREHOLE BH110 TERMINATED AT 5.95 m Target depth			
					6.0 15.7						
					7.0 14.7						
					8.0 13.7						

See Explanatory Notes for details of abbreviations & basis of descriptions.

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File: 304100928 BH110 1 OF 1

Stantec	TITLE: Borehole Core Photographs – BH110 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH110 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH110 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH110 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **11/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **AS**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH111
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292228.16, N: 6265410.53 (56 MGA2020) SURFACE ELEVATION : 20.85 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 8/7/24 DATE COMPLETED : 8/7/24 DATE LOGGED : 8/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F		1.00m SPT 5, 10, 9 Nc=19 1.45m	0.0 20.9 1.0 19.9			FILL: SILTY CLAY: grey, low to medium plasticity, trace fine to medium grained sand, trace subangular gravel, appeared poorly compacted, trace concrete and brick fragments 1.00m FILL: CLAYEY SILT: grey, low plasticity, with siltstone, angular to subangular gravel, appeared poor to moderately compacted, trace concrete and brick fragments			FILL 1.00: SPT recovery 450mm
				2.50m SPT 6, 4, 5 Nc=9 2.95m	2.0 18.9 3.0 17.9		CH	2.30m SILTY CLAY: brown-yellow, high plasticity, with fine to medium grained sand	M	St	ALLUVIUM 2.50: SPT recovery 450mm
				4.00m SPT 4, 5, 5 Nc=10 4.45m 4.50m D 4.75m ES 5.00m	4.0 16.9 5.0 15.9		CH	4.00m SILTY CLAY: brown-yellow, brown, grey, high plasticity, trace fine to medium grained sand, trace gravel		F to St	4.00: SPT recovery 450mm
				5.50m SPT 5, 4, 4 Nc=8 5.95m	6.0 14.9		CH	5.50m SANDY CLAY: grey, brown-yellow, high plasticity, fine to medium grained sand, trace subangular gravel	W	St	5.50: SPT recovery 450mm
				7.00m SPT 4, 5, 7 Nc=12 7.45m	7.0 13.9					St	7.00: SPT recovery 450mm
					8.0 12.9						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH111
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292228.16, N: 6265410.53 (56 MGA2020) SURFACE ELEVATION : 20.85 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 8/7/24 DATE COMPLETED : 8/7/24 DATE LOGGED : 8/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					8.0 12.9			SANDY CLAY: grey, brown-yellow, high plasticity, fine to medium grained sand, trace subangular gravel *(continued)*			
				8.50m SPT 7, 6, 5 Nc=11			CH			St	8.50: SPT recovery 450mm
AD/T		E-F		8.95m	9.0 11.9				W		
								9.50m SANDY CLAY: grey to dark grey, high plasticity, fine to medium grained sand		H	
							CH				
				10.00m SPT 7, 21/150mm Nc=R 10.30m	10.0 10.9		CI	10.00m GRAVELLY CLAY: brown-yellow, yellow-brown, medium plasticity, angular gravel, trace fine to medium grained sand			RESIDUAL SOIL 10.00: SPT recovery 300mm
		H						10.25m 10.30m SHALE: yellow-brown, recovered as clayey silt, low plasticity, inferred very low to low strength			WEATHERED ROCK
								BOREHOLE BH111 TERMINATED AT 10.30 m Refusal			
					11.0 9.9						
					12.0 8.9						
					13.0 7.9						
					14.0 6.9						
					15.0 5.9						
					16.0 4.9						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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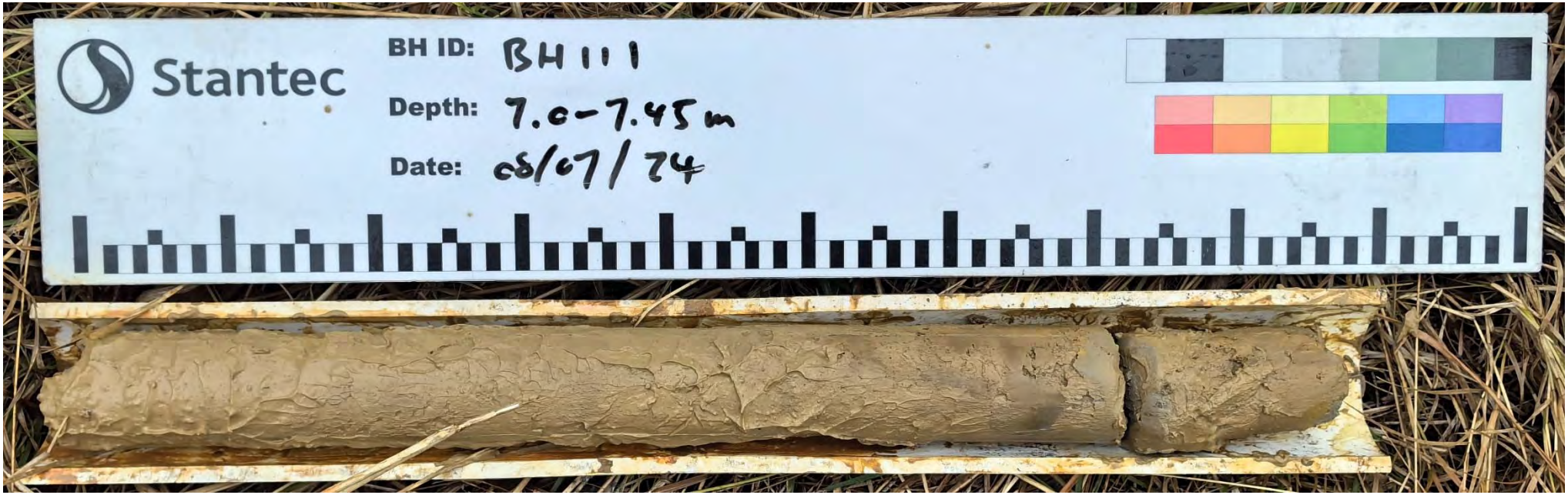
Stantec	TITLE: Borehole Core Photographs – BH111 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH111 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

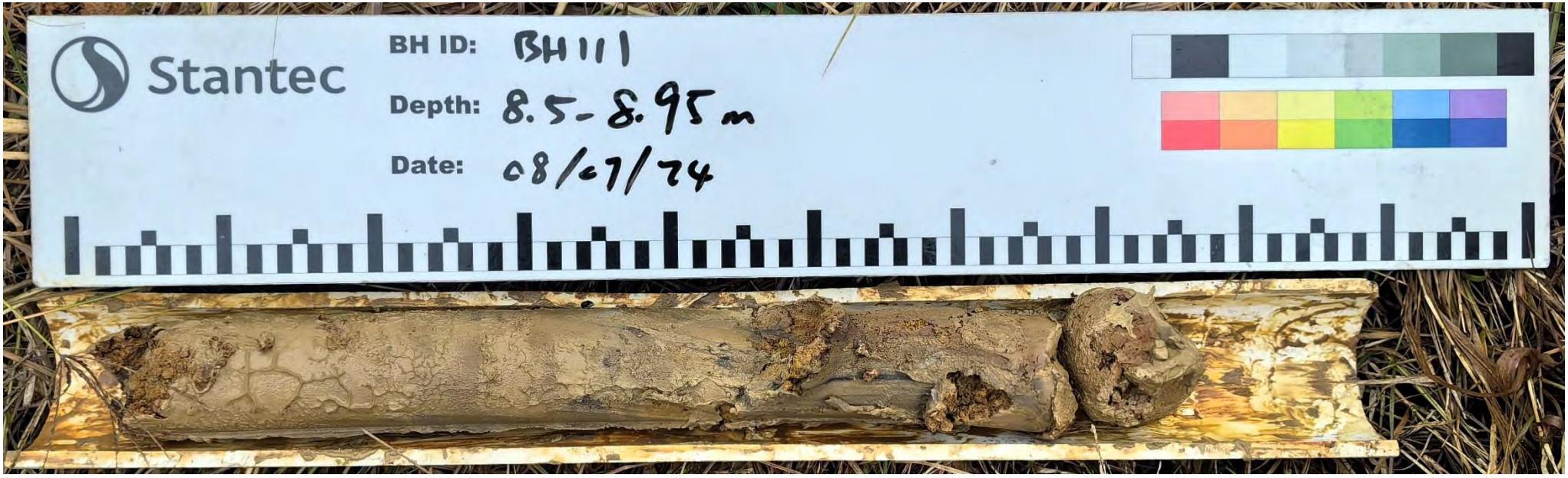
Stantec	TITLE: Borehole Core Photographs – BH111 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH111 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH111 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**



Stantec	TITLE: Borehole Core Photographs – BH111 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **8.5m to 8.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH112
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292185.13, N: 6265409.41 (56 MGA2020) SURFACE ELEVATION : 21.29 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 8/7/24 DATE COMPLETED : 8/7/24 DATE LOGGED : 8/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F	10/07/24	1.00m SPT 7, 12, 7 Nc=19 1.45m	0.0 21.3			FILL: SILTY CLAY: brown, high plasticity, trace fine grained sand, appeared poorly compacted, trace concrete and brick fragments			FILL
								0.30m FILL: CLAYEY SILT: grey, low to medium plasticity, with siltstone, subangular gravel, appeared poor to moderately compacted, trace concrete and brick fragments			1.00: SPT recovery 450mm
				2.50m SPT 3, 2, 0 Nc=2 2.95m	1.0 20.3 2.0 19.3 3.0 18.3				M		2.50: SPT recovery 450mm
				4.00m SPT 4, 5, 4 Nc=9 4.45m	4.0 17.3			3.80m SILTY CLAY: brown-yellow, high plasticity, with fine to medium grained sand, trace subangular gravel			ALLUVIUM 4.00: SPT recovery 450mm
				5.50m SPT 4, 4, 5 Nc=9 5.95m 6.00m D 6.25m ES 6.50m	5.0 16.3 6.0 15.3			5.50m SANDY CLAY: grey, brown-yellow, medium plasticity, fine to medium grained sand, trace subangular gravel		St	5.50: SPT recovery 450mm
				7.00m SPT 7, 8, 7 Nc=15 7.45m	7.0 14.3				W	St to VSt	7.00: SPT recovery 450mm
					8.0 13.3						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH112
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW 2747

POSITION : E: 292185.13, N: 6265409.41 (56 MGA2020) SURFACE ELEVATION : 21.29 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess Drilling DRILLER : SK

DATE STARTED : 8/7/24 DATE COMPLETED : 8/7/24 DATE LOGGED : 8/7/24 LOGGED BY : SL CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T		E-F		8.50m SPT 7, 9, 6 Nc=15 8.95m	8.0 13.3 9.0 12.3			SANDY CLAY: grey, brown-yellow, high plasticity, fine to medium grained sand, trace subangular gravel *(continued)*	W	St to VSt	
								8.50m GRAVELLY CLAY: brown-yellow, brown, high plasticity, angular gravel		St to VSt	RESIDUAL SOIL 8.50: SPT recovery 450mm
		H		10.00m SPT 20/80mm Nc=R 10.08m	10.0 11.3			10.00m 10.08m SHALE: yellow-brown, recovered as clayey silt, low plasticity, inferred very low to low strength		H	WEATHERED ROCK 10.00: SPT recovery 80mm
								BOREHOLE BH112 TERMINATED AT 10.08 m Refusal			
					11.0 10.3						
					12.0 9.3						
					13.0 8.3						
					14.0 7.3						
					15.0 6.3						
					16.0 5.3						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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Stantec	TITLE: Borehole Core Photographs – BH112 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH112 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH112 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH112 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH112 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH112 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **8.5m to 8.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

Stantec	TITLE: Borehole Core Photographs – BH112 **Proposed New High School in Jordan Springs**			
	PROJECT NO: **304100928**	TEST DATE: **08/07/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **10.0m to 10.3m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **SL**	CHECKED BY: **TH**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH201
FILE / JOB NO : 305001663
SHEET : 1 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292092.71, N: 6265226.84 (56 MGA20) SURFACE ELEVATION : 22.80 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/9/24 DATE COMPLETED : 10/9/24 DATE LOGGED : 10/9/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					0.0 22.8			0.10m TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, with organic matters (grass, rootlets)	D		TOPSOIL
								FILL: GRAVELLY SILTY CLAY: dark grey, brown, low plasticity, fine to medium subangular to subrounded (crushed shale / sandstone fragments) gravel, trace fine grained sand, trace of cobble sized shale fragments. Appeared to be compacted			FILL
				1.00m SPT 10 Nc=R 1.15m	1.0 21.8						
		E-F									
					2.0 20.8						
				2.50m SPT 1, 2, 1 Nc=3					M (<PL)		
								2.70m FILL: SILTY CLAY: brown, grey, pale grey, low to medium plasticity, with fine to medium subangular gravel, trace fine grained sand			
				2.95m	3.0 19.8						
		E									
				4.00m SPT 11, 5, 5 Nc=10	4.0 18.8			4.00m FILL: GRAVELLY SILTY CLAY: dark grey, brown, low plasticity, fine to coarse grained, subangular (shale fragments) gravel, trace cobble to boulder sized sandstone and shale fragments.			4.00: at 4-5m, occasional moderate auger resistance, possibly cobbles or boulders
				4.45m							
		E-F									
			▶	5.00m DS	5.0 17.8			5.00m SILTY CLAY: brown, orange brown, mottled grey, medium to high plasticity, trace fine grained sand			ALLUVIUM 5.00: water strike encountered at 5.0m approximately
			Water strike	5.50m SPT 4, 4, 6 Nc=10							
				5.95m 6.00m	6.0 16.8		CI-CH		M (=PL)	St	
		E									
				7.00m SPT 3, 2, 4 Nc=6	7.0 15.8			7.00m SANDY SILTY CLAY: grey, brown, orange, medium to high plasticity, fine grained sand, with fine grained grey sand lenses			
				7.45m			CI-CH		W	F	
					8.0 14.8			8.00m			

AD/T
HQ Casing

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH201
FILE / JOB NO : 305001663
SHEET : 2 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292092.71, N: 6265226.84 (56 MGA20) SURFACE ELEVATION : 22.80 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/9/24 DATE COMPLETED : 10/9/24 DATE LOGGED : 10/9/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
WB HQ Casing		F-H		8.50m SPT 10/110mm Nc=R 8.61m	8.0 14.8		CI-CH	GRAVELLY CLAY: orange brown, brown, dark grey, medium to high plasticity, fine to medium, sub-angular to sub-rounded gravel	W	VSt - H	ALLUVIUM
					9.0 13.8			9.00m SILTY CLAY: orange brown, pale grey, medium to high plasticity, trace mottled fine grained sand			POSSIBLE RESIDUAL SOIL
		E		10.00m SPT 10, 13, 12 Nc=25 10.45m	10.0 12.8		CI-CH		M (=PL)	VSt	
		E-F			11.0 11.8			11.40m Continued as Cored Drill Hole			
					12.0 10.8						
					13.0 9.8						
					14.0 8.8						
					15.0 7.8						
					16.0 6.8						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

CORED DRILL HOLE LOG

HOLE NO : BH201
FILE / JOB NO : 305001663
SHEET : 3 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292092.71, N: 6265226.84 (56 MGA20) | SURFACE ELEVATION : 22.80 (AHD) | ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 | MOUNTING : Track | CONTRACTOR : Traccess | DRILLER : SK

DATE STARTED : 10/9/24 | DATE COMPLETED : 10/9/24 | DATE LOGGED : 10/9/24 | LOGGED BY : HC | CHECKED BY : AS

CASING DIAMETER : HQ | BARREL (Length) : | BIT : STEP | BIT CONDITION : Good

DRILLING					MATERIAL			FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(NO CORE PER RUN %) DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral VL -0.1 L -0.3 M -1.0 H -3.0 VH -10.0 EH	NATURAL FRACTURE (mm) 20 40 100 300 1000	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					8.0 14.8						
					9.0 13.8						
					10.0 12.8						
					11.0 11.8						
							11.40m START CORING AT 11.40m				
NMLC		0% NO CORE	69				SILTSTONE: brown, orange brown, indisticted flat bedded, ironstained	HW EW HW			11.45-11.50: SM Clay
					12.0 10.8						12.00: HB
							12.25m	EW			12.15-12.25: SM Clay
				Is(50) d=0.07 a=0.07 MPa			SILTSTONE: brown, dark brown, indisticted flat bedded, < 5% sandstone lamination at 0*, trace of fine grained subrounded gravel clast, ironstained	MW			12.39: JT 30° CN PR S 12.43: JT 40 - 50° CN PR S 12.64: HB
								EW			12.80-13.00: EWS Clay
					13.0 9.8						13.00: HB
							13.12m	MW			
		13.40					SILTSTONE: dark grey, pre-dominantly siltstone, thinly laminated at 0*, at 13.6 to 13.65 turn to black grey, carbonacious				13.13: BP 0° SN PR S 13.20-13.21: SM Clay 13.28: BP 0° SN PR S 13.32: BP 0° SN PR S 13.34: BP 0° SN PR S 13.38-13.43: CZ 13.43-13.44: SM Clay 13.46-13.47: SM Clay 13.52: HB 13.61: BP 0° CN PR S carbonacious 13.84: BP 0° CN ST RF
		0% NO CORE	88	UCS =2 MPa 13.74m			at 13.60 to 13.65turn to black grey, carbonacious				
				Is(50) d=0.52 a=0.54 MPa	14.0 8.8						14.00: HB 14.05: HB
											14.20-14.30: CZ
				Is(50) d=0.2 a=0.21 MPa			at 14.44 to 14.47 turn to black grey, carbonacious				14.46: BP 0° CN PR S carbonacious 14.52-14.53: SM Clay 14.60: DB
											14.73-14.74: SM Clay
		15.00					15.00m				14.85-14.93: CZ
					15.0 7.8		BOREHOLE BH201 TERMINATED AT 15.00 m Target depth				15.00: HB
					16.0 6.8						

See Explanatory Notes for details of abbreviations & basis of descriptions.

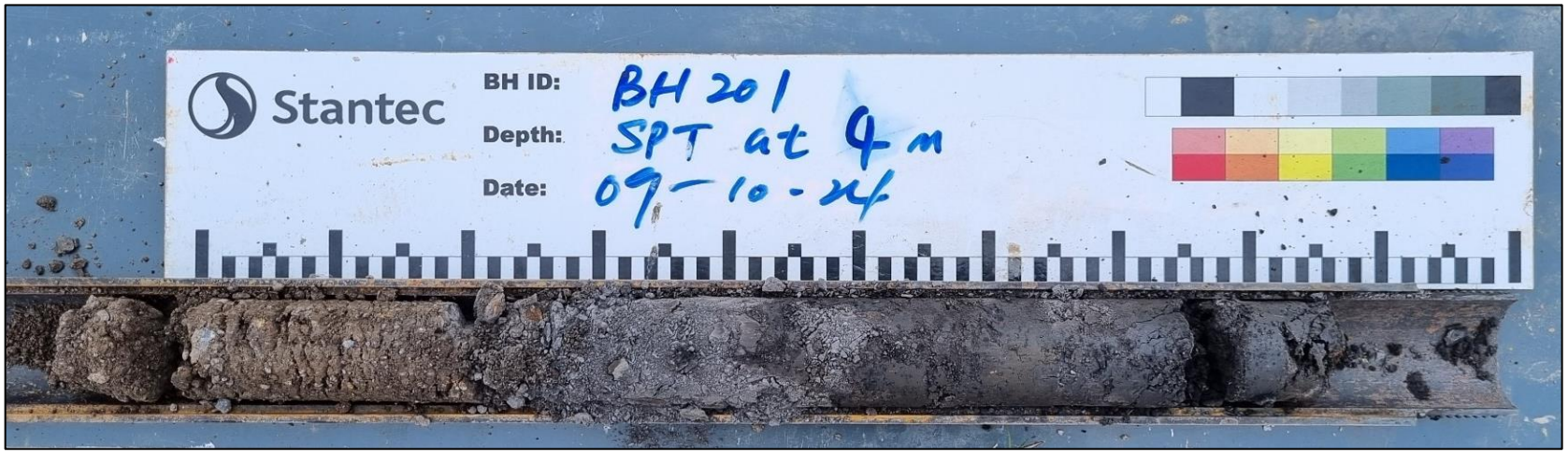
STANTEC AUSTRALIA PTY LTD

Stantec

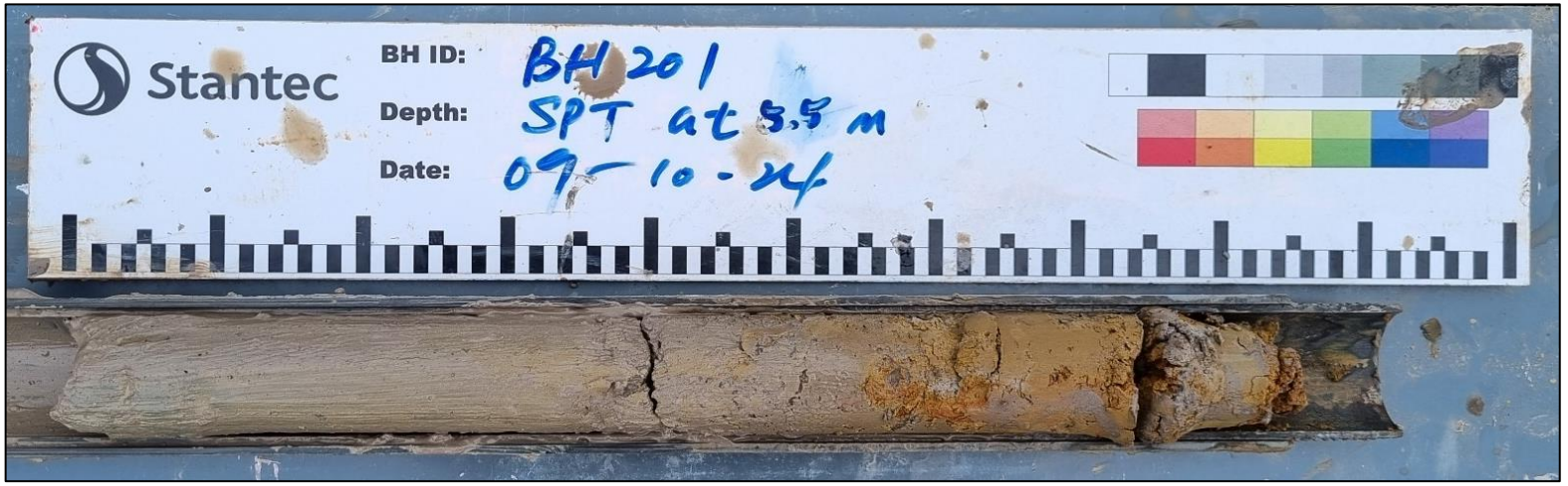
Stantec	TITLE: **Borehole Core Photographs – BH201** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **9/10/2024**	INCLINATION: **-90 degree**	SPT at: **1.0m to 1.15m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH201** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **9/10/2024**	INCLINATION: **-90 degree**	SPT at: **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH201** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **9/10/2024**	INCLINATION: **-90 degree**	SPT at: **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



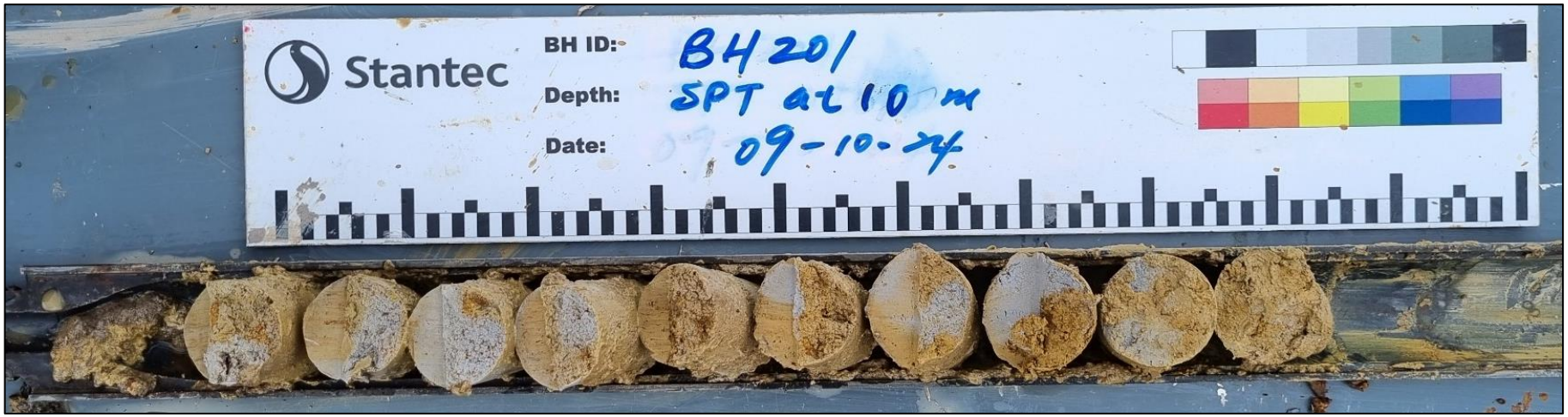
Stantec	TITLE: **Borehole Core Photographs – BH201** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **9/10/2024**	INCLINATION: **-90 degree**	SPT at: **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



Stantec	TITLE: **Borehole Core Photographs – BH201** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **9/10/2024**	INCLINATION: **-90 degree**	SPT at: **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH201** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **9/10/2024**	INCLINATION: **-90 degree**	SPT at: **8.5m to 8.6m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH201** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **9/10/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **10.0m to 10.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



Stantec	TITLE: **Borehole Core Photographs – BH201** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **9/10/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.0m to 1.12m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH202
FILE / JOB NO : 305001663
SHEET : 1 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292099.06, N: 6265270.46 (56 MGA20) SURFACE ELEVATION : 22.70 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/10/24 DATE COMPLETED : 10/10/24 DATE LOGGED : 10/10/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T HQ Casing		E			0.0 22.7			0.10m TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, with organic matters (grass, rootlets)	D		TOPSOIL
								FILL: GRAVELLY SILTY CLAY: brown, orange brown, grey mottled, low plasticity, fine to medium, angular to subangular shale gravel, trace fine grained sand, trace of cobble sized shale / sandstone fragments. Appeared to be compacted			FILL
				1.00m SPT 3, 6, 11 Nc=17	1.0 21.7						
				1.45m					M (<PL)		
		E-F									
					2.0 20.7						
				2.50m SPT 1, 2, 2 Nc=4							
				2.95m							
					3.0 19.7			3.00m FILL: SANDY GRAVEL: grey, pale grey,, fine to coarse gravel, sub-angular, fine to medium grained sand, with clay, trace of cobble sized shale / sandstone fragments. Appeared to be compacted			3.00: possible with cobble to boulder size sandstone, rcoovered as pale grey fine grained sand, mederated auger resistance
		F-H							M		
								3.50m FILL: SILTY CLAY: orange brown, mottled grey, medium to high plasticity, with fine to medium grained gravel, trace of cobble to boulder sized sandstone fragments. Appeared to be compacted			
				4.00m SPT 3, 6, 5 N=11	4.0 18.7				M (=PL)		
				4.45m				4.50m SILTY CLAY: brown, orange brown, mottled pale grey, medium to high plasticity, trace fine grained sand, trace fine grained sandstone gravel			ALLUVIUM
			▶ water strike		5.0 17.7						
				5.50m SPT 4, 5, 6 N=11							
		E-F					CI-CH		M (=PL)	St	
				5.95m	6.0 16.7						
								7.00m SANDY SILTY CLAY: brown, orange brown, low to medium plasticity, fine grained sand			
				7.00m SPT 7, 9, 14 N=23	7.0 15.7						
				7.45m 7.50m DS			CL-CI		W	VSt	
				8.00m	8.0 14.7			8.00m			

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH202
FILE / JOB NO : 305001663
SHEET : 2 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292099.06, N: 6265270.46 (56 MGA20) SURFACE ELEVATION : 22.70 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/10/24 DATE COMPLETED : 10/10/24 DATE LOGGED : 10/10/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
WB HQ Casing		E-F		8.50m SPT 4, 12/100mm N=R 8.75m	8.0 14.7		CI-CH	GRAVELLY SILTY CLAY: orange brown, red orange, medium to high plasticity, fine to medium, sub-angular to sub-rounded gravel, ironstone gravel	W	VSt - H	ALLUVIUM
					9.0 13.7			9.00m SILTY CLAY: brown, grey,, medium to high plasticity, with ironstone, subangular to subrounded geotextile			POSSIBLE RESIDUAL SOIL
				10.00m SPT 8, 16, 10/50mm N=R 10.35m	10.0 12.7		CI-CH		M (=PL)	H	
					11.0 11.7			11.60m Continued as Cored Drill Hole			
					12.0 10.7						
					13.0 9.7						
					14.0 8.7						
					15.0 7.7						
					16.0 6.7						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

CORED DRILL HOLE LOG

HOLE NO : BH202
FILE / JOB NO : 305001663
SHEET : 3 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292099.06, N: 6265270.46 (56 MGA20) | SURFACE ELEVATION : 22.70 (AHD) | ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 | MOUNTING : Track | CONTRACTOR : Traccess | DRILLER : SK

DATE STARTED : 10/10/24 | DATE COMPLETED : 10/10/24 | DATE LOGGED : 10/10/24 | LOGGED BY : HC | CHECKED BY : AS

CASING DIAMETER : HQ | BARREL (Length) : | BIT : STEP | BIT CONDITION : Good

DRILLING					MATERIAL				FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(NO CORE PER RUN %) DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral VL -0.1 L -0.3 M -1.0 H -3.0 VH -10.0 EH	NATURAL FRACTURE (mm) 20 40 100 300 1000	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					8.0 14.7						
					9.0 13.7						
					10.0 12.7						
					11.0 11.7						
							11.60m START CORING AT 11.60m				
NMLC		0% NO CORE	48		12.0 10.7		SILTSTONE: orange brown, red orange, pale grey, indistinguished flat bedded, iron stained	HW EW HW EW HW			11.70-12.00: EWS Clay 12.00-12.10: FZ 12.10-12.15: SM Clay 12.30: BP 0° Clay FILLED PR S 12.35: BP 0° Clay FILLED PR S 12.45: BP 0° CN PR S 12.55: BP 0° CN PR S 12.65: JT 20° Clay FILLED UN S 12.75-12.80: CS 12.95-13.03: HB 13.12-13.30: CS 13.34: DL 13.35: BP
				Is(50) d=0.04 a=0.04 MPa	13.0 9.7						
		13.50		UCS =2.7 MPa 13.50m			13.50m				
		0% NO CORE	93	Is(50) d=0.54 a=0.89 MPa	14.0 8.7		SILTSTONE: grey, dark grey, thinly laminated at 0°	MW to SW			13.70: DB 13.75: JT 45° CN ST S 13.84: DB 13.95-14.00: DB 14.04: BP 0° CN PR S 14.14: BP 0° CN PR S 14.15: BP 0° CN PR S 14.28: BP 0° CN PR S 14.30: BP 0° CN PR S 14.37: BP 0° CN PR S carbinacious 14.47: BP 0° CN PR S carbinacious 14.71: BP 0° CN PR S carbinacious 14.90: HB
		15.00		Is(50) d=0.1 a=0.23 MPa	15.0 7.7		15.00m BOREHOLE BH202 TERMINATED AT 15.00 m Target depth				
					16.0 6.7						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

Stantec	TITLE: **Borehole Core Photographs – BH202** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **10/10/2024**	INCLINATION: **-90 degree**	SPT at: **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH202** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **10/10/2024**	INCLINATION: **-90 degree**	SPT at: **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

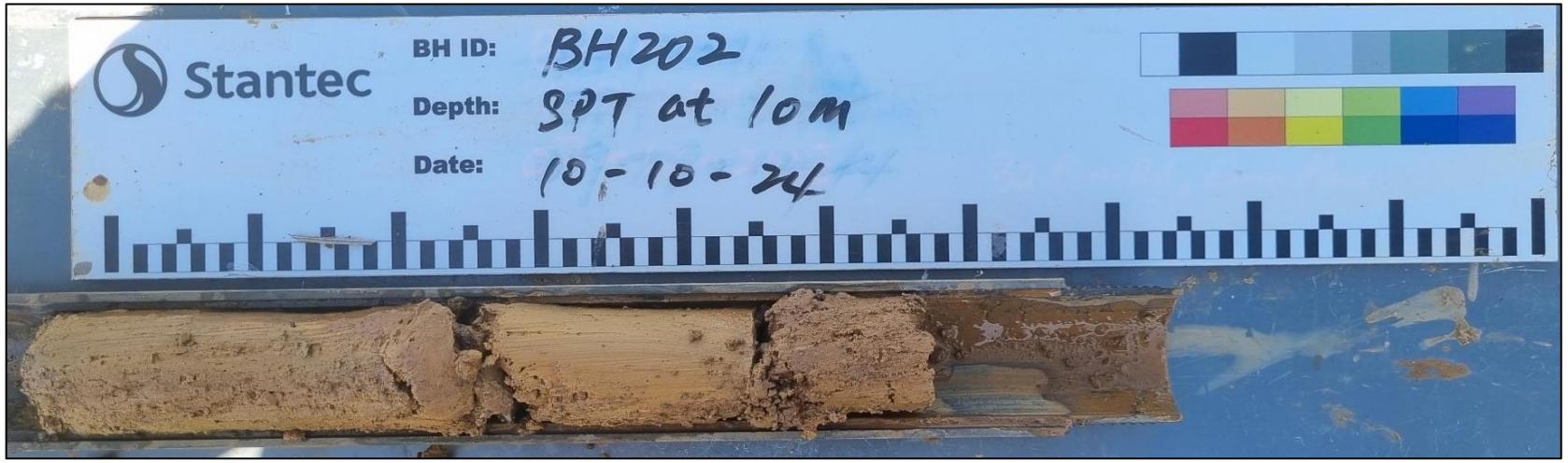
Stantec	TITLE: **Borehole Core Photographs – BH202** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **10/10/2024**	INCLINATION: **-90 degree**	SPT at: **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH202** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **10/10/2024**	INCLINATION: **-90 degree**	SPT at: **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH202** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **10/10/2024**	INCLINATION: **-90 degree**	SPT at: **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH202** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **10/10/2024**	INCLINATION: **-90 degree**	SPT at: **8.5m to 8.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH202** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **10/10/2024**	INCLINATION: **-90 degree**	SPT at: **10.0m to 10.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



Stantec	TITLE: **Borehole Core Photographs – BH202** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **10/10/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **11.6m to 15m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH203
FILE / JOB NO : 305001663
SHEET : 1 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292118.22, N: 6265319.75 (56 MGA20) SURFACE ELEVATION : 22.46 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/11/24 DATE COMPLETED : 10/11/24 DATE LOGGED : 10/11/24 LOGGED BY : RN CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					0.0 22.5			0.10m TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, with organic matters (grass, rootlets)	M		TOPSOIL
								FILL: GRAVELLY SILTY CLAY: brown-grey, medium to high plasticity, angular to subangular sandstone / shale gravel, trace of cobble size shale fragment. Appeared to be compacted			FILL
				1.00m SPT 8, 10, 8 Nc=18	1.0 21.5						
				1.45m							
					2.0 20.5				M		
				2.50m SPT 3, 5, 5 Nc=10				color change to dark grey at 2.5m			
				2.95m	3.0 19.5						
AD/T HQ Casing				4.00m SPT 1, 2, 3 Nc=5	4.0 18.5			4.00m FILL: SILTY CLAY: dark grey, trace angular to subangular sandstone / shale. gravel			
				4.45m					M		
					5.0 17.5			at 5.0m to 5.5m, possibly with cobble to boulder size sandstone and shale fragments			5.00: moderate to high auger resistance, possibly cobble to boulder size sandstone fragments, recovered as fine to medium pale grey sand with sandstone gravels
			water strike	5.50m SPT 4, 4, 6 Nc=10				5.50m SILTY CLAY: brown grey, medium to high plasticity, with fine grained sand			ALLUVIUM
				5.95m 6.00m DS	6.0 16.5		CI-CH		M	St	
				7.00m SPT 3, 3, 5 Nc=8	7.0 15.5			7.00m SANDY SILTY CLAY: orange brown, medium to high plasticity, fine grained sand, trace fine, sub-rounded gravel			
				7.45m			CI-CH		M	St	
					8.0 14.5						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH203
FILE / JOB NO : 305001663
SHEET : 2 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292118.22, N: 6265319.75 (56 MGA20) SURFACE ELEVATION : 22.46 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/11/24 DATE COMPLETED : 10/11/24 DATE LOGGED : 10/11/24 LOGGED BY : RN CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T				8.50m SPT 4, 6, 6 Nc=12 8.95m	8.0 14.5		CI-CH	SANDY SILTY CLAY: orange brown, medium to high plasticity, fine grained sand, trace fine, sub-rounded gravel *(continued)*	M	St	ALLUVIUM
					9.0 13.5		SC	CLAYEY SAND: orange brown and pale grey, fine grained sand, high to high plasticity	M	MD	
HQ Casing				10.00m SPT 6, 8, 8 Nc=16 10.45m	10.0 12.5			10.20m			
WB					11.0 11.5		CI-CH	SILTY CLAY: brown, orange brown, medium to high plasticity, with ironstone gravel, fine to medium, sub-angular	M	VSt	POSSIBLE RESIDUAL SOIL
								11.70m			
								Continued as Cored Drill Hole			
					12.0 10.5						
					13.0 9.5						
					14.0 8.5						
					15.0 7.5						
					16.0 6.5						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

CORED DRILL HOLE LOG

HOLE NO : BH203
FILE / JOB NO : 305001663
SHEET : 3 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292118.22, N: 6265319.75 (56 MGA20) | SURFACE ELEVATION : 22.46 (AHD) | ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 | MOUNTING : Track | CONTRACTOR : Traccess | DRILLER : SK

DATE STARTED : 10/11/24 | DATE COMPLETED : 10/11/24 | DATE LOGGED : 10/11/24 | LOGGED BY : RN | CHECKED BY : AS

CASING DIAMETER : HQ | BARREL (Length) : | BIT : STEP | BIT CONDITION : Good

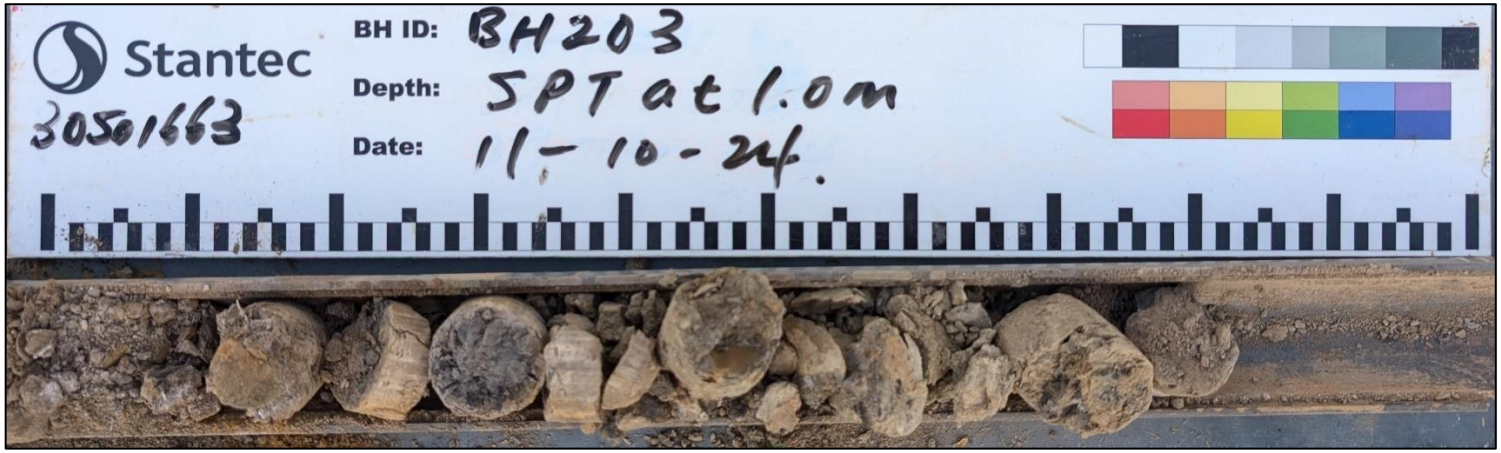
DRILLING					MATERIAL				FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(NO CORE PER RUN %) DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral VL -0.1 L -0.3 M -1.0 H -3.0 VH -10.0 EH	NATURAL FRACTURE (mm) 20 40 100 300 1000	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					8.0 14.5						
					9.0 13.5						
					10.0 12.5						
					11.0 11.5						
							11.70m START CORING AT 11.70m				
NMLC		0% NO CORE	68		12.0 10.5		SILTSTONE: orange-brown, 0-5% sandstone, ironstrained. 12.6-12.86 ironstone clast subrounded	EW HW EW HW EW HW MW			11.70-11.80: EWS Clay 11.87-11.90: CZ ironstone 11.90-11.97: EWS Clay 12.00: HB 12.10-12.20: EWS Clay 12.30: DB
				Is(50) d=0.05 a=0.07 MPa			at 12.6 to 12.86, with ironstone clast, fine to medium, subrounded				12.60: BP 0° CN PR S
					13.0 9.5			EW HW			12.92: BP 0° CN PR S 12.95-13.00: SM Clay 13.08: BP 0° SN PR S 13.12-13.16: SM Clay
							13.15m SILTSTONE: dark grey and grey, laminated at 0° -10°	MW SW			13.30-13.33: SM Clay 13.50: DB
				Is(50) d=0.18 a=0.21 MPa	14.0 8.5		at 13.8 to 13.85, color change to dark black, carbonaceous	MW			13.71-13.73: SM Clay 13.73-13.84: CZ carbonacious 14.00: HB
								EW MW			14.20-14.26: EWS Clay
		14.60									14.45: JT 20° CN CU S
		0% NO CORE	100	UCS =1.7 MPa 14.82m							14.60: DL 14.70: BP 0° CN CU S
		15.00		Is(50) d=0.19 a=0.12 MPa	15.0 7.5		15.00m BOREHOLE BH203 TERMINATED AT 15.00 m Target depth				15.00: DL
					16.0 6.5						

See Explanatory Notes for details of abbreviations & basis of descriptions.

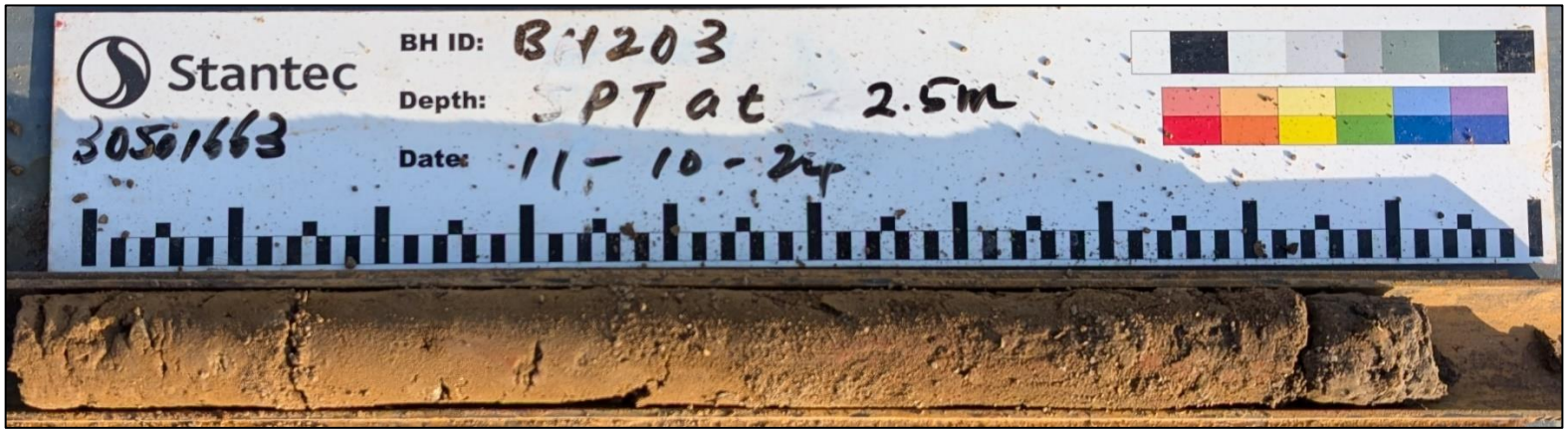
STANTEC AUSTRALIA PTY LTD

Stantec

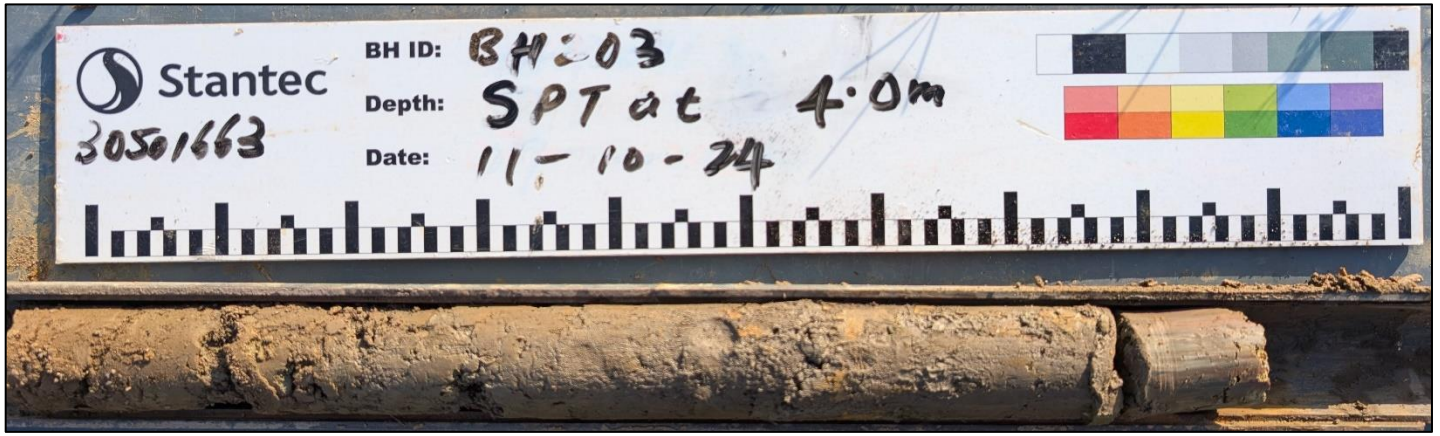
Stantec	TITLE: **Borehole Core Photographs – BH203** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **11/10/2024**	INCLINATION: **-90 degree**	SPT at: **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

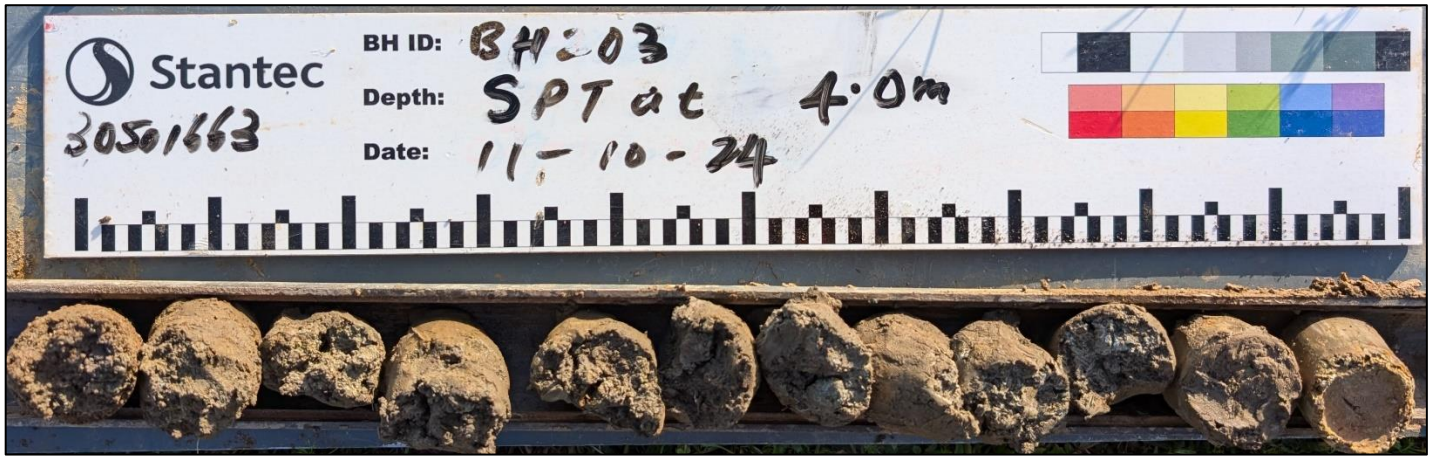


Stantec	TITLE: **Borehole Core Photographs – BH203** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **11/10/2024**	INCLINATION: **-90 degree**	SPT at: **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

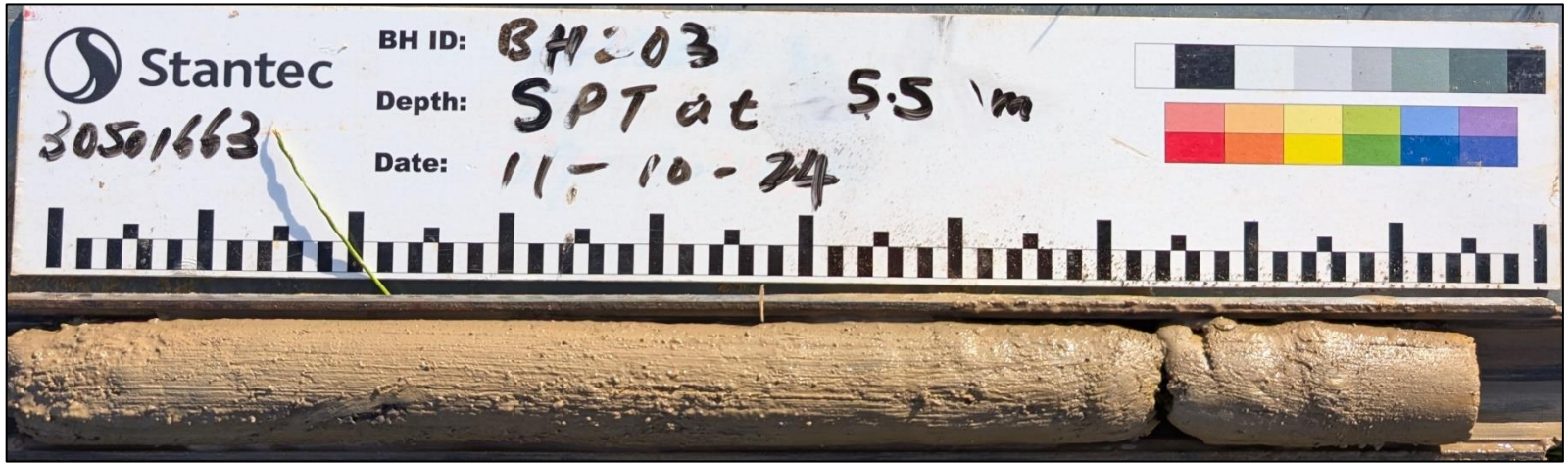


Stantec	TITLE: **Borehole Core Photographs – BH203** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **11/10/2024**	INCLINATION: **-90 degree**	SPT at: **4.0m to 4.34m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**





Stantec	TITLE: **Borehole Core Photographs – BH203** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **11/10/2024**	INCLINATION: **-90 degree**	SPT at: **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

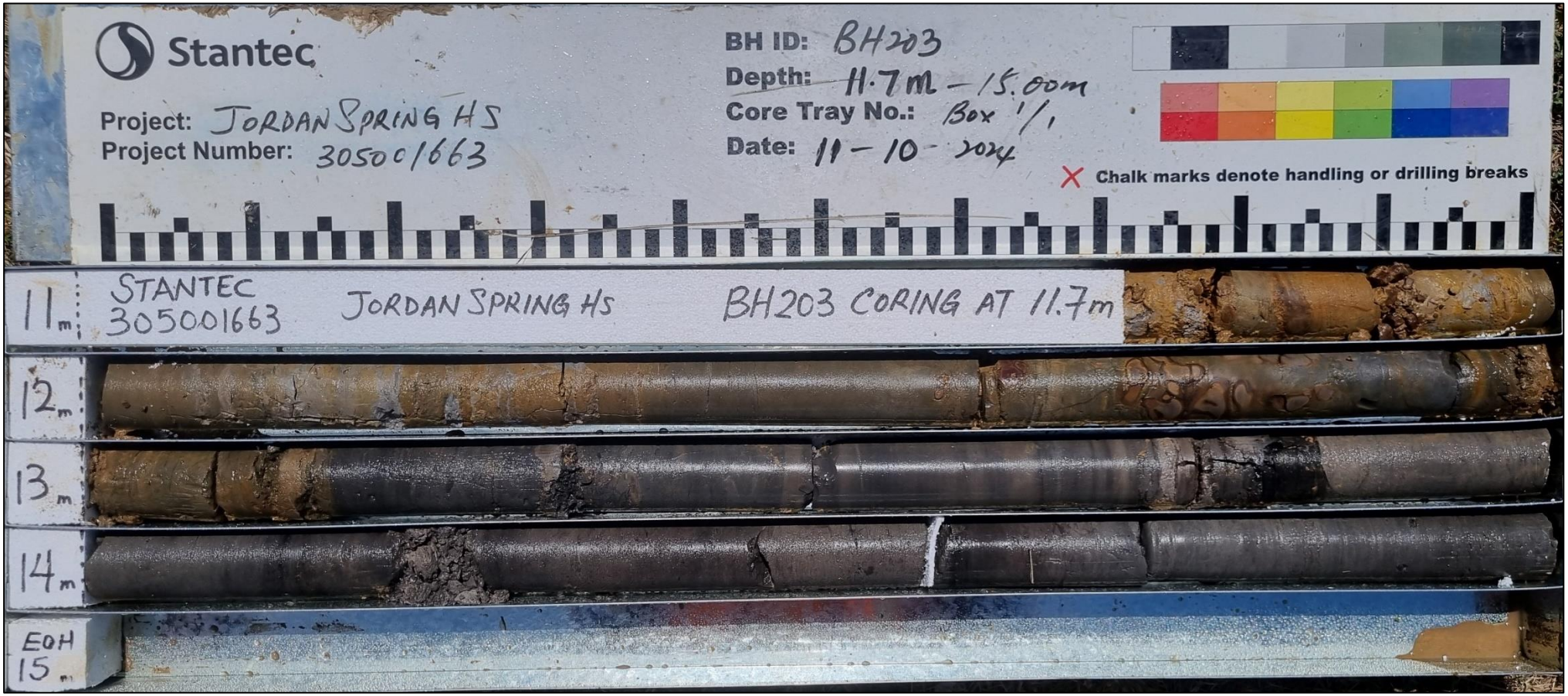


Stantec	TITLE: **Borehole Core Photographs – BH203** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **11/10/2024**	INCLINATION: **-90 degree**	SPT at: **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH203** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **11/10/2024**	INCLINATION: **-90 degree**	SPT at: **8.0m to 8.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH203** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **11/10/2024**	INCLINATION: **-90 degree**	SPT at: **10.0m to 10.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH203** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **11/10/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **11.7m to 15.16m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH204
FILE / JOB NO : 305001663
SHEET : 1 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292121.46, N: 6265359.70 (56 MGA20) | SURFACE ELEVATION : 22.24 (AHD) | ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 | MOUNTING : Track | CONTRACTOR : Traccess | DRILLER : SK

DATE STARTED : 10/2/24 | DATE COMPLETED : 10/2/24 | DATE LOGGED : 10/2/24 | LOGGED BY : HC | CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					0.0 22.2			TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, with organic matters (grass, rootlets)			TOPSOIL
								0.20m FILL: SILTY SANDY GRAVEL: brown, grey, fine to medium gravel, angular, medium grained sand, with medium plasticity clay, trace of concrete and brick fragment, trace of cobble size shale fragments. Appeared to be compacted			FILL
				1.00m SPT 4, 10, 6 Nc=16	1.0 21.2						
				1.45m							
								2.00m FILL: SILTY SANDY CLAY: orange brown, medium to high plasticity, fine to medium grained sand, trace subangular gravel, Appeared to be compacted			
				2.50m SPT 4, 3, 5 Nc=8	2.0 20.2				M		
				2.95m							
					3.0 19.2			at 3.1 to 3.4m, cobble to boulder size sandstone			3.30: moderate to high auger resistance, possibly cobble to boulder size sandstone fragments
				4.00m SPT 4, 6, 5/40mm Nc=R 4.34m	4.0 18.2			4.00m FILL: SILTY SANDY CLAY: brown, grey, medium to high plasticity, fine to medium grained sand, with subangular gravel, Appeared to be compacted			
			water level		5.0 17.2						
				5.50m SPT 2, 2, 2 Nc=4				5.50m FILL: SILTY CLAY: brown, medium to high plasticity, trace subangular gravel			
				5.95m	6.0 16.2						
								6.50m SILTY SANDY CLAY: orange brown, medium to high plasticity, fine to medium sand, with subangular gravel	W		ALLUVIUM
				7.00m SPT 3, 5, 6 Nc=11	7.0 15.2		CI-CH				
				7.45m DS						St	
				8.00m	8.0 14.2			8.00m			

AD/T
HQ Casing

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH204
FILE / JOB NO : 305001663
SHEET : 2 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292121.46, N: 6265359.70 (56 MGA20) SURFACE ELEVATION : 22.24 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/2/24 DATE COMPLETED : 10/2/24 DATE LOGGED : 10/2/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T HQ Casing				8.50m SPT 8, 6, 8 Nc=14 8.95m	8.0 14.2			SILTY SANDY CLAY: orange brown, medium to high plasticity, fine to medium sand, with subangular gravel			ALLUVIUM
					9.0 13.2		CI-CH			St	
				10.00m SPT 8, 9, 15 Nc=24 10.45m	10.0 12.2			10.00m SILTY SANDY CLAY: grey-orange-brown, medium to high plasticity, fine to medium sand, trace subangular gravel	W		
					11.0 11.2		CI-CH			VSt	
								11.70m Continued as Cored Drill Hole			
					12.0 10.2						
					13.0 9.2						
					14.0 8.2						
					15.0 7.2						
					16.0 6.2						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

CORED DRILL HOLE LOG

HOLE NO : BH204
FILE / JOB NO : 305001663
SHEET : 3 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292121.46, N: 6265359.70 (56 MGA20) | SURFACE ELEVATION : 22.24 (AHD) | ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 | MOUNTING : Track | CONTRACTOR : Traccess | DRILLER : SK

DATE STARTED : 10/2/24 | DATE COMPLETED : 10/2/24 | DATE LOGGED : 10/2/24 | LOGGED BY : HC | CHECKED BY : AS

CASING DIAMETER : HQ | BARREL (Length) : | BIT : STEP | BIT CONDITION : Good

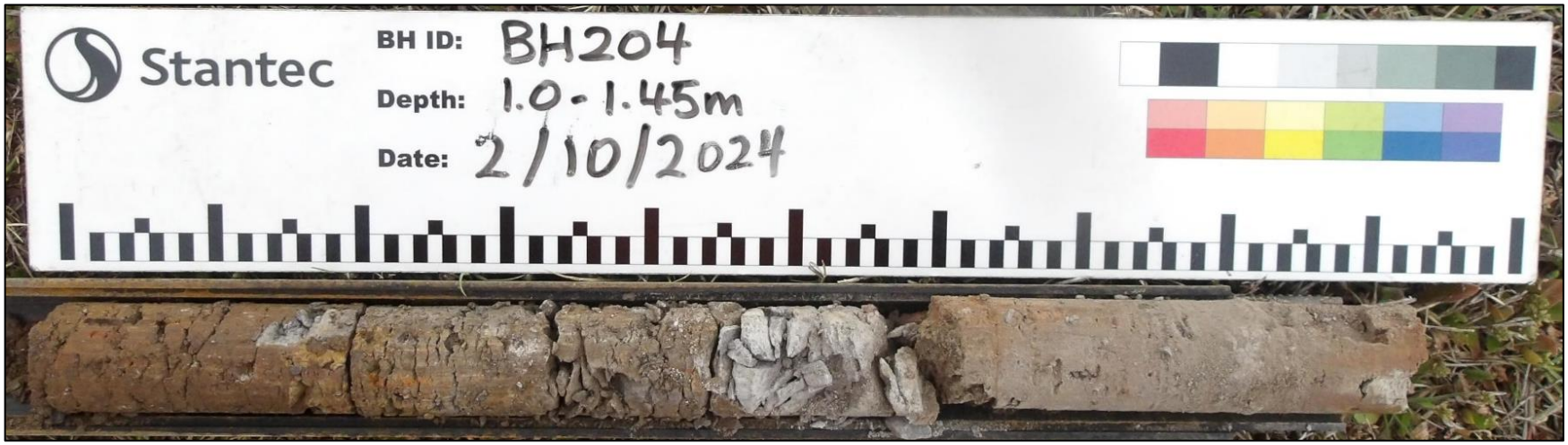
DRILLING						MATERIAL				FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(NO CORE PER RUN %) DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral VL -0.1 L -0.3 M -1.0 H -3.0 VH -10.0 EH	NATURAL FRACTURE (mm) 20 40 100 300 1000	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					8.0 14.2						
					9.0 13.2						
					10.0 12.2						
					11.0 11.2						
							11.70m START CORING AT 11.70m				
NMLC		0% NO CORE	79	Is(50) d=0.05 a=0.26 MPa	12.0 10.2		SILTSTONE: orange-brown, fine grained, 5% to 10% sandstone lamination at 0* to 10*, grey, with ironstain	MW HW MW	○ ●		11.92: BP 5° CN UN S 11.96-12.00: EWS 12.09: BP 5 - 10° IR RF 12.23-12.25: SM Clay 12.27: BP 5° CN PR S 12.43-12.45: JT 60 - 70° CN PR S
							12.62m				
		12.84 0% NO CORE	92		13.0 9.2		SILTSTONE: pale grey to grey, fine grained, 5% sandstone lamination at 0* to 10*, grey	SW	○ ●		12.65: BP 5° CN PR S 12.78: BP 5 - 10° CN UN S 12.87: BP 5° CN CU S 13.12: BP 10 - 30° CN IR S 13.24: BP 10 - 30° CN UN S
				Is(50) d=0.34 a=0.59 MPa					○ ●		13.50: BP 10° CN CU S
				UCS =1.9 MPa 13.88m					○ ●		13.70-13.72: JT 30° CN PR S 13.80: BP 5 - 10° CN IR S
				Is(50) d=0.06 a=0.32 MPa	14.0 8.2		14.00m SILTSTONE: pale grey to grey, fine grained, 5% to 10% sandstone lamination at 0* to 10*, grey				13.94: BP 30 - 80° CN ST S 14.14: DB 14.23: BP 5° CN PR S 14.30: BP 5 - 10° CN CU S
							14.30m SILTSTONE: dark grey, fine grained, 5% sandstone lamination at 0* to 10*, grey				14.42: DB 14.57: DB 14.70: BP 5 - 10° CN IR RF
		15.16			15.0 7.2		15.16m				14.95: JT 40° CN PR S 15.08-15.10: CZ
							BOREHOLE BH204 TERMINATED AT 15.16 m Target depth				
					16.0 6.2						

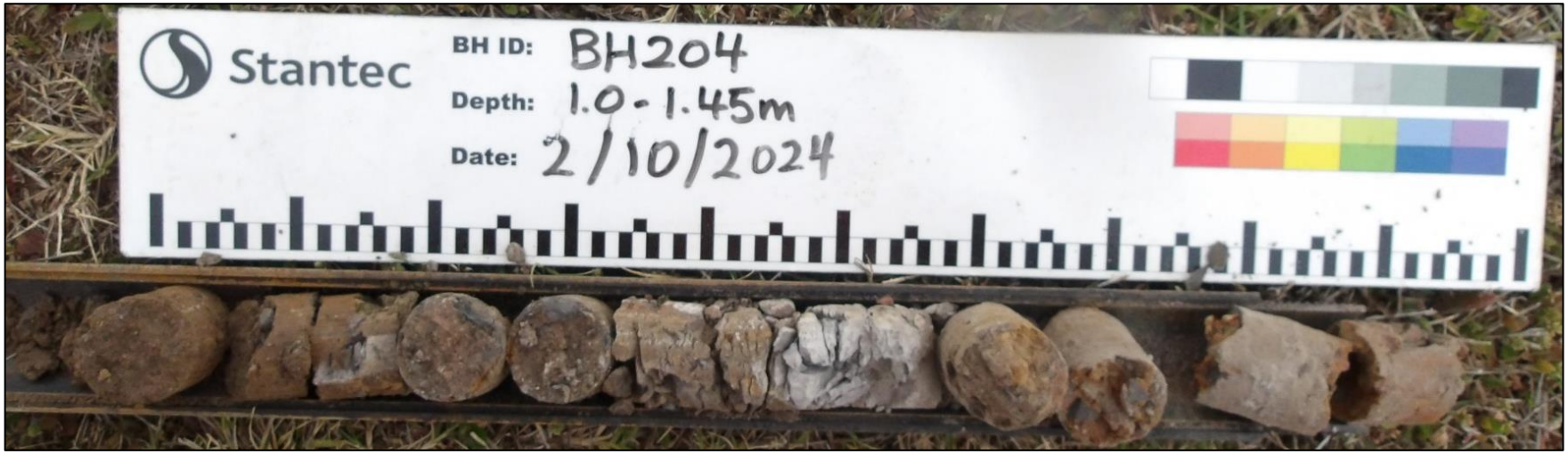
See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

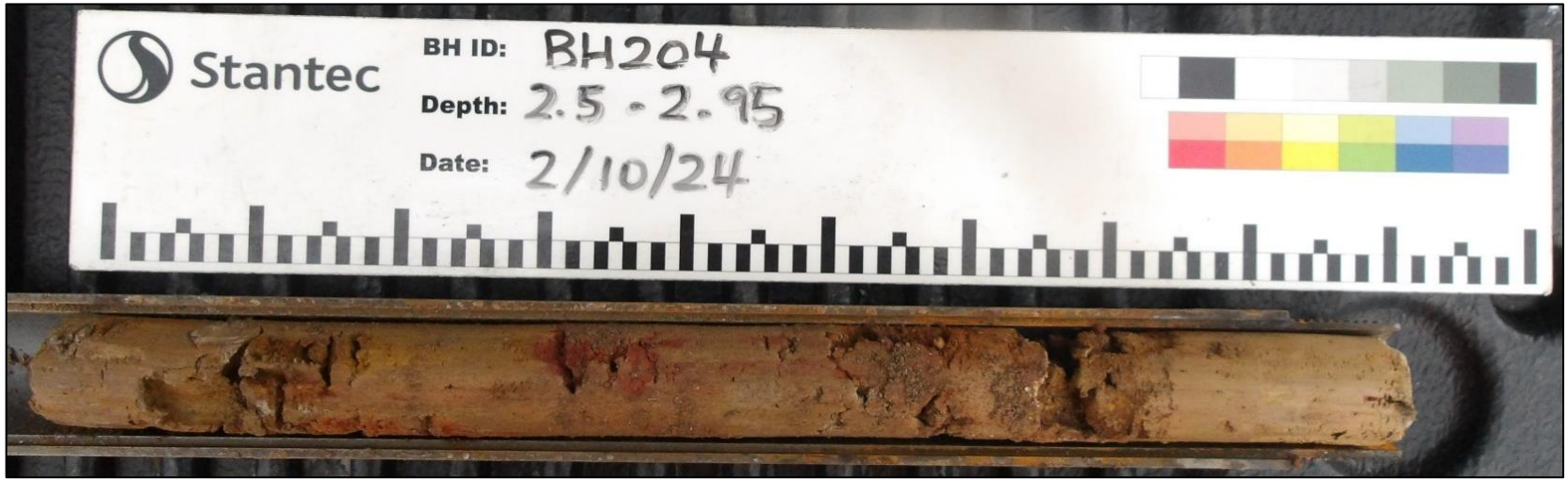
Stantec

Stantec	TITLE: **Borehole Core Photographs – BH204** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **02/10/2024**	INCLINATION: **-90 degree**	SPT at: **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

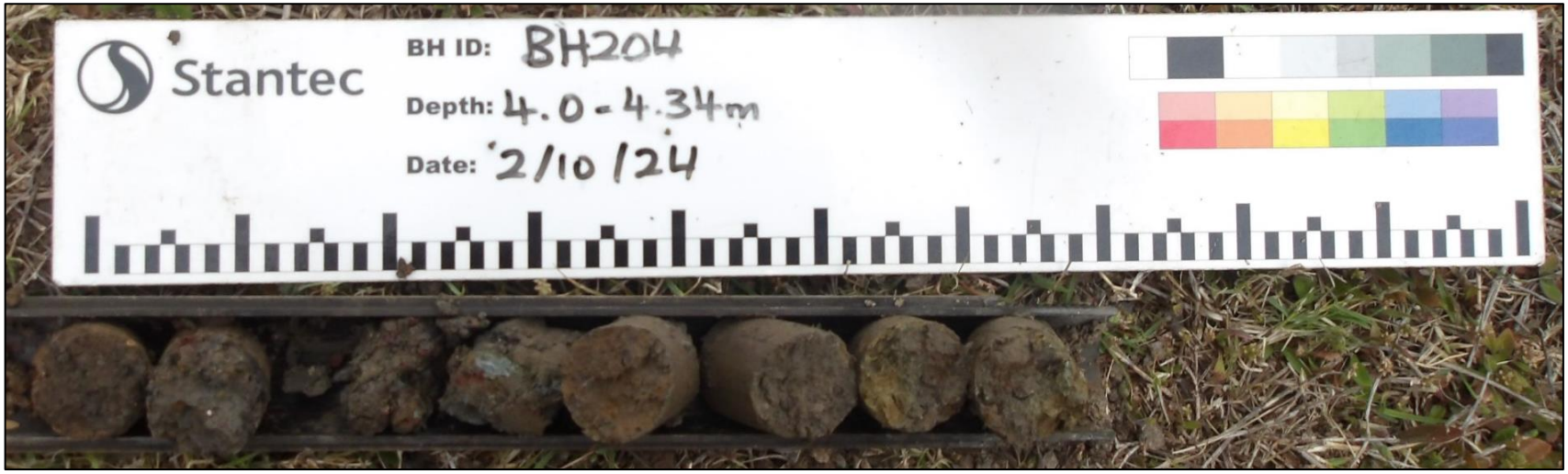




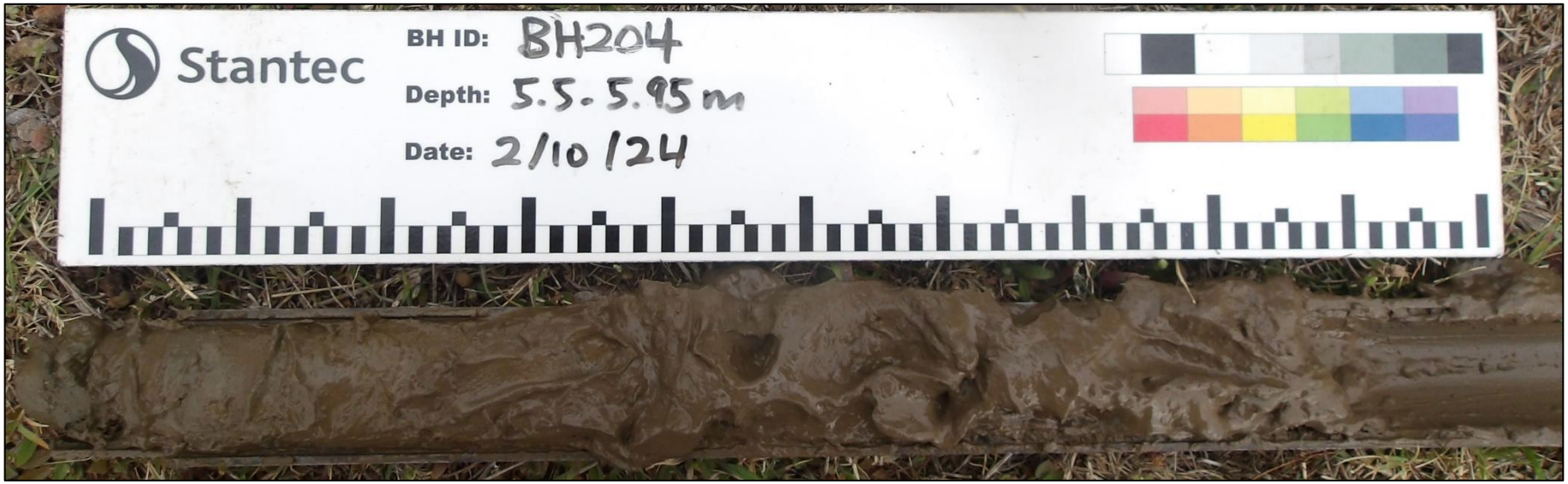
Stantec	TITLE: **Borehole Core Photographs – BH204** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **02/10/2024**	INCLINATION: **-90 degree**	SPT at: **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



Stantec	TITLE: **Borehole Core Photographs – BH204** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **02/10/2024**	INCLINATION: **-90 degree**	SPT at: **4.0m to 4.34m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



Stantec	TITLE: **Borehole Core Photographs – BH204** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **02/10/2024**	INCLINATION: **-90 degree**	SPT at: **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

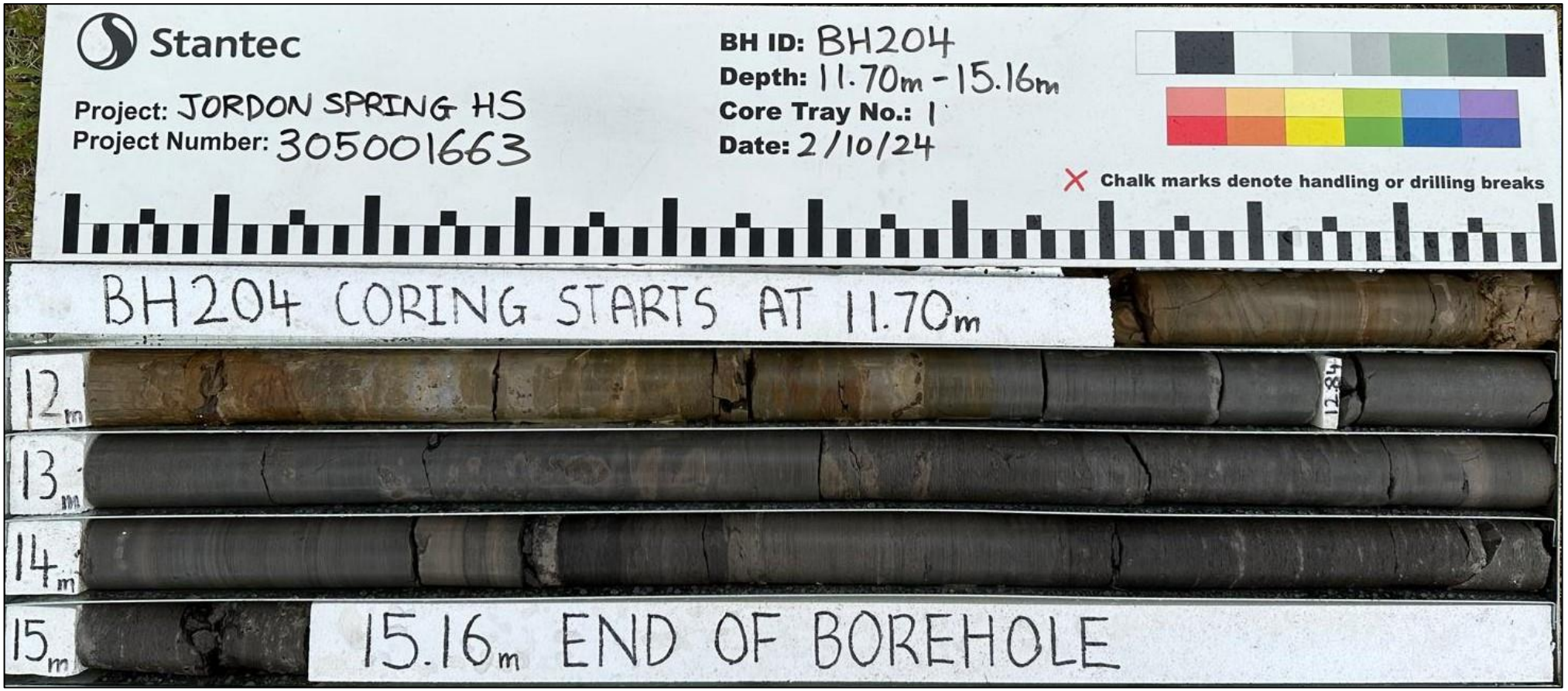


Stantec	TITLE: **Borehole Core Photographs – BH204** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **02/10/2024**	INCLINATION: **-90 degree**	SPT at: **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH204** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **02/10/2024**	INCLINATION: **-90 degree**	SPT at: **8.0m to 8.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH204** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **02/10/2024**	INCLINATION: **-90 degree**	SPT at: **10.0m to 10.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH204** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **02/10/2024**	INCLINATION: **-90 degree**	SPT at: **11.7m to 15.16m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH205
FILE / JOB NO : 305001663
SHEET : 1 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292148.85, N: 6265257.82 (56 MGA20) SURFACE ELEVATION : 21.90 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/8/24 DATE COMPLETED : 10/8/24 DATE LOGGED : 10/8/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					0.0 21.9			0.10m TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, with organic matters (grass, rootlets)	M		TOPSOIL
								FILL: GRAVELLY SANDY CLAY: brown, low to medium plasticity, fine grained sand, fine to medium grained, subangular shale / sandstone gravel, appeared to be compacted			FILL
				1.00m SPT 5, 8, 6 Nc=14	1.0 20.9				M (<PL)		
				1.45m							
								1.80m FILL: SILTY CLAY: brown, orange brown, orange mottled, medium to high plasticity, trace fine to medium grained, subangular gravel, appeared to be compacted			
					2.0 19.9						
				2.50m SPT 1, 3, 4 Nc=7							
				2.95m							
					3.0 18.9						
				3.50m ES					M (=PL)		
				4.00m SPT 2, 2, 2 Nc=4	4.0 17.9						
				4.45m				4.50m SILTY CLAY: brown, medium to high plasticity, trace fine grained sand			ALLUVIUM
					5.0 16.9		CI-CH			F - St	
			▼ water level					5.30m SILTY CLAY: brown, orange brown, medium to high plasticity, with fine grained sand, trace fine grained, subrounded ironstone gravel			
				5.50m SPT 4, 6, 5 Nc=11							
				5.95m 6.00m DS	6.0 15.9		CI-CH			St	
									M (>PL)		
				7.00m SPT 12,14,6/50mm Nc=R	7.0 14.9			7.00m GRAVELLY SILTY CLAY: brown, low to medium plasticity, fine grained, subrounded to subangular ironstone gravel			
							CL-CI			H	
					8.0 13.9			8.00m			

AD/T
HQ Casing

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH205
FILE / JOB NO : 305001663
SHEET : 2 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292148.85, N: 6265257.82 (56 MGA20) SURFACE ELEVATION : 21.90 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 MOUNTING : Track CONTRACTOR : Traccess DRILLER : SK

DATE STARTED : 10/8/24 DATE COMPLETED : 10/8/24 DATE LOGGED : 10/8/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T				8.50m SPT 8, 10, 11 Nc=21 8.95m	8.0 13.9			SILTY CLAY: grey, dark grey, medium to high plasticity			RESIDUAL SOIL
WB HQ Casing				10.00m SPT 10, 15, 15 Nc=30 10.45m	9.0 12.9 10.0 11.9		CI-CH		M (=PL)	VSt	
				11.50m SPT 11, 20 Nc=R 11.80m	11.0 10.9			11.90m		H	
					12.0 9.9			Continued as Cored Drill Hole			
					13.0 8.9						
					14.0 7.9						
					15.0 6.9						
					16.0 5.9						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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CORED DRILL HOLE LOG

HOLE NO : BH205
FILE / JOB NO : 305001663
SHEET : 3 OF 3

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292148.85, N: 6265257.82 (56 MGA20) | SURFACE ELEVATION : 21.90 (AHD) | ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MD300 | MOUNTING : Track | CONTRACTOR : Traccess | DRILLER : SK

DATE STARTED : 10/8/24 | DATE COMPLETED : 10/8/24 | DATE LOGGED : 10/8/24 | LOGGED BY : HC | CHECKED BY : AS

CASING DIAMETER : HQ | BARREL (Length) : | BIT : STEP | BIT CONDITION : Good

DRILLING						MATERIAL				FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(NO CORE PER RUN %) DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral (VL -0.1, L -0.3, M -1.0, H -3.0, VH -10.0, EH)	NATURAL FRACTURE (mm) (20, 40, 100, 300, 1000)	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					8.0 13.9						
					9.0 12.9						
					10.0 11.9						
					11.0 10.9						
							11.90m START CORING AT 11.90m				
NMLC		4% NO CORE	33		12.0 9.9		SILTSTONE: orange brown, indistincted, flat bedded, ironstained	MW EW MW EW			11.90-12.18: FZ 12.18-12.22: EWS Clay 12.27-12.30: EWS Clay 12.33-12.55: EWS Clay
							12.55m SILTSTONE: grey, dark grey, thinly laminated at 0*, sandstone laminated at 0* (<5%), with clay seams	HW EW HW EW HW			12.63: BP 0° CN ST S 12.70-12.90: EWS Clay
				Is(50) d=0.19 a=0.21 MPa	13.0 8.9			HW EW HW EW HW EW			13.12: BP 0° CN PR S 13.18: JT 10 - 20° CN CU S 13.28-13.30: SM Clay 13.31-13.35: CZ carbonacious 13.43-13.50: SM Clay 13.57-13.63: SM Clay
				Is(50) d=0.06 a=0.13 MPa	14.0 7.9			HW HW to MW			13.86: BP 0° CN PR S infill gravelly clay 5 mm 14.08: BP 0° CT PR S clay coating 14.10: BP 0° CT PR S clay coating 14.16-14.20: CZ 14.22-14.27: CZ 14.35: BP 0° CN PR S 14.39: HB 14.54: HB 14.58: HB 14.71: HB 14.78: HB 14.88: BP 0° CN PR S
		14.20 -4% NO CORE	68		15.0 6.9						15.07: BP 0° CN PR S 15.20: BP 0° CN PR S
				Is(50) d=0.09 a=0.24 MPa							15.36: BP 0° CT PR S clay coating 15.40-15.45: SM Clay 15.50: HB 15.53-15.57: SM Clay 15.61: BP 0° CN PR S 15.63: BP 0° CN PR S 15.75: HB 15.93: DB
		16.00		UCS =2.5 MPa 15.92m	16.0 5.9		16.00m BOREHOLE BH205 TERMINATED AT 16.00 m Target depth	EW HW to MW			

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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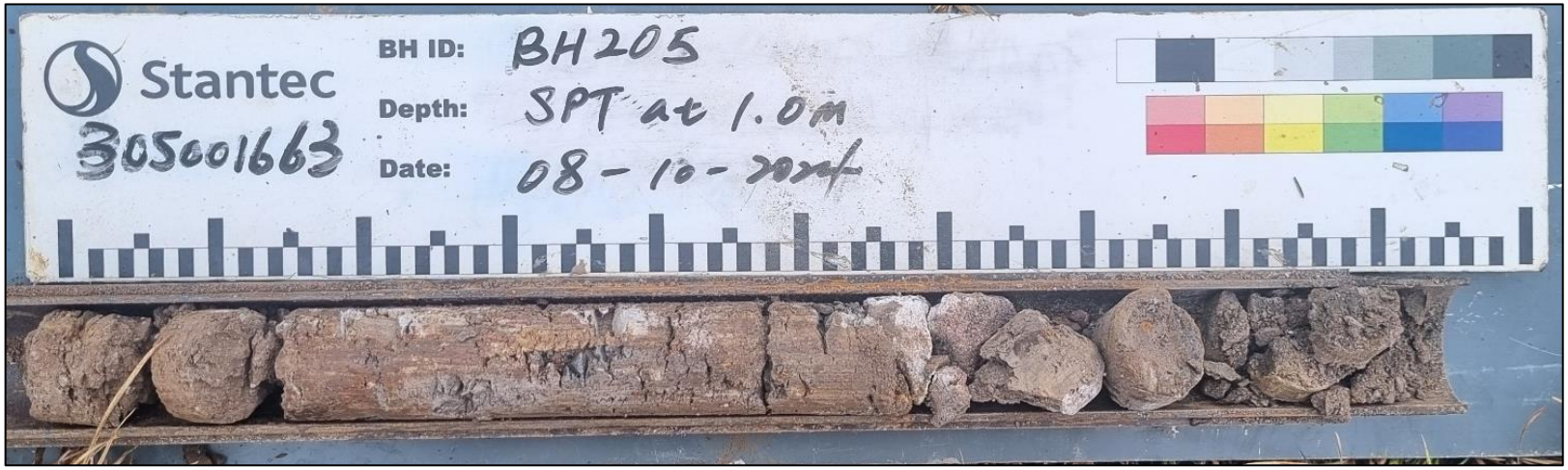
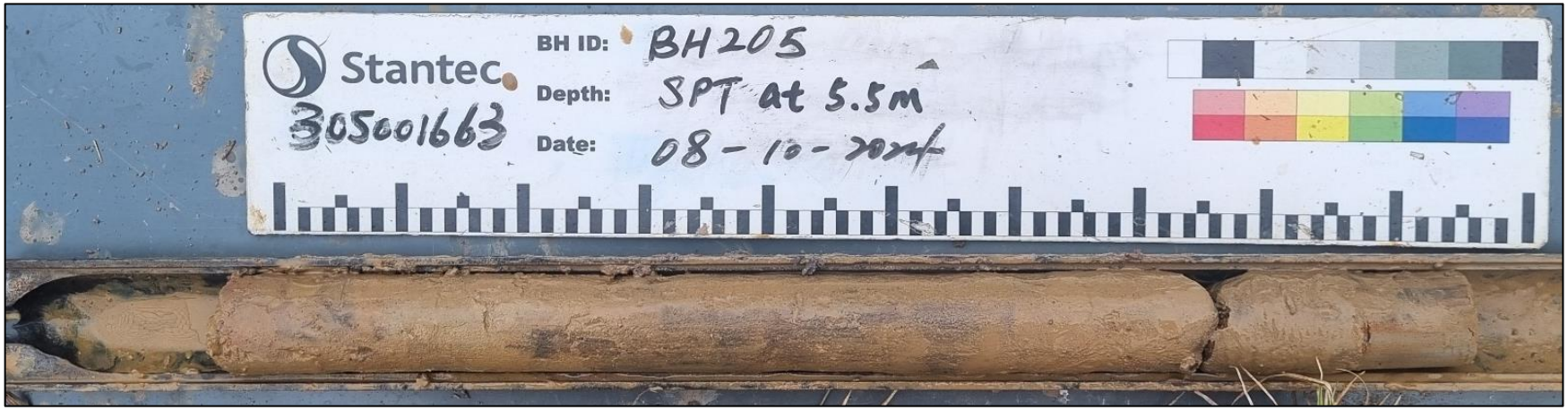
Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	SPT at: **1.0m to 1.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	SPT at: **2.5m to 2.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	SPT at: **4.0m to 4.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	SPT at: **5.5m to 5.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

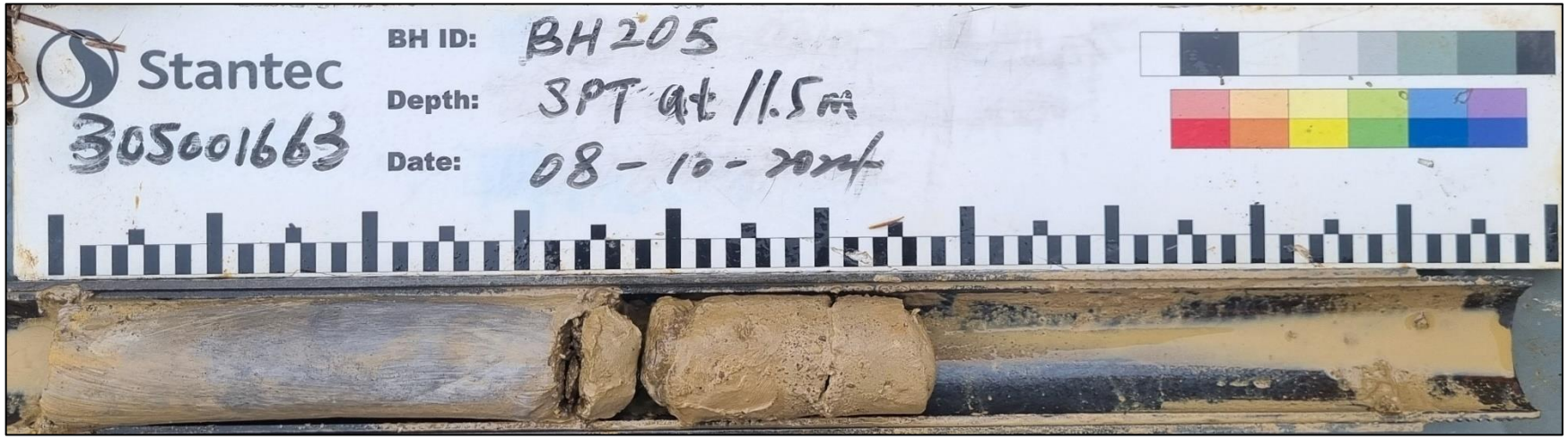


Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	SPT at: **7.0m to 7.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

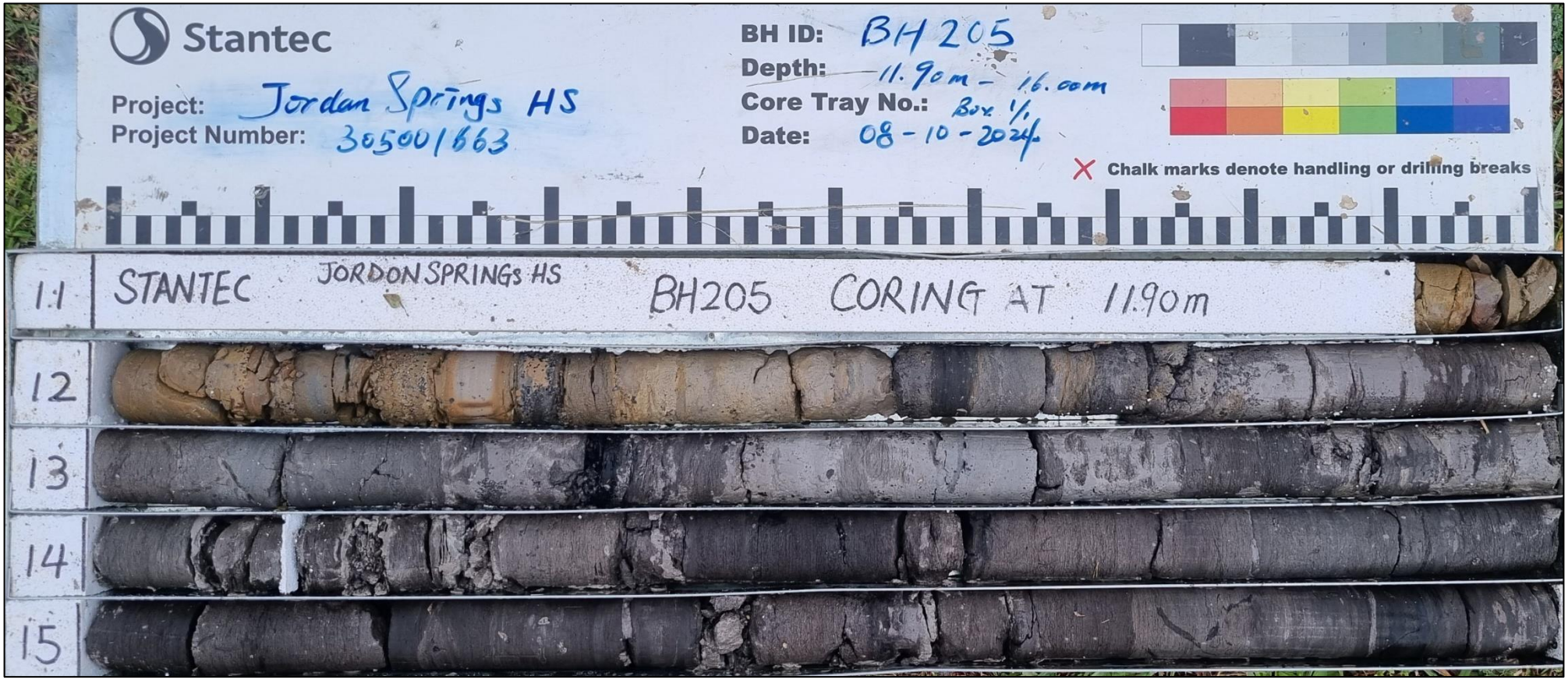
Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	SPT at: **8.5m to 8.95m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	SPT at: **10.0m to 10.45m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**

Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	SPT at: **11.5m to 11.8m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



Stantec	TITLE: **Borehole Core Photographs – BH205** **Proposed New High School in Jordan Springs**			
	PROJECT NO: **305001663**	TEST DATE: **08/10/2024**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **11.9m to 16m**
	DRILL RIG: **MD 300**	CONTRACTOR: **Traccess Drilling**	LOGGED BY: **HC**	CHECKED BY: **AS**



NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : PH201
FILE / JOB NO : 305001663
SHEET : 1 OF 1

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292212.75, N: 6265194.34 (56 MGA20) | SURFACE ELEVATION : 20.90 (AHD) | ANGLE FROM HORIZONTAL : 90°

RIG TYPE : 15t Excavator | MOUNTING : 400 mm Auger | CONTRACTOR : FirstCivil | DRILLER :

DATE STARTED : 10/2/24 | DATE COMPLETED : 10/2/24 | DATE LOGGED : 10/2/24 | LOGGED BY : HC | CHECKED BY : AS

DRILLING					MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
400 Auger Drill		E-F			0.0 20.9			0.10m TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, with organic matters (grass, rootlets)			TOPSOIL
								SILTY SANDY GRAVEL: brown, grey, medium to coarse gravel, sub-angular, fine grained sand, trace orange, brown medium plasticity clay, gravel is crushed sandstone an shale. Appeared to be compacted	M		FILL
								0.60m GRAVELLY SILTY CLAY: brown, orange brown, grey mottled, medium plasticity, shale gravel, trace fine grained sand, appeared to be compacted			
					1.0 19.9						
					2.0 18.9				M		
								2.50m GRAVELLY SILTY CLAY: grey, medium plasticity, shale gravel, trace fine grained sand, trace cobble to boulder size shale fragments, size range from 100mm to 300mm. Appeared to be compacted			
					3.0 17.9						
					4.0 16.9			4.10m SILTY CLAY: orange, brown, medium to high plasticity, with organic matter (tree root)			ALLUVIUM
					5.0 15.9				M		
								5.50m BOREHOLE PH201 TERMINATED AT 5.50 m Target depth			
					6.0 14.9						
					7.0 13.9						
					8.0 12.9						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

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File: 305001663 PH201 1 OF 1

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH201**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH201**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH201**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH201**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH201**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**	TEST PIT NUMBER: **PH201**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**
		PREPARED BY: HC

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : PH202
FILE / JOB NO : 305001663
SHEET : 1 OF 1

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292135.16, N: 6265235.72 (56 MGA20) SURFACE ELEVATION : 22.22 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : 15t Excavator MOUNTING : 400 mm Auger CONTRACTOR : FirstCivil DRILLER :

DATE STARTED : 10/2/24 DATE COMPLETED : 10/2/24 DATE LOGGED : 10/2/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
400 Auger Drill		E-F			0.0 22.2			0.10m TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, trace fine to medium, subangular gravel, with organic matters (grass, rootlets)	M		TOPSOIL FILL
					1.0 21.2			SILTY SANDY CLAY: brown, grey, low plasticity, fine grained sand, with fine to coarse subangular shale / sandstone gravel, trace fine to medium grained sand, appeared to be compacted			
								1.60m SILTY GRAVELLY CLAY: brown, orange brown, grey mottled, medium plasticity, shale gravel, trace fine grained sand, trace of cobble to boulder size shale fragments, size range from 100mm to 400mm, trace reinforced concrete fragments. Appeared to be compacted			
					2.0 20.2				M		
					3.0 19.2						
					4.0 18.2				M		
					5.0 17.2			5.00m SILTY CLAY: orange, brown, medium to high plasticity, trace fine grained sand, with organic matter			ALLUVIUM
								5.40m BOREHOLE PH202 TERMINATED AT 5.40 m Target depth			
					6.0 16.2						
					7.0 15.2						
					8.0 14.2						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH202**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH202**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH202**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH202**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH202**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : PH203
FILE / JOB NO : 305001663
SHEET : 1 OF 1

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292105.89, N: 6265349.61 (56 MGA20) SURFACE ELEVATION : 22.09 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : 15t Excavator MOUNTING : 400 mm Auger CONTRACTOR : FirstCivil DRILLER :

DATE STARTED : 10/9/24 DATE COMPLETED : 10/9/24 DATE LOGGED : 10/9/24 LOGGED BY : HC CHECKED BY : AS

DRILLING					MATERIAL						
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
400 Auger Drill		E			0.0 22.1			0.10m TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, trace fine to medium, subangular gravel, with organic matters (grass, rootlets)	D		TOPSOIL FILL
								SILTY SANDY GRAVEL: grey, brown, fine to coarse gravel, sub-angular, fine grained sand, low plasticity silt, Trace of cobble size shale and sandstone fragment, subangular to angular, irregular in shape, typically 70 mm to 100 mm in size			
					1.0 21.1			1.20m GRAVELLY SILTY CLAY: grey brown, low plasticity, fine to coarse grained, subangular to subrounded, crushed siltstone gravel, trace fine grained sand, trace of cobble size shale fragments, appeared to be compacted	M (<PL)		
		E-F			2.0 20.1						
					3.0 19.1			3.00m SANDY GRAVEL: pale grey, off white, sub-angular to angular, fine to medium grained sand, with sandstone cobbles, trace clay, with cobble size sandstone fragments, irregular in shape, angular to subangular, 100 mm to 130 mm in size, appeared to be compacted	D		
		F-H						3.50m SILTY CLAY: brown, medium to high plasticity, with fine to medium grained, subangular gravel, trace fine grained sand, trace of cobble size shale fragments			
		E			4.0 18.1				M (<PL)		
			▶					4.40m GRAVELLY SANDY CLAY: brown, grey, medium to high plasticity, fine to medium grained sand, fine to coarse, angular to subangular gravel, trace of cobble size shale and sandstone fragments			
		E-F						4.80m	M (>PL)		
		E						SILTY CLAY: brown, orange brown, low to medium plasticity, trace fine grained sand, trace of organic matters (tree roots)			ALLUVIUM
					5.0 17.1			5.00m BOREHOLE PH203 TERMINATED AT 5.00 m Target depth			
					6.0 16.1						
					7.0 15.1						
					8.0 14.1						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

File: 305001663 PH203 1 OF 1

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH203**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH203**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH203**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH203**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH203**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH203**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH203**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : PH204
FILE / JOB NO : 305001663
SHEET : 1 OF 1

PROJECT : Proposed New High School in Jordan Springs
LOCATION : Infantry St, Jordan Springs East, NSW, 2747

POSITION : E: 292187.39, N: 6265421.22 (56 MGA20) SURFACE ELEVATION : 21.02 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : 15t Excavator MOUNTING : 400 mm Auger CONTRACTOR : FirstCivil DRILLER :

DATE STARTED : 10/2/24 DATE COMPLETED : 10/2/24 DATE LOGGED : 10/2/24 LOGGED BY : HC CHECKED BY : AS

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
400 Auger Drill		E			0.0 21.0			0.10m TOPSOIL: CLAYEY SANDY SILT: brown, low plasticity, fine grained sand, low plasticity clay, trace fine to medium, subangular gravel, with organic matters (grass, rootlets)	M		TOPSOIL FILL
								SILTY CLAY: brown, grey, low to medium plasticity, trace fine grained sand, with fine to coarse, subangular gravel, trace of coble size shale fragments, subangular to angular, irregular in shape, generally 70 mm to 100 mm in size, appear to be compacted			
					1.0 20.0				M (<PL)		
								1.80m GRAVELLY SILTY CLAY: brown, grey, low to medium plasticity, fine to coarse, subangular to angular gravel, with coble size shale and sandstone fragments, subangular to angular, irregular in shape, generally 100 mm to 120 mm in size, appear to be compacted			
		E-F			2.0 19.0						
					3.0 18.0			3.00m SILTY CLAY: dark brown, brown, medium plasticity, trace fine to medium grained, subangular to subrounded shale gravel, trace fine grained sand, at 4.2 m colour change to brown and orange brown			
		E							M (=PL)		
					4.0 17.0			4.70m CLAYEY SILT: brown, pale brown, plae grey mottled, low plasticity, trace fine grained, subrounded ironstone gravel, trace fine grained sand			ALLUVIUM
					5.0 16.0			5.00m BOREHOLE PH204 TERMINATED AT 5.00 m Target depth			
					6.0 15.0						
					7.0 14.0						
					8.0 13.0						

See Explanatory Notes for details of abbreviations & basis of descriptions.

STANTEC AUSTRALIA PTY LTD

Stantec

File: 305001663 PH204 1 OF 1

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH204**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH204**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH204**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH204**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**	TEST PIT NUMBER: **PH204**
	PROJECT NO: **305001663** / TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH204**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Stantec	TITLE: **40mm Diameter Auger Hole (PH) Photographs** **Proposed New High School in Jordan Springs**		TEST PIT NUMBER: **PH204**
	PROJECT NO: **305001663**	TEST DATE: **0210/2024**	PREPARED BY: HC

Appendix F PREVIOUS DATA

REPORT OF BOREHOLE: BH-P2-24

SHEET: 1 OF 1

CLIENT: Lendlease Communities
PROJECT: Jordan Springs East
LOCATION: Jordan Springs East Stages 4-6
JOB NO: PS129457

COORDS: 292133.8 m E 6265391.1 m N MGA94 56
SURFACE RL: 21.81 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.50 m

DRILL RIG: Comacchio Geo305
CONTRACTOR: Matrix Drilling
LOGGED: EH DATE: 9/1/23
CHECKED: PO DATE: 8/3/23

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M	GWNO	0	0.10 21.71					Sandy SILT pale grey brown, fine to coarse grained sand, with rootlets			TOPSOIL
									FILL: Silty SAND grey brown, with fine to medium, angular to sub-rounded sandstone, concrete and shale gravel			FILL
			1									
					Rec = 450/450 mm SPT 1.50-1.95 m 5, 10, 9 N=19					D	MD	
			2	2.00 19.81					becomes dark brown			
				2.50 19.31					FILL: Gravelly SAND fine to medium, angular to sub-rounded, sandstone, concrete and shale gravel, trace clay			
	H		3	3.00 18.81	Rec = 450/350 mm SPT 3.00-3.35 m 1, 2 HB N>2				FILL: Gravelly CLAY medium plasticity, fine to medium, angular to sub-rounded, sandstone, concrete and shale gravel	M	VS	
	R			18.31					END OF BOREHOLE @ 3.50 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED WITH SPOIL			
			4									
			5									
			6									
			7									

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REPORT OF BOREHOLE: BH-P2-25

SHEET: 1 OF 1

CLIENT: Lendlease Communities
PROJECT: Jordan Springs East
LOCATION: Jordan Springs East Stages 4-6
JOB NO: PS129457

COORDS: 292183.3 m E 6265324.0 m N MGA94 56
SURFACE RL: 21.42 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 4.95 m

DRILL RIG: Comacchio Geo305
CONTRACTOR: Matrix Drilling
LOGGED: EH DATE: 9/1/23
CHECKED: PO DATE: 8/3/23

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M	09/01/23 14:10 09/01/23 14:00	0	0.10 21.32					TOPSOIL: Sandy SILT pale grey brown, fine to coarse grained sand, with rootlets			TOPSOIL
				0.50 20.92					FILL: Gravelly Silty SAND fine to medium grained, grey, fine and medium, angular and sub-angular brick, concrete and shale gravel			FILL
			1	1.00 20.42					becomes brown becomes dark grey	D	MD	
			2	2.50 18.92	Rec = 450/450 mm SPT 1.50-1.95 m 6, 4, 8 N=12				FILL: Gravelly Silty CLAY medium plasticity, red brown, fine and medium, angular and sub-angular brick, concrete and shale gravel			
			3	3.50 17.92	Rec = 450/450 mm SPT 3.00-3.45 m 8, 14, 0 N=14 290mm penetration				FILL: Gravelly Silty CLAY medium plasticity, brown, fine to coarse, sub-angular and sub-rounded, brick, concrete and shale gravel	M	S	
			4	4.00 17.42	Rec = 450/450 mm SPT 4.50-4.95 m 4, 2, 4 N=6			Cl	Silty CLAY low plasticity, orange brown and grey	M - W	F	ALLUVIAL SOIL Groundwater fillling base of hole, rises to 4.6m after 10 minutes. Rises prior to backfilling.
			5	16.47					END OF BOREHOLE @ 4.95 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED WITH SPOIL			
			6									
			7									

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GAP gINT FN. F01a RL3

REPORT OF BOREHOLE: BH-P2-26

SHEET: 1 OF 1

CLIENT: Lendlease Communities
PROJECT: Jordan Springs East
LOCATION: Jordan Springs East Stages 4-6
JOB NO: PS129457

COORDS: 292185.3 m E 6265202.2 m N MGA94 56
SURFACE RL: 21.49 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 6.45 m

DRILL RIG: Comacchio Geo305
CONTRACTOR: Matrix Drilling
LOGGED: EH DATE: 9/1/23
CHECKED: PO DATE: 8/3/23

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M		0	0.10 21.39					TOPSOIL: Sandy SILT pale grey brown, fine to coarse grained sand, with rootlets			TOPSOIL
									FILL: Silty SAND fine to medium grained, grey, with fine to medium grained, subangular, subrounded brick, aggregate, shale gravel	D	VL	FILL
			1		Rec = 450/450 mm SPT 1.50-1.95 m 1, 1, 4 N=5							
			2	2.50 18.99					FILL: Sandy CLAY medium plasticity, red brown, fine and medium grained sand, trace fine to medium grained, subangular, subrounded brick and shale gravel			
	H		3	3.00 18.49	Rec = 450/450 mm SPT 3.00-3.45 m 4, 4, 5 N=9				becomming brown	M	F	
		09/01/23 11:10	4	4.00 17.49					becoming grey brown			
				4.50						W		
	M	09/01/23 11:00		16.99	Rec = 450/450 mm SPT 4.50-4.95 m 3, 5, 8 N=13			Cl	Silty CLAY medium plasticity, grey brown mottled red brown, trace fine to medium grained gravel	M	St	ALLUVIAL SOIL Groundwater encountered. Fills base of hole prior to rising by 30cm.
			5									
			6	6.00 15.49	Rec = 450/450 mm SPT 6.00-6.45 m 4, 6, 9 N=15				becoming light brown			
				15.04					END OF BOREHOLE @ 6.45 m TARGET DEPTH BACKFILLED WITH SPOIL			
			7									

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REPORT OF BOREHOLE: BH-P2-30

SHEET: 1 OF 1

CLIENT: Lendlease Communities
PROJECT: Jordan Springs East
LOCATION: Jordan Springs East Stages 4-6
JOB NO: PS129457

COORDS: 292239.2 m E 6265386.1 m N MGA94 56
SURFACE RL: 20.50 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 4.95 m

DRILL RIG: Comacchio Geo305
CONTRACTOR: Matrix Drilling
LOGGED: TW DATE: 13/1/23
CHECKED: PO DATE: 8/3/23

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GWNO	0	0.10 20.40					TOPSOIL: Sandy SILT Fine to coarse grained sand, pale grey brown with rootlets.	D	L	TOPSOIL FILL
				0.40 20.10					FILL: Silty Gravelly SAND Fine to coarse grained sand, brown grey. Gravel is fine and medium, angular to sub-rounded shale.			
			1						FILL: Gravelly SAND with clay Fine and coarse grained sand, dark grey. Gravel is fine and medium, sub-angular and sub-rounded shale.		MD	
	M			1.65 18.85	Rec = 450/450 mm SPT 1.50-1.95 m 12, 9, 8 N=17							
				1.80 18.70					FILL: Clayey SAND with gravel Fine to coarse grained sand, dark grey. Gravel is fine and medium, angular to sub-rounded shale. Red brown clay nodules up to 30mm, weathered brick fragments.			
			2						Shale cobble			
				2.50 18.00					FILL: Sandy CLAY with trace gravel Low to medium plasticity, fine and medium grained sand, orange brown and dark grey. Gravel is fine and medium, sub-angular and sub-rounded, shale			
			3	3.05 17.45	Rec = 450/450 mm SPT 3.00-3.45 m 4, 6, 8 N=14			CI	Sandy Silty CLAY Medium plasticity, fine and medium grained sand, orange brown mottled grey with rootlets.	M		ALLUVIAL SOIL
				3.65 16.85					Brown, low plasticity		St	
	L		4									
				4.60 15.90	Rec = 450/450 mm SPT 4.50-4.95 m 6, 7, 9 N=16			ML	Sandy Clayey SILT Low plasticity, fine to medium grained sand, grey mottled orange brown			
				4.90 15.55					with angular and sub-angular, dark orange brown, weathered shale gravel.			
			5						END OF BOREHOLE @ 4.95 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED WITH SPOIL			
			6									
			7									

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GAP gINT FN. F01a
RL3

REPORT OF TEST PIT: TP-P2-24

CLIENT: Lendlease Communities
PROJECT: Jordan Springs East
LOCATION: Jordan Springs East Stages 4-6
JOB NO: PS129457

COORDS: 292128.1 m E 6265432.7 m N MGA94 56
SURFACE RL: 21.70 m DATUM: AHD
LENGTH: 4.50 m WIDTH: 1.00 m DIRECTION: 045°
PIT DEPTH: 5.20 m
BUCKET TYPE: 700mm wide scaping bucket

SHEET: 1 OF 1
MACHINE: 14t Excavator
CONTRACTOR: MBA Earthmoving PTY LTD
LOGGED: TW DATE: 19/1/23
CHECKED: PO DATE: 8/3/23

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0	21.60					TOPSOIL: Sandy SILT Fine to coarse grained sand, pale grey brown with rootlets			TOPSOIL
				0.50					Gravelly Silty SAND fine to coarse grained, grey, angular to subangular, fine to coarse grained gravel, with concrete cobbles, gravel: concrete, aggregate, sandstone	W		FILL
				21.20								
				0.90					FILL: Sandy GRAVEL Fine to coarse grained, angular and subangular, grey, fine to coarse sand, with concrete cobbles			
			1	20.80	BDS 1.20-1.50 m Rec = 300/300 mm					D		
				1.90					FILL: Silty Gravelly SAND Fine to coarse grained, grey, angular and sub-angular gravel, with angular and sub-angular cobbles, concrete and shale			
			2	19.80					FILL: Clayey Gravelly SAND Fine to coarse grained, dark grey, with angular and sub-angular concrete, shale, brick cobbles with angular and subangular concrete shale and brick cobbles and boulders.			
				2.20								
				19.50					FILL: Clayey Gravelly SAND Fine to coarse grained, dark grey, angular to sub-rounded, fine to coarse grained gravel, with angular to sub-rounded, shale and concrete cobbles, with angular to sub-rounded, concrete boulders	M		
				2.90								
			3	18.80	DS 3.00-3.50 m Rec = 500/500 mm				FILL: Clayey Gravelly SAND Fine to coarse grained, dark grey, angular to subrounded gravel, with angular and subangular, concrete gravel	M - W		
				4.50								
				17.20				GW-GC	Clayey Sandy GRAVEL Fine to coarse grained, sub-angular to rounded, brown, fine to coarse sand.	W		ALLUVIAL SOIL
			4	5.00								
		19/01/23	5					ML	Clayey Sandy SILT Fine and medium grained sand, orange brown mottled grey.			
				16.50					TEST PIT DISCONTINUED @ 5.20 m UNSTABLE TARGET DEPTH BACKFILLED WITH SPOIL			Groundwater slowly rising through base of pit, infilling pit to 5.10m
			6									

Sketch & Other Observations

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GAP gINT FN. F03e RL3

REPORT OF TEST PIT: TP-P2-25

CLIENT:	Lendlease Communities	COORDS: 292149.2 m E 6265376.0 m N MGA94 56	SHEET: 1 OF 1
PROJECT:	Jordan Springs East	SURFACE RL: 21.66 m DATUM: AHD	MACHINE: 14t Excavator
LOCATION:	Jordan Springs East Stages 4-6	LENGTH: 4.50 m WIDTH: 1.00 m DIRECTION: 045°	CONTRACTOR: MBA Earthmoving PTY LTD
JOB NO:	PS129457	PIT DEPTH: 5.10 m	LOGGED: TW DATE: 19/1/23
		BUCKET TYPE: 700mm wide scaping bucket	CHECKED: PO DATE: 8/3/23

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0	0.30 21.36					TOPSOIL: Sandy SILT Low plasticity, fine to coarse grained sand, light grey brown with rootlets.	W - D		TOPSOIL
				1.00 20.66					FILL: Gravelly Silty SAND fine to coarse grained, brown grey, with angular and sub-angular, shale, sandstone cobbles			FILL
			1	1.50 20.16	DS 1.50-2.00 m Rec = 500/500 mm				FILL: Sandy Silty GRAVEL fine to coarse grained, grey, with angular and sub-angular, concrete, shale, sandstone cobbles			
									FILL: Gravelly Silty SAND fine to coarse grained, grey, with fine to coarse, angular and sub-rounded, concrete, shale cobbles	D		
			2						FILL: Gravelly Clayey SAND fine to coarse grained, dark grey, with fine to coarse, angular and sub-angular, shale, concrete cobbles			
				2.80 18.86					FILL: Gravelly Sandy CLAY medium plasticity, brown and grey, fine to coarse grained sand, with fine to coarse, angular and sub-angular, sandstone, shale, concrete cobbles			
			3	3.30 18.36					FILL: Sandy Clayey GRAVEL fine to coarse grained, brown grey, with fine to coarse, angular and sub-angular, concrete, shale, sandstone cobbles	M - W		
			4		BDS 3.50-4.00 m Rec = 500/500 mm							Groundwater slowly rising up through base of pit, filling remainder of test pit as material excavated.
				4.70 16.96				CI	Silty Sandy CLAY medium plasticity, brown, fine to coarse grained sand, fine to coarse, shale, sandstone	M		ALLUVIAL SOIL
		19/01/23	5	16.56					TEST PIT DISCONTINUED @ 5.10 m UNSTABLE TARGET DEPTH BACKFILLED WITH SPOIL			
			6									

Sketch & Other Observations

REPORT OF TEST PIT: TP-P2-26

CLIENT:	Lendlease Communities	COORDS: 292116.2 m E 6265327.2 m N MGA94 56	SHEET: 1 OF 2
PROJECT:	Jordan Springs East	SURFACE RL: 22.43 m DATUM: AHD	MACHINE: 14t Excavator
LOCATION:	Jordan Springs East Stages 4-6	LENGTH: 4.50 m WIDTH: 1.00 m DIRECTION: 045°	CONTRACTOR: MBA Earthmoving PTY LTD
JOB NO:	PS129457	PIT DEPTH: 5.00 m	LOGGED: TW DATE: 19/1/23
		BUCKET TYPE: 700mm wide scaping bucket	CHECKED: PO DATE: 8/3/23

Excavation					Sampling		Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0	0.10 22.33					TOPSOIL: Sandy SILT Fine to coarse grained sand, pale grey brown with rootlets			TOPSOIL
			0.5						FILL: Silty Sandy GRAVEL Fine to coarse grained, angular to subangular, brick, concrete, grey, sandstone, shale, fine to coarse grained sand, with angular and sub-angluar concrete cobbles, with angular and sub-angluar concrete boulders. Low plasticity silt.	D		FILL
			1.0	1.10 21.33					FILL: Silty Sandy GRAVEL Fine to coarse grained, angular and subangular, concrete, brown and pale red, fine to coarse grained sand, with angular and sub-angular, concrete cobble. Low platicity silt			
				1.40 21.03								
			1.5		DS 1.50-1.80 m Rec = 300/300 mm				FILL: Sandy Gravelly CLAY Low plasticity, orange brown, fine to coarse grained sand, angular to sub-angular, fine to coarse grained, shale, concrete gravel, with shale, concrete cobbles. Inferred firm.	D - M		
				2.00 20.43						D		
			2.0		BDS 2.00-2.50 m Rec = 500/500 mm				FILL: Gravelly CLAY Medium plasticity, brown and grey, fine to coarse grained sand, angular and sub-angular, fine to coarse grained, concrete, brick, sandstone, shale gravel, with concrete, mudstone, and brick. Inferred firm.	D - M		
			2.5									
				3.00 19.43					FILL: Sandy CLAY Medium plasticity, dark grey, fine to coarse grained sand, with sub-angular to sub-rounded, fine to coarse grained, shale and concrete gravel. Inferred firm.	M		
			3.0	3.30 19.13						D		
			3.5									

Sketch & Other Observations

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GAP gINT FN. F03e RL3

REPORT OF TEST PIT: TP-P2-28

CLIENT: Lendlease Communities
PROJECT: Jordan Springs East
LOCATION: Jordan Springs East Stages 4-6
JOB NO: PS129457

COORDS: 292147.5 m E 6265202.2 m N MGA94 56
SURFACE RL: 21.85 m DATUM: AHD
LENGTH: 4.50 m WIDTH: 1.00 m DIRECTION: 000°
PIT DEPTH: 4.40 m
BUCKET TYPE: 700mm wide scaping bucket

SHEET: 1 OF 2
MACHINE: 14t Excavator
CONTRACTOR: MBA Earthmoving PTY LTD
LOGGED: TW DATE: 19/1/23
CHECKED: PO DATE: 8/3/23

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L		0.0	0.10 21.75					TOPSOIL: Sandy SILT Fine to coarse grained sand, pale grey brown with rootlets			TOPSOIL
			0.5	0.70 21.15					FILL: Clayey Silty Gravelly SAND Firm to coarse grained sand, brown, angular to sub-angular, fine to coarse grained gravel, shale, brick, sandstone, concrete gravel, with angular and sub-angular, concrete cobbles, with angular and sub-angular, concrete and dry, gravelly, clay boulders. Low plasticity Silty Clay. Inferred dense	M		FILL
			1.0	1.40 20.45					FILL: Sandy silty GRAVEL Fine to coarse grained, angular and sub-angular, concrete, shale, sandstone, and brick gravel, fine to coarse sand, with angular and sub-angular, concrete and shale cobbles Inferred dense			
			1.5		BDS 1.50-2.00 m Rec = 500/500 mm				FILL: Clayey gravelly SAND Fine to coarse grained, grey and brown, angular and sub-angualr, fine to coarse grained, brick, concrete, shale gravel, with angular and sub-angular, concrete, and shale cobbles with wood fragments. low plasticity clay. Inferred dense	D		
			2.0	2.10 19.75					FILL: Sandy GRAVEL. Fine to coarse grained, angular to subangular, concete, aggregate, and shale gravel, fine to coarse grained sand, with angular to subangular, concrete and shale cobbles. Inferred dense			
			2.5	2.70 19.15					FILL: Sandy Gravelly CLAY Soft to firm, low to medium plasticity, grey and red-brown, fine to coarse grained sand, angular and sub-angular, fine to coarse grained, shale, brick gravel, with anuglar and sub-angular, concrete, and shale cobbles. Inferred soft to firm	M		
			3.0		DS 2.80-3.20 m Rec = 400/400 mm							
			3.5	3.30 18.55								

Sketch & Other Observations

REPORT OF TEST PIT: TP-P2-28

CLIENT: Lendlease Communities
PROJECT: Jordan Springs East
LOCATION: Jordan Springs East Stages 4-6
JOB NO: PS129457

COORDS: 292147.5 m E 6265202.2 m N MGA94 56
SURFACE RL: 21.85 m DATUM: AHD
LENGTH: 4.50 m WIDTH: 1.00 m DIRECTION: 000°
PIT DEPTH: 4.40 m
BUCKET TYPE: 700mm wide scaping bucket

SHEET: 2 OF 2
MACHINE: 14t Excavator
CONTRACTOR: MBA Earthmoving PTY LTD
LOGGED: TW DATE: 19/1/23
CHECKED: PO DATE: 8/3/23

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	L	19/01/23	3.5									
			4.0	4.10 17.75					FILL: COBBLES and BOULDERS with clayey gravelly sand Angular and sub-angular, concrete and shale cobbles, concrete and shale boulders, with fine to coarse sand, angular and sub-angular, fine to coarse grained, concrete, brick, sandstone, shale gravel. Low plasticity clay. Inferred dense	M		
				4.30					FILL: Sandy Clayey GRAVEL Fine to coarse grained, angular to sub-rounded, shale, and sandstone gravel, grey, fine to coarse grained sand with roots. Low plasticity clay.	W		
				17.45				ML	Sandy Gravelly SILT Low liquid limit, grey, fine to coarse grained sand with roots and rootlets. Inferred soft to firm	M		ALLUVIAL SOIL Groundwater encountered at 4.40m, rising to 4.25m, slow seepage from the side walls of test pit.
			4.5						TEST PIT DISCONTINUED @ 4.40 m UNSTABLE TARGET DEPTH BACKFILLED WITH SPOIL			
			5.0									
			5.5									
			6.0									
			6.5									
			7.0									

Sketch & Other Observations

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F03e RL3

Appendix G TEST RESULTS

MOISTURE CONTENT TEST REPORT

Client	Stantec	**Job #**	S24364-1
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Report #**	S98496-MC
Project	Jordan Springs PS (304100928)		

Test Procedure

- ☑ AS 1289 2.1.1 Determination of the moisture content of a soil - Oven drying method (Standard method).
- ☐ AS4133 1.1.1 Determination of the moisture content of rock - Oven drying method (standard method)
- ☐ RMS T120 Moisture content of road construction materials (Standard method)
- ☐ RMS T262 Determination of moisture content of aggregates (Standard method)

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 9/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 24/07/2024

Sample #	Source	Sample Description	Moisture Content %
S98496	BH103 3.50-4.00m	Silty CLAY with Sand, trace of Gravel	**18.9**
S98497	BH104 0.50-1.00m	Silty CLAY with Gravel and Sand	**13.1**
S98498	BH107 1.60-2.00m	Silty Sandy CLAY, trace of Gravel	**9.5**
S98499	BH108 6.50-7.00m	Silty Sandy CLAY, trace of Gravel	**19.3**
S98500	BH110 0.50-1.00m	Silty CLAY with Gravel and Sand	**15.9**
S98501	BH110 5.00-5.50m	Silty CLAY with Sand, trace of Gravel	**18.0**
S98502	BH109 4.50-5.50m	Silty Sandy CLAY, trace of Gravel	**16.7**
S98503	BH112 6.00-6.50m	Silty CLAY with Sand, trace of Gravel	**18.3**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

2/08/2024

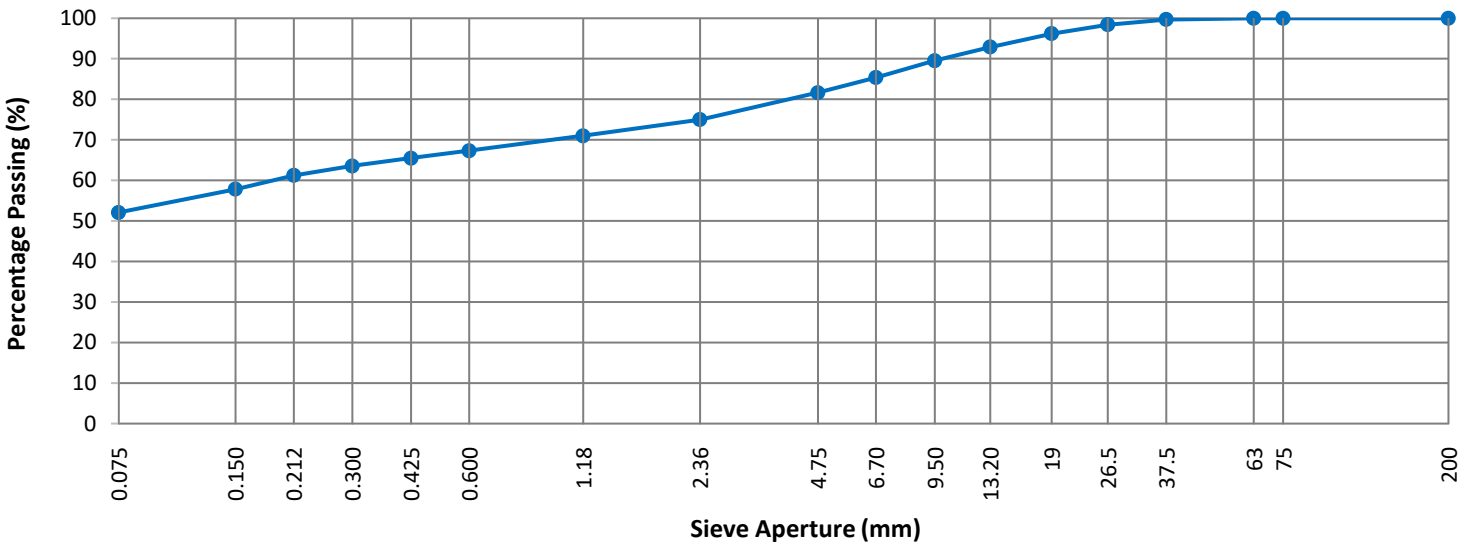
Date:

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

Particle Size Distribution Report

Client	Stantec	**Source**	BH104 0.50-1.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand and Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98497-PSD
Job No	S24364-1	**Lab No**	S98497

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	11/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	1/08/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**100**
26.5	**98**
19.0	**96**
13.2	**93**
9.50	**90**
6.70	**85**
4.75	**82**
2.36	**75**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**71**
0.600	**67**
0.425	**65**
0.300	**64**
0.212	**61**
0.150	**58**
0.075	**52**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory: Chris Lloyd

Date: 2/08/2024

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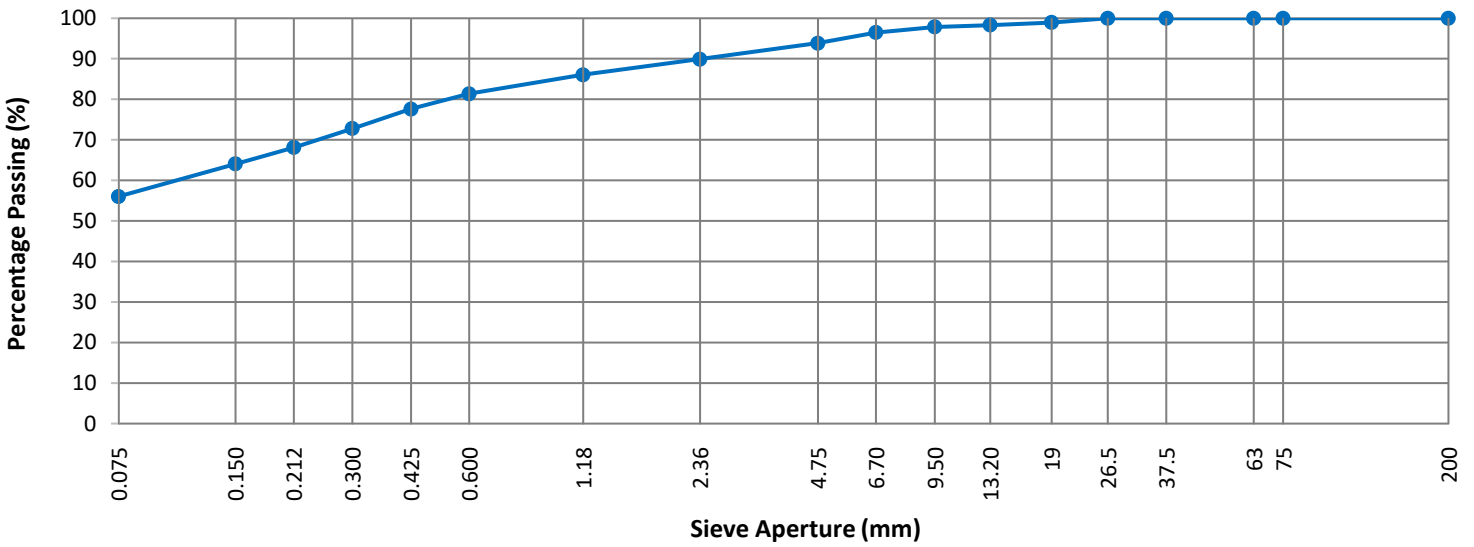
Lidcombe NSW 2141

Particle Size Distribution Report

Client	Stantec	**Source**	BH107 1.60-2.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98498-PSD
Job No	S24364-1	**Lab No**	S98498

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	8/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	31/07/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**100**
26.5	**100**
19.0	**99**
13.2	**98**
9.50	**98**
6.70	**96**
4.75	**94**
2.36	**90**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**86**
0.600	**81**
0.425	**78**
0.300	**73**
0.212	**68**
0.150	**64**
0.075	**56**

Notes

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Authorised Signatory: Chris Lloyd

Date: 1/08/2024

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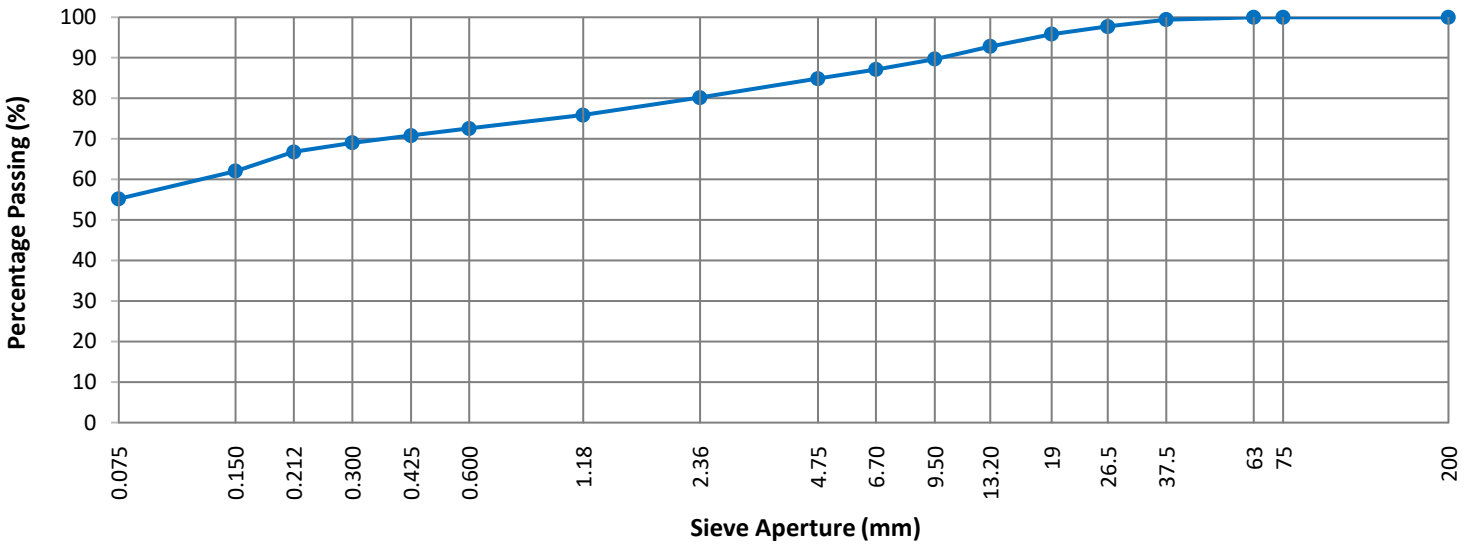
14 Carter St
Lidcombe NSW 2141

Particle Size Distribution Report

Client	Stantec	**Source**	BH110 0.50-1.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand and Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98500-PSD
Job No	S24364-1	**Lab No**	S98500

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	11/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	1/08/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**99**
26.5	**98**
19.0	**96**
13.2	**93**
9.50	**90**
6.70	**87**
4.75	**85**
2.36	**80**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**76**
0.600	**73**
0.425	**71**
0.300	**69**
0.212	**67**
0.150	**62**
0.075	**55**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory: Chris Lloyd

Date: 2/08/2024

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14 Carter St
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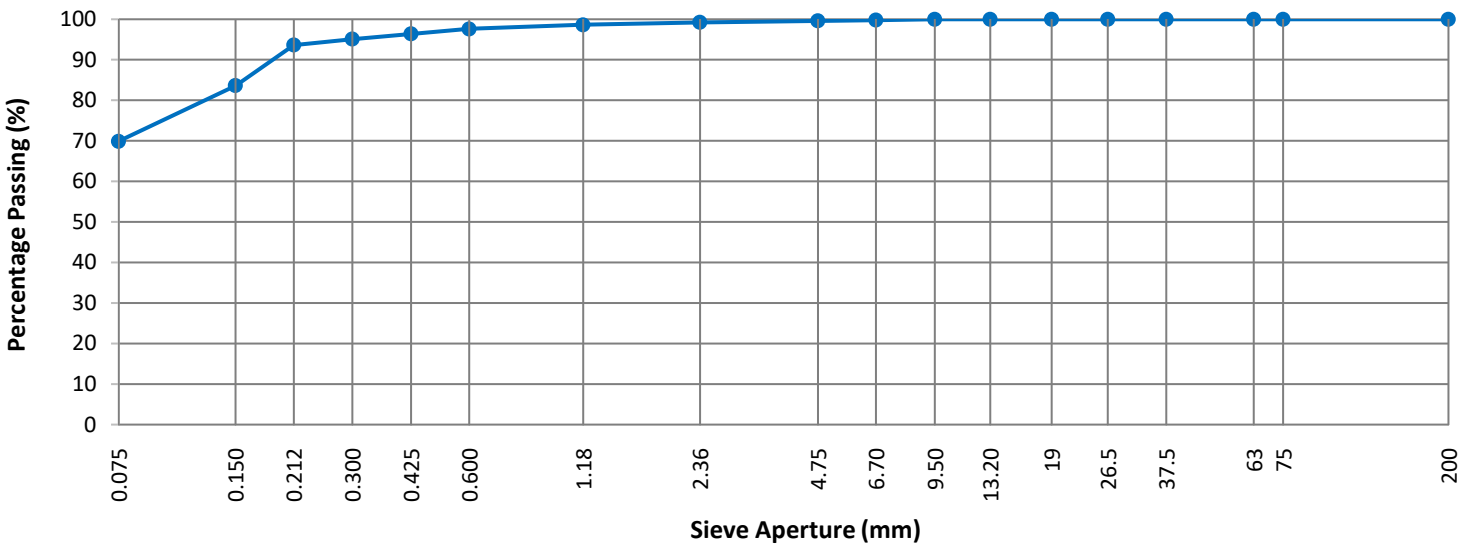
Particle Size Distribution Report

Client	Stantec	**Source**	BH110 5.00-5.50m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98501-PSD
Job No	S24364-1	**Lab No**	S98501

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	11/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	31/07/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**100**
26.5	**100**
19.0	**100**
13.2	**100**
9.50	**100**
6.70	**100**
4.75	**100**
2.36	**99**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**99**
0.600	**98**
0.425	**96**
0.300	**95**
0.212	**94**
0.150	**84**
0.075	**70**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory: Date: 1/08/2024

Chris Lloyd

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

Particle Size Distribution with Hydrometer Report

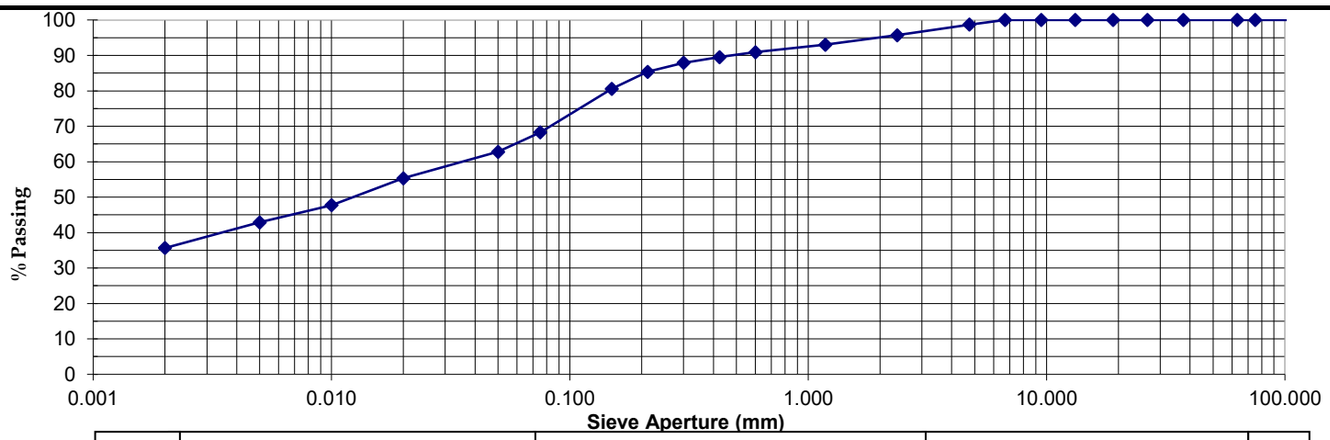
Client	Stantec	**Source**	BH103 3.50-4.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98496-HYD
Job No	S24364-1	**Lab No**	S98496

Test Procedure AS1289.3.6.3 Determination of the particle size distribution of a soil - Standard method of fine analysis using a hydrometer

AS1289.3.6.1 Determination of particle size distribution of a soil standard method sieving

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 9/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 1/08/2024



Clay	Silt	Sand	Gravel	Cobbles

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	-		1.180	93	
75	-		0.600	91	
63	-		0.425	90	
37.5	-		0.300	88	
26.5	-		0.212	85	
19.0	-		0.150	81	
13.2	-		0.075	68	
9.5	-		0.050	63	
6.7	100		0.020	55	
4.75	99		0.010	48	
2.36	96		0.005	43	
			0.002	36	

Loss in Pre-treatment of Material (%):	0	Particle Density (t/m^3):	2.65
Method of Dispersion:	Sodium Hexametaphosphate / Sodium Carbonate	Assumed - Reference HB160-2006	
Method of Preparation:	As received from natural state	Hydrometer Type:	ASTM E100

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory: Date: 2/08/2024

Chris Lloyd

MACQUARIE GEOTECH

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14 Carter St
Lidcombe NSW 2141

Particle Size Distribution with Hydrometer Report

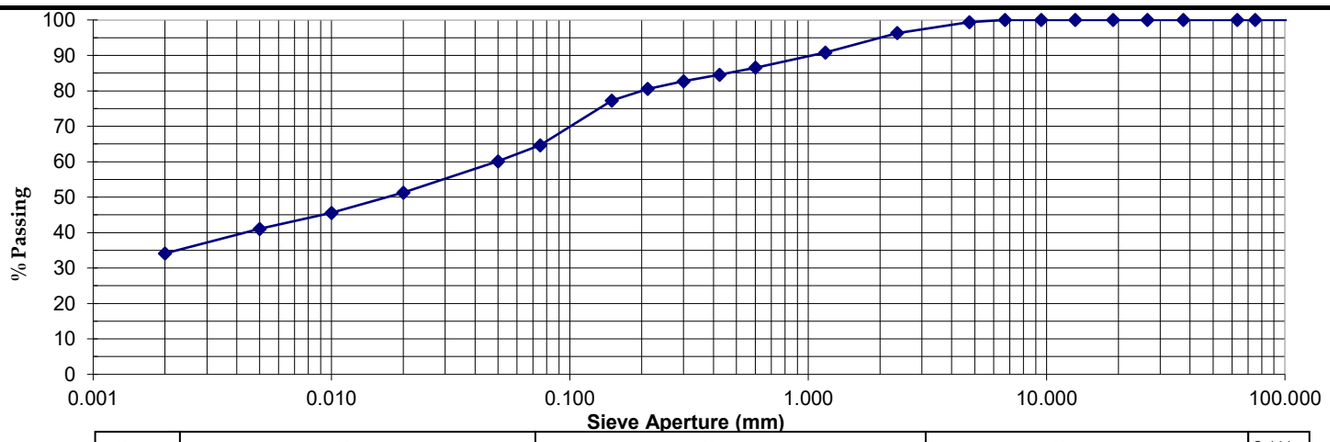
Client	Stantec	**Source**	BH108 6.50-7.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98499-HYD
Job No	S24364-1	**Lab No**	S98499

Test Procedure AS1289.3.6.3 Determination of the particle size distribution of a soil - Standard method of fine analysis using a hydrometer

AS1289.3.6.1 Determination of particle size distribution of a soil standard method sieving

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 9/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 1/08/2024



Clay	Silt	Sand	Gravel	Cobbles

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	-		1.180	91	
75	-		0.600	87	
63	-		0.425	85	
37.5	-		0.300	83	
26.5	-		0.212	81	
19.0	-		0.150	77	
13.2	-		0.075	65	
9.5	-		0.050	60	
6.7	100		0.020	51	
4.75	99		0.010	46	
2.36	96		0.005	41	
			0.002	34	

Loss in Pre-treatment of Material (%):	0	Particle Density (t/m^3):	2.65
Method of Dispersion:	Sodium Hexametaphosphate / Sodium Carbonate	Assumed - Reference HB160-2006	
Method of Preparation:	As received from natural state	Hydrometer Type:	ASTM E100

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory: Date:

2/08/2024

Chris Lloyd

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14 Carter St
Lidcombe NSW 2141

Particle Size Distribution with Hydrometer Report

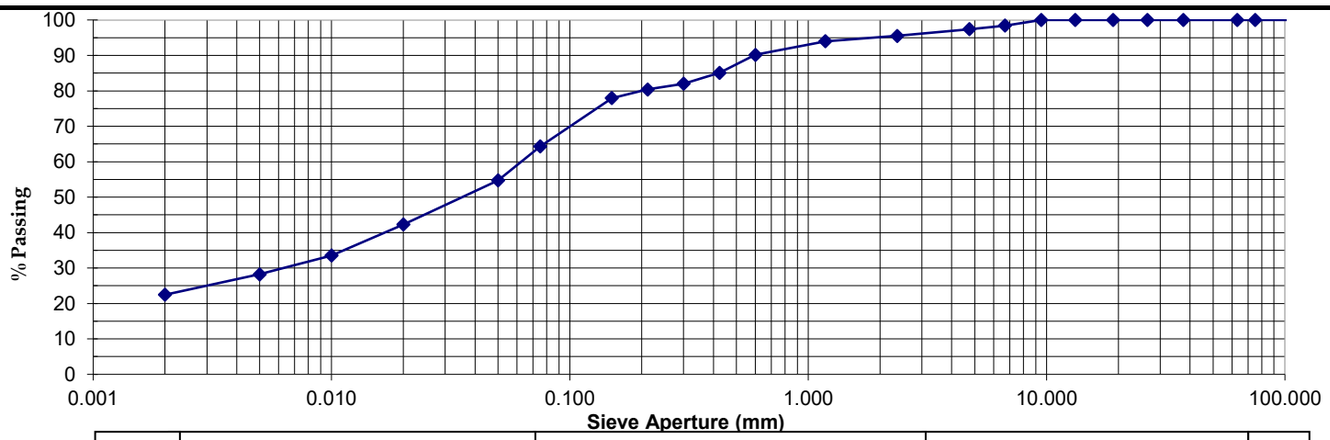
Client	Stantec	**Source**	BH109 4.50-5.50m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98502-HYD
Job No	S24364-1	**Lab No**	S98502

Test Procedure AS1289.3.6.3 Determination of the particle size distribution of a soil - Standard method of fine analysis using a hydrometer

AS1289.3.6.1 Determination of particle size distribution of a soil standard method sieving

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 8/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 1/08/2024



Clay	Silt	Sand	Gravel	Cobbles

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	-		1.180	94	
75	-		0.600	90	
63	-		0.425	85	
37.5	-		0.300	82	
26.5	-		0.212	80	
19.0	-		0.150	78	
13.2	-		0.075	64	
9.5	100		0.050	55	
6.7	98		0.020	42	
4.75	97		0.010	34	
2.36	95		0.005	28	
			0.002	22	

Loss in Pre-treatment of Material (%):	0	Particle Density (t/m^3):	2.65
Method of Dispersion:	Sodium Hexametaphosphate / Sodium Carbonate	Assumed - Reference HB160-2006	
Method of Preparation:	As received from natural state	Hydrometer Type:	ASTM E100

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory: Date:

2/08/2024

Chris Lloyd

MACQUARIE GEOTECH

Macquarie Geotechnical

14 Carter St
Lidcombe NSW 2141

Particle Size Distribution with Hydrometer Report

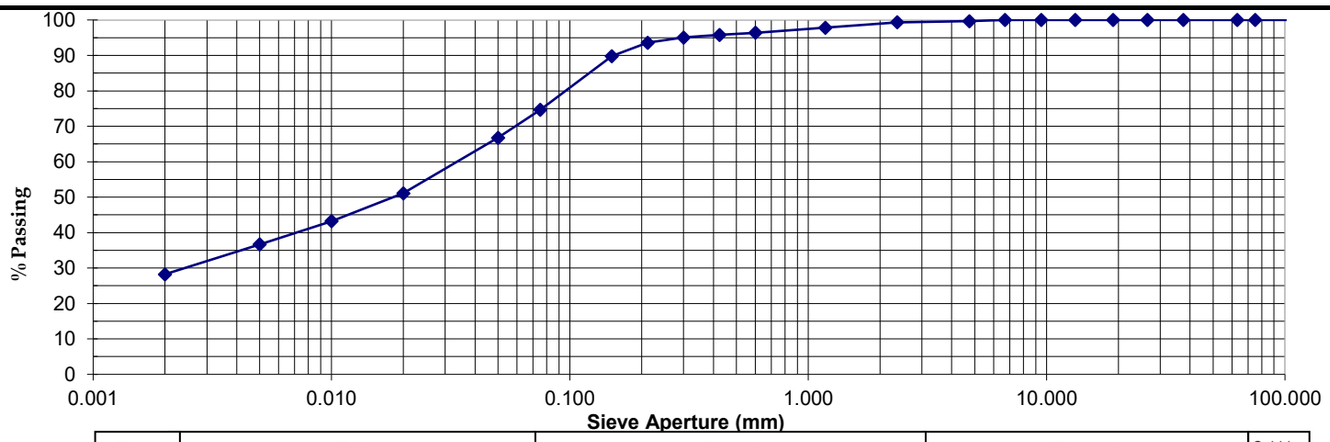
Client	Stantec	**Source**	BH112 6.00-6.50m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98503-HYD
Job No	S24364-1	**Lab No**	S98503

Test Procedure AS1289.3.6.3 Determination of the particle size distribution of a soil - Standard method of fine analysis using a hydrometer

AS1289.3.6.1 Determination of particle size distribution of a soil standard method sieving

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 8/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 1/08/2024



Clay	Silt	Sand	Gravel	Cobbles

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	-		1.180	98	
75	-		0.600	96	
63	-		0.425	96	
37.5	-		0.300	95	
26.5	-		0.212	94	
19.0	-		0.150	90	
13.2	-		0.075	75	
9.5	-		0.050	67	
6.7	100		0.020	51	
4.75	100		0.010	43	
2.36	99		0.005	37	
			0.002	28	

Loss in Pre-treatment of Material (%):	0	Particle Density (t/m^3):	2.65
Method of Dispersion:	Sodium Hexametaphosphate / Sodium Carbonate	Assumed - Reference HB160-2006	
Method of Preparation:	As received from natural state	Hydrometer Type:	ASTM E100

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory: Date: 2/08/2024

Chris Lloyd

MACQUARIE GEOTECH

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH103 3.50-4.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No.**	S98496-PI
Job No.	S24364-1	**Lab No.**	S98496

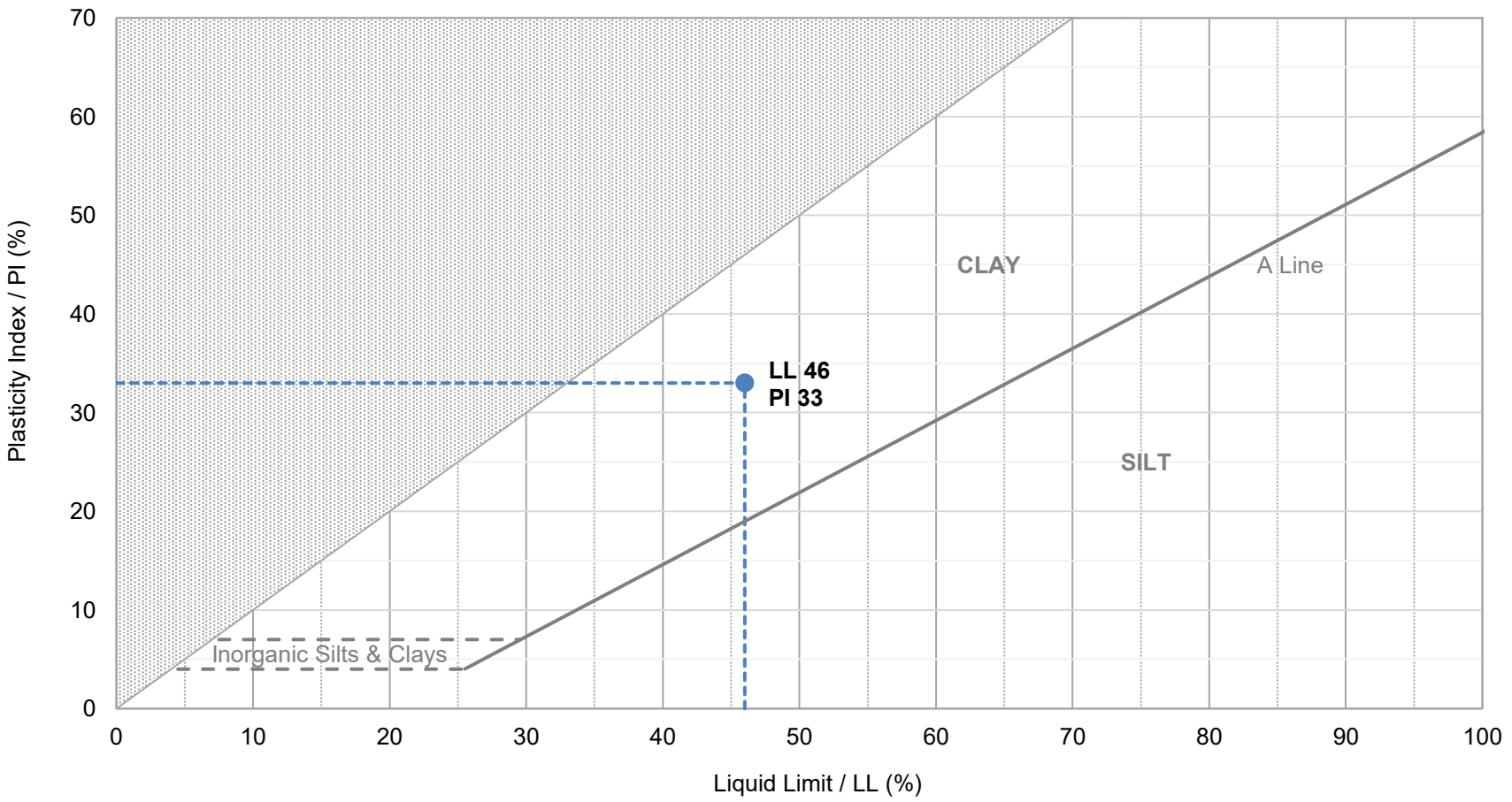
Test Procedure

- ☐ AS1289 3.1.1 Liquid Limit - Four point Casagrande method
- ☐ AS1289 3.1.2 Liquid Limit - One point Casagrande method
- ☑ AS1289 3.2.1 Plastic Limit - Standard method
- ☑ AS1289 3.3.1 Calculation of the Plasticity Index
- ☑ AS1289 3.4.1 Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	9/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	31/07/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**46**
History of the Sample	**Air Dried**	Plastic Limit (%)	**13**
		Plasticity Index / PI (%)	**33**
		Linear Shrinkage (%)	**14.5**
		Condition upon Drying	**Linear**

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

2/08/2024

Date:

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH110 5.00-5.50m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No.**	S98501-PI
Job No.	S24364-1	**Lab No.**	S98501

Test Procedure

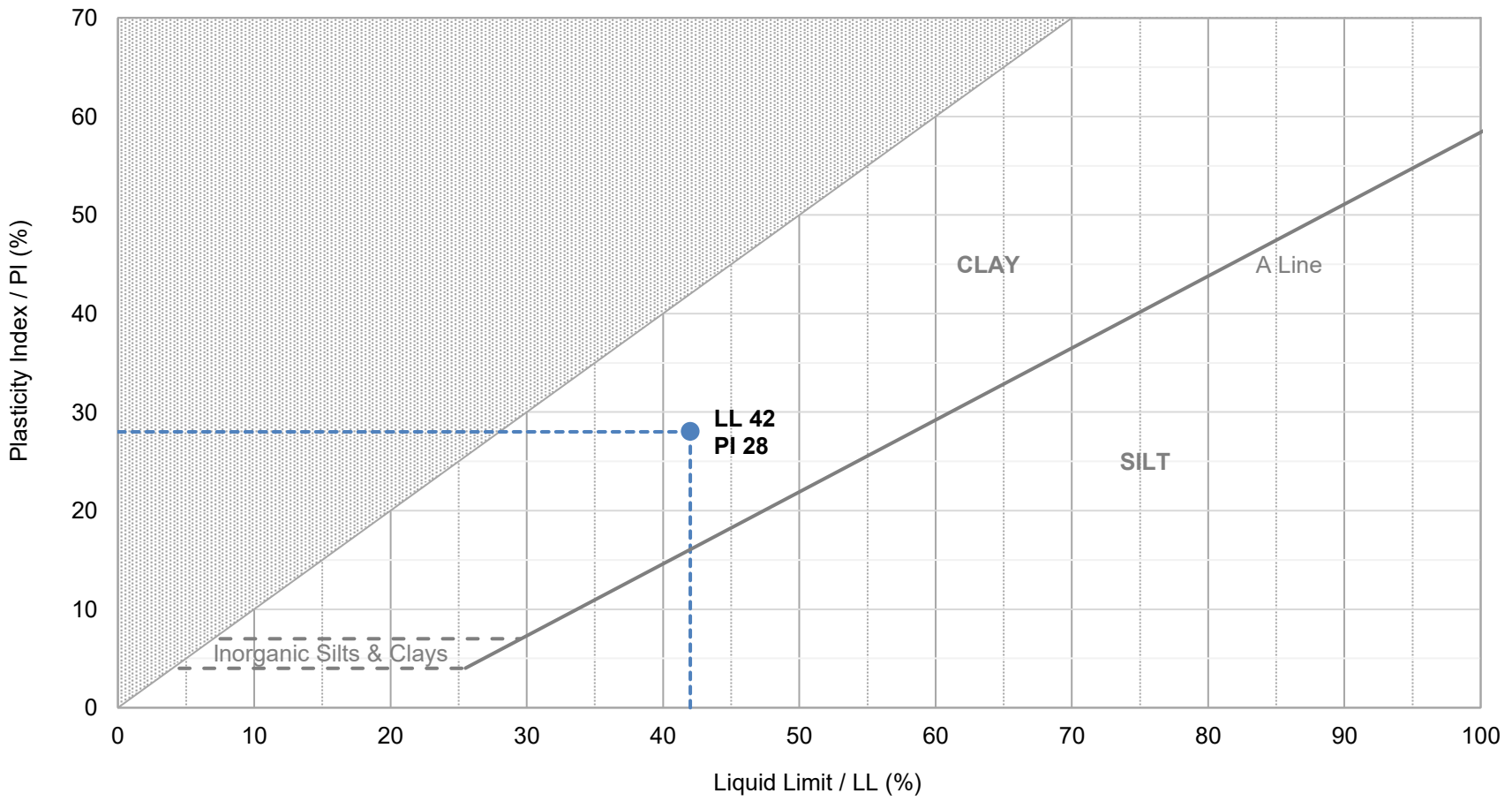
☐	AS1289 3.1.1	Liquid Limit - Four point Casagrande method
☐	AS1289 3.1.2	Liquid Limit - One point Casagrande method
☑	AS1289 3.2.1	Plastic Limit - Standard method
☑	AS1289 3.3.1	Calculation of the Plasticity Index
☑	AS1289 3.4.1	Linear Shrinkage - Standard method

Sampling Sampled by Client - results apply to the sample as received — **Date Sampled** 11/07/2024

Preparation Prepared in accordance with the test method — **Date Tested** 31/07/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**42**
History of the Sample	**Air Dried**	Plastic Limit (%)	**14**
		Plasticity Index / PI (%)	**28**
		Linear Shrinkage (%)	**12.5**
		Condition upon Drying	**Linear**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

2/08/2024

Date:

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH109 4.50-5.50m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No.**	S98502-PI
Job No.	S24364-1	**Lab No.**	S98502

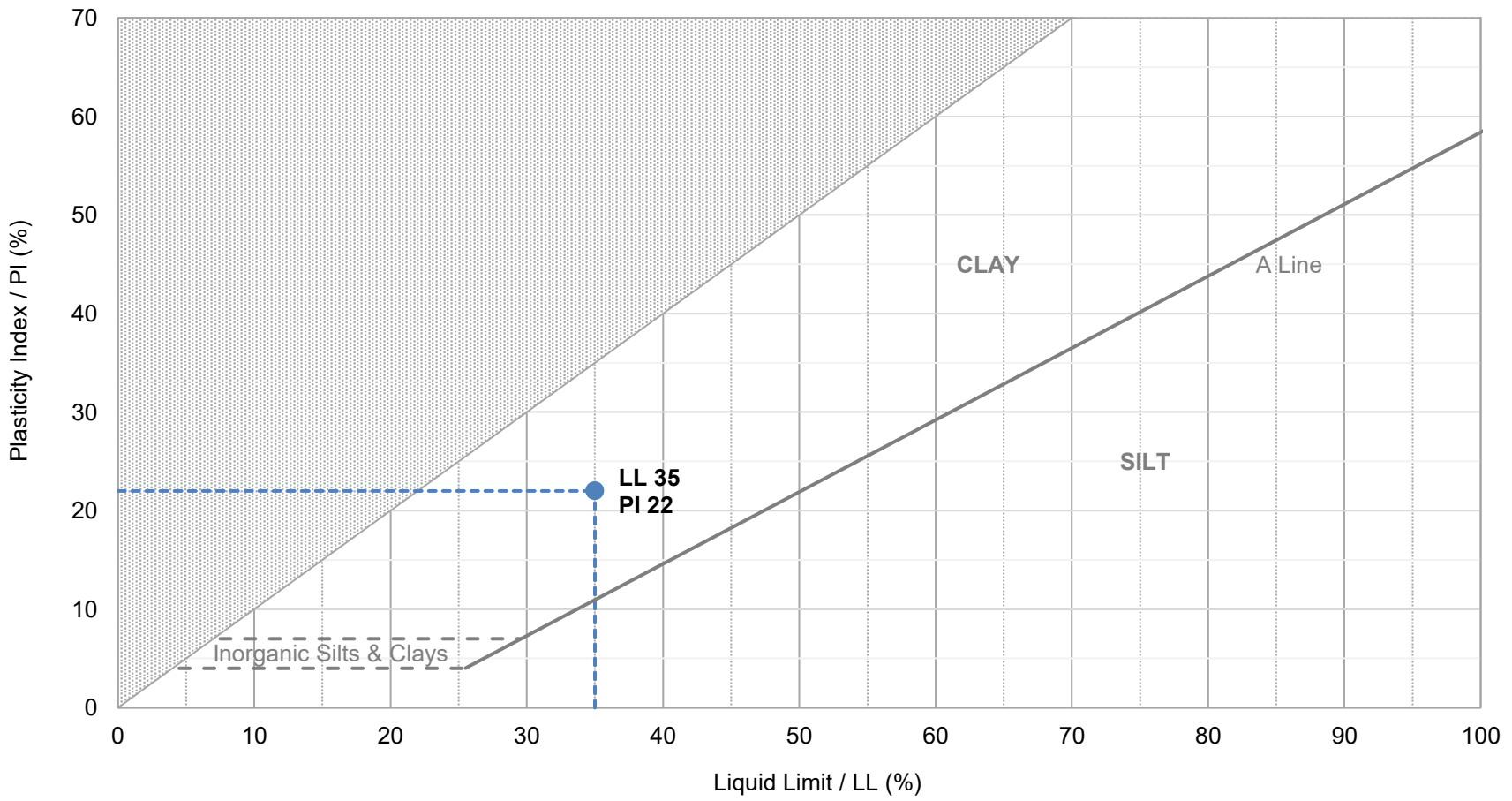
Test Procedure

- ☐ AS1289 3.1.1 Liquid Limit - Four point Casagrande method
- ☐ AS1289 3.1.2 Liquid Limit - One point Casagrande method
- ☑ AS1289 3.2.1 Plastic Limit - Standard method
- ☑ AS1289 3.3.1 Calculation of the Plasticity Index
- ☑ AS1289 3.4.1 Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	8/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	1/08/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**35**
History of the Sample	**Air Dried**	Plastic Limit (%)	**13**
		Plasticity Index / PI (%)	**22**
		Linear Shrinkage (%)	**7.5**
		Condition upon Drying	**Linear**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

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2/08/2024

Date:

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14 Carter St
Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH112 6.00-6.50m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No.**	S98503-PI
Job No.	S24364-1	**Lab No.**	S98503

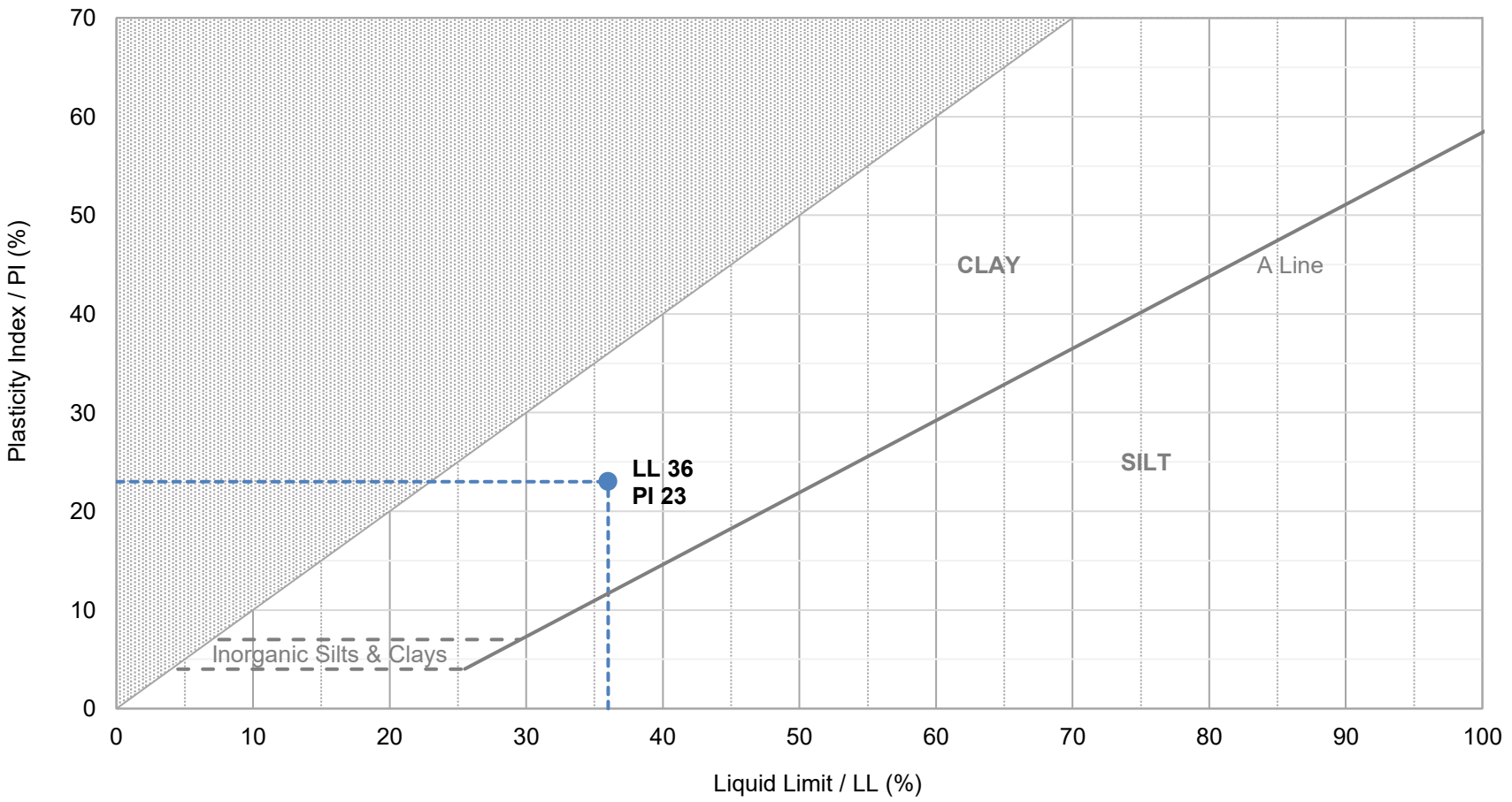
Test Procedure

☐	AS1289 3.1.1	Liquid Limit - Four point Casagrande method
☐	AS1289 3.1.2	Liquid Limit - One point Casagrande method
☑	AS1289 3.2.1	Plastic Limit - Standard method
☑	AS1289 3.3.1	Calculation of the Plasticity Index
☑	AS1289 3.4.1	Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	8/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	31/07/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**36**
History of the Sample	**Air Dried**	Plastic Limit (%)	**13**
		Plasticity Index / PI (%)	**23**
		Linear Shrinkage (%)	**8.5**
		Condition upon Drying	**Linear**

Notes

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2/08/2024

Date:

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SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH107 1.60-2.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No.**	S98498-PI
Job No.	S24364-1	**Lab No.**	S98498

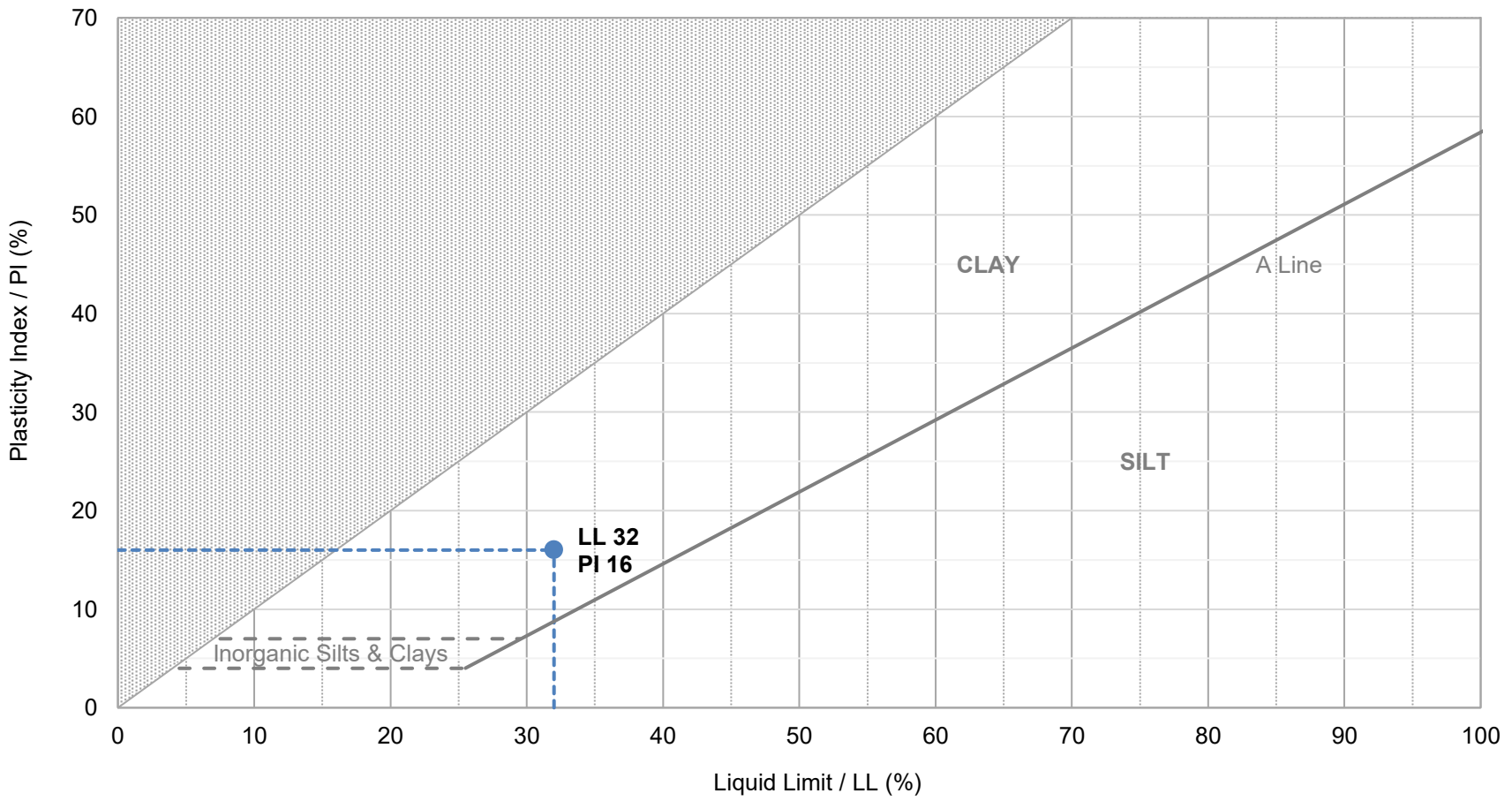
Test Procedure

☐	AS1289 3.1.1	Liquid Limit - Four point Casagrande method
☐	AS1289 3.1.2	Liquid Limit - One point Casagrande method
☑	AS1289 3.2.1	Plastic Limit - Standard method
☑	AS1289 3.3.1	Calculation of the Plasticity Index
☑	AS1289 3.4.1	Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	8/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	1/08/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**32**
History of the Sample	**Air Dried**	Plastic Limit (%)	**16**
		Plasticity Index / PI (%)	**16**
		Linear Shrinkage (%)	**6.5**
		Condition upon Drying	**Linear**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

2/08/2024

Date:

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14 Carter St
Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH108 6.50-7.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs PS (304100928)	**Report No.**	S98499-PI
Job No.	S24364-1	**Lab No.**	S98499

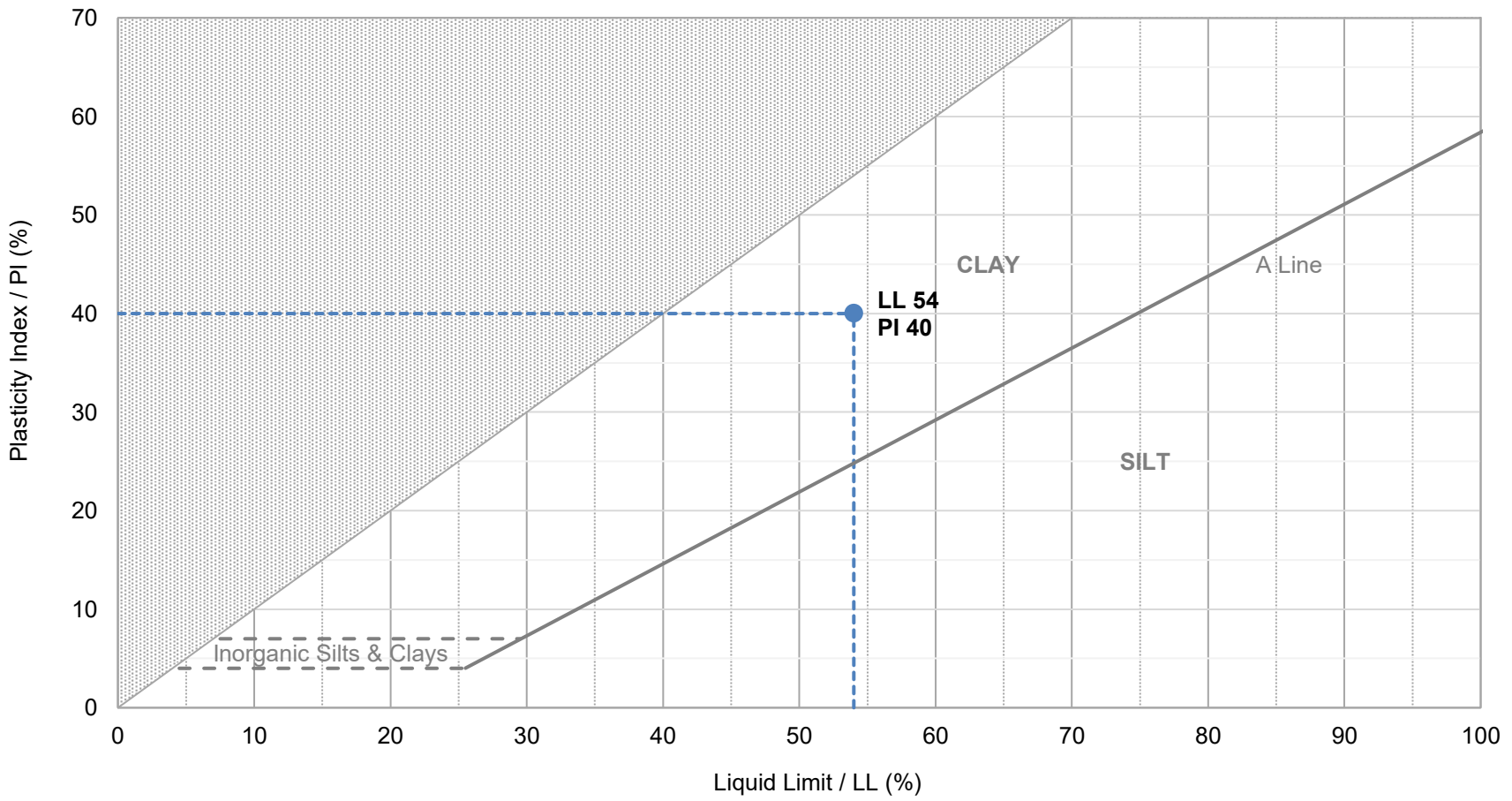
Test Procedure

☐	AS1289 3.1.1	Liquid Limit - Four point Casagrande method
☐	AS1289 3.1.2	Liquid Limit - One point Casagrande method
☑	AS1289 3.2.1	Plastic Limit - Standard method
☑	AS1289 3.3.1	Calculation of the Plasticity Index
☑	AS1289 3.4.1	Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	9/07/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	31/07/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**54**
History of the Sample	**Air Dried**	Plastic Limit (%)	**14**
		Plasticity Index / PI (%)	**40**
		Linear Shrinkage (%)	**15.5**
		Condition upon Drying	**Linear**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

2/08/2024

Date:

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14 Carter St
Lidcombe NSW 2141

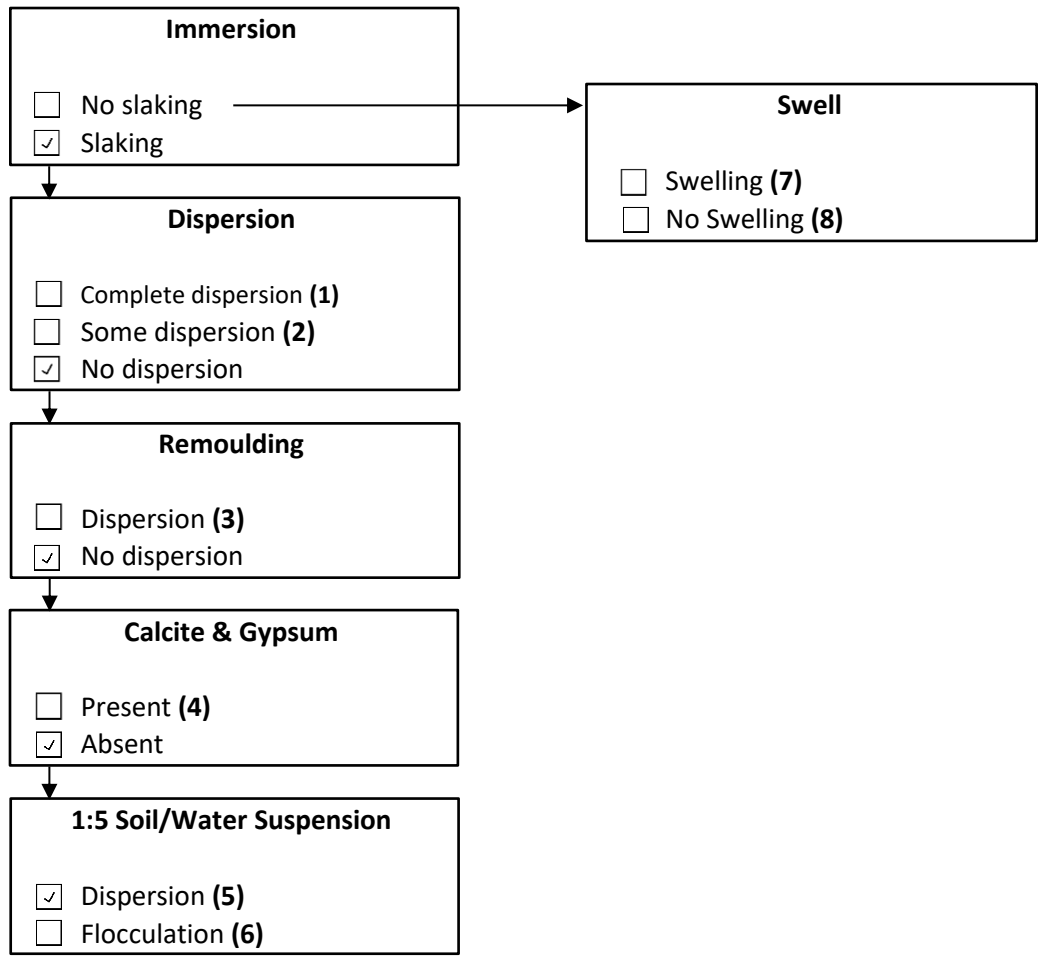
Emerson Class Number Report

Client	Stantec	**Source**	BH104 0.50-1.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand and Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98497-ECT
Job No	S24364-1	**Lab No**	S98497

Test Procedure ☑ AS 1289.3.8.1 Soil classification tests - Dispersion-Determination of Emerson class number of a soil

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 11/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 1/08/2024



Type of Water Used:	Distilled
Water Source:	Laboratory
Water Temperature (°C):	20.5

Emerson Class Number:	**5**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

2/08/2024

Date:

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14 Carter St
Lidcombe NSW 2141

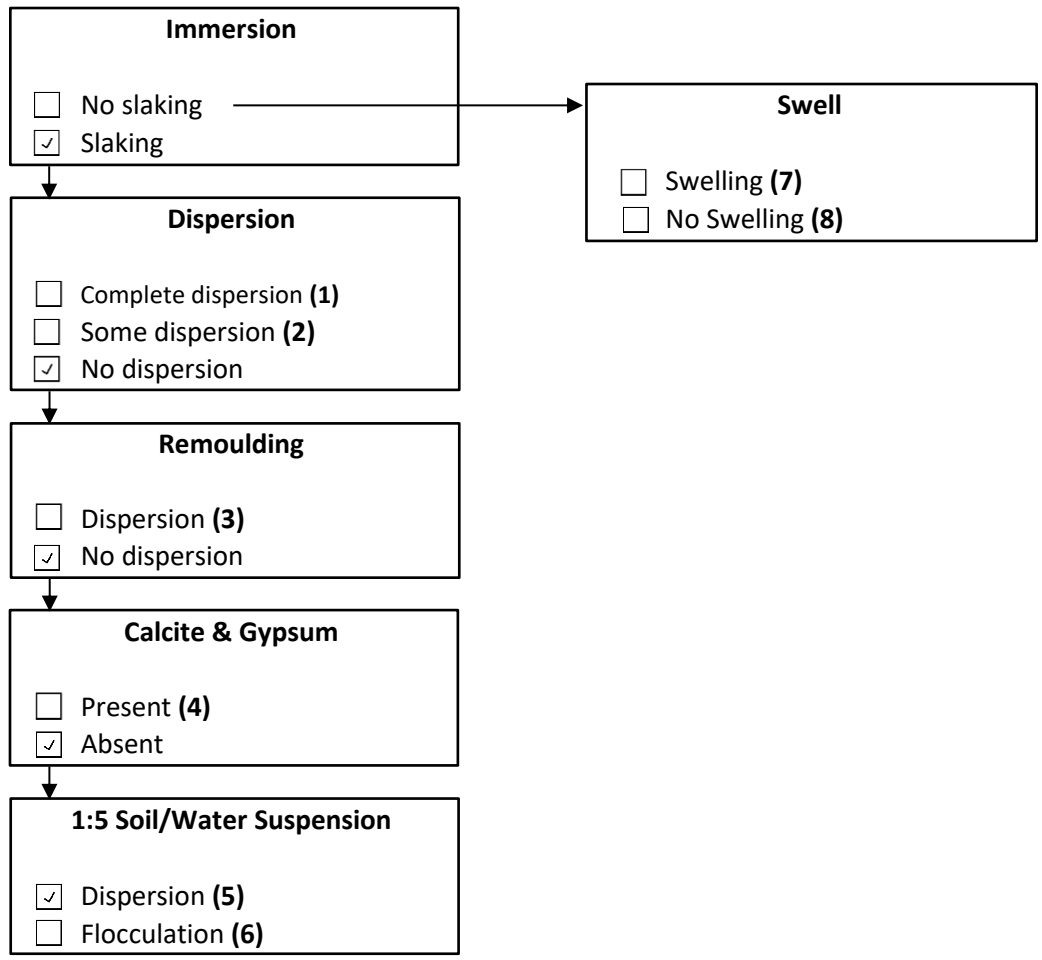
Emerson Class Number Report

Client	Stantec	**Source**	BH110 0.50-1.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand and Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98500-ECT
Job No	S24364-1	**Lab No**	S98500

Test Procedure ☑ AS 1289.3.8.1 Soil classification tests - Dispersion-Determination of Emerson class number of a soil

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 11/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 1/08/2024



Type of Water Used:	Distilled
Water Source:	Laboratory
Water Temperature (^{o}C):	20.5

Emerson Class Number:	**5**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

2/08/2024

Date:

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14 Carter St
Lidcombe NSW 2141

DRY DENSITY / OPTIMUM MOISTURE CONTENT REPORT

Client	Stantec	**Source**	BH104 0.50-1.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand and Gravel
Project	Jordan Springs PS (304100928)	**Report No**	S98497-MDD
Job No	S24364-1	**Sample No**	S98497

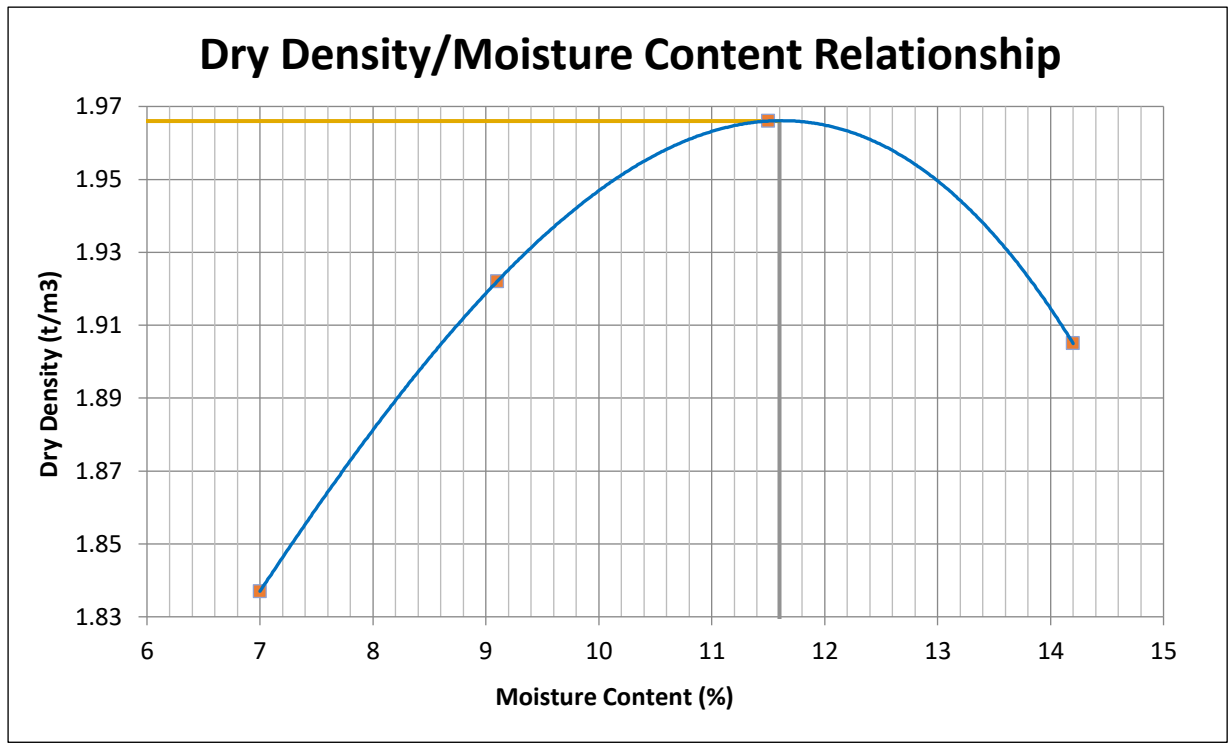
Test Procedure

☑ AS1289.5.1.1 Dry Density / Moisture Content Relationship - Standard Compaction

☑ AS1289.2.1.1 Moisture Content - Oven Drying Method (Standard Method)

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 11/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 25/07/2024



Maximum Dry Density (t/m^3)	1.97
Optimum Moisture Content (%)	11.6
Oversize Retained on 19mm sieve (%)	4
Oversize Retained on 37.5mm sieve (%)	0
Curing Time	24 hrs
Liquid Limit Determination	Technician Assessment

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

2/08/2024

Date:

MACQUARIE GEOTECH

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

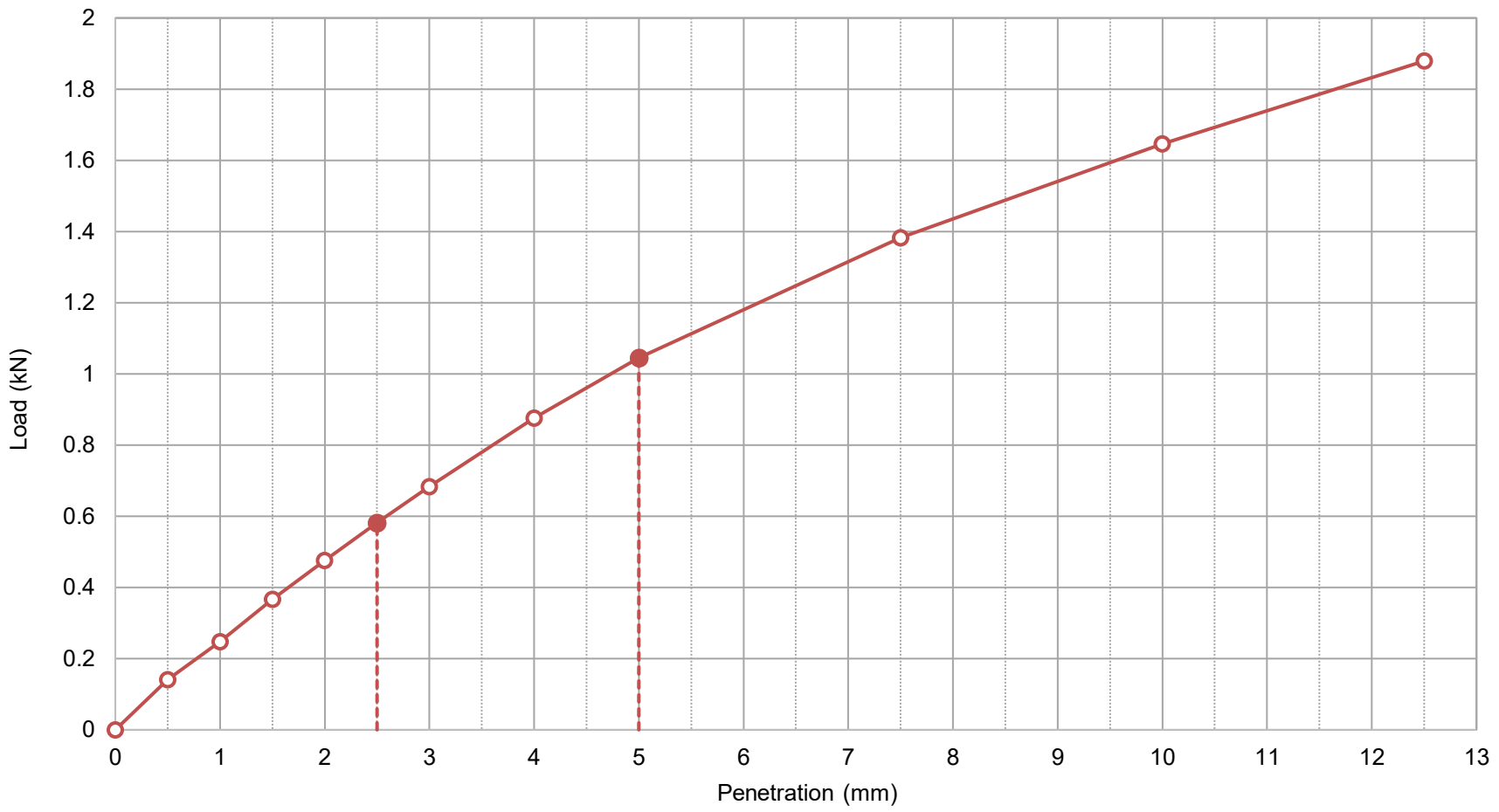
CALIFORNIA BEARING RATIO REPORT

Client	Stantec	**Source**	BH104 0.50-1.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand and Gravel
Project	Jordan Springs PS (304100928)	**Report No.**	S98497-CBR
Job No.	S24364-1	**Sample No.**	S98497

Test Procedure	☑ AS 1289.6.1.1	☐ RMS T117	California Bearing Ratio
	☑ AS 1289.5.1.1	☐ RMS T111	Dry Density / Moisture Content Relationship - Standard Compaction
	☐ AS 1289.5.2.1	☐ RMS T112	Dry Density / Moisture Content Relationship - Modified Compaction
	☑ AS 1289.2.1.1	☐ RMS T120	Moisture Content - Oven Drying Method (Standard Method)

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 11/07/2024

Preparation Prepared in accordance with the test method **Date Tested** 31/07/2024



Preparation & Specification	
Retained on 19.0mm Sieve (%)	4
Method of Establishing Plasticity Level	Technician Assessment
Sample Curing Time (hrs)	25 hrs
Compaction Hammer Used	Standard
Surcharge Mass Applied (kg)	4.5
Period of Soaking (Days)	4
Maximum Dry Density - MDD (t/m³)	1.97
Optimum Moisture Content - OMC (%)	11.6

Density & Moisture	Achieved	Target
Lab Moisture Ratio - LMR (%)	101.0	100.0
Lab Density Ratio - LDR (%)	98.0	98.0
Dry Density - At Compaction (t/m³)	1.92	1.93
Dry Density - After Soaking (t/m³)	1.88	
Specimen Swell (%)	2.4	
Moisture Content - At Compaction (%)	11.7	
Moisture Content - Top 30mm (%)	16.4	
Moisture Content - Remainder (%)	15.0	

Material CBR Value (%): 5 at a penetration of 5.0 mm

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd Date: 2/08/2024

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

Stantec Australia Pty Ltd
Level 9, The Forum, 203 Pacific Highway
St Leonards
NSW 2065

Attention: **Terence Huang**

Report **1118681-S**
Project name JORDAN SPRINGS PS
Project ID 304100928-800
Received Date Jul 17, 2024

Client Sample ID			**BH101**	**BH103**	**BH107**	**BH109**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S24-JI0041825**	**S24-JI0041826**	**S24-JI0041827**	**S24-JI0041828**
Date Sampled			**Jul 09, 2024**	**Jul 09, 2024**	**Jul 08, 2024**	**Jul 09, 2024**
Test/Reference	LOR	Unit				
Chloride	10	mg/kg	420	< 10	170	610
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	340	28	380	410
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	7.5	8.1	11	5.9
Resistivity*	0.5	ohm.m	29	360	26	25
Sulphate (as SO4)	10	mg/kg	< 25	< 25	310	< 25
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	6.3	6.7	10	5.2
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	2.1	< 2	< 2	8.0
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	0.003	< 0.003	< 0.003	0.013
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)[S04]	0.005	% S	0.020	< 0.005	0.032	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	13	< 3	20	< 3
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	N/A	N/A	N/A
HCl Extractable Sulfur	0.005	% S	N/A	N/A	N/A	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	N/A	N/A	N/A	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1[S02]	0.005	% S	N/A	N/A	N/A	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	N/A	N/A	N/A	N/A
HCl Extractable Sulfur Correction Factor	1	factor	2.0	2.0	2.0	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	N/A	0.30	2.4	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)[S03]	0.02	% S	N/A	0.10	0.77	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	N/A	60	480	N/A
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Including ANC)						
s-CRS Suite - Net Acidity - NASSG (including ANC)	0.02	% S	0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	15	< 10	< 10	< 10
CRS Suite - Liming Rate - NASSG (Including ANC)[S01]	1	kg CaCO3/t	1.1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	150	150	130	110
>2mm Fraction	0.005	g	4.0	< 0.005	< 0.005	4.6
Analysed Material	0.1	%	97	100	100	96
Extraneous Material	0.1	%	2.6	< 0.1	< 0.1	4.0
Sample Properties						
% Moisture	1	%	17	17	35	22

Client Sample ID			BH111	BH112
Sample Matrix			Soil	Soil
Eurofins Sample No.			S24-JI0041829	S24-JI0041830
Date Sampled			Jul 08, 2024	Jul 08, 2024
Test/Reference	LOR	Unit		
Chloride	10	mg/kg	25	25
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	46	39
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	7.9	7.4
Resistivity*	0.5	ohm.m	220	260
Sulphate (as SO4)	10	mg/kg	< 25	< 25
Actual Acidity (NLM-3.2)				
pH-KCL (NLM-3.1)	0.1	pH Units	7.6	5.9
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	4.2
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	0.007
Potential Acidity - Chromium Reducible Sulfur				
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)[S04]	0.005	% S	< 0.005	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	< 3
Extractable Sulfur				
Sulfur - KCl Extractable	0.005	% S	N/A	N/A
HCl Extractable Sulfur	0.005	% S	N/A	N/A
Retained Acidity (S-NAS)				
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	N/A	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1[S02]	0.005	% S	N/A	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	N/A	N/A
HCl Extractable Sulfur Correction Factor	1	factor	2.0	2.0
Acid Neutralising Capacity (ANCbt)				
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	0.94	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)[S03]	0.02	% S	0.30	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	190	N/A
ANC Fineness Factor		factor	1.5	1.5
Net Acidity (Including ANC)				
s-CRS Suite - Net Acidity - NASSG (including ANC)	0.02	% S	< 0.02	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	< 10
CRS Suite - Liming Rate - NASSG (Including ANC)[S01]	1	kg CaCO3/t	< 1	< 1
Extraneous Material				
<2mm Fraction	0.005	g	110	96
>2mm Fraction	0.005	g	4.9	35
Analysed Material	0.1	%	96	73
Extraneous Material	0.1	%	4.4	27
Sample Properties				
% Moisture	1	%	16	15

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Chloride	Sydney	Jul 23, 2024	28 Days
- Method: LTM-INO-4270 Anions by Ion Chromatography			
Conductivity (1:5 aqueous extract at 25 °C as rec.)	Sydney	Jul 23, 2024	7 Days
- Method: LTM-INO-4030 Conductivity			
pH (1:5 Aqueous extract at 25 °C as rec.)	Sydney	Jul 23, 2024	7 Days
- Method: LTM-GEN-7090 pH by ISE			
Sulphate (as SO4)	Sydney	Jul 23, 2024	28 Days
- Method: In-house method LTM-INO-4270 Sulphate by Ion Chromatograph			
Chromium Reducible Sulfur Suite			
Chromium Suite	Brisbane	Jul 25, 2024	6 Week
- Method: LTM-GEN-7070 Chromium Reducible Sulfur Suite			
Extraneous Material	Brisbane	Jul 25, 2024	6 Week
- Method: LTM-GEN-7050/7070			
% Moisture	Sydney	Jul 17, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			

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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Stantec Australia Pty Ltd (NSW/ACT)
Address: Level 9, The Forum, 203 Pacific Highway
St Leonards
NSW 2065

Project Name: JORDAN SPRINGS PS
Project ID: 304100928-800

Order No.:
Report #: 1118681
Phone: (02) 9493 9700
Fax:

Received: Jul 17, 2024 11:23 AM
Due: Jul 24, 2024
Priority: 5 Day
Contact Name: Terence Huang

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						HOLD*	Aggressivity Soil Set	Chromium Reducible Sulfur Suite	Moisture Set
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X
Brisbane Laboratory - NATA # 1261 Site # 20794 & 2780								X	
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	BH101	Jul 09, 2024		Soil	S24-Jl0041825		X	X	X
2	BH103	Jul 09, 2024		Soil	S24-Jl0041826		X	X	X
3	BH107	Jul 08, 2024		Soil	S24-Jl0041827		X	X	X
4	BH109	Jul 09, 2024		Soil	S24-Jl0041828		X	X	X
5	BH111	Jul 08, 2024		Soil	S24-Jl0041829		X	X	X
6	BH112	Jul 08, 2024		Soil	S24-Jl0041830		X	X	X
7	BH108	Jul 09, 2024		Soil	S24-Jl0041831	X			
8	BH110	Jul 10, 2024		Soil	S24-Jl0041832	X			
Test Counts						2	6	6	6

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Chloride	mg/kg	< 10			10	Pass	
Conductivity (1:5 aqueous extract at 25 °C as rec.)	uS/cm	< 10			10	Pass	
LCS - % Recovery							
Chloride	%	103			70-130	Pass	
Conductivity (1:5 aqueous extract at 25 °C as rec.)	%	97			70-130	Pass	
Resistivity*	%	97			70-130	Pass	
Sulphate (as SO4)	%	111			70-130	Pass	
LCS - % Recovery							
Actual Acidity (NLM-3.2)							
pH-KCL (NLM-3.1)	%	98			80-120	Pass	
Titratable Actual Acidity (NLM-3.2)	%	95			80-120	Pass	
LCS - % Recovery							
Potential Acidity - Chromium Reducible Sulfur							
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	%	100			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Chloride	W24-JI0048688	NCP	%	114			70-130	Pass	
Sulphate (as SO4)	W24-JI0048688	NCP	%	106			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S24-JI0050010	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Conductivity (1:5 aqueous extract at 25 °C as rec.)	S24-JI0039498	NCP	uS/cm	35	35	1.7	30%	Pass	
pH (1:5 Aqueous extract at 25 °C as rec.)	S24-JI0050009	NCP	pH Units	6.8	6.8	<1	30%	Pass	
Resistivity*	S24-JI0039498	NCP	ohm.m	290	280	1.7	30%	Pass	
Sulphate (as SO4)	S24-JI0050010	NCP	mg/kg	< 25	< 25	<1	30%	Pass	
Duplicate									
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD			
pH-KCL (NLM-3.1)	S24-JI0041825	CP	pH Units	6.3	6.2	2.3	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	S24-JI0041825	CP	mol H+/t	2.1	2.4	14	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	S24-JI0041825	CP	% pyrite S	0.003	0.004	14	30%	Pass	
Duplicate									
Potential Acidity - Chromium Reducible Sulfur				Result 1	Result 2	RPD			
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	S24-JI0041825	CP	% S	0.020	0.020	1.1	20%	Pass	
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	S24-JI0041825	CP	mol H+/t	13	13	1.1	30%	Pass	
Duplicate									
Extractable Sulfur				Result 1	Result 2	RPD			
Sulfur - KCl Extractable	S24-JI0041825	CP	% S	N/A	N/A	N/A	30%	Pass	
HCl Extractable Sulfur	S24-JI0041825	CP	% S	N/A	N/A	N/A	20%	Pass	
Duplicate									
Retained Acidity (S-NAS)				Result 1	Result 2	RPD			
Net Acid soluble sulfur (SNAS) NLM-4.1	S24-JI0041825	CP	% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (s-SNAS) NLM-4.1	S24-JI0041825	CP	% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (a-SNAS) NLM-4.1	S24-JI0041825	CP	mol H+/t	N/A	N/A	N/A	30%	Pass	

Duplicate									
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD			
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	S24-Jl0041825	CP	% CaCO3	N/A	N/A	N/A	20%	Pass	
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	S24-Jl0041825	CP	% S	N/A	N/A	N/A	30%	Pass	
ANC Fineness Factor	S24-Jl0041825	CP	factor	1.5	1.5	<1	30%	Pass	
Duplicate									
Net Acidity (Including ANC)				Result 1	Result 2	RPD			
s-CRS Suite - Net Acidity - NASSG (including ANC)	S24-Jl0041825	CP	% S	0.02	0.02	1.0	30%	Pass	
CRS Suite - Net Acidity - NASSG (Including ANC)	S24-Jl0041825	CP	mol H+/t	15	15	1.0	30%	Pass	
CRS Suite - Liming Rate - NASSG (Including ANC)	S24-Jl0041825	CP	kg CaCO3/t	1.1	1.1	1.0	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	W24-Jl0041318	NCP	%	9.9	9.4	5.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3'
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised by:

Ursula Long	Analytical Services Manager
Jonathon Angell	Senior Analyst-SPOCAS
Roopesh Rangarajan	Senior Analyst-Sample Properties
Ryan Phillips	Senior Analyst-Inorganic

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

MOISTURE CONTENT TEST REPORT

Client	Stantec	**Job #**	S24513-1
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Report #**	S100547-MC
Project	Jordan Springs HS (305001663)		

Test Procedure

- ☑ AS 1289 2.1.1 Determination of the moisture content of a soil - Oven drying method (Standard method).
- ☐ AS4133 1.1.1 Determination of the moisture content of rock - Oven drying method (standard method)
- ☐ RMS T120 Moisture content of road construction materials (Standard method)
- ☐ RMS T262 Determination of moisture content of aggregates (Standard method)

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 2/10/2024

Preparation Prepared in accordance with the test method **Date Tested** 8/10/2024

Sample #	Source	Sample Description	Moisture Content %
S100547	BH204 7.50-8.00m	Silty CLAY with Sand, trace of Gravel	**19.7**

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

21/10/2024

Date:

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

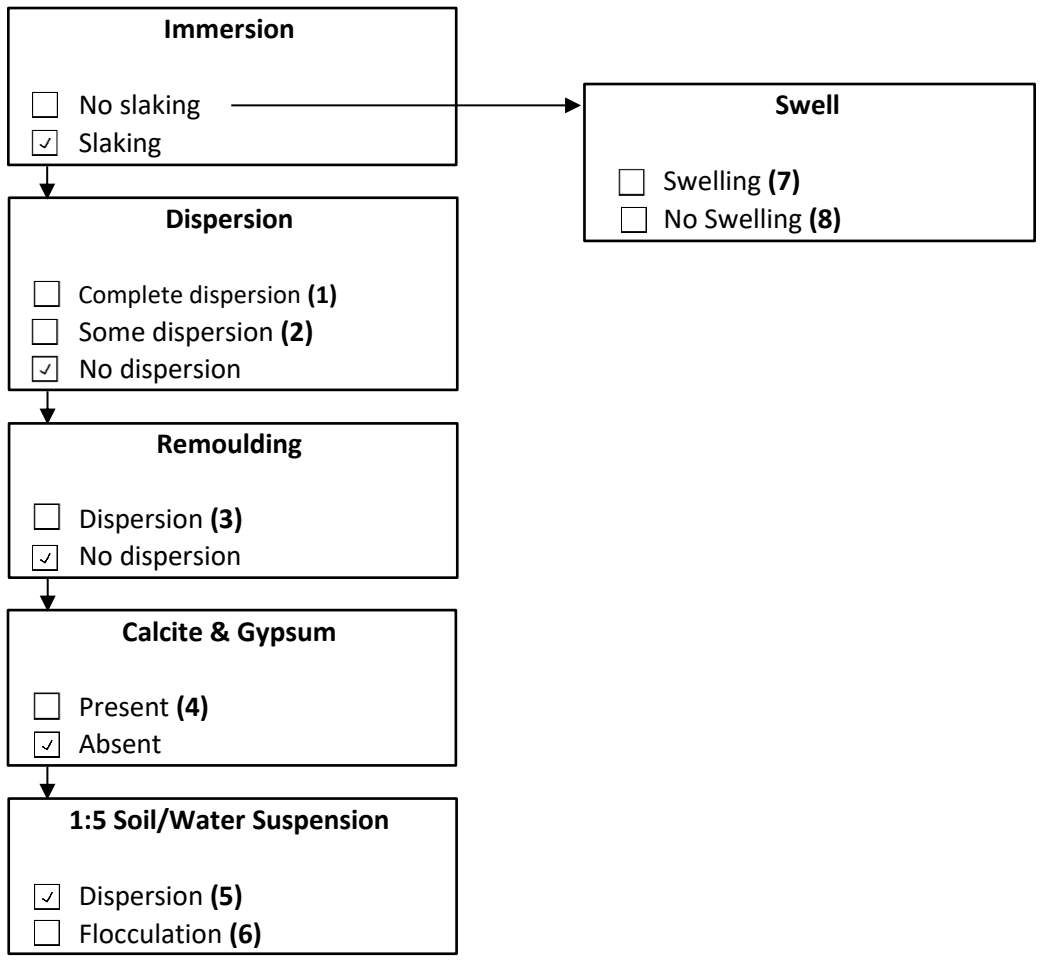
Emerson Class Number Report

Client	Stantec	**Source**	BH204 7.50-8.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No**	S100547-ECT
Job No	S24513-1	**Lab No**	S100547

Test Procedure ☑ AS 1289.3.8.1 Soil classification tests - Dispersion-Determination of Emerson class number of a soil

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 2/10/2024

Preparation Prepared in accordance with the test method **Date Tested** 10/10/2024



Type of Water Used:	Distilled
Water Source:	Laboratory
Water Temperature (°C):	20.7

Emerson Class Number:	**5**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

21/10/2024

Date:

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH204 7.50-8.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No.**	S100547-PI
Job No.	S24513-1	**Lab No.**	S100547

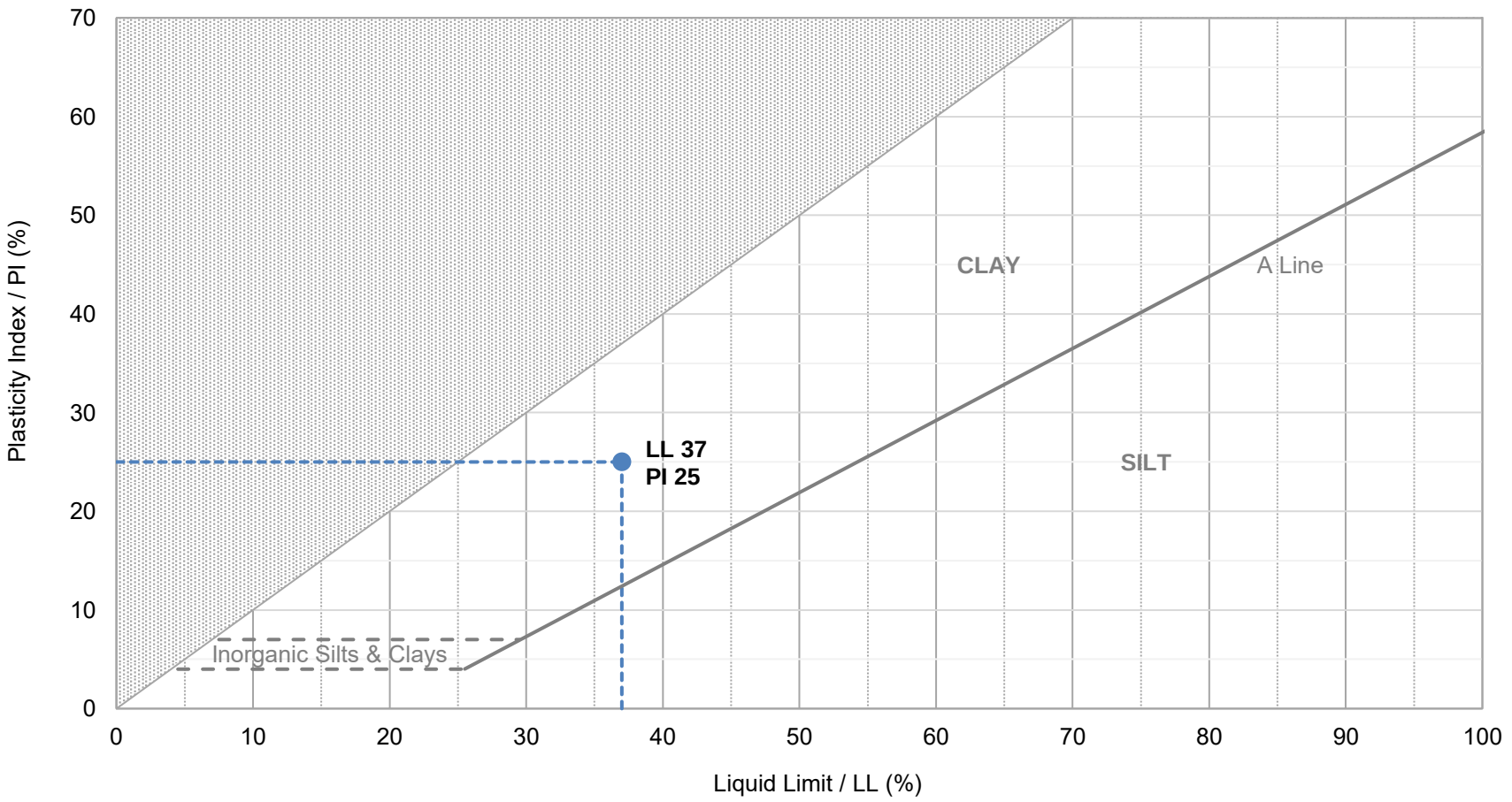
Test Procedure

- ☑ AS1289 3.1.1 Liquid Limit - Four point Casagrande method
- ☐ AS1289 3.1.2 Liquid Limit - One point Casagrande method
- ☑ AS1289 3.2.1 Plastic Limit - Standard method
- ☑ AS1289 3.3.1 Calculation of the Plasticity Index
- ☑ AS1289 3.4.1 Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	2/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	16/10/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		**Results**	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**37**
History of the Sample	**Air Dried**	Plastic Limit (%)	**12**
		Plasticity Index / PI (%)	**25**
		Linear Shrinkage (%)	**9.5**
		Condition upon Drying	**Linear**

Notes

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Authorised Signatory:

Chris Lloyd

21/10/2024

Date:

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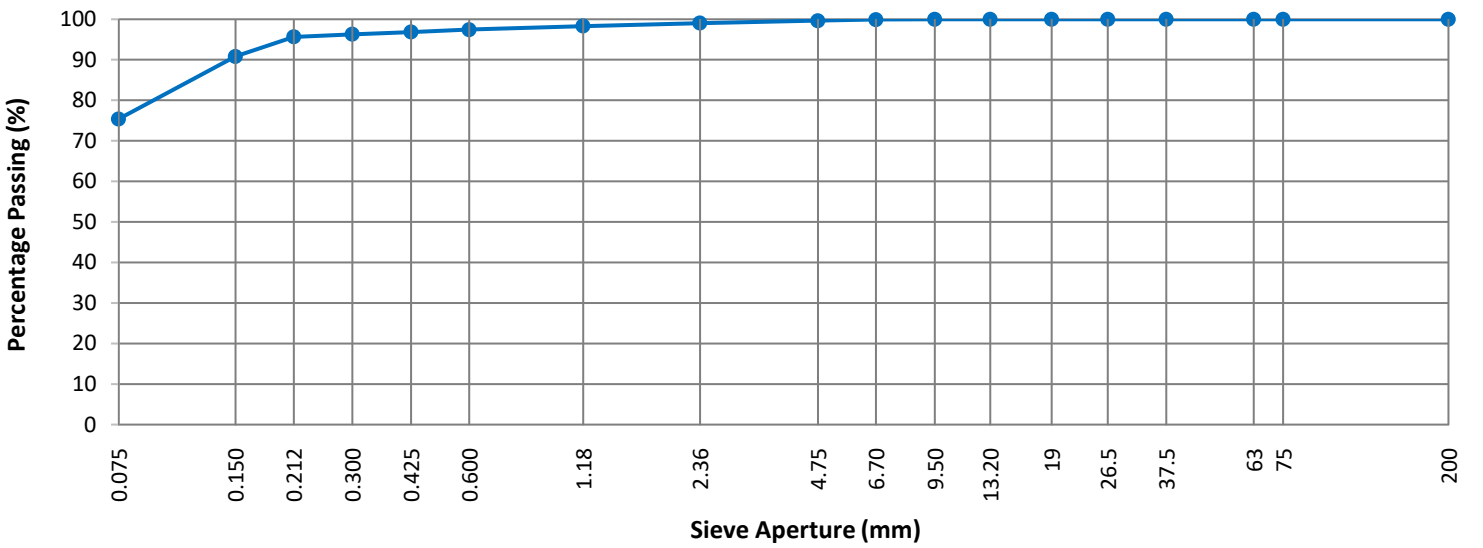
14 Carter St
Lidcombe NSW 2141

Particle Size Distribution Report

Client	Stantec	**Source**	BH204 7.50-8.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No**	S100547-PSD
Job No	S24513-1	**Lab No**	S100547

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	2/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	16/10/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**100**
26.5	**100**
19.0	**100**
13.2	**100**
9.50	**100**
6.70	**100**
4.75	**100**
2.36	**99**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**98**
0.600	**97**
0.425	**97**
0.300	**96**
0.212	**96**
0.150	**91**
0.075	**75**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory: Chris Lloyd

Date: 16/10/2024

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Lidcombe NSW 2141

POINT LOAD STRENGTH INDEX REPORT

Client	Stantec	**Moisture Content Condition**	As received
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Storage History**	Core boxes
Project	Jordan Springs HS (305001663)	**Report #**	S100548-PL
Job #	S24513-1	**Test Date**	15/10/2024

Test Procedure ☑ AS4133 4.1 Rock strength tests - Determination of point load strength index

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 2/10/2024

Preparation Prepared in accordance with the test method

Sample Number	Sample Source	Sample Description	Test Type	Average Width (mm)	Platen Separation (mm)	Failure Load (kN)	Point Load Index Is (MPa)	Point Load Index $Is_{(50)}$ (MPa)	Failure Mode
S100548	BH204 11.77-11.86m	Shale	Diametral	-	48.0	0.12	0.05	0.05	2
			Axial	50.8	30.0	0.54	0.28	0.26	1
S100549	BH204 13.52-13.68m	Shale	Diametral	-	48.0	0.80	0.35	0.34	1
			Axial	51.3	28.0	1.15	0.63	0.59	1
S100550	BH204 13.71-13.88m	Shale	Diametral	-	49.0	0.14	0.06	0.06	2
			Axial	51.1	34.0	0.73	0.33	0.32	1

Failure Modes

1 - Fracture through fabric of specimen oblique to bedding, not influenced by weak planes.

2 - Fracture along bedding.

3 - Fracture influenced by pre-existing plane, microfracture, vein or chemical alteration.

4 - Chip or partial fracture.

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

16/10/2024

Date

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

Uniaxial Compressive Strength

Client	Stantec	**Sample Source**	BH204 13.71-13.88m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Shale
Project	Jordan Springs HS (305001663)	**Report #**	S100550-UCS
Job #	S24513-1	**Sample #**	S100550

Test Procedure	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	2/10/2024
Storage History	Sealed	**Storage Environment**	Sealed at as received moisture condition
Sample Curing	-	**Testing Machine**	Matest 2000 kN Compression Machine

Uniaxial Compressive Strength 1.9 MPa

Date Tested:	15/10/2024		Moisture Content:	6.0	%
Specimen Height:	126.3	mm	Duration of Test:	621	seconds
Average Specimen Diameter:	51.3	mm	Rate of Displacement:	< 0.1	mm/min

Failure Type:	Failure influenced by defects
Other Pertinent Observations:	
Deviation from Standard:	Test specimen length to diameter ratio falls outside of standard limitations of 2.5-3.0.

NATA

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised Signatory:

Chris Lloyd

NATA Accredited Laboratory Number: 14874

Date: 16/10/2024

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Lidcombe NSW 2141

MOISTURE CONTENT TEST REPORT

Client	Stantec	**Job #**	S24513-2
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Report #**	S100742-MC
Project	Jordan Springs HS (305001663)		

Test Procedure

- ☑ AS 1289 2.1.1 Determination of the moisture content of a soil - Oven drying method (Standard method).
- ☐ AS4133 1.1.1 Determination of the moisture content of rock - Oven drying method (standard method)
- ☐ RMS T120 Moisture content of road construction materials (Standard method)
- ☐ RMS T262 Determination of moisture content of aggregates (Standard method)

Sampling Sampled by Client - results apply to the sample as received — **Date Sampled** 9/10/2024

Preparation Prepared in accordance with the test method — **Date Tested** 23/10/2024

Sample #	Source	Sample Description	Moisture Content %
S100742	BH201 5.00-6.00m	Silty CLAY with Sand, trace of Gravel	**25.6**
S100743	BH202 7.50-8.00m	Silty Sandy CLAY	**19.9**
S100744	BH203 6.00-7.00m	Silty Sandy CLAY, trace of Gravel	**27.1**
S100745	BH205 6.00-7.00m	Silty Sandy CLAY, trace of Gravel	**24.6**

Notes

NATA

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

30/10/2024

Date:

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This document shall not be reproduced, except in full.
Results relate only to the samples tested.

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Lidcombe NSW 2141

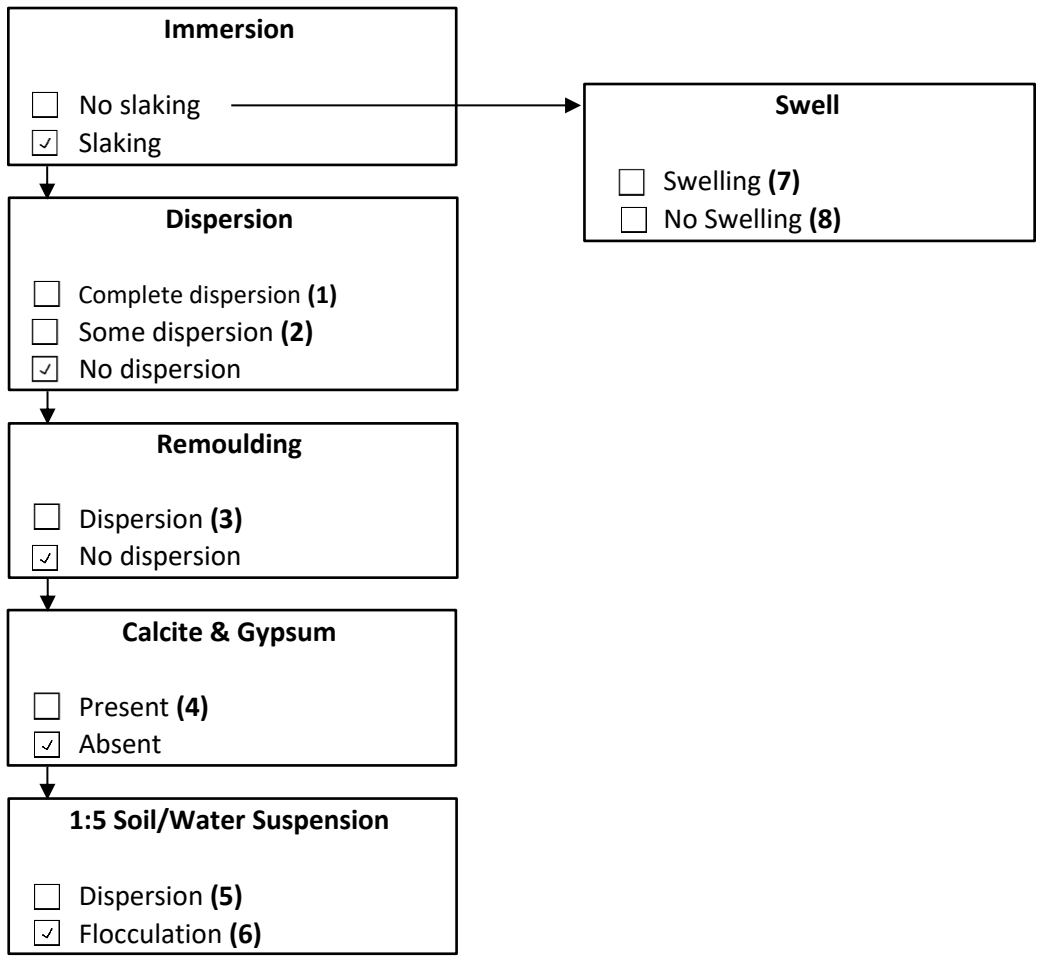
Emerson Class Number Report

Client	Stantec	**Source**	BH201 5.00-6.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No**	S100742-ECT
Job No	S24513-2	**Lab No**	S100742

Test Procedure ☑ AS 1289.3.8.1 Soil classification tests - Dispersion-Determination of Emerson class number of a soil

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 9/10/2024

Preparation Prepared in accordance with the test method **Date Tested** 28/10/2024



Type of Water Used:	Distilled
Water Source:	Laboratory
Water Temperature (^{o}C):	22

Emerson Class Number:	**6**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

30/10/2024

Date:

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH201 5.00-6.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No.**	S100742-PI
Job No.	S24513-2	**Lab No.**	S100742

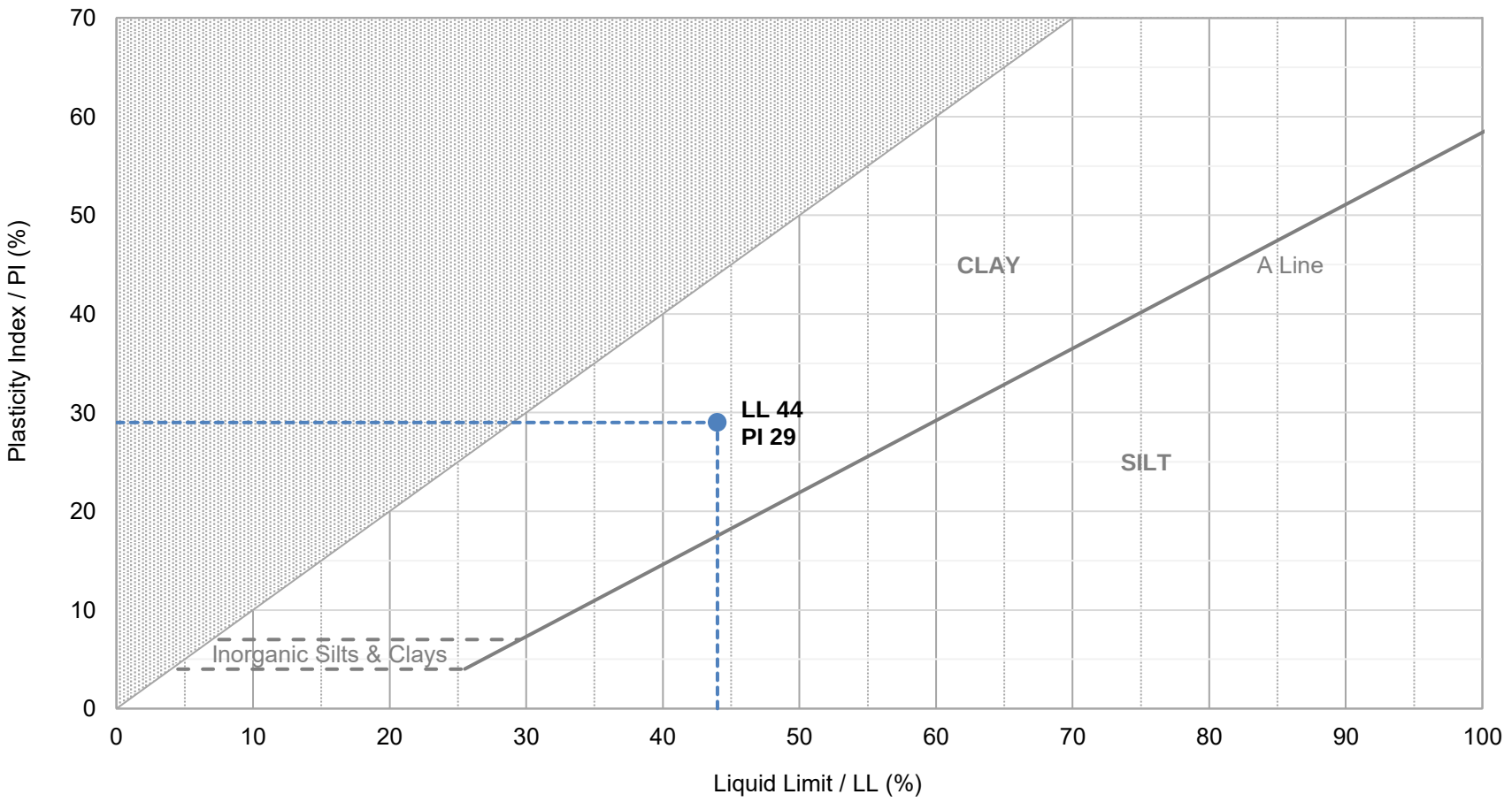
Test Procedure

- ☑ AS1289 3.1.1 Liquid Limit - Four point Casagrande method
- ☐ AS1289 3.1.2 Liquid Limit - One point Casagrande method
- ☑ AS1289 3.2.1 Plastic Limit - Standard method
- ☑ AS1289 3.3.1 Calculation of the Plasticity Index
- ☑ AS1289 3.4.1 Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	9/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	29/10/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**44**
History of the Sample	**Air Dried**	Plastic Limit (%)	**15**
		Plasticity Index / PI (%)	**29**
		Linear Shrinkage (%)	**11.5**
		Condition upon Drying	**Linear**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

30/10/2024

Date:

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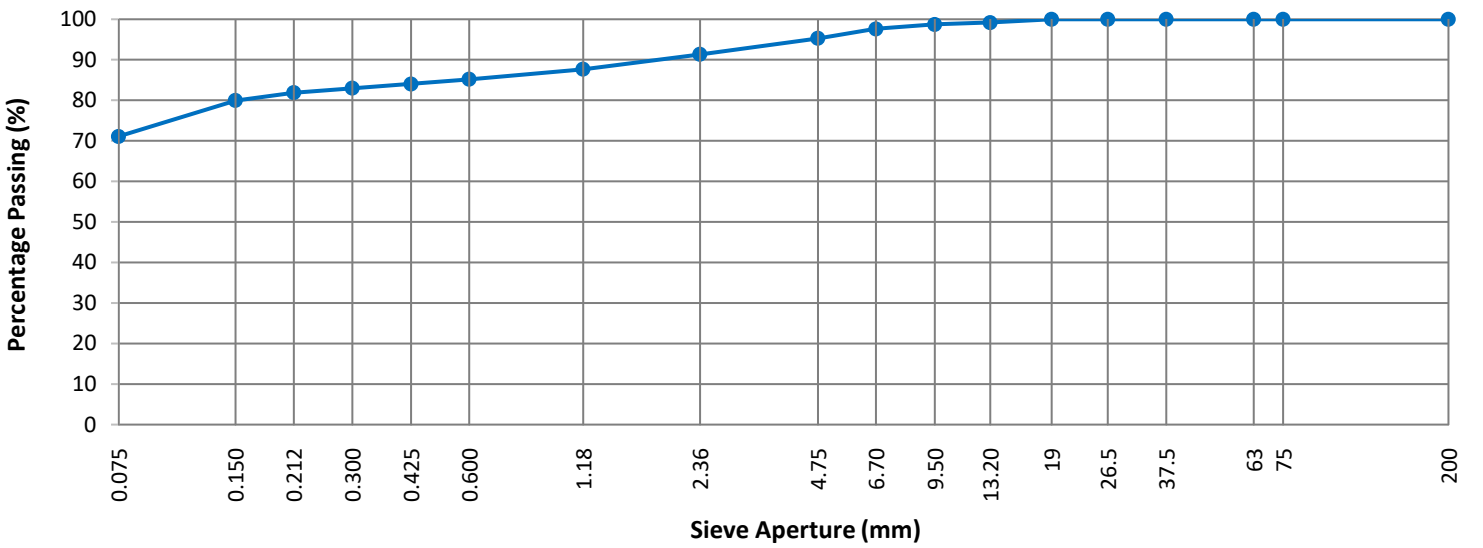
14 Carter St
Lidcombe NSW 2141

Particle Size Distribution Report

Client	Stantec	**Source**	BH201 5.00-6.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty CLAY with Sand, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No**	S100742-PSD
Job No	S24513-2	**Lab No**	S100742

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	9/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	30/10/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**100**
26.5	**100**
19.0	**100**
13.2	**99**
9.50	**99**
6.70	**98**
4.75	**95**
2.36	**91**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**88**
0.600	**85**
0.425	**84**
0.300	**83**
0.212	**82**
0.150	**80**
0.075	**71**

Notes

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Authorised Signatory: Date: 30/10/2024

Chris Lloyd

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141

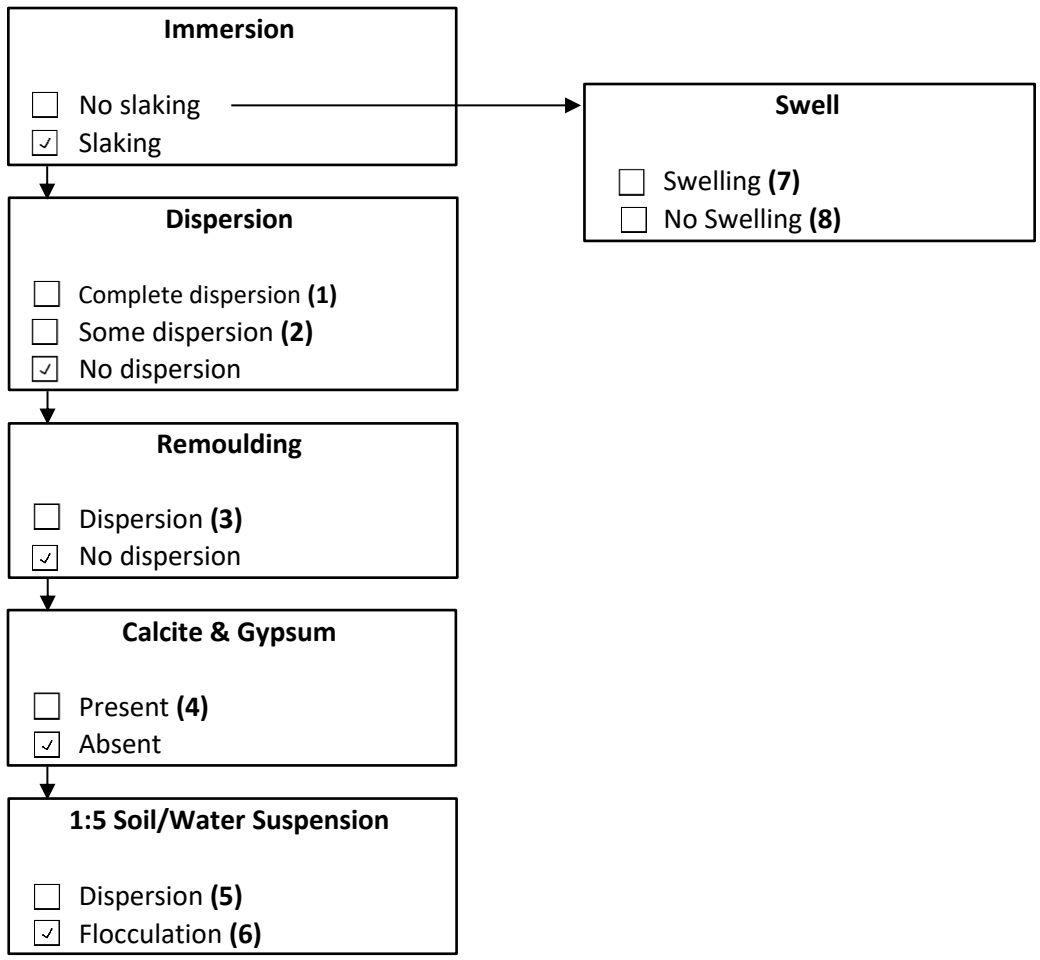
Emerson Class Number Report

Client	Stantec	**Source**	BH202 7.50-8.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY
Project	Jordan Springs HS (305001663)	**Report No**	S100743-ECT
Job No	S24513-2	**Lab No**	S100743

Test Procedure ☑ AS 1289.3.8.1 Soil classification tests - Dispersion-Determination of Emerson class number of a soil

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 10/10/2024

Preparation Prepared in accordance with the test method **Date Tested** 28/10/2024



Type of Water Used:	Distilled
Water Source:	Laboratory
Water Temperature (^{o}C):	22

Emerson Class Number:	**6**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

30/10/2024

Date:

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14 Carter St
Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH202 7.50-8.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY
Project	Jordan Springs HS (305001663)	**Report No.**	S100743-PI
Job No.	S24513-2	**Lab No.**	S100743

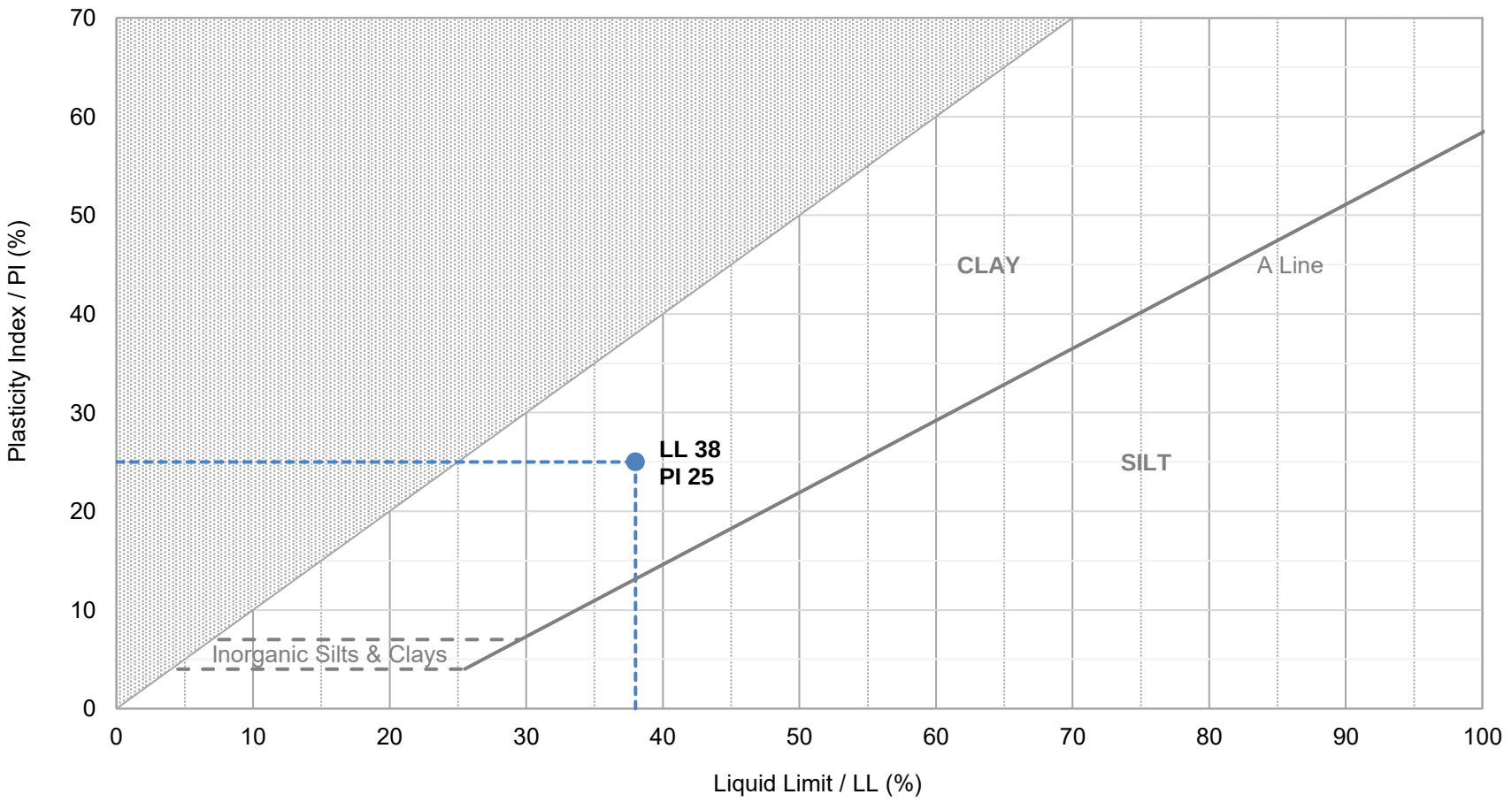
Test Procedure

- ☑ AS1289 3.1.1 Liquid Limit - Four point Casagrande method
- ☐ AS1289 3.1.2 Liquid Limit - One point Casagrande method
- ☑ AS1289 3.2.1 Plastic Limit - Standard method
- ☑ AS1289 3.3.1 Calculation of the Plasticity Index
- ☑ AS1289 3.4.1 Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	10/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	29/10/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**38**
History of the Sample	**Air Dried**	Plastic Limit (%)	**13**
		Plasticity Index / PI (%)	**25**
		Linear Shrinkage (%)	**11.0**
		Condition upon Drying	**Linear**

Notes

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Authorised Signatory:

Chris Lloyd

30/10/2024

Date:

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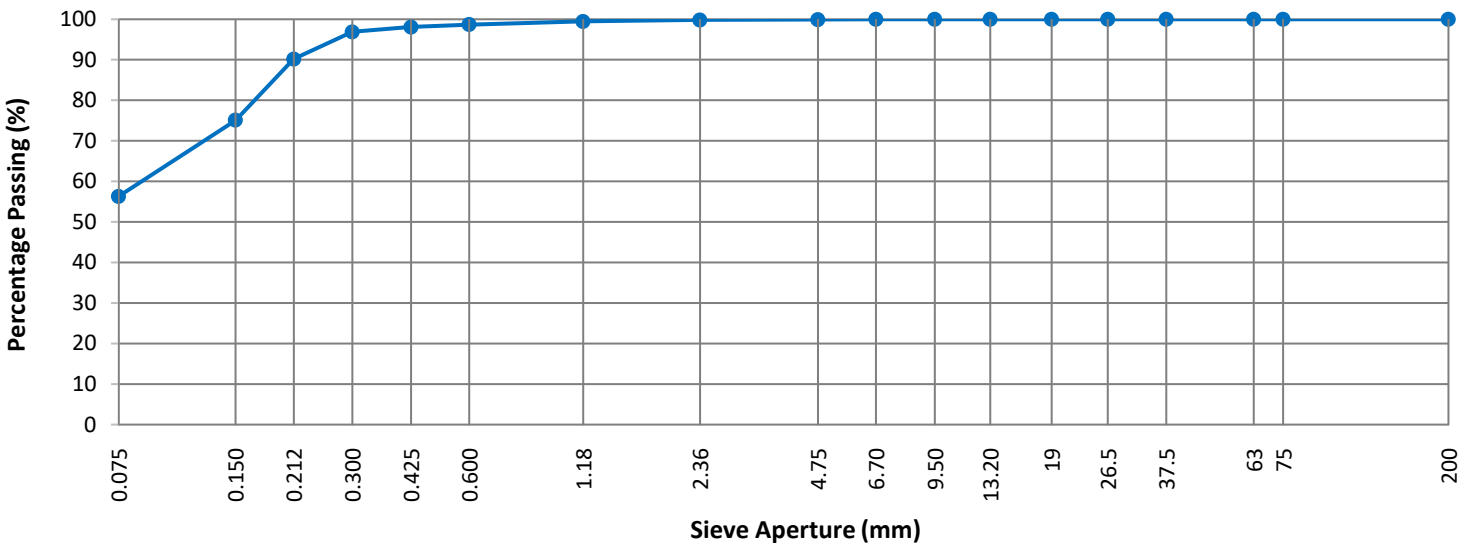
Lidcombe NSW 2141

Particle Size Distribution Report

Client	Stantec	**Source**	BH202 7.50-8.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY
Project	Jordan Springs HS (305001663)	**Report No**	S100743-PSD
Job No	S24513-2	**Lab No**	S100743

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	10/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	30/10/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**100**
26.5	**100**
19.0	**100**
13.2	**100**
9.50	**100**
6.70	**100**
4.75	**100**
2.36	**100**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**99**
0.600	**99**
0.425	**98**
0.300	**97**
0.212	**90**
0.150	**75**
0.075	**56**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory: Date: 30/10/2024

Chris Lloyd

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14 Carter St
Lidcombe NSW 2141

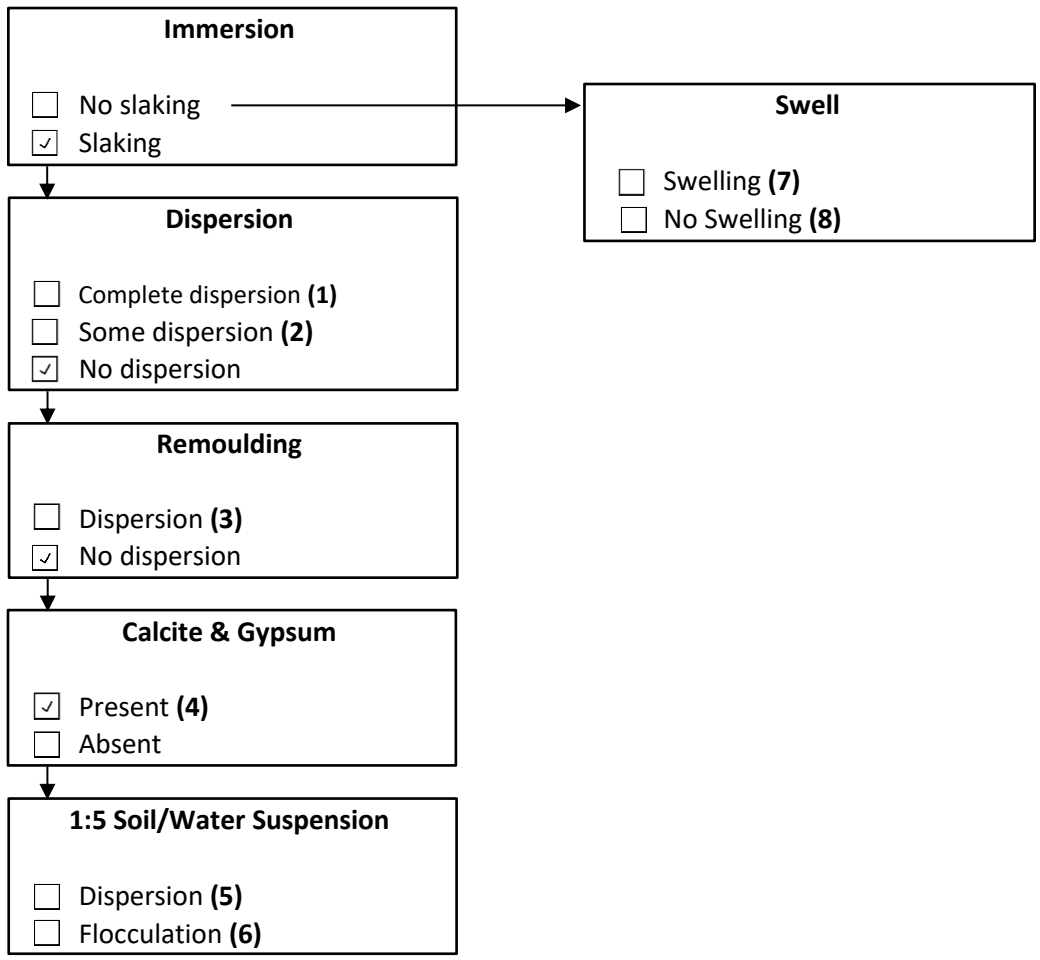
Emerson Class Number Report

Client	Stantec	**Source**	BH203 6.00-7.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No**	S100744-ECT
Job No	S24513-2	**Lab No**	S100744

Test Procedure ☑ AS 1289.3.8.1 Soil classification tests - Dispersion-Determination of Emerson class number of a soil

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 11/10/2024

Preparation Prepared in accordance with the test method **Date Tested** 28/10/2024



Type of Water Used:	Distilled
Water Source:	Laboratory
Water Temperature (^{o}C):	22

Emerson Class Number:	**4**

Notes

Reaction with Acid, Calcite present

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Authorised Signatory:

Chris Lloyd

30/10/2024

Date:

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SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH203 6.00-7.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No.**	S100744-PI
Job No.	S24513-2	**Lab No.**	S100744

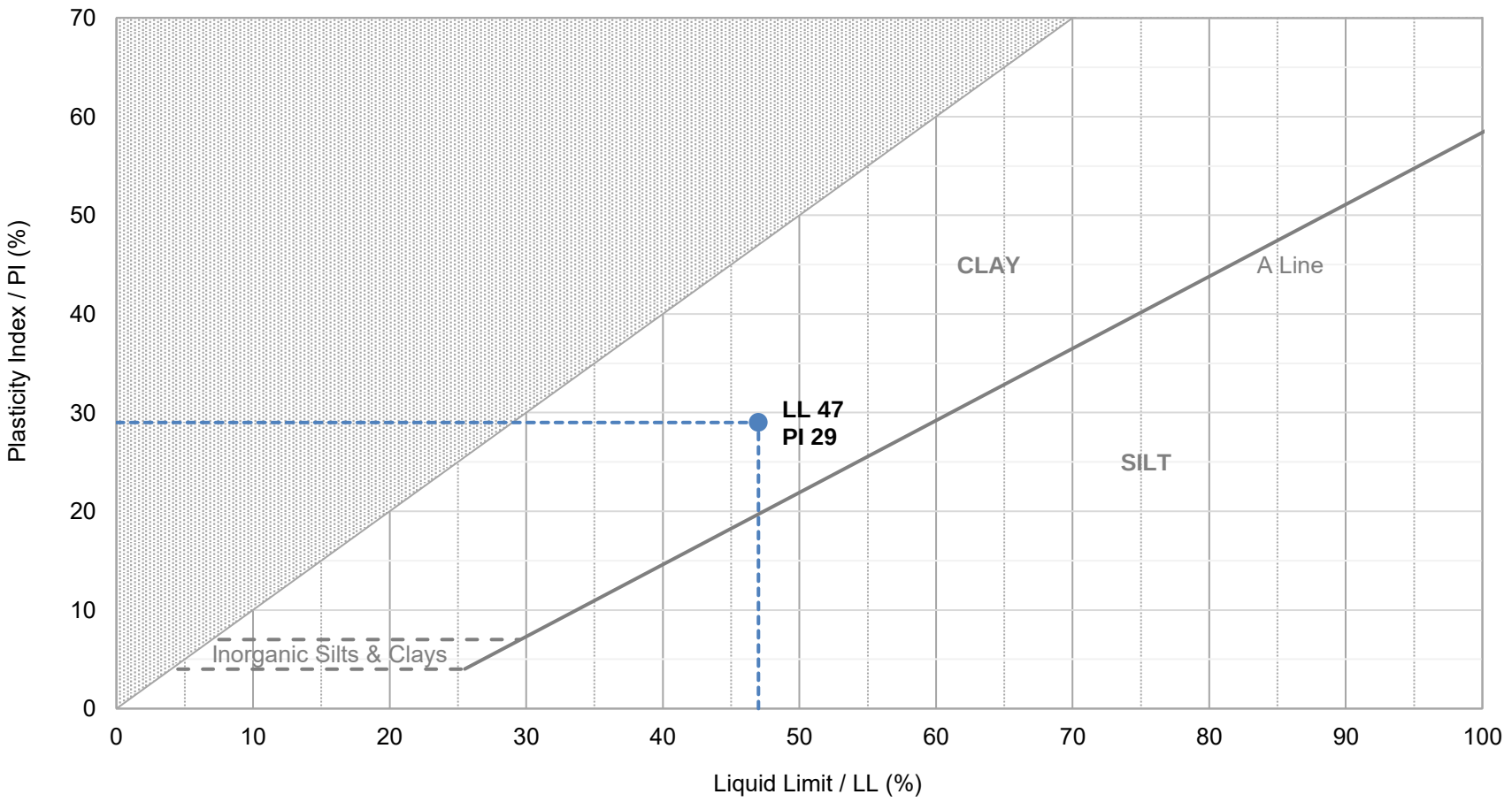
Test Procedure

- ☑ AS1289 3.1.1 Liquid Limit - Four point Casagrande method
- ☐ AS1289 3.1.2 Liquid Limit - One point Casagrande method
- ☑ AS1289 3.2.1 Plastic Limit - Standard method
- ☑ AS1289 3.3.1 Calculation of the Plasticity Index
- ☑ AS1289 3.4.1 Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	11/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	29/10/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**47**
History of the Sample	**Air Dried**	Plastic Limit (%)	**18**
		Plasticity Index / PI (%)	**29**
		Linear Shrinkage (%)	**13.5**
		Condition upon Drying	**Linear**

Notes

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Authorised Signatory:

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30/10/2024

Date:

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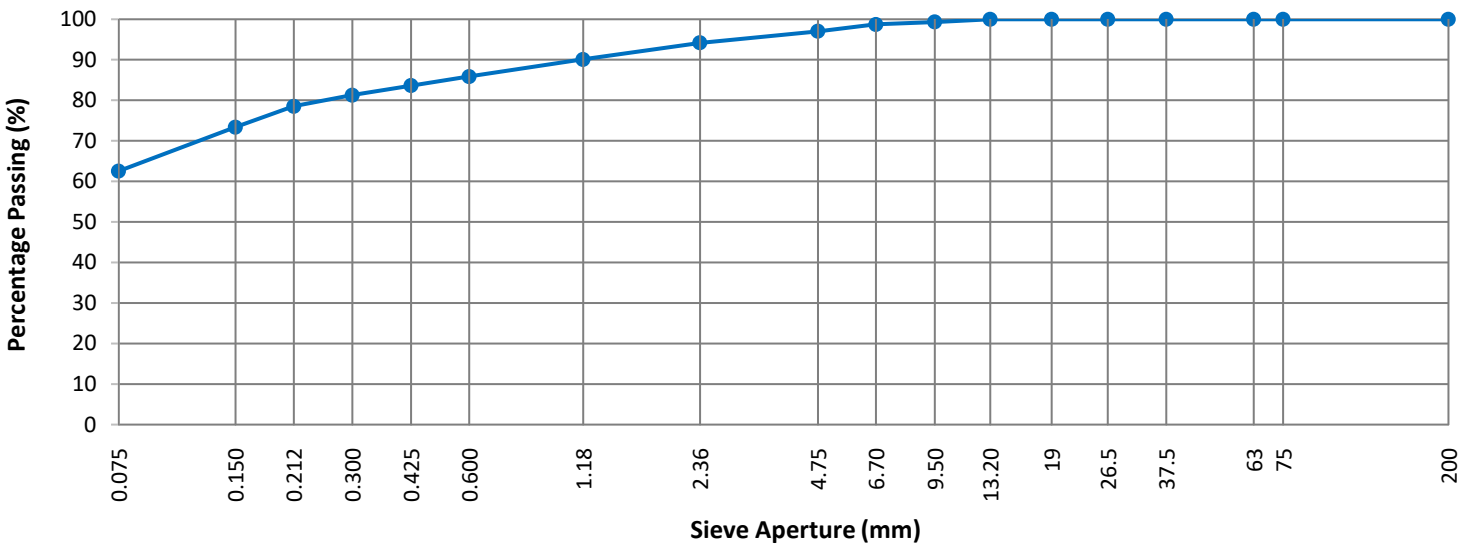
Particle Size Distribution Report

Client	Stantec	**Source**	BH203 6.00-7.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No**	S100744-PSD
Job No	S24513-2	**Lab No**	S100744

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	11/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	30/10/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**100**
26.5	**100**
19.0	**100**
13.2	**100**
9.50	**99**
6.70	**99**
4.75	**97**
2.36	**94**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**90**
0.600	**86**
0.425	**84**
0.300	**81**
0.212	**79**
0.150	**73**
0.075	**63**

Notes

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Authorised Signatory: Date: 30/10/2024

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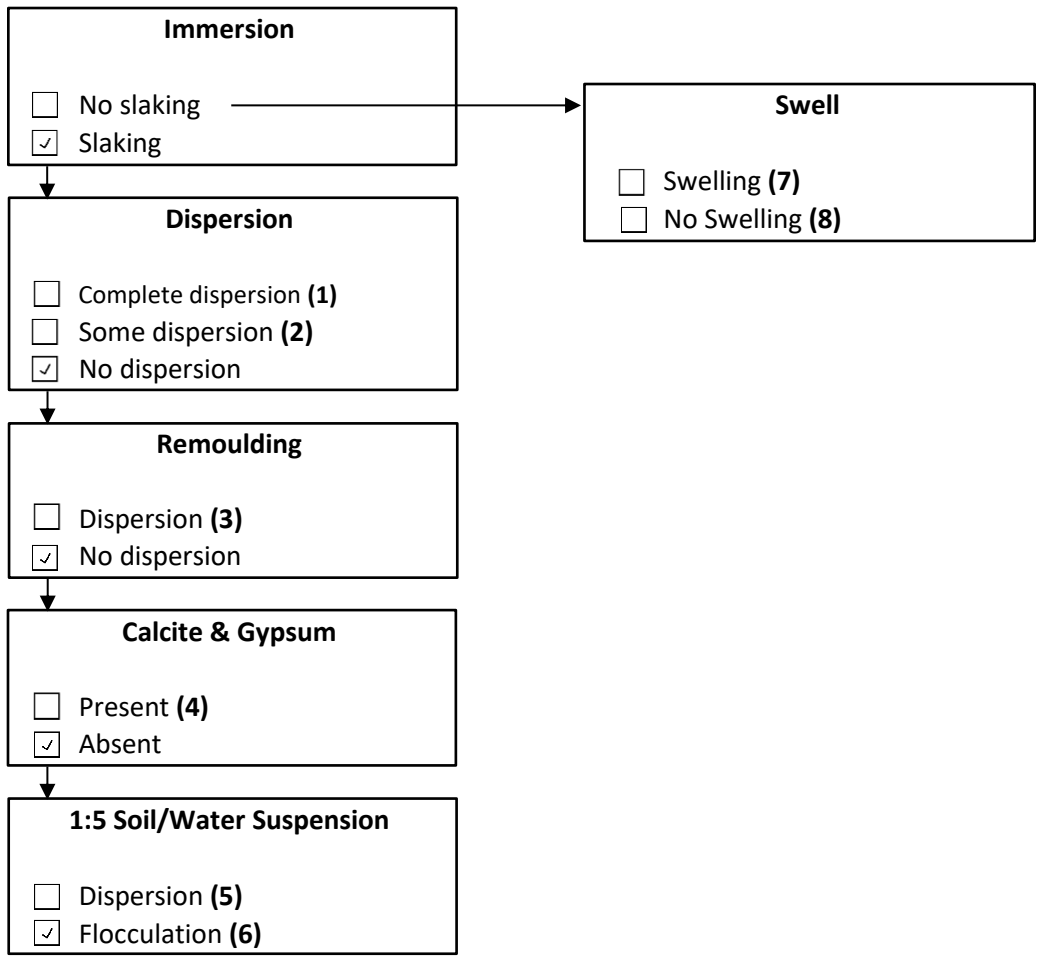
Emerson Class Number Report

Client	Stantec	**Source**	BH205 6.00-7.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No**	S100745-ECT
Job No	S24513-2	**Lab No**	S100745

Test Procedure ☑ AS 1289.3.8.1 Soil classification tests - Dispersion-Determination of Emerson class number of a soil

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 8/10/2024

Preparation Prepared in accordance with the test method **Date Tested** 28/10/2024



Type of Water Used:	Distilled
Water Source:	Laboratory
Water Temperature (^{o}C):	22

Emerson Class Number:	**6**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

30/10/2024

Date:

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Lidcombe NSW 2141

SOIL CLASSIFICATION REPORT

Client	Stantec	**Source**	BH205 6.00-7.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No.**	S100745-PI
Job No.	S24513-2	**Lab No.**	S100745

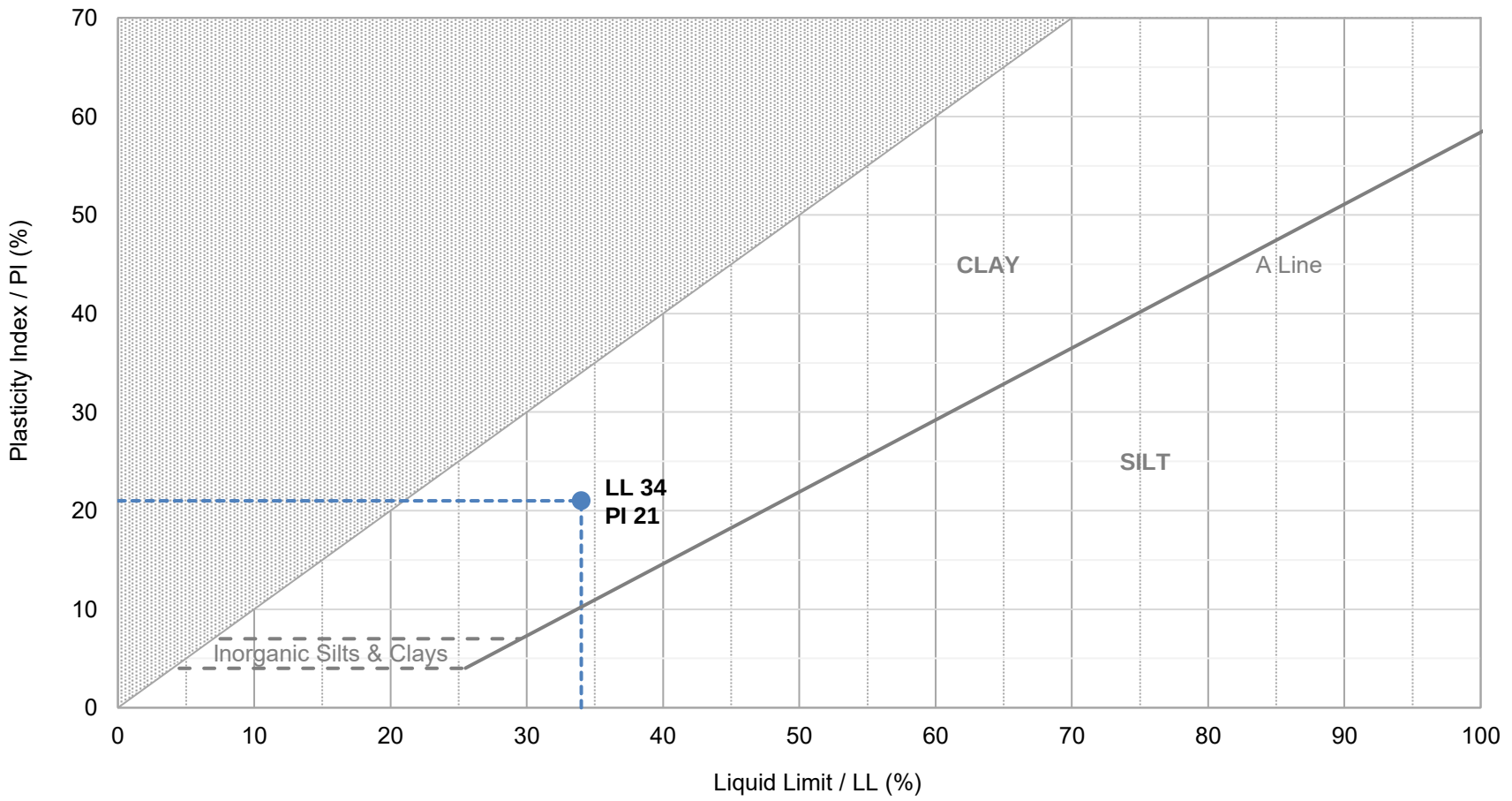
Test Procedure

- ☑ AS1289 3.1.1 Liquid Limit - Four point Casagrande method
- ☐ AS1289 3.1.2 Liquid Limit - One point Casagrande method
- ☑ AS1289 3.2.1 Plastic Limit - Standard method
- ☑ AS1289 3.3.1 Calculation of the Plasticity Index
- ☑ AS1289 3.4.1 Linear Shrinkage - Standard method

Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	8/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	29/10/2024

Plasticity Chart for Classification of Fine-Grained Soils

AS 1726:2017 Clause 6.1.6 (Figure 5)



Preparation		Results	
Method of Preparation	**Dry Sieved**	Liquid Limit / LL (%)	**34**
History of the Sample	**Air Dried**	Plastic Limit (%)	**13**
		Plasticity Index / PI (%)	**21**
		Linear Shrinkage (%)	**9.5**
		Condition upon Drying	**Linear**

Notes

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Authorised Signatory:

Chris Lloyd

30/10/2024

Date:

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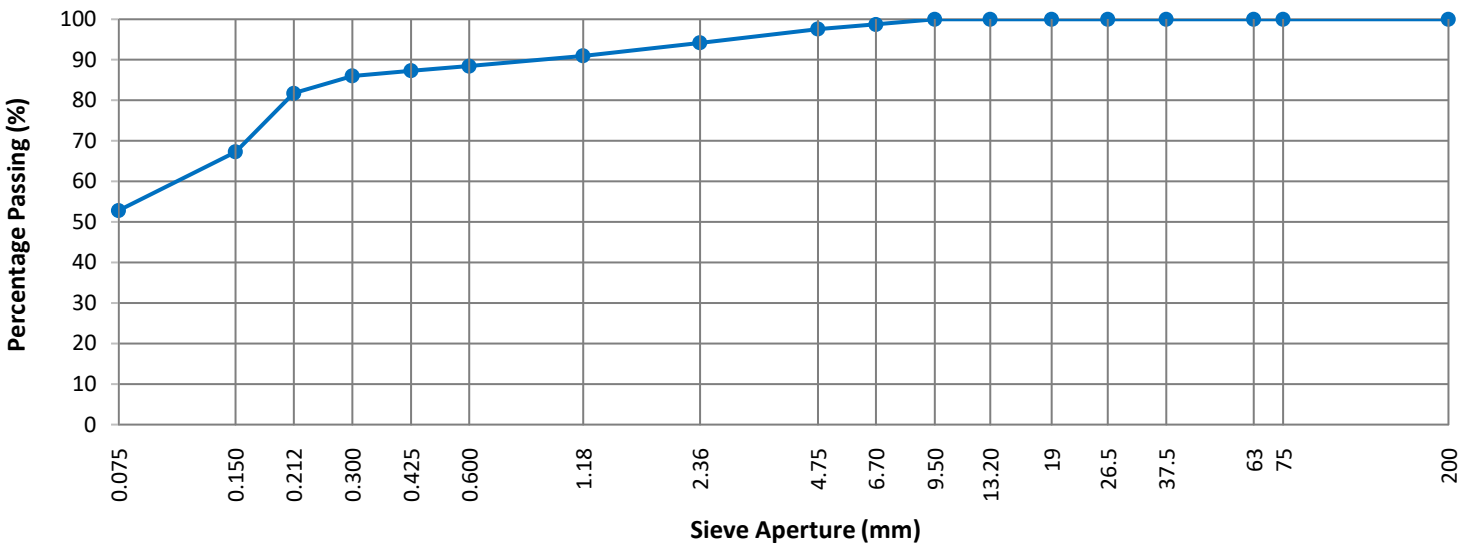
14 Carter St
Lidcombe NSW 2141

Particle Size Distribution Report

Client	Stantec	**Source**	BH205 6.00-7.00m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Silty Sandy CLAY, trace of Gravel
Project	Jordan Springs HS (305001663)	**Report No**	S100745-PSD
Job No	S24513-2	**Lab No**	S100745

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	8/10/2024
Preparation	Prepared in accordance with the test method	**Date Tested**	30/10/2024



Sieve Aperture (mm)	Percentage Passing (%)
200	**100**
75	**100**
63	**100**
37.5	**100**
26.5	**100**
19.0	**100**
13.2	**100**
9.50	**100**
6.70	**99**
4.75	**98**
2.36	**94**

Sieve Aperture (mm)	Percentage Passing (%)
1.18	**91**
0.600	**88**
0.425	**87**
0.300	**86**
0.212	**82**
0.150	**67**
0.075	**53**

Notes

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NATA Accredited Laboratory Number: 14874

Authorised Signatory: Date: 30/10/2024

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14 Carter St
Lidcombe NSW 2141

POINT LOAD STRENGTH INDEX REPORT

Client	Stantec	**Moisture Content Condition**	As received
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Storage History**	Core boxes
Project	Jordan Springs HS (305001663)	**Report #**	S100548-PL
Job #	S24513-1	**Test Date**	15/10/2024

Test Procedure ☑ AS4133 4.1 Rock strength tests - Determination of point load strength index

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 2/10/2024

Preparation Prepared in accordance with the test method

Sample Number	Sample Source	Sample Description	Test Type	Average Width (mm)	Platen Separation (mm)	Failure Load (kN)	Point Load Index Is (MPa)	Point Load Index $Is_{(50)}$ (MPa)	Failure Mode
S100548	BH204 11.77-11.86m	Shale	Diametral	-	48.0	0.12	0.05	0.05	2
			Axial	50.8	30.0	0.54	0.28	0.26	1
S100549	BH204 13.52-13.68m	Shale	Diametral	-	48.0	0.80	0.35	0.34	1
			Axial	51.3	28.0	1.15	0.63	0.59	1
S100550	BH204 13.71-13.88m	Shale	Diametral	-	49.0	0.14	0.06	0.06	2
			Axial	51.1	34.0	0.73	0.33	0.32	1

Failure Modes

1 - Fracture through fabric of specimen oblique to bedding, not influenced by weak planes.

2 - Fracture along bedding.

3 - Fracture influenced by pre-existing plane, microfracture, vein or chemical alteration.

4 - Chip or partial fracture.

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

16/10/2024

Date

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14 Carter St
Lidcombe NSW 2141

POINT LOAD STRENGTH INDEX REPORT

Client	Stantec	**Moisture Content Condition**	As received
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Storage History**	Core boxes
Project	Jordan Springs HS (305001663)	**Report #**	S100994-PL
Job #	S24513-2	**Test Date**	23/10/2024

Test Procedure ☑ AS4133 4.1 Rock strength tests - Determination of point load strength index

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 9/10/2024

Preparation Prepared in accordance with the test method

Sample Number	Sample Source	Sample Description	Test Type	Average Width (mm)	Platen Separation (mm)	Failure Load (kN)	Point Load Index Is (MPa)	Point Load Index $Is_{(50)}$ (MPa)	Failure Mode
S100994	BH201 12.50-12.61m	Claystone/Shale	Diametral	-	49.0	0.16	0.07	0.07	1
			Axial	51.3	40.0	0.19	0.07	0.07	1
S100995	BH201 13.90-14.00m	Claystone/Shale	Diametral	-	49.0	1.27	0.53	0.52	1
			Axial	51.4	36.0	1.30	0.55	0.54	1
S100996	BH201 14.52-14.60m	Claystone/Shale	Diametral	-	49.0	0.48	0.20	0.20	1
			Axial	51.2	35.0	0.48	0.21	0.21	1
S100997	BH202 12.34-12.44m	Claystone	Diametral	-	42.0	0.08	0.05	0.04	1
			Axial	51.4	28.0	0.08	0.04	0.04	1
S100998	BH202 13.84-13.96m	Shale	Diametral	-	49.0	1.32	0.55	0.54	1
			Axial	51.9	29.0	1.80	0.94	0.89	1
S100999	BH202 14.81-14.90m	Shale	Diametral	-	50.0	0.25	0.10	0.10	1
			Axial	51.3	32.0	0.51	0.24	0.23	1
S101000	BH203 12.44-12.52m	Shale	Diametral	-	49.0	0.11	0.05	0.05	1
			Axial	51.1	34.0	0.15	0.07	0.07	1
S101001	BH203 13.87-14.00m	Shale	Diametral	-	49.0	0.44	0.18	0.18	1
			Axial	51.1	33.0	0.46	0.21	0.21	1
S101002	BH203 14.82-14.94m	Shale	Diametral	-	48.0	0.45	0.20	0.19	1
			Axial	51.5	28.0	0.24	0.13	0.12	1
S101003	BH205 12.56-12.63m	Shale	Diametral	-	49.0	0.45	0.19	0.19	1
			Axial	50.8	30.0	0.44	0.23	0.21	1

Failure Modes

1 - Fracture through fabric of specimen oblique to bedding, not influenced by weak planes.

2 - Fracture along bedding.

3 - Fracture influenced by pre-existing plane, microfracture, vein or chemical alteration.

4 - Chip or partial fracture.

Notes

Accredited for compliance with ISO/IEC 17025 - Testing.

NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

31/10/2024

Date

This report cancels and supersedes Report No. S100994-PL Issued 24/10/2024

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14 Carter St
Lidcombe NSW 2141

POINT LOAD STRENGTH INDEX REPORT

Client	Stantec	**Moisture Content Condition**	As received
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Storage History**	Core boxes
Project	Jordan Springs HS (305001663)	**Report #**	S101004-PL
Job #	S24513-2	**Test Date**	23/10/2024

Test Procedure ☑ AS4133 4.1 Rock strength tests - Determination of point load strength index

Sampling Sampled by Client - results apply to the sample as received **Date Sampled** 8/10/2024

Preparation Prepared in accordance with the test method

Sample Number	Sample Source	Sample Description	Test Type	Average Width (mm)	Platen Separation (mm)	Failure Load (kN)	Point Load Index Is (MPa)	Point Load Index $Is_{(50)}$ (MPa)	Failure Mode
S101004	BH205 13.72-13.81m	Shale	Diametral	-	49.0	0.15	0.06	0.06	1
			Axial	51.0	31.0	0.28	0.14	0.13	1
S101005	BH205 15.07-15.19m	Shale	Diametral	-	49.0	0.23	0.10	0.09	1
			Axial	51.6	28.0	0.48	0.26	0.24	1

Failure Modes

1 - Fracture through fabric of specimen oblique to bedding, not influenced by weak planes.

2 - Fracture along bedding.

3 - Fracture influenced by pre-existing plane, microfracture, vein or chemical alteration.

4 - Chip or partial fracture.

Notes

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Authorised Signatory:

Chris Lloyd

31/10/2024

Date

This report cancels and supersedes Report No. S101004-PL issued 24/10/2024

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Results relate only to the samples tested.

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Uniaxial Compressive Strength

Client	Stantec	**Sample Source**	BH201 13.62-13.74mm
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Shale
Project	Jordan Springs HS (305001663)	**Report #**	S100746-UCS
Job #	S24513-2	**Sample #**	S100746

Test Procedure	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	9/10/2024
Storage History	Sealed	**Storage Environment**	Sealed at as received moisture condition
Sample Curing	-	**Testing Machine**	Matest 2000 kN Compression Machine

Uniaxial Compressive Strength 2 MPa

Date Tested:	23/10/2024		Moisture Content:	7.4	%
Specimen Height:	107.5	mm	Duration of Test:	608	seconds
Average Specimen Diameter:	51.7	mm	Rate of Displacement:	< 0.1	mm/min
Failure Type:	Mixed mode				
Other Pertinent Observations:					
Deviation from Standard:	Test specimen length to diameter ratio falls outside of standard limitations of 2.5-3.0.				

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NATA Accredited Laboratory Number: 14874

Date: 24/10/2024

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Uniaxial Compressive Strength

Client	Stantec	**Sample Source**	BH202 13.34-13.51m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Shale
Project	Jordan Springs HS (305001663)	**Report #**	S100747-UCS
Job #	S24513-2	**Sample #**	S100747

Test Procedure	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	10/10/2024
Storage History	Core Box	**Storage Environment**	Sealed at as received moisture condition
Sample Curing	-	**Testing Machine**	Matest 2000 kN Compression Machine

Uniaxial Compressive Strength 2.7 MPa

Date Tested:	23/10/2024		Moisture Content:	5.7	%
Specimen Height:	138.4	mm	Duration of Test:	615	seconds
Average Specimen Diameter:	51.8	mm	Rate of Displacement:	< 0.1	mm/min
Failure Type:	Mixed mode				
Other Pertinent Observations:					

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Date: 24/10/2024

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Uniaxial Compressive Strength

Client	Stantec	**Sample Source**	BH203 14.62-14.82m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Shale
Project	Jordan Springs HS (305001663)	**Report #**	S100748-UCS
Job #	S24513-2	**Sample #**	S100748

Test Procedure	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	11/10/2024
Storage History	Sealed	**Storage Environment**	Sealed at as received moisture condition
Sample Curing	-	**Testing Machine**	Matest 2000 kN Compression Machine

Uniaxial Compressive Strength 1.7 MPa

Date Tested:	23/10/2024		Moisture Content:	7.8	%
Specimen Height:	136.7	mm	Duration of Test:	606	seconds
Average Specimen Diameter:	50.9	mm	Rate of Displacement:	< 0.1	mm/min
Failure Type:	Mixed mode				
Other Pertinent Observations:					

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Uniaxial Compressive Strength

Client	Stantec	**Sample Source**	BH204 13.71-13.88m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Shale
Project	Jordan Springs HS (305001663)	**Report #**	S100550-UCS
Job #	S24513-1	**Sample #**	S100550

Test Procedure	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	2/10/2024
Storage History	Sealed	**Storage Environment**	Sealed at as received moisture condition
Sample Curing	-	**Testing Machine**	Matest 2000 kN Compression Machine

Uniaxial Compressive Strength 1.9 MPa

Date Tested:	15/10/2024		Moisture Content:	6.0	%
Specimen Height:	126.3	mm	Duration of Test:	621	seconds
Average Specimen Diameter:	51.3	mm	Rate of Displacement:	< 0.1	mm/min

Failure Type:	Failure influenced by defects
Other Pertinent Observations:	
Deviation from Standard:	Test specimen length to diameter ratio falls outside of standard limitations of 2.5-3.0.

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Date: 16/10/2024

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Uniaxial Compressive Strength

Client	Stantec	**Sample Source**	BH205 15.75-15.92m
Address	Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065	**Sample Description**	Shale
Project	Jordan Springs HS (305001663)	**Report #**	S100749-UCS
Job #	S24513-2	**Sample #**	S100749

Test Procedure	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	**Date Sampled**	8/10/2024
Storage History	Sealed	**Storage Environment**	Sealed at as received moisture condition
Sample Curing	-	**Testing Machine**	Matest 2000 kN Compression Machine

Uniaxial Compressive Strength 2.5 MPa

Date Tested:	23/10/2024		Moisture Content:	5.9	%
Specimen Height:	139.0	mm	Duration of Test:	612	seconds
Average Specimen Diameter:	52.4	mm	Rate of Displacement:	< 0.1	mm/min
Failure Type:	Mixed mode				
Other Pertinent Observations:					

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Authorised Signatory:

Chris Lloyd

NATA Accredited Laboratory Number: 14874

Date: 24/10/2024

Macquarie Geotechnical
14 Carter St
Lidcombe NSW 2141